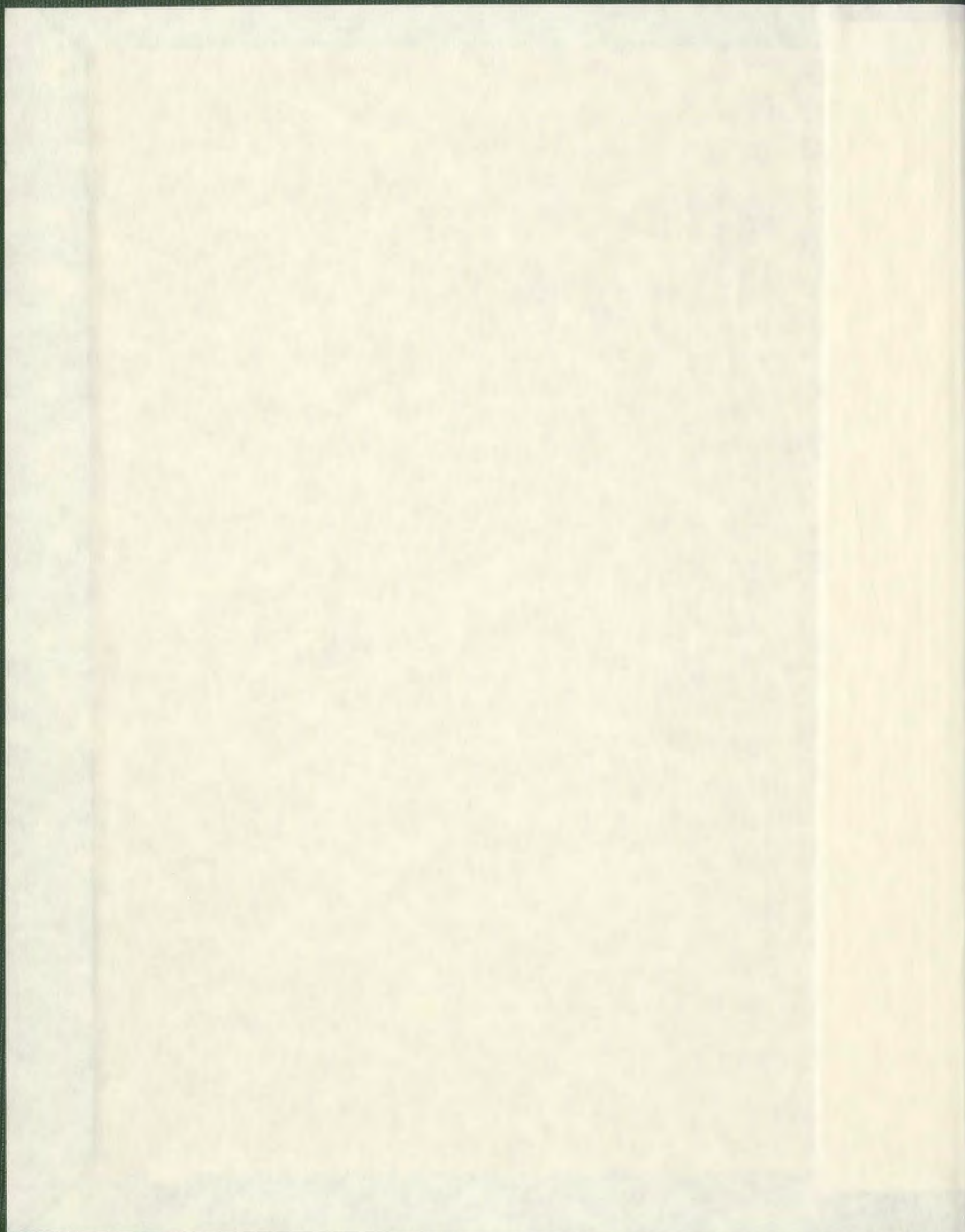


THE IMPACT OF AN ACADEMIC SUPPORT PROGRAM  
ON THE SUCCESS AND PERFORMANCE OF AT-RISK  
FRESHMEN RESIDENCE STUDENTS

LORILYNN ROWSELL





The Impact Of An Academic Support Program On The Success  
And Performance Of At-Risk Freshmen Residence Students

By

LoriLynn Rowsell, B.A., B.Ed.

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## Abstract

This study investigated the effects of an academic support program on at-risk freshmen students living in residence. The study sought to determine if academic averages and student persistence at university was impacted by an intervention program. The locally developed program at Memorial University's residence addressed topics including study skills, test anxiety and time management. The effects of several demographic factors (such as gender, origin of students, and academic entrance average) were also assessed. Data collected included: academic entrance average, students' year of study, end-of-semester academic average, gender, place of origin (urban or rural) of students, continuance at university the next fall semester, and use of the "forgiveness clause" (a university regulation allowing students to return to university once after failing out). Results indicated that attending or providing only one type of intervention program to students, as was done for this research, is not an effective means in improving retention or academic averages. Data collected on demographic factors was largely not significant. Recommendations for future research include using multiple or alternative interventions, identifying other factors that may affect students, using a larger sample, collecting information over a longer time period, and providing more focused and personalized academic supports.

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Gratitude is the memory of the heart ~Jean Baptiste Massieu (Guillemets, 2004).

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## Chapter One: Introduction

Each year a number of first-year students do not return to post-secondary institutions for a variety of reasons, one of which is academic. The offering of academic support programs may lower this risk to first-year students. Considered to be at-risk, these students have a semester failure average or have a cumulative average at barely the pass level. While programming is provided for at-risk students both academically and socially, the focus of this research is the impact of academic interventions on the at-risk group of freshmen who chose to live in residence. More specifically, this study looks at the impact of an academic support program (also called learning strategies sessions) offered to at-risk residence students at Memorial University of Newfoundland (MUN).

Memorial University's dormitory style residences, collectively referred to as Paton College, are home to 980 undergraduates. Out of this 980, approximately 500, or half, each September are freshmen entering the university environment for the first time. To aid in the transition of students to university, the Department of Housing, Food and Conference Services has, as part of its mandate, academic and social programming for all students with particular emphasis on aiding first-year students. The view commonly held among housing professionals is that university residences are more than just a place to sleep and that living there plays a vital part in enhancing a students' academic and personal growth (Housing, Food and Conference Services, [HFCS], 1999). An orientation, that is separate from the regular university-wide orientation, is held for all freshmen living in Paton College. Throughout the semester, students are exposed to

motivational speakers and encouraged to participate in numerous on-going projects that deal with a variety of issues such as safe sex, healthy lifestyles, exercise and responsible drinking. They are encouraged to participate in volunteering and peer helping, and offered part-time work including leadership positions that are available if they choose to get involved. The motto of the Residence Life Office, responsible for educational programming (under the auspices of HFCS), is “Strive to achieve a healthy balance between academics and social activities” (HFCS, 1999).

Lenning, Beal, and Sauer (1980) state that retention is enhanced if entering students have demographics similar to the general student population. Being the only university in Newfoundland, Memorial freshmen undergraduates typically share many traits with their fellow students; however, students in residence are different from the commuter or off-campus students. One difference for residence students is the level of support offered to them through friends, house executives, resident assistants, academic advisors, proctors, the Residence Life office and the Department of Housing, Food and Conference Services. These services mean that the residence experience is different from that found in apartment style living. While commuter-students often have to search out support systems, students in residence are close to these resources and encouraged by peers and staff to avail of them. While it is true that residence students do not have direct parental support as do those living at home, the supports offered by the University to residence students are intended to help lessen the impact of not living at home.

It is interesting to note that some studies report that students living in residence show greater academic and intellectual gains and cognitive growth over their off-campus counterparts (Terenzini, Pascarella & Blimling, 1999); they are also less likely to drop out than those living at home (Grayson & Grayson, 2003; Lenning et al., 1980). These changes in performance may be attributed to the fact that residences afford more opportunity than other living arrangements for students to interact with peers and faculty members (Terenzini et al., 1999). Living in residence allows them to establish close relationships with other persons, which in turn, may enhance their performance (Lenning et al.).

Various factors such as financial problems, lack of goal definitions, personal difficulties and dissatisfaction with post-secondary institutions, have been identified as contributing to the risk of freshman attrition (Lenning et al., 1980; Mackie, 1998; Tinto, 1987, 1993).

### *Background*

Post-secondary student attrition has concerned educators and post-secondary officials for decades. It is a fact that students display the highest rate of attrition during, or just after, their freshman year (Dunphy, Miller, Woodruff & Nelson, 1987; Webb, 1987) and if institutions help freshmen “fit” by involving them in their education, it tremendously aids students’ success (Webb). Most programs and centres at MUN have a special focus on first-year undergraduates and first-year courses. Memorial’s focus on

first-year students, and on helping students “fit”, consists of a number of different aspects. Because students who use academic advising centres show greater persistence, (Lenning et al., 1980), Memorial’s Academic Advising Centre focuses on students who have not declared a major. Most of these students are freshmen. The University orientation focus is mainly on first time students as orientation programs have been shown to improve retention (Lenning et al.). Similarly, at Memorial, tutors in residence help first-year residence students by tutoring different courses, as learning assistance centres have been shown to reduce attrition (Lenning et al.). Also, at MUN various academic departments on campus offer a number of help centres. The Counselling Centre provides many short and long-term courses that, while open to the general student body, see a greater proportion of freshmen. Outside the University, private tutoring companies also focus their energies on freshmen students. Research has shown that attrition is more effectively reduced when services are offered at the university level, as is done at Memorial, than at the departmental level (Grayson & Grayson, 2003).

Post-secondary personnel know that students will be more likely to persist when their positive interactions exceed their negative interactions with the institution (Van Allen, 1988). Receiving effective academic and career advising, living on campus, interacting frequently with other students, participating in campus activities, and maintaining attendance are some of the factors associated with achieving the goal of graduating from post-secondary institutions (Webb, 1987). Institutions that provide

academic, social, and personal support services to students encourage their persistence through to graduation (Consolvo, 2002). Non-academic supports also greatly influence students. For example, living on campus has been positively linked to cognitive development as has working part-time. It has not been established that these changes are linked to course work (Terenzini et al., 1999). Research has also shown that the more students are involved with campus life, the greater their chances of success (Study Group on Conditions of Excellence in Higher Education, 1984), and that students continue to learn outside the classroom through interactions with staff, faculty and peers (Terenzini et al.). It would stand to reason that the more positive the overall experience for students, the greater their chances of completing their post-secondary degree. When students are less involved, they may not be as successful as those more involved.

### *Purpose*

Recent research in Canada has shown that 20-25% of all first-year students drop out of school (Grayson & Grayson 2003). At Memorial University in 2002, this number was approximately 15% (Centre for Institutional Analysis and Planning - CIAP, 2004). Retention rates at other public provincial institutions were not readily available. As these attrition rates can have a negative affect on the student and the institution (Grayson & Grayson; Sharpe & Spain,1993) an intervention program was developed in residence at Memorial University. The primary objective of this study is to evaluate the impact of academic interventions, such as are offered at Memorial, on identified at-risk first-year



students in residence. Specifically, the focus of this study is first-year students who have a semester average below 50% (failing), and who have a cumulative average below 55% (barely passing), as these students have been found to be at-risk of dropping out of university. This study seeks to determine if academic average increases after participating in an intervention program and if students completing the intervention have a greater probability of returning to university the following semester.

Academic support groups have been shown to help students achieve and maintain acceptable levels of academic success (Halstead, 1998). Dropping out is believed linked to a number of areas including high school grades, academic aptitude, study habits, and high school size (Lenning et al., 1980; Mackie, 1998; Tinto, 1987, 1993). This study looks at the effects of gender, community size and academic entrance average on first-year students.

As is evident in research by Tinto (1987, 1993), up to 40% of students drop out of post-secondary institutions and in Canada, 20-25% of these are in their first year (Grayson & Grayson, 2003). Consolvo (2002) states that a large percentage of students who enter post-secondary drop out, stop out, or fail to complete their programs of study. The cost of attrition to both students and the institutions is evident in that students may feel they have wasted their time, money and energy along with experiencing a negative change in their attitude (Lenning et al., 1980; Sharpe & Spain, 1993). Institutions often see the students as an economic liability, occupying limited program space that could

have been filled by other students (Sharpe & Spain). To combat this problem, many institutions have attempted to increase retention through various educational initiatives.

### *Definitions*

**Attrition:** occurs when a student is no longer enrolled in a post-secondary institution and has not completed a program of studies (Lenning et al., 1980).

**Retention:** occurs when a student completes, continues or resumes their studies (Lenning et al., 1980).

**Drop-Out:** one who leaves the institution and does not return for additional study at any time (Lenning et al., 1980).

**Stop-Out:** one who leaves the institution for a period of time but returns for additional study. Graduation is achieved but not on-time (Lenning et al., 1980).

**Persistence/Continuance:** continued enrolment at the same institution without interruption for a period of study. Graduation is usually achieved on-time (Lenning et al., 1980).

**Rural:** any area with a population of less than 5000 (Department of Education, personal communication, April, 2002).

**Urban:** any area with a population of more than 5000 (Department of Education, personal communication, April, 2002).

Group: a number of students assembled together by year of admission to university.

### *Significance of the Study*

A noted and persisting concern of post-secondary institutions is the retention rate among, in particular, first-year students. Because attrition costs postsecondary institutions money, retention is an issue that remains in the foreground (Grayson & Grayson, 2003). As first year is seen as critical and first year students most vulnerable to attrition, they are deemed most in need of support. (Cuseo, 2003; Dunphy, et al., 1987; Mackie, 1998). Counselling services, academic advising centres, orientation programs and learning assistance centres exemplify resources that help increase persistence (Lenning et al., 1980). Many students who are not succeeding either do not realize that they should avail of these resources, or are unsure of how to find them; the challenge is to encourage students to use the existing support structures (Strage et al., 2002).

If strong relationships are found to exist between students' attendance at academic skills programs and average or retention, post-secondary support service providers could be provided with information necessary to help them develop more extensive academic support programs for freshmen at-risk of failing out. Examining demographic factors may provide some indicators of who may be at-risk of failing among first-year students. Such issues as high school grades, academic aptitude, study habits, high school size and academic quality have an impact on freshmen during their first semester and possible

subsequent semesters (Lenning et al., 1980; Tinto, 1987, 1993). Further research into some of these demographics could determine the impact they have on retention. There has been little significant research completed in this particular area.

This study looked at the attrition rate of first year students in residence at Memorial during the period from 1997-1999. It sought to assess the impact of an intervention program developed by HFCS, to address attrition in freshmen in residence. Using data in existing University records, an analysis was carried out to assess the impact of the intervention program, taking in to account factors including gender, academic entrance average, and origin of student (urban or rural). The study compared groups not receiving intervention with one that did.

### *Specific Research Questions*

In this study it is predicted that when comparing groups not receiving intervention with those receiving intervention:

1. There will be a significant difference in semester two student performance between groups.
2. There will be a significant difference in continuance rates at university.
3. There will be a significant difference in student performance between semester one and semester two among students with no intervention.
4. There will be a significant difference in continuance at university from year to year, among students with no intervention.

5. There will be a significant difference in performance ability in semester two related to gender.
6. There will be a significant difference in continuance rates related to gender.
7. There will be a significant difference in performance in semester two related to student origin (rural or urban).
8. There will be a significant difference in continuance rates at university related to student origin (rural or urban).
9. There will be a significant difference in performance in semester two related to entrance average.
10. There will be a significant difference in continuance rates related to entrance average.

### *Limitations of the Study*

While it is hoped that this study will add to the limited amount of information on the impact of intervention services for at-risk freshmen students, there are recognized limitations, as follows:

1. This study is not longitudinal, therefore students will not be tracked beyond first year, providing the researcher with only the short-term impact of academic support.
2. This study focused on students in a single residence setting therefore any findings may not be generalizable to other post-secondary residences.

3. This study used mostly Newfoundland students and therefore may not be generalizable to other locations.

## Chapter Two: Literature Review

From the literature reviewed, several key variables were found that impacted retention and attrition that will be further discussed below. These included, but are not limited to: support systems; first year experience; gender; communication with others; commitment on behalf of the institution to the student; and student satisfaction with post-secondary institution.

### *Retention/Attrition*

Research by Tinto (1987, 1993), has indicated more students drop-out or stop-out of post-secondary institutions than graduate. The cost of attrition to both students and the institution is evident in that the students may feel they have wasted their time, money and energy along with experiencing a negative change in attitude (Lenning et al., 1980; Sharpe & Spain, 1993). The institution itself may see these students as an economic liability, occupying limited program space that could have been filled by other students (Sharpe & Spain). To combat this problem, many institutions have attempted to increase retention through various educational initiatives. Increasing the likelihood that students will stay at post-secondary institutions means less empty classrooms and more tuition income, which may be funnelled towards building a higher quality institution. While retention is both a social and an economic issue, the focus of most universities remains on the economic impact that stop-outs and drop-outs have on the institutions (Van Allen, 1988). Sharpe and Spain report that low retention rates contribute to an inefficient

educational system. At a time when procuring an education is vital to future employment, it becomes increasingly important that the issue of retention be addressed.

The first year of post-secondary is seen as the critical year in terms of retention. For some students, making the transition from high school to post-secondary is one of the biggest changes and challenges that will occur in their lives. If the experience is to be positive, retention efforts must focus both on students needs, and on the institutions services and programs. If the fit between the students and the post-secondary institution is not right, chances are students will drop out (Tinto, 1987, 1993; Van Allen, 1988; Webb, 1987).

Contact by the student, with faculty, staff and other students, has been shown to be one of the most significant factors in retention (Lenning et al., 1980; Tinto 1987, 1993; Webb, 1987). In a recent study, Witherspoon, Long and Chublick (1999) found that a number of factors including, interactions with peers, emotional support and encouragement, can be critical for post-secondary success. Using the Environmental Deprivation Scale (EDS) to identify students at risk of failing out of post-secondary institutions, they assessed areas including: school, income, debts, participation, status, hobbies, education, residence, church, organizations, friends, relatives, parents, partner, children, and fears. What they deemed to be a deprivation in any one of these areas meant a greater likelihood of dropping out. Those who rated high on these indicators reflected a lower level of organizational involvement and were deemed lonely, lacking social skills and deficient in their relationships with others. Orientation and other events



at postsecondary institutions that encouraged participation on campus were seen as vital to forming close attachments necessary for success.

The institution must be willing to become involved in the social and intellectual development of its students, as persistence has been linked to positive social and intellectual student adjustment (Tinto, 1987, 1993). Counselling services, academic advising centres, orientation programs and learning assistance centres are examples of resources that help increase persistence (Lenning et al., 1980). To lessen and manage the impact of the negative aspects of some out of class experiences, such as too much socializing or infrequent encounters with peers and faculty, early interventions are needed to help students achieve academic success (Minchella, Yazvac, Fodrea, & Ball, 2002; Terenzini et al., 1999). Some students need more guidance than others to help motivate them to learn. Minchella et al. (2002) for example, designed a resource seminar that included both academic and orientation components to help students to succeed in the classroom and integrate with their peers. They found that students who attended the seminar earned A's, B's and C's twice as often as non-participants.

Programming for retention of freshmen can be institution-wide or small scale. Often the most successful intervention programs begin small (Tinto, 1987, 1993) with a focus on minimizing or eliminating the impact of attrition factors on retention through improving student-faculty interactions, fostering a community network between students, faculty and resources, and primarily focusing on academic achievement (Van Allen, 1988). Tinto also states that while retention programs are key, they cannot replace the

need for caring and concerned faculty and staff. Programs are the tools to help in retention, with institutions providing on a daily basis, individual attention to each student. Institutions that provide this commitment to their students help in retention efforts.

### *Factors Affecting Retention and Attrition*

Students persist and drop out of post-secondary institutions for a number of reasons. While, for practical purposes, the focus of this research will be on a particular academic intervention, to have a complete view of retention, it is necessary to discuss other key factors as well. Based on a compilation of previous research on attrition completed by others, Tinto (1987, 1993) and Lenning et al. (1980) identified some key factors such as high school grades, academic aptitude, study habits, high school size and academic quality that impact freshmen during their first, and possibly subsequent, semesters. In particular, this research has its foundations in previous psychological and societal theories including: Van Gennep's Rites of Passage; Durkheim's Theory of Suicide; Astin's Theory of Involvement; and Chickering's Theory on Identity Development (Lenning et al.; Tinto). As well, students involved in the research identified areas they felt impacted their decisions to stay or leave. Further research is needed to address many of these areas and the impact that they have on retention. Factors such as one's inability to adapt to new settings, lack of finances, disadvantaged home life, type of housing while at post-secondary, poor and inadequate study habits and skills,

availability of essential resources such as counselling and advising, the nature of one's involvement on campus, and one's peer group all impact retention (Dunphy et al., 1987; Lenning et al.; Sharpe & Spain, 1993; Tinto; Webb, 1987). Table 1 summarizes general factors that affect attrition and retention.

Table 1 – Factors Influencing Attrition and Retention

<b>Attrition Factors</b>	<b>Retention Factors</b>
financial problems	high academic expectations
lack of defined goals	informal interactions with faculty
studying on a part-time basis	studying on a full-time basis
poor grades	supportive institutional environments
personal difficulties	working, but under 25 hours per week (part-time)
changing labour markets	living on-campus
job commitments (mostly full-time work)	
poor study habits	
lack of motivation	
dissatisfaction with post-secondary institution	
isolation	
adjustment	

### *Models of Retention*

There are many theoretical models used to describe attrition at post-secondary institutions. Tinto's model of institutional departure (Tinto, 1987, 1993), Spady's

Theoretically Based Model of the Undergraduate Dropout Process (Spady, 1971), Alfred's symbolic interaction theory (Lenning et al. 1980), Bean and Eaton's psychological model of college student attrition (Bean & Eaton, 2000) and Mackie's model of the process of student departure will be examined (Clift, 2003; Mackie, 1998).

Tinto's model of institutional departure (1987, 1993), seen as the best established and most tested theory of student attrition (Patrick, 2001), is a longitudinal model in which ongoing interactions take place between students and the academic and social systems within and around the post-secondary institution (see Figure 1). It is these positive and negative experiences that modify goals and institutional commitments potentially leading to persistence or withdrawal (Sharpe & Spain, 1993; Tinto). Positive or integrative experiences reinforce the likelihood of persistence whereas negative, or malintegrative experiences, can lead to withdrawal (Tinto). Basically, Tinto's model suggests that characteristics of students affect the level of commitment to graduating and commitment to the institution. The range of factors affecting the student would include events that occur within the institution, such as academic performance, or what has preceded the student before arriving at the institution, such as family background (Tinto). Tinto goes further to say, in his revised theory in 1993, that what happens to the student at the institution has a greater impact on student withdrawal than the interactions or events that occurred beforehand. The argument of the model is that the greater the degree of social and academic interaction experienced by freshmen students, the greater the commitment to graduating and to the institution and the less the likelihood of withdrawal

(Kirby & Sharpe, 2001; Lenning et al., 1980; Sharpe & Spain, 1993; Tinto).

Tinto focuses on goals and emphasizes that the stronger the link between the goal of post-secondary completion, the greater the likelihood of graduation. While goals tend to change after entering post-secondary, uncertainty in the first year is not directly related to attrition. There is a much stronger correlation between uncertainty and attrition if this uncertainty persists over a number of years (Lenning et al.; Tinto).

Spady's model (Lenning et al., 1980; Spady, 1971) looks at the interactions between students and their environment (i.e., other students, faculty, and administration) (see Figure 2). If there is a large discrepancy between the two, students run the risk of not being assimilated into the social and intellectual systems of the institution—felt by some researchers to be as important a factor as academics in predicting persistence (Gerdes & Mallinckrodt, 1994). Spady also focus' on the students' perception of the lack of rewards provided by the institution. He believes that either of the above two variables—student interaction with environment and reward perception—can result in withdrawal from post-secondary institutions (Lenning et al.; Spady). His basic premise is that students leave post-secondary institutions because they lack shared values and/or support (Pike, Schroeder & Berry, 1997; Spady).

Richard Alfred's symbolic interaction theory (as cited in Lenning et al., 1980) is based upon the fact that interaction of the students within an individual-group setting provides the framework for behaviour in higher education. He identified many genetic, external and internal factors that he found were involved in students' decisions to leave

post-secondary institutions. Factors such as financial status, place of residence, work status, reasons for pursuing an education, and psychological patterning are examples of some factors he felt would predispose a person towards non-completion of post-secondary education (Gerdes & Mallinckrodt, 1994; Lenning et al.).

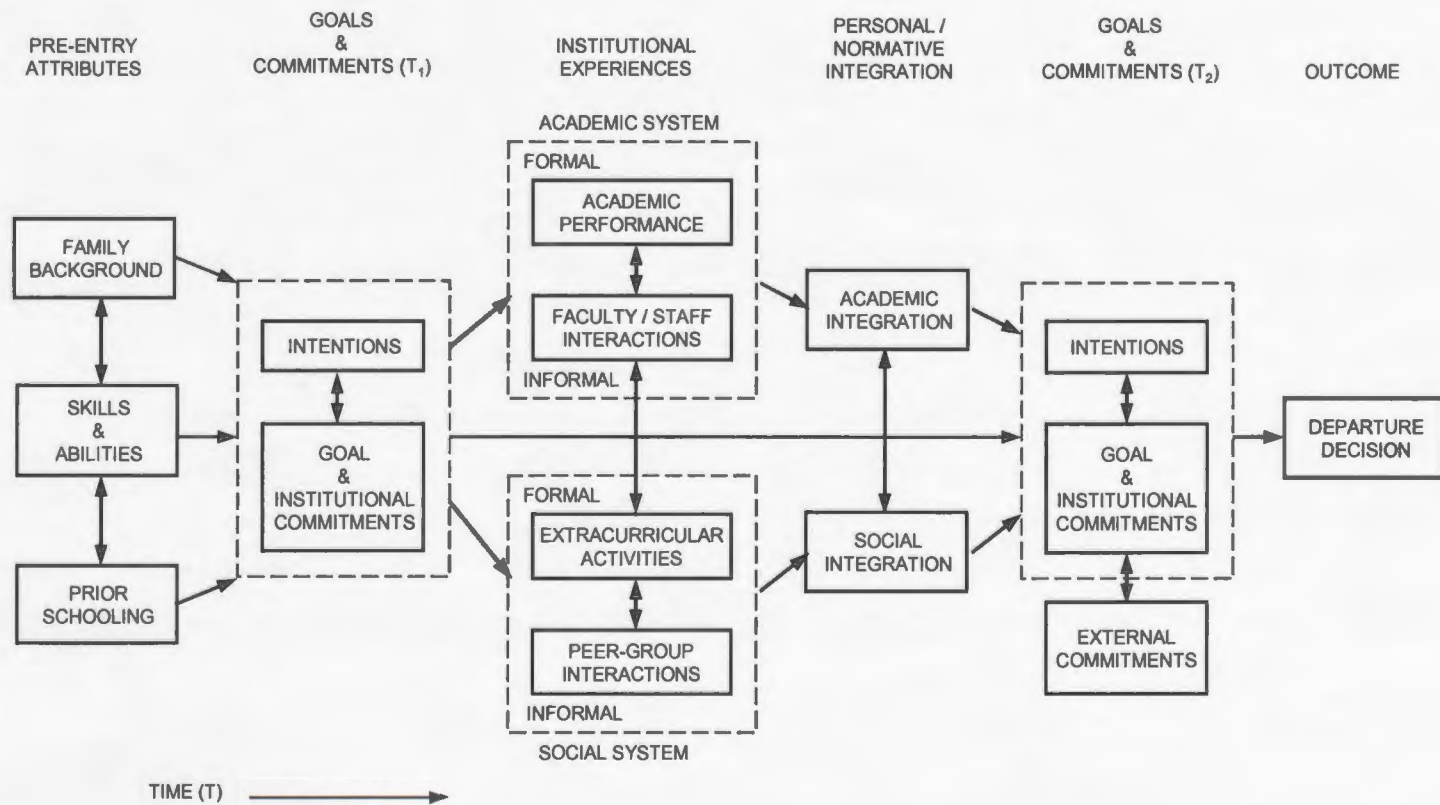


Figure 1. Tinto's longitudinal model of institutional departure<sup>1</sup>

<sup>1</sup>From "Leaving College: Rethinking the Causes and Cures of Student Attrition, 2<sup>nd</sup> Ed.," by V. Tinto, 1993, Chicago: The University of Chicago Press.

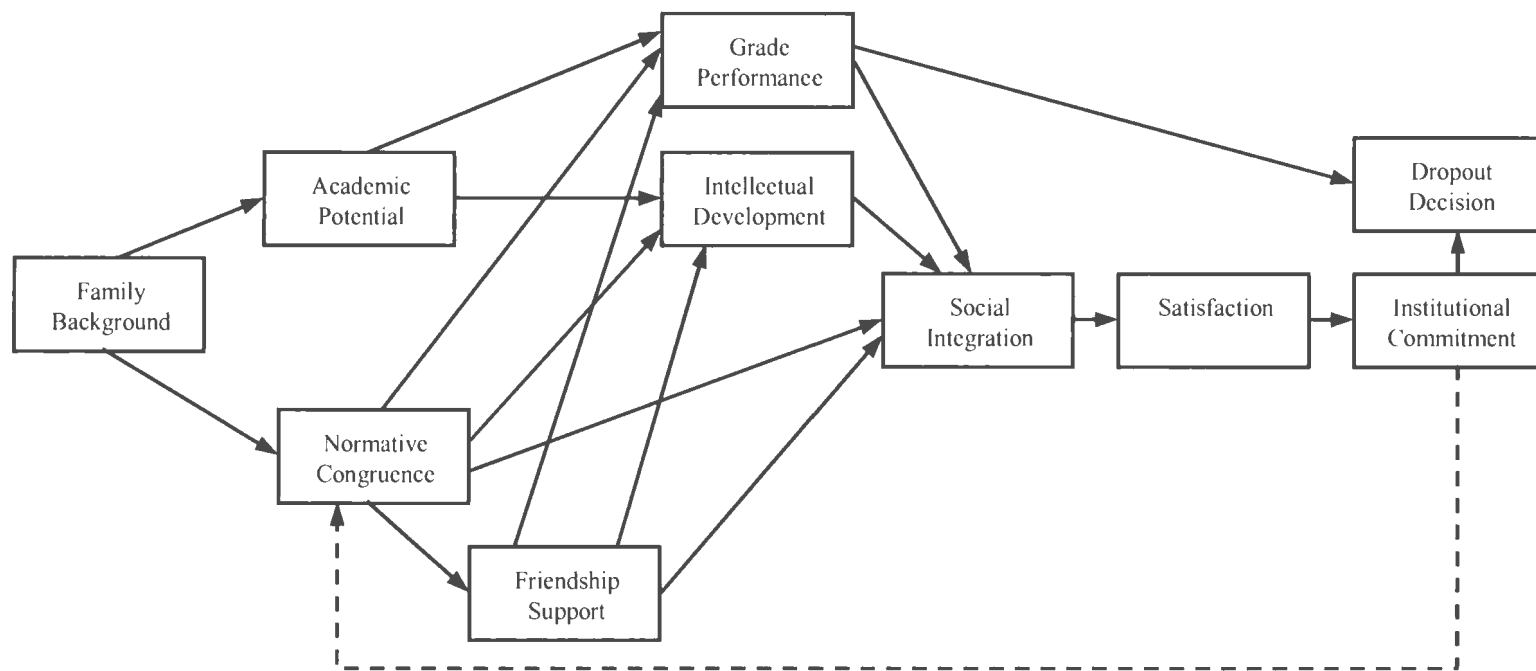


Figure 2. Spady's Theoretically Based Model of the Undergraduate Dropout Process<sup>1</sup>

<sup>1</sup>From "Dropouts from Higher Education: Toward an Empirical Model by W.G. Spady, 1971, *Interchange*, 2(3) p. 39.



In 1998, Sarah Mackie developed a model of the process of student departure (see Figure 3). Her theory, based on research she collected on first year business students at a university in England, is based on the premise that the transition to higher education is psychosocial in nature. She discusses the importance of identity development in students. Students, experiencing their first real sense of self, are in the midst of role identity and require interactions with others. At this time students feel a lack of control over their environment, thus support is vital to help them regain control. In order to be successful and remain at their institution, students need to be integrated within the social and formal organization of the institution (Clift, 2003; Mackie 1998).

Mackie identified four key areas that “push” students through post-secondary institutions or “pull” them back. These include: social integration (such as difficulties in the ability to make new friends); organizational integration (such as personal connection with faculty); external environment integration (such as finances); and individual commitment to change (such as homesickness) (Clift, 2003; Mackie, 1998). In effect students will stay at their institutions because the forces “enable” them and they are fully integrated or the student will leave because the forces “inhibit” them and they do not become integrated. Departures are usually a result of failure in any one of the four key areas and can occur at any time of the year. Early departures are often linked to failure in social integration with late departure being linked to failure in organizational integration (Clift; Mackie).

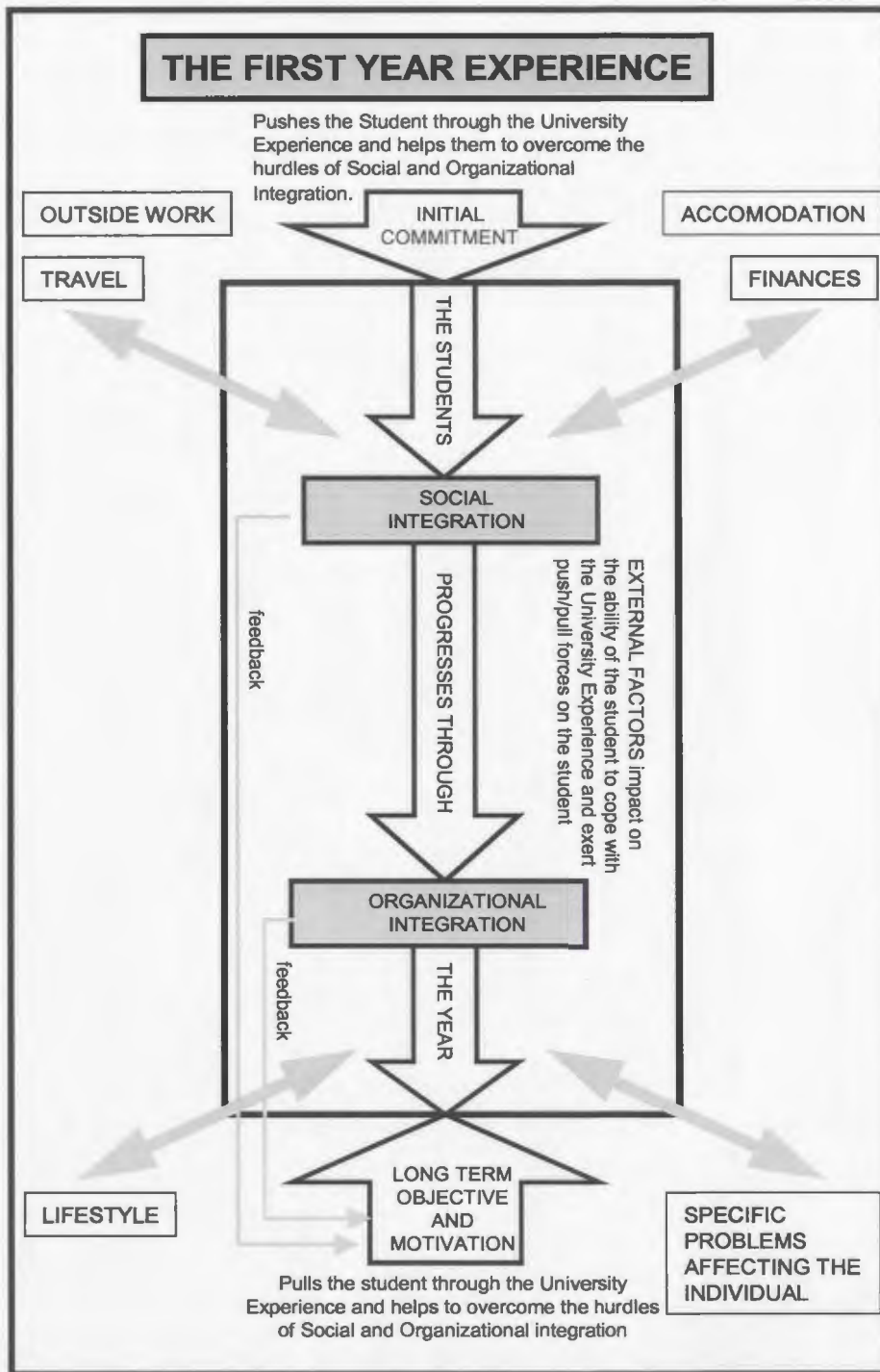


Figure 3. Mackie's model of the process of student departure<sup>1</sup>

<sup>1</sup>From "Jumping the Hurdles," by S. Mackie, 1998, Paper presented at International Conference Higher Education Close Up, Bristol, England, p. 19.

There has been recent research in the area of retention completed by John Bean and Shevawn Bogdan Eaton (2000) culminating in the psychological model of student retention (see Figure 4). This model, intended to explain behaviour as a choice, assumes people are motivated to choose, and that choices lead to, or away from, any given behaviour. The basic premise of the model is that students enter post-secondary institutions with a complex set of personal characteristics and that their past behaviours and beliefs affect the way they interact with their institutional environment. The institution, acting as a filter, affects these initial characteristics. Students often react to new situations based on past experiences, or they learn new coping strategies to help in their new environment. Students also assess and interpret how to respond to future situations. Through interacting with the institution, different psychological processes take place, which, for successful students, mean less stress, increased positive self-efficacy, and increased internal locus of control. Each process increases the students' motivation and leads to improved academic and social integration, improved institutional fit and loyalty, increased intent to persist and actual persistence (Bean & Eaton, 2000).

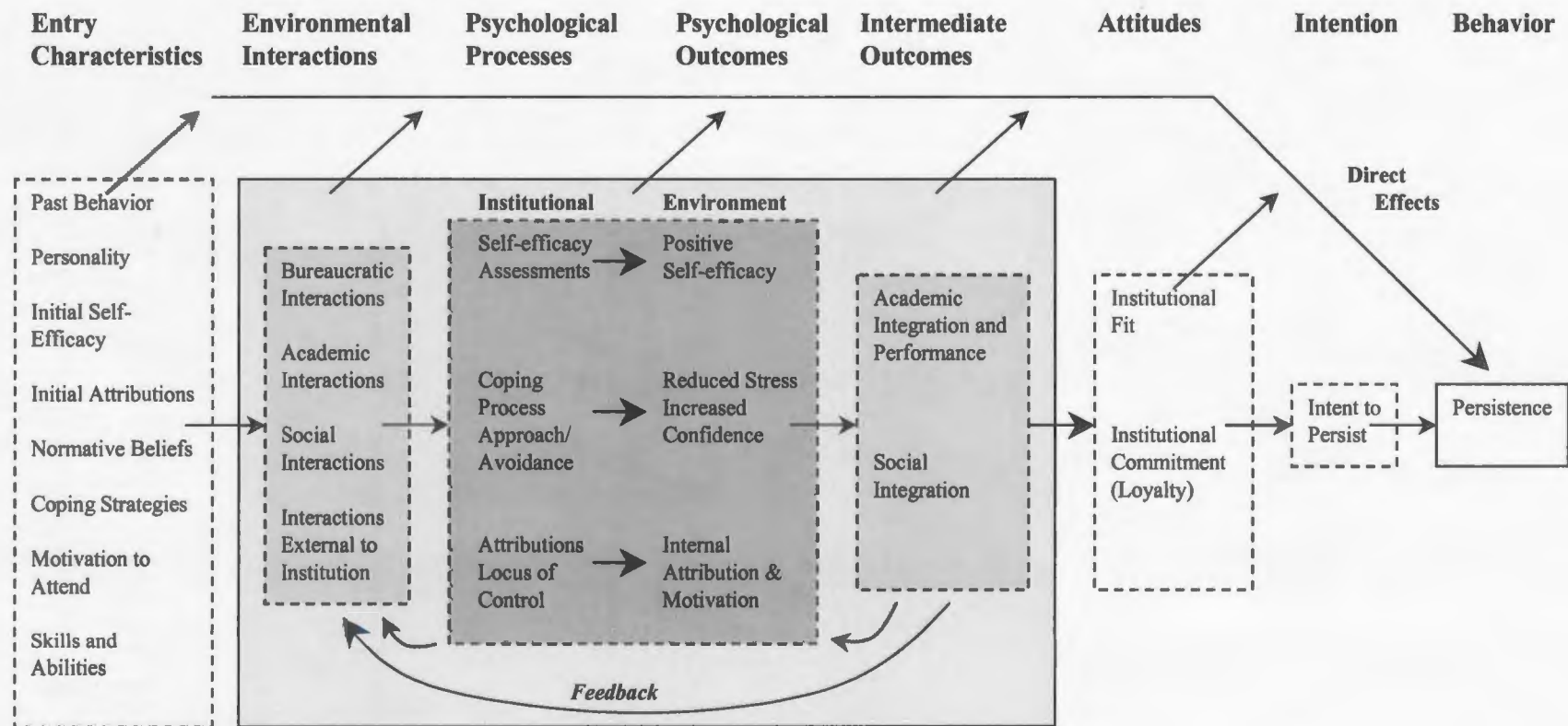


Figure 4. Bean & Eaton's psychological model of college student retention<sup>1</sup>

<sup>1</sup>From "The Psychology Underlying Successful Retention Practices," by J. Bean and S.B. Eaton, 2001-2002, *Journal of College Student Retention* 3(1) p. 76.

Recent research findings clarify some issues that arise in these five models. It has been shown that academic achievement and institutional commitment directly influence persistence (as defined in Pike et al., 1997). Students living in residence having higher levels of peer, faculty and staff interaction; therefore greater academic and social integration are more likely to persist than their with off-campus, commuter-student counterpart who travels to and from campus each day (Blimling, 1999; Pike, 1999; Pike et al.). In studies completed on a variety of campuses, residential students showed greater satisfaction with their institutions than non-residential students and were therefore more committed to their institutions (Pike). Residential living accounts for a 12% advantage over commuter-students in persistence (Pike) and on-campus students showed significantly larger gains in critical thinking and reading when compared to their commuter-student counterparts (Terenzini et al., 1999). Such factors can directly or indirectly affect persistence.

Students entering post-secondary institutions come with varied backgrounds including differences in high school grades and socio-economic status. In their research on critical thinking skills in residence students, Inman and Pascarella (1998) found that, when high school grades and socio-economic status, along with academic major, are taken into account, students in residence still persist much longer at post-secondary institutions than commuter-students. It appears that students living on campus usually become more involved in campus life, thereby affording them the opportunity to develop a strong sense of community and to become more integrated into the campus social

system, resulting in the tendency to stay at post-secondary institutions (Berger, 1997). Tinto (1987, 1993) goes further to say that a necessary condition for retention is the fact that residence provides a prime opportunity for social integration. Witherspoon et al. (1999) state that students who dropped out of post-secondary institutions reported deficiencies in their interactions with others, and reported a lack of involvement in campus life. The greater students' academic and social integration, the greater their persistence (Pike et al., 1997). Residence dormitories have an important role to play in promoting those dimensions of students' cognitive development not closely tied to coursework activities by providing opportunities for social integration (Terenzini et al., 1999).

### *Support Systems*

The early experiences of students at post-secondary institutions can shape their lives forever. The fact that freshmen students have the highest rate of attrition means that most universities place a special focus on providing services to minimize attrition in this population through the use of services such as academic advising centres, help centres, orientation programs, employment seminars and wellness education sessions.

It is key that a communication network exists between the student and faculty, staff and other students (Grayson & Grayson, 2003) and that students feel connected to their institution and happy with their school in order to be successful and remain there (Tinto, 1987, 1993). Support comes in a variety of ways including faculty/staff

interactions, interactions with peers, and access to various programs offered by the institution (Grayson & Grayson; Tinto; Van Allen, 1988).

In the general post-secondary population, freshmen are most likely to use advising services (Metzner, 1989). It is important to provide this group with academic advising that is of good quality as it helps students define and identify educational goals in relation to their post-secondary experience. Students linking their goals to the institution's resources means more satisfied students who may be motivated to stay at post-secondary institutions longer. Academic advising may influence students' grades, attitudes towards, and perceptions of, the importance of a post-secondary education (Metzner). This in turn, affects the retention of students at institutions. Academic support groups have been shown to help students achieve and maintain acceptable levels of academic achievement (Halstead, 1998). While studies are limited in the area of peer tutoring, in their preliminary research on tutoring effectiveness and retention efforts, Landrum and Chastain (1998), through the use of the Learning and Study Strategies Inventory (LASSI), came to the conclusion that students who were tutored and tested at least five times over a semester, showed improvements from the beginning to the end of the semester. The LASSI is a diagnostic assessment tool that measures students' use of learning and study strategies, believing that these strategies can be altered through intervention. Using this as a pre and posttest instrument, Landrum and Chastain gave students the option to attend or not attend tutoring sessions. They found students who were tutored scored higher on the last two tests completed. Terenzini et al. (1999) state that because peer tutoring

increases students' involvement in the learning process, it is also positively linked to gains in academic average, and analytical and problem solving skills. Mentoring programs designed to help at-risk students appear effective as well (Witherspoon et al., 1999).

Student Services' role in aiding first-year students is apparent in the offering of support programs and services to students. Through such services environments are created where students feel welcomed and motivated to succeed, which in turn helps with retention (Ting & Robinson, 1998). For example, at Memorial University in fall 2004/winter 2005, the following programs were offered through Student Affairs and Services: Leaders Involved in Future Education (LIFE) Program; Student Ambassador Program; Peer Orientation Assistants; Orientation; Volunteer Programs; Student Services Café; educational and social programming in residence; education and career planning seminars; and stress seminars.

It is also interesting to note that because living in residence may increase a student's interaction with their peers, other groups and the institution, residence students persist longer at post-secondary institutions when compared to their off-campus counterparts (Grayson & Grayson, 2003).



### *First-Year Experience*

Students enter post-secondary institutions with unique backgrounds and factors that influence their post-secondary education. Socio-economic status, quality of high school education, academic ability, and attitudes, are but a few of the factors that may affect students' futures. First-year students soon realize that they have entered a unique and foreign environment vastly different from their past lives (Gilbert, Chapman, Dietsche, Grayson, & Gardner, 1997). Twale and Saunders (as cited in Zheng, Saunders, Shelley, & Whalen, 2002) found that the only non-classroom variable to influence learning was time spent discussing issues with peers outside of class. Academically, freshmen are challenged in various areas from the selection of courses and programs, through to scholastic performance. Socially, they are typically trying to find the right niche. Peers help one another adjust at post-secondary institutions and are a constant source of support. Students value their friends' opinions on post-secondary life, both academically and socially, so it comes as no surprise that friends help students succeed at the institution (Gilbert et al., 1997). Keeping contact with faculty and getting involved in post-secondary life are also two important factors in retention (Lenning et al., 1980; Tinto, 1987, 1993; Webb, 1987;).

With regards to the overall first-year experience, Gilbert et al. (1997) found that those who left post-secondary institutions were less positive about their programs midway through their first semester and showed more indecision about future goals than those who persisted. Their commitment to a post-secondary education was found to decrease

from the start of the semester and they were more likely to leave the institution for a job. This group also reflected less confidence in themselves than the group that persisted. In his studies, Gilbert et al., found that freshmen reported the following obstacles in their first year: emotional health; stress; lack of self-confidence; sources of help; difficulty in finding employment while studying; and discrimination, harassment and abuse from fellow students. This same group found orientation, time management courses, study skills and integration to post-secondary through specialized courses to be most useful (Gilbert, et al.).

### *Gender*

Gender is a significant demographic factor that may affect students' performance at post-secondary institutions thereby affecting attrition rates. Relevant data offers some insight into male and female performance; however, studies in the area of gender and its role provide inconclusive findings (Warrick & Naglieri, 1993) and at times are contradictory. In one study, cognitive differences showed females as being superior in verbal ability, perceptual speed, fine motor dexterity, auditory discrimination, and rote memory with males performing better in mathematics, spatial relationships, problem solving, and gross motor development (Pottorff, Phelps-Zientarski, & Skovera, 1996). It is interesting to note that in the 2003 Education Indicators in Canada report, more females than males graduated from post-secondary institutions, with the gap widening since 1998.

Close to 60% of all university degrees awarded in 1998 were awarded to women (Education Indicators Canada, 2003).

Many studies show that on post-secondary entrance exams such as the Scholastic Aptitude Test (SAT), males tend to receive higher scores than females. Yet in a study of over 100,000 post-secondary students, Kessel and Linn (1996) report that females tend to earn higher grades in post-secondary mathematics and also earn higher grade point averages (GPA's) overall. Rech (1996) reports that females are equally proficient in post-secondary math as their male peers. One possible reason for higher GPA's and math grades may be that females "learn more" in a math course than their male counterparts. Research shows that females spend more time in labs and class, and more time organizing, reflecting, linking ideas, and reviewing material, which contribute to greater math and classroom learning, but not necessarily speedier test taking. This test-taking factor could be reflected in weaker scores on entrance exams (Kessel & Linn) and is a factor to be considered when trying to determine how best to help at-risk freshmen students. Stipek and Granlinski (1991) link the poorer female scores to achievement-related beliefs, as females from an early age tend to rate their ability lower in math and thus expect to do poorer than males. They are less likely to believe that success can be achieved through effort and as a result often avoid mathematics. Children may also be influenced by socio-cultural expectations. Pottorff et al., (1996) found that reading and writing are viewed as female activities, and females performed better in these areas while males exhibited a lack of motivation similar to females with math. It seems that lower

expectations lead to lower achievement—another important factor to keep in mind when working with at-risk freshmen students.

### *School Size – Urban versus Rural*

As rural schools offer fewer advanced courses than larger urban schools, it may be assumed that students graduating from rural schools are deficient in their schooling when compared to their urban peers (Howley, 2003). Haller and Tien (1993) report that math skills were not deficient among rural students who were offered a much smaller selection of courses. Tran and Chen (1999) found that there were no significant differences in math scores between rural or urban centres.

The Atlantic Institute for Market Studies recently published a “report card” on Atlantic Canadian high schools (Audas & Cirtwill, 2005). Schools were graded on the following: enrolment; ratio of student to staff; socioeconomic status in area; feeder achievement (how well junior and middle schools students did at high schools); academic achievement in math, science, humanities, language arts and honour placement; and engagement (which included retention in schools and attendance rate). In Newfoundland and Labrador, out of 116 schools graded, the top 18 were rural schools (Audas & Cirtwill).

### Chapter Three: The Design of the Study

This study looks at freshmen living in a university residence and asks whether or not academic support programs and selected demographic factors have an effect on retention rates at university and on end-of-semester academic performance.

The literature reviewed in Chapter Two indicates that there are multi-faceted and complex factors impacting student attrition at post-secondary institutions that affect both the student and the institution. Student withdrawal occurs most often in first year of post-secondary studies. Without adequate academic and social supports, students are at a high risk of failing out (Grayson & Grayson, 2003). Research also shows that other factors such as high school grades, size of high school, gender, academic aptitude, population of home community, (ie, urban vs. rural area), study habits, and involvement in campus life affect students' retention rates (Lenning et al., 1980; Tinto, 1987, 1993). The more students are involved with their institution, the more they will be committed and likely to succeed.

Research also shows that living on campus provides students with more opportunities to interact with peers, faculty and staff and get involved in campus life. It provides the basic framework of support systems that enable students to fulfill their academic pursuits.

This chapter is organized into two main sections: sample and data collection. The sample section provides a description of the sample population. The data collection

section describes the process involved in obtaining and organizing this data for final analysis.

### *Sample*

Participants in this study were 162 freshmen students living in Paton College, a residence at Memorial University of Newfoundland (St. John's campus) who were chosen because they previously failed out of university and had returned upon application of the one-time forgiveness clause—a clause that allows students to return to university the following semester with no academic prejudice. The community of Paton College houses 980 students of which approximately 500 are first-year. Within this population, the participants also come from a diverse community consisting of urban and rural Newfoundland students as well as other Canadian and International students. Most freshmen in residence are from rural Newfoundland. In January of each year, a list is requested by the Director of the Housing, Food, and Conference Services Office (HFCS), from the Registrar's Office indicating which students have used their forgiveness clause. In February, students are sent a letter indicating that they are required, as part of their occupancy agreement<sup>1</sup>, to attend Learning Strategies sessions held by Housing, Food, and Conference Services. Students were also classified by origin, entrance average and

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<sup>1</sup> Occupancy Agreement refers to a document required to be signed by all students residing in Paton College. This document outlines all the rules and regulations concerning the College including attendance at Learning Strategies sessions.

gender. Table 2 summarizes the nomenclature used throughout the forthcoming analysis to reference the abovementioned factors.

Table 2 - Nomenclature

Factor	Factor Levels		
Gender	Male	Female	
Origin <sup>a</sup>	Rural	Urban	
Entrance Average <sup>b</sup>	High	Low	
Group <sup>c</sup>	'97	'98	'99

a. Population over/under 5000.  
b. Determined by median.  
c. Academic year identified by fall semester for academic year (eg. '97 means academic year 1997-98).

The learning strategies sessions held at Housing, Food and Conference Services (HFCS) for at-risk students took place early in the winter semester and consisted of seven one-hour sessions that were held over a four-week period. Attendance at all seven sessions was mandatory for all at-risk freshmen students living in residence. All were a combination of hands-on and lecture format. Sessions were organized and developed based on research regarding factors affecting retention and attrition (G. Hurley, personal communication, September 1997; Hohn, 1995; Hossler, 1990; Lenning et al., 1980; Noel, Levitz, Saluri & Associates, 1985; Rafoth, Leal, & DeFabo, 1993; Seamones, 1991; Tinto, 1987, 1993).

Session one was introductory and gave a general overview of, and introduction to, all up-coming sessions. It also included as a pre-test, the Nelson-Denny Reading test (Form G) that was administered by MUN's Counselling Centre.

Session two focused on basic memory functioning and covered such areas as: short-term, long-term and working memory; why forgetting occurs and how to avoid it; and basic retrieval mechanisms. Students were encouraged to recognize the value of these mechanisms and where they are appropriately utilized.

Session three covered two areas: study strategies and mnemonics. Students were presented with information on reading techniques and study tips. Information included: how to organize work before starting; knowing factors that students can control when studying (location, interruptions, best work time); optimal lengths of time spent studying; and the importance of scheduled breaks and healthy eating. Also, the facilitator spent time on mnemonics, which aid in learning (i.e., acronyms, rhyming, chaining, and method of loci).

Session four dealt with stress management and test anxiety. The facilitator covered the following elements: how to identify stressors and knowing when stress is occurring; how to respond to stress; and the use of relaxation techniques. Test anxiety focused on being prepared for exams; the importance of reading test instructions carefully; how to refocus when faced with a "blank mind"; and the importance of a good night's sleep and a full stomach on test taking.



Session five looked at time management and helping students plan daily, weekly, monthly and semester schedules. Students looked at where they lost time by individually completing activity logs for the previous week. They were also encouraged to write “to-do” lists and prioritize their work and social schedules.

In session six, students were asked to complete a second Nelson-Denny Reading Test (Form H). MUN Counselling Centre again administered this test. This test was used as a post-test to aid in helping students identify if they had improved their reading skills.

Session seven was a closing meeting that was held to allow for questions from students who participated in the program regarding the program, their studies or any general questions they had, as well as to offer refreshments and finger foods to students.

The participants were assigned to one of three groups, based on year of arrival. All lived at Paton College for their first year, from 1997 to 2000 ('97, '98, & '99). The first two groups of students ('97 & '98) did not receive direct academic support from HFCS, whereas the third group ('99) did. These groups were chosen because at-risk freshmen students living in residence who had not received direct academic support could be compared with those who did receive support. It was the first time direct academic support was offered to at-risk freshmen living in residence through the Learning Strategies sessions.

Direct academic support came in the form of the Learning Strategies Sessions held on a variety of issues including time management, test anxiety, and study skills, to name a

few. Academic support is the treatment variable that the researcher is interested in exploring with this study.

Initially, the researcher had decided to follow an additional year of residence students ('00 – '01) who received the direct academic support; however, this group could not be followed as a strike by professors during the fall semester precluded the use of the forgiveness clause. Students were thus allowed to continue with the winter semester with no academic prejudice regardless of academic standing. Regulations were waived for this semester only.

The resulting sample consisted of 162 students with 46 having received direct academic support from HFCS.

#### *Data Collection and Analysis*

The data obtained for this study was collected from the University's general student information system (Banner) reports generated by the Registrar's Office of Memorial University of Newfoundland. Permission to obtain this data was granted by the Director of Housing, Food and Conference Services and approved by the Ethics Committee (see appendix A – Permission Request For Data) in their proposal review. The data collected consists of student year of study, hometown, end-of-semester average, gender, continuance at university in the next fall semester, use of forgiveness clause, and university entrance average. An identification number was assigned to each student and all data used was non-identifying.

Descriptive statistics, as well as analysis of variance, correlation analysis, chi-square tests and cross tabulations were calculated. These analyses were carried out using the Statistical Package for the Social Sciences (SPSS). The data looks at each group individually as well as compares '97 & '98 to '99 students and seeks to ascertain whether or not there are differences between the group who did not receive intervention and the group that did. A significance level of  $\alpha = .05$  is used for all hypothesis testing in this study except where noted otherwise.

The following set of statements comprise the null hypotheses assumed for this study (applicable to at-risk freshmen students living in residence):

1. Student performance in semester two does not improve as a result of intervention.
2. Continuance rates at university do not increase as a result of intervention.
3. Student performance with no intervention does not change between semester one and semester two.
4. Continuance rates among students with no intervention do not vary from year to year.
5. Gender does not affect one's performance ability in semester two.
6. Gender is not a factor in continuance rates.

7. Student origin (rural or urban) does not affect performance in semester two.
8. Student origin (urban/rural) does not affect continuance rates.
9. Entrance average does not affect performance in semester two.
10. Entrance average does not affect continuance rates.

## Chapter Four: Findings And Discussion

The present study was designed to determine if semester two averages increase after participating in an intervention program and if students who complete the intervention have a greater probability of returning to university the following semester. As well, analyses of the possible impact of gender, academic entrance average and urban/rural origin of the students are looked at to determine whether or not these demographic factors are related to the above impacts. In this chapter, the findings are examined relative to statements corresponding to the null hypotheses listed in the previous chapter. Each statement will be addressed in turn.

In total, data was collected on 162 first-year students over a three-year period. Each year is considered a separate group. In '97, 66 students were deemed to be at-risk and did not attend intervention programs; in '98, 50 students were deemed at-risk and did not attend intervention while in '99, 46 students were deemed at-risk and attended an intervention program. For the purposes of this paper the terms "year" and "group" will be used interchangeably.

*Statement 1: Student performance in semester two does not improve as a result of intervention*

For this test, a one-way ANOVA was used to determine if there was any significant difference in the semester two averages across the years '97, '98, and '99. Semester two averages are provided in Table 3 for each of the groups. The ANOVA test

produced a p-value of .537, (see Table 4) which indicates the semester two averages did not vary significantly between the groups. This analysis supports the null hypothesis that intervention does not improve semester two performance.

Table 3 - Semester Two Averages By Year

Year	N	Mean
97	66	47.54
98	50	44.30
99	46	45.69
Total	162	46.02

Table 4 - Analysis of Variance for Semester Two Averages with Year as the Factor

Source	Sum of Squares	df	Mean Square	F	Significance
Between Groups	306.445	2	153.222	.624	.537
Within Groups	39040.840	159	245.540		
Total	39347.285	161			

*Statement 2: Continuance rates at university do not increase as a result of intervention*

For this test, cross tabulation and chi-square tests were used to determine if continuance rates at university increased among at-risk students as a result of intervention. Table 5 indicates the total number, and proportions of students who did and did not return to university, in the subsequent fall semester, for each year considered in this study. Table 6 repeats the cross tabulation with '97/'98 combined so as to provide a direct comparison between non-intervention and intervention years.

Table 5 - Cross Tabulation of Subsequent Registration for Fall by Group

		Group			Total	
		'97	'98	'99		
Subsequent Registration for Fall	No	Count	42	40	27	109
		% within Group	60.0%	64.5%	57.4%	60.9%
	Yes	Count	28	22	20	70
		% within Group	40%	35.5%	42.6%	39.1%
Total	Count	70	62	47	179	
	% within Group	100.0%	100.0%	100.0%	100.0%	

Table 6 - Cross Tabulation of Subsequent Registration for Fall by '97/'98 and '99

		Group		Total	
		'97/'98	'99		
Subsequent Registration for Fall	No	Count	82	27	109
		% within Group	62.1%	57.4%	60.9%
	Yes	Count	50	20	70
		% within Group	37.9	42.6%	39.1%
Total	Count	132	47	179	
	% within Group	100.0%	100.0%	100.0%	

The overall data indicates that out of 179 students, 60.9% of students did not register the following fall semester whereas 39.1% did return. Based on cross tabulations in both Table 5 and Table 6 the percentage of returning students tends to be consistent among all groups as is the percentage of non-returning students. This finding is supported by the results of the chi-square test data in Table 7 (significance of .741) and Table 8 (significance of .573). Since '99 was an intervention year, and '97/'98 were non-intervention years, the analysis supports the null hypothesis that subsequent registration for the fall semester is not dependent on intervention.

Table 7 - Chi-Square Test for Subsequent Registration for Fall by Group

	Value	df	Significance
Pearson Chi-Square	.600	2	.741
N of Valid Cases	179		

Table 8 - Chi-Square Test for Subsequent Registration for Fall by '97/'98 and '99

	Value	df	Significance
Pearson Chi-Square	.318	1	.573
N of Valid Cases	179		



*Statement 3: Student performance with no intervention does not change between semester one and semester two*

For this test, academic averages in fall '97 and '98 were combined, as were averages in winter '97 and '98 (see Table 9). An ANOVA with the dependent variable being academic average and the factor being semester was run for the combined '97 and '98 groups (see Table 10). The analysis rejects the null hypothesis, with a high degree of confidence, in favour of the conclusion that there is a significant improvement in performance from the fall to the winter semester without any intervention, for at-risk students. The fact that students have shown some improvement and/or may have sought assistance that we are unaware of, indicates that they are persisting. It would seem, based on the ANOVA, that the majority of at-risk students are not giving up and continue to put forth an effort to learn. This supports a need for intervention to assist in their efforts.

Table 9 - Averages By Semester for '97 and '98 Combined

Semester	N	Mean
Fall	116	40.37
Winter	116	46.14
Total	232	43.26

Table 10 - Analysis of Variance for Averages by Semester for '97 and '98

Source	Sum of Squares	df	Mean Square	F	Significance
Between Groups	1933.2	1	1933.18	12.1	0.0006
Within Groups	36735.3	230	159.72		
Total	38668.5	231			

It is interesting to note that the correlational data related to this test, presented in Table 11 and Table 12, shows a positive correlation between semester one and semester two averages for students who had no intervention. This implies at-risk students who perform better in semester one show more marked improvement in semester two; however, it is difficult to pinpoint the exact reasons for this correlation based on this test alone.

Table 11 – Correlation between Semester One Avg. and Semester Two Avg. for '97

		Semester One Avg.	Semester Two Avg.
Semester One Avg.	Pearson Correlation	1	.510*
	Sig. (2-tailed)	.	.000
	N	70	66

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

Table 12 – Correlation between Semester One and Semester Two Avg. for '98

		Semester One Avg.	Semester Two Avg.
Semester One Avg.	Pearson Correlation	1	.384*
	Sig. (2-tailed)	.	.006
	N	62	50

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

*Statement 4: Continuance rates among students with no intervention do not vary from year to year*

The analysis for statement 2 showed there was no significant difference in continuance rates across all three years of the study (refer to Table 5 and Table 7). Since two non-intervention years were included in this analysis, it can also be concluded that continuance rates among students with no intervention does not vary from year to year, and the null hypothesis is supported.

*Statement 5: Gender does not affect one's performance ability in semester two*

The semester two averages by gender for the combined years of '97 and '98 are presented in Table 13. Based upon the ANOVA results shown in Table 14, the null hypothesis, that gender has no bearing on semester two performance, is accepted. However, given that the significance level is very close to the rejection criteria, a weak

argument could be made that gender may impact performance ability in semester two. The ANOVA test reports a significance level of .058.

Table 13 - Semester Two Academic Averages By Gender for '97 and '98

Gender	N	Mean
Male	64	48.55
Female	52	43.18
Total	116	46.14

Table 14 - Analysis of Variance for Semester Two Averages with Gender as the Factor

Source	Sum of Squares	df	Mean Square	F	Significance
Between Groups	829.122	1	829.122	3.676	.058
Within Groups	25710.525	114	225.531		
Total	26539.647	115			

*Statement 6: Gender is not a factor in continuance rates*

For this test, cross tabulation and chi-square tests, presented in Table 15 and Table 16 respectively, were used for all three groups—'97, '98 and '99. For '97 and '99 there was no significant difference in subsequent registration for females and males; however, in '98 significantly fewer males registered for the subsequent year than females

( $p=0.048$ ). Therefore, the null hypothesis is rejected in favour of the conclusion that gender may affect continuance rates in any given year. It is not clear from this analysis why gender exhibited such an effect for '98 only.

Table 15 - Cross Tabulation of Subsequent Registration for Fall by Gender and Year

Year				Gender		Total
				Male	Female	
'97	Subsequent Registration for Fall	No	Count	26	16	42
			% within Group	61.9%	57.1%	60.0%
		Yes	Count	16	12	28
			% within Group	38.1%	42.9%	40.0%
	Total		Count	42	28	70
			% within Group	100.0%	100.0%	100.0%
'98	Subsequent Registration for Fall	No	Count	15	25	40
			% within Group	51.7%	75.8%	64.5%
		Yes	Count	14	8	22
			% within Group	48.3%	24.2%	35.5%
	Total		Count	29	33	62
			% within Group	100.0%	100.0%	100.0%
'99	Subsequent Registration for Fall	No	Count	15	12	27
			% within Group	51.7%	66.7%	57.4%
		Yes	Count	14	6	20
			% within Group	48.3%	33.3%	42.6%
	Total		Count	29	18	47
			% within Group	100.0%	100.0%	100.0%

Table 16 - Chi-Square Test for Subsequent Registration for Fall by Gender and Year

Year		Value	df	Significance
'97	Pearson Chi-Square	.159	1	.690
	N of Valid Cases	70		
'98	Pearson Chi-Square	3.895	1	.048
	N of Valid Cases	62		
'99	Pearson Chi-Square	1.014	1	.314
	N of Valid Cases	47		

*Statement 7: Student origin (rural or urban) does not affect performance in semester two*

The semester two averages by student origin for combined years of '97 and '98 are presented in Table 17. Based upon the ANOVA results shown in Table 18, with the factor being origin and the dependent variable being semester two average, the place of origin of the student (urban or rural), was found to have no significant impact on performance in semester two.

Table 17 - Semester Two Averages by Student Origin

Origin	N	Mean
Rural	70	45.22
Urban	46	47.55
Total	116	46.14

Table 18 - Analysis of Variance for Semester Two Averages with Student

Origin as the Factor

Source	Sum of Squares	df	Mean Square	F	Significance
Between Groups	149.584	1	149.584	.646	.423
Within Groups	26390.063	114	231.492		
Total	26539.647	115			

*Statement 8: Student origin (urban/rural) does not affect continuance rates*

For this test, cross tabulation and chi-square tests were used for '97, '98 and '99 to determine if student origin affects continuance rates. As seen in Table 19 and Table 20 continuance rates at university were not dependent upon whether or not a student was from a rural or urban area. Therefore the null hypothesis is accepted.

Table 19 - Cross Tabulation of Subsequent Registration for Fall by Origin and Year

Year				Origin		Total
				Rural	Urban	
'97	Subsequent Registration for Fall	No	Count	21	21	42
			% within Urban/Rural	60.0%	60.0%	60.0%
		Yes	Count	14	14	28
			% within Urban/Rural	40.0%	40.0%	40.0%
	Total		Count	35	35	70
			% within Urban/Rural	100.0%	100.0%	100.0%
'98	Subsequent Registration for Fall	No	Count	28	12	40
			% within Urban/Rural	63.6%	66.7%	64.5%
		Yes	Count	16	6	22
			% within Urban/Rural	36.4%	33.3%	35.5%
	Total		Count	44	18	62
			% within Urban/Rural	100.0%	100.0%	100.0%
'99	Subsequent Registration for Fall	No	Count	21	6	27
			% within Urban/Rural	60.0%	50.0%	57.4%
		Yes	Count	14	6	20
			% within Urban/Rural	40.0%	50.0%	42.6%
	Total		Count	35	12	47
			% within Urban/Rural	100.0%	100.0%	100.0%



Table 20 - Chi-Square Test for Subsequent Registration for Fall by Origin and Year

Year		Value	df	Significance
'97	Pearson Chi-Square	.000	1	1.000
	N of Valid Cases	70		
'98	Pearson Chi-Square	.051	1	.821
	N of Valid Cases	62		
'99	Pearson Chi-Square	.366	1	.545
	N of Valid Cases	47		

*Statement 9: Entrance average does not affect performance in semester two*

The data relating to student performance in semester two by entrance average is provided in Table 21. Entrance average was categorized using the median entrance average to divide the group into high and low averages (67.09% and lower were considered low average and 67.10% and above were considered high average. The groups were divided in this way so to establish two equivalent sized groups). As shown in Table 22 using one-way ANOVA, data used for this test showed no significant differences. Thus neither high nor low entrance average has any affect on performance in semester two for at-risk students.

Table 21 - Semester Two Averages By Entrance Average

Entrance Average	N	Mean
Low (67.09 and below)	55	46.38
High (67.10 and above)	61	45.93
Total	116	46.14

Table 22 - Analysis of Variance for Semester Two Averages with Entrance Average as the Factor

Source	Sum of Squares	df	Mean Square	F	Significance
Between Groups	5.695	1	5.695	.024	.876
Within Groups	26533.952	114	232.754		
Total	26539.647	115			

As an alternate method, the semester two averages were compared to the actual entrance averages through correlational analysis. Table 23, Table 24, Table 25 describe the correlation between semester two and entrance average for '97, '98 and '99 respectively. None of these tests had significant findings. Table 26 describes the correlation between semester two and entrance average for all groups combined. This test also showed no significant findings. Thus entrance average has no effect on performance in semester two.

Table 23 - Correlation between Entrance Avg. and Semester Two Avg. for '97

		Semester One Avg.	Semester Two Avg.
Entrance Avg.	Pearson Correlation	1	-.008*
	Sig. (2-tailed)	.	.953
	N	64	60

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

Table 24 - Correlation between Entrance Avg. and Semester Two Avg. for '98

		Semester One Avg.	Semester Two Avg.
Entrance Avg.	Pearson Correlation	1	-.056*
	Sig. (2-tailed)	.	.706
	N	57	47

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

Table 25 - Correlation between Entrance Avg. and Semester Two Avg. for '99

		Semester One Avg.	Semester Two Avg.
Entrance Avg.	Pearson Correlation	1	-.224*
	Sig. (2-tailed)	.	.149
	N	44	43

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

Table 26 - Correlation between Entrance Avg. and Semester Two Avg. for All

Groups Combined

		Semester One Avg.	Semester Two Avg.
Entrance Avg.	Pearson Correlation	1	-.059*
	Sig. (2-tailed)	.	.472
	N	165	150

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

*Statement 10: Entrance average does not affect continuance rates*

For this test, cross tabulation and chi square tests were used to assess the data, and as in statement 9, the median entrance average was used to divide the group into low and high averages. The cross tabulation was used to determine if a greater population of those with above average entrance marks registered for the subsequent fall semester. Results showed that 41% of above average students returned whereas 35% of below average returned the following fall semester (see Table 27). The chi square test shows that there is no significant difference between these proportions (Table 28). Therefore the null hypothesis is supported in that entrance average has no bearing on the likelihood of returning for the subsequent fall semester.

Table 27 - Cross Tabulation of Subsequent Registration for Fall by Entrance

Average

			Entrance Average		Total
			Low	High	
Subsequent Registration for Fall	No	Count	50	59	109
		% within Entrance Avg.	64.1%	58.4%	60.9%
	Yes	Count	28	42	70
		% within Entrance Avg.	35.9%	41.6%	39.1%
Total		Count	78	101	179
		% within Entrance Avg.	100.0%	100.0%	100.0%

Table 28 - Chi-Square Test for Subsequent Registration for Fall by Entrance Average

	Value	df	Significance
Pearson Chi-Square	.598	1	.439
N of Valid Cases	179		

## Chapter Five: Summary, Conclusions, and Suggestions

Freshmen students have the highest rate of attrition during, or after, their first year of studies (Dunphy et al., 1987; Webb, 1987). While this has proven time and again to be true, research has also shown that those students, whose institutions provide them with academic, social and personal support, have a much greater chance of graduating. It is these two key points that provided the focus for this study. This study was conducted to look at the impact of academic interventions on at-risk freshmen students with the aim of determining whether or not academic averages increase and if students persist at post-secondary institutions after participating in a single intervention program, such as the one developed at Housing, Food and Conference Services. This program consisted of seven sessions where information was presented on a variety of topics such as study skills, memory, mnemonics, stress, test anxiety and reading skills. The effects of several demographic factors (such as gender, origin of student, and academic entrance average) were also assessed.

Data was collected on at-risk freshmen students living on-campus. It included: academic entrance average, students' year of study, end-of-semester academic average, gender, place of origin (urban or rural) of students, continuance at university the next fall semester, and use of the "forgiveness clause" (a university regulation which allow students to use a one-time clause to return to university after effectively failing out). This data was then analysed using the Statistical Package for the Social Sciences. The emphasis was on descriptive statistics, analysis of variance, correlation analysis, cross

tabulation and chi-square tests. Participants in the study included 162 at-risk students over a three-year period.

The review of the research was related to intervention programs and demographic factors and the retention and attrition of at-risk freshmen students. In particular, the impact of first-year experiences on first-year students was reviewed, including such factors as: the amount of contact with peers, faculty and staff; and the offering of services such as counselling, academic advising, orientation programs and learning assistance centres. Review of the literature indicated that oftentimes interventions are needed to reverse a negative experience and channel it into a positive one. A single intervention program was introduced to the at-risk students and while the focus was this single program, consideration needs to be given to the viability and practicality of one single program versus a more extensive service offering multi-dimensional interventions.

Factors affecting why students drop out of post-secondary institutions were also researched. In particular such factors as high school grades, academic aptitude, gender, high school and town size (rural vs. urban) were the focus.

Literature reviewed also looked at several different models of retention including Tinto's model of institutional departure (Tinto, 1987, 1993); Spady's model of drop-outs; and Alfred's symbolic interaction theory (as cited in Lenning et al., 1980).

The final area of study was the impact of living on-campus and the related potential effect on first-year students. Also, the impact of the university support system in general was reviewed.

Overall, this study suggests that providing only one type of intervention program to students, as was investigated in this research, is not an effective means in helping retain students or improving academic averages. Data collected on each demographic factor was not significant with the exception of gender (to be discussed further in this chapter).

When looking at whether students' performance in the semester following intervention improves, the findings appear to contradict research in the area of student support programs. It should be kept in mind that this might have been related to there being only one support program for students to attend. The nature of that program may also be a factor. There was no research found to support the theory that one intervention such as learning strategies would improve a students' academics in the following semester. All of the research reviewed suggested that success is a result of a combination of many support factors such as seeking out and using help centres, being involved in post-secondary life and keeping contact with faculty, staff and peers, to name a few (Lenning et al., 1980; Tinto, 1987, 1993; Webb, 1987). Therefore, further research and follow-up with the students, perhaps in the form of a questionnaire, would address whether or not these students accessed other resources. This might help clarify the contradiction between this research and current theory.

With respect to gender, research has shown that, while males often outperform females in math in school, this gap is non-existent at post-secondary level. As well, females consistently outperform males in verbal abilities all through school and post-



secondary school. Research on who performs better overall at post-secondary institutions is inconclusive at best (Hornaday et al., 1989; Kessel and Linn, 1996; Rech, 1996). It was interesting to see that of all areas examined in this study, gender was the one area that had a near significant finding. Males performed better than females ( $p = .058$  for '97 and '98 - the non-intervention years) with the dependent variable being semester two average. This finding is in direct contrast to the research found regarding males and females performing equally well at post-secondary levels. However, it must be noted that the current study focused only on at-risk students—not on the general population of students. The data collected reflected at-risk males and females only, indicating that at-risk males appear to adapt better than their female counterparts in semester two.

The study looked at the urban/rural factor, given that larger urban schools are able to offer advanced courses and greater course offerings (Howley, 2003). This study does not support this argument, as it appears, based on the oneway ANOVA (as reported in statement 7), that school size is not a factor.

As most of the findings in this study were not significant, it is necessary to look at the reasons. Such an outcome might mean that the theory and the limited research done by others is incorrect or incomplete, that there are methodological problems in this study, or that there are factors that were not considered in this study.

The researcher does not feel that the lack of significant results in this study in any way offers a challenge of the thinking and major theories discussed earlier. No studies

were found that showed significant improvements when students were offered one resource of support. It is more likely that there are problems with the methodology, in that the study was impacted by the nature of the intervention program. There may be limitations in the study as a result of the research questions not clearly addressing the predictions from the theory. In analyzing the data it became clear that this study was not as focused, or did not address the issue of intervention and support programs as effectively as possible. The positive outcome of this study is that it is now clear that the supports that were offered, on their own, are not adequate for at-risk students. In effect, it helps with pointing out the path future research and intervention services should take.

For future studies, the following recommendations are being made:

1. Develop better, multi-dimensional interventions that would focus on the needs of individual students while covering important generic issues.
2. Because there may be other factors that influence how well students do academically, it is critical that future studies not be limited to looking at only the effects of gender, origin (urban or rural) of students and academic entrance average and the intervention programs attended. Research has shown that factors such as financial problems, personal difficulties, lack of defined goals and motivation, working full-time and dissatisfaction with post-secondary institution can lead to attrition problems. This study did not address any of these factors that could be negatively impacting students' studies. To address

the impact of such factors future research questions may need to be re-examined. Future studies should include a more thorough look at such factors that could influence whether or not student intervention programs are successful.

3. A possible short coming in this study is that there is no way to know if students attempted to help themselves by getting involved or seeking other ways to improve their academics. It would be useful to see which students may have done this, and if such students persisted or were successful at post-secondary institutions. Research has shown that the more “connected to post-secondary institutions” students are, the better they will perform and the longer they will stay at the institution. It is possible that the students who entered this study did not attend or seek out other forms of academic support or get involved in campus life. Additional data, possibly gathered through a questionnaire, could determine if they attended other interventions or were involved in other activities.
4. Clearer findings may be produced if data was collected over four to five years to produce a larger sample group, which could help determine if there are any trends.

5. As this study focused on groups that were the first to attend academic support sessions held at Housing Food and Conference Services, information collected each year could change over a period of time therefore it would be more beneficial to initiate more long-term studies. Tracking students beyond first year could provide a better look at the longer-term effects of academic support and could be a better predictor of long-term gains. It is quite possible that recognition by researchers of the positive factors to be gained by academic sessions, may take more than one semester.
6. Include a larger sample of other universities so that research can be generalized to other groups of students. At present, the study includes only students at one institution. Therefore findings are not transferable to other institutions as they are institution specific.
7. Complete further studies that focus solely on attrition factors among freshmen residence students.

It is felt that the intervention program developed at HFCS may need to be more specific to the needs of individual students. The sessions and the information provided are not designed to address the specific needs of an individual and hence the focus may be too broad. If students were offered an individualized program based on their needs, then

it is quite possible that there may be a greater chance of success at post-secondary institutions.

Knowledge of why students drop out of post-secondary institutions is important, as such knowledge can provide a basis for the design and development of intervention programs. The intervention developed by HFCS assumed that factors related to students not being successful included limited knowledge or use of study skills, time management, stress management, and learning and reading strategies. Additional research on the reasons for attrition might identify other factors as it was beyond the scope of this study to seek to identify all factors. A positive aspect of this study is that it provides the foundation for further research.

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## Appendix A – Permission Request for Data

Dr. K. Brian Johnston  
Director of Housing, Food and Conference Services  
Memorial University of Newfoundland  
St. John's, NF  
A1B 3P7

Dear Dr. Johnston:

As part of fulfilling the requirements for my M. Ed. I am currently undertaking a thesis project under the guidance of Dr. Gary Jeffery, Professor of Education at Memorial University.

The purpose of this research is to assess and evaluate the impact of the academic support program currently run by Housing, Food and Conference Services. I wish to focus on students experiencing academic difficulties for whom this program was designed. I am interested in seeing if students enrolled in the program are successful in improving their academic average and have the option to return to university the following semester.

As part of my research, I will need to have access to data on freshmen students living in residence. All data will be strictly confidential and it is not necessary to know the names of the students. As it is my understanding that the Registrar's Office releases data on students to you for educational and research purposes, I am requesting to view the following data on at-risk freshmen students living at Paton College:

- grades
- current average and subsequent average
- subsequent registration at university
- entrance average
- home community
- gender

Data will need to be provided for the following semesters: fall 1997, winter 1998, fall 1998, winter 1999, fall 2000, winter 2001, and fall 2001.

Thank you for your assistance with this study. If you have any questions, please feel free to contact me at 737-4394 (w) or by email [lrowsell@mun.ca](mailto:lrowsell@mun.ca). As well, you may contact my supervisor Dr. Gary Jeffery, at any time if you have questions or concerns.

Sincerely,

LoriLynn Rowsell

**Appendix B – Student Consent Form**

Dear Student,

My name is LoriLynn Rowsell and I am a candidate for the degree of Master of Education with a specialization in Educational Psychology at Memorial University of Newfoundland.

I am presently undertaking a research project under the guidance of Dr. Gary Jeffery, Professor of Education at Memorial University.

The purpose of this research is to assess and evaluate the academic support program currently run by Housing, Food and Conference Services. I wish to focus on the target student group, students experiencing academic difficulties, that this program was designed for, to ensure that it is meeting the intended goals and objectives. I am also interested in seeing if students enrolled in the program are successful in improving their academic average and returning to university the following semester. By looking at your academic average at the end of this semester and comparing that to your previous academic average, weaknesses and strengths may be identified and changes made, if need be, to improve the program.

Your participation will consist of attending all six academic support sessions. Please note that participation is completely voluntary and you have the right to withdraw from the study at any time. The information gathered will be strictly confidential and no individuals will be identified. You will have an opportunity to view the final draft upon request.

If you wish to participate in this study please sign below. If you have any questions please contact me at 737-4394 (W) or email [lrowsell@mun.ca](mailto:lrowsell@mun.ca). If at any time you wish to speak with a resource person not associated with the study, please contact the Associate Dean of Graduate Programs and Research in the Faculty of Education at 737-3402.

Sincerely,

LoriLynn Rowsell, B.A.- B.Ed., M. Ed. (Candidate)

I, \_\_\_\_\_, hereby give consent to participate in this study and give consent for the release of information from the Registrar's Office which would aid the study. I understand that participation is entirely voluntary and permission may be withdrawn at any time. I also understand that all information is strictly confidential and that no individuals will be identified.

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature





