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Intervention Strategies in the Academic and Career Development of At-Risk Undergraduate Students

by

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Dedication

I would like to dedicate this dissertation to my family: my parents, Josephine and Carmine Ciccocioppo, and my sister, Susan Ciccocioppo. They have been a constant source of support throughout my post-secondary studies and especially the lengthy process of acquiring my Ph.D. Thank you for everything.

Abstract

This study had two primary purposes: (a) to learn more about the experiences and perceptions of students in science-related fields that have been placed on academic probation or academic warning, and (b) to learn about the impact of a course-based combined cognitive and career intervention on students' grade point averages, learning and study skills, and career decision-making self-efficacy. Participants (N=21) were second- to fourth- year students in a science-related faculty who were currently on academic probation (i.e., successfully appealed their 'required to withdraw' status due to unsatisfactory standing) or academic warning (those with marginal academic standing) and completed an intervention course. A matched-peer group of students from the previous academic year when the course was not available comprised the control group. Quantitative data collection included pre-, post-, and follow-up measures of participants' grade point averages (GPAs), scores on the Learning and Study Strategies Inventory (LASSI), and the Career Decision-Making Self-Efficacy Scale (CDMSE). Qualitative data collection included semi-structured interviews with a subset of the participants (N=13) as well as a pre-course questionnaire and the qualitative course evaluation. A repeated-measures ANCOVA showed no difference between the at-risk students who took the intervention course and the matched control group. Friedman results demonstrated significant increases in many subscales of the LASSI, the CDMSE, as well as the overall measure of career decision-making self-efficacy. In the qualitative findings, participants described various academic and non-academic factors that contributed to their at-risk academic standing and the majority described their experience in the course-

based intervention as positive and helpful in improving their situation. The findings from this unique combined intervention approach provided a greater understanding of the experience of this often overlooked group of students, and led into a discussion of implications for theory, for education, for counselling, and for further research.

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CHAPTER I

Introduction

Problem

The phenomenon of undergraduate student attrition has maintained a stable, yet concerning presence on post-secondary campuses across North America in the past several decades (Day, 2001). While the predominant theoretical perspective on student attrition focuses on voluntary student attrition (Tinto, 1993), it is also relevant to understand the experience of students who may be subject to involuntary student attrition (i.e., required to withdraw) due to unsatisfactory academic standing.

Career indecision and inadequate learning and study strategies may contribute to students' academic difficulties. When a lack of career planning and decision-making is combined with a lack of learning and study strategies appropriate for postsecondary study, students may have great difficulty continuing in their program. Compared with other faculty programs, students in science-related programs may experience greater major instability and less flexibility in their program that could put them at greater risk for being required to withdraw (Seymour & Hewitt, 1997).

Inappropriate career decision-making strategies and inadequate study skills can result in a mismatch that is costly both in the students' investment of time, money and, most importantly, their drive to continue postsecondary education. Ultimately, much talent may be lost through a lack of effective intervention strategies. The students who may be affected most by such obstacles are those at-

risk of dropping out, or at least at-risk of underachieving academically (Weinstein & Van Mater Stone, 1993). The following sections further outline how the issues of career indecision and a lack of appropriate learning and study strategies may affect student success.

Career indecision among undergraduates.

A major motivator of students entering university is the promise of a fulfilling career (Orndorff & Herr, 1996). Students who are encountering increased burdens of debt, more than ever, are expecting to obtain valuable career experience and to graduate with a degree that is marketable once they graduate and prepare to find employment (Ciccocioppo, 1999). Despite these strong motivators, the choice of a subject area major and future career weighs heavily upon first-year students, many whom are tentative in their career choice (Dale & Zych, 1996; Li, 1996; Orndorff & Herr, 1996).

Orndorff and Herr (1996) cite several studies that emphasize first-year students' lack of knowledge and experience required to make a viable decision regarding their choice of program and subsequent career. They found that students often chose from a narrow band of familiar majors and careers due to lack of exposure to the vast array of career choices available to them. This may be particularly true for nontraditional career choices (Read, 1994). Students who are either declared or undeclared in their major may have minimal experience in exploring occupational options (Orndorff & Herr, 1996), resulting in both groups' frequent changes of major.

Lack of learning and study strategies.

In addition to the traditional first-year students' career indecision and lack of career decision-making skills, improved access to university education in recent decades has resulted in an increasingly heterogeneous student population, including those who are less well-resourced in terms of skills, knowledge, and finance (Peat, Dalziel, & Grant, 2000). Li (1996) discussed the traditional view among administrators that students' success in their first year directly relates to students' entrance grades, with the accompanying assumption that those who have met the admission standard will then possess the necessary learning and study skills to succeed at the university level. This common assumption has been maintained over time, despite there being scarce research on whether this view still applies to a changing and diverse student population. Weinstein and Van Mater Stone (1993) stated that

> Students who are at risk for academic failure or severe underachievement may be either academically underprepared, indifferent toward school success, or overextended in their school as well as out-of-school commitments. These students need more than general knowledge and basic competencies in computation, reading, and writing. Therefore, educational models based only on transmission of knowledge, vocational preparation, or both in the community college will not prepare students for the lifelong learning so important to future growth and success. This consideration is even more important for students who fall in the at-risk category. (p. 31)

Challenges Specific to Students in Science-Related Fields

Seymour and Hewitt (1997) discussed unpublished data from the Higher Education Research Institute indicating that there is a continuum of stability to instability in original major choices. This continuum ranged from English (with a low switching rate of 15%) to the social sciences, fine arts, education, history, and

political science (switching rates of 28-35%), to engineering and business (switching rate of 38-40%), to sciences, computer sciences, and mathematics (47-63% switch) and, finally, the non-technical and health professions, which lose 62-71% of majors.

Seymour and Hewitt (1997) explain that while the liberal arts tradition is to encourage students to experience different disciplines before making a final choice, the sciences typically demand early commitment from students in order to build their skills and understanding in linear fashion over time. There has, consequently, been greater difficulty in switching to science from another faculty (e. g., arts) than vice versa and among the sciences than in other non-science faculties. Switching majors within the science-related fields is therefore more costly in terms of time, money and effort, and students in science-related fields of study that switched majors tend to see themselves as failures. This perception is likely to discourage them from putting in the effort needed to obtain the grade point average necessary to continue in the program, and many students in science fields can be at risk of dropping out altogether.

Reasons for Attrition among Science-Related Majors

Pre-college or university academic achievement has often been cited as the best single-variable predictor of attrition of students from across academic areas, including the sciences (Drysdale, 1997; Polansky, Horan, & Hanish, 1993), although it does not explain the whole picture. It has been suggested that other variables such as gender should be taken into account when looking at students getting into academic difficulty (Drysdale, 1997), although no real differences

were found based on this variable in previous research studies (Drysdale, 1997; Pybus, 1991).

In their review of the literature, Seymour and Hewitt (1997) indicated that, prior to 1990, there was a lack of research explaining the range of factors contributing to attrition among both male and female undergraduates of diverse cultural backgrounds and in different science-related programs. The only studies of attrition found to be grounded in actual student experience were those that explored the problems of women in science and engineering majors and students of colour (Seymour & Hewitt, 1997). Common themes uncovered in their literature review included the perception of a "chilly climate" by women students and faculty in the sciences; inadequate financial support; financial impact of four-year degree programs; poor teaching, difficult and/or confusing content, combined with a loss of confidence in their ability to do science; and cut-throat competition in the science subjects.

Seymour and Hewitt's (1997) findings indicate problems arising from the structure of the educational experience and the culture of the discipline (e. g., poor teaching, the "weed-out" process, cut-throat competition) make the largest contribution to attrition from the sciences. Other influences on attrition in the sciences include the lack of connection between interest in the discipline, associated careers, and the reality of career goals; a lack of sufficient academic and personal support (from institutional, faculty, peer and other sources) to sustain motivation and morale; and ineffective curriculum content and structure, which inhibits maximum student comprehension, application, and knowledge transfer.

In a Canadian study, Ciccocioppo (1999; Ciccocioppo, Stewin, Madill, Montgomerie, Tovell, Armour, & Fitzsimmons, 2002) researched the experiences of women studying in undergraduate science, engineering, and technology programs and identified several obstacles (many of which are applicable to both genders) to pursuing a career in science. Participants discussed experiences of what they found to be a difficult transition from high school to postsecondary study, and felt intimidated by the much larger campus and classrooms they had expected to encounter before starting their postsecondary studies. They encountered a much heavier workload in their postsecondary studies compared with their high school experience, resulting in a subsequent drop in their academic performance. Their response to these lower grades varied greatly: some students chose to switch majors; some switched academic institutions; and others learned to adjust their expectations and took a more proactive approach by seeking assistance from professors. Difficulties in course scheduling, availability of prerequisite courses, and problems with the transferability of courses were seen as potential obstacles for completing an undergraduate education in science.

Similar to findings of Seymour and Hewitt (1997), students expressed disapproval of the competitive nature of their programs and indicated a desire for more fostering of cooperative relationships with other students. Financial issues were paramount, and few students had scholarships. Many students faced increasing debt burdens through cumulative student loans that were woefully inadequate to cover basic living costs. These financial difficulties appeared to be an additional source of stress for many participants who were already stressed with

their academic requirements. Students were frustrated with the lack of relevance of much of their coursework to the world of work. Guidance counselling received prior to postsecondary study was a disappointment for most students, as they offered little career guidance aside from narrowing their options to actively encourage or discourage a particular career choice. This lack of adequate, available guidance seemed to continue into postsecondary studies and, combined with a lack of flexibility in course options, inadequate study strategies, and lack of clear direction for a post-degree career, the chances of being put on academic warning or probation seem great. The process of ending up on academic warning/probation is consequently a multifaceted problem.

Relevance and Implications of the Study

Clearly, when students struggle academically the problem is multifaceted, and it is important to acknowledge this in the design of an appropriate intervention. This study was designed to examine the roles of both career counselling and cognitive strategy intervention. A graded credit course, Educational Psychology (EDPY) 397: Cognitive Strategies, was implemented to help students on academic probation improve their overall results (i. e., grade point average) for students on academic probation. A combination of quantitative and qualitative data collection methods was used to investigate the experience of students on academic probation or academic warning and what can be done to help these students to improve their own academic outlook.

The Research Questions

The current study attempted to answer the following research questions:

1. What are students' perceptions of the factors that lead to students in science-related fields being placed on academic probation or academic warning?

2. Can a combined cognitive learning strategies/career counselling intervention program improve at-risk students' GPAs in science-related fields?

3. Do at-risk students' learning and study skills improve significantly following this intervention?

4. Do at-risk students have higher career decision-making self-efficacy following this intervention?

Qualitative data analysis was used to answer Research Question 1, while Questions 2 through 4 were addressed using quantitative data analysis (explained in Chapter 3).

Definition of Terms

It is important to clearly define the key terms used in an intervention-based study, as the terminology may shape our understanding of (and subsequent administration of) career development and cognitive strategy interventions. When terminology is subjectively understood, it can lead to confusion for counsellors, students, and clients, and subsequently hinder the progress made in advancing the effectiveness of career development interventions (Niles & Harris-Bowlsbey, 2005). Alternatively, when definitions are specified, a common ground is established from where we can develop, implement, and evaluate these interventions.

The following terms will be used throughout this study and are defined here for clarification:

Academic Probation: A Faculty may allow a student whose previous academic record is either deficient in some respect or below the standard ordinarily required to continue on academic probation. This may happen after a student has been required to withdraw due to unsatisfactory academic standing (GPA of 1.6 or below on a 4-point scale, or below 4.5 on a 9-point scale), who subsequently appealed successfully to continue their program. The Faculty may require the student to meet specified course, program and performance standards to maintain eligibility in the program (University of Alberta annual calendar).

Academic Warning: A Faculty decision that a student with marginal standing (GPA of 1.7 to 1.9 on a 4-point scale, or 4.5-4.9 on a 9-point scale) must meet specified course and performance standards within a set time or credit frame to maintain eligibility in the program (University of Alberta annual calendar).

Attrition: The non-completion of a post-secondary program, which could be voluntary or involuntary.

Career Development: The lifelong process of managing work, leisure, and transitions in order to move toward a personally determined and evolving preferred future (Canadian Standards and Guidelines for Career Development Practitioners, 2004).

Career Development Intervention: Any activity that empowers people to cope effectively with career development tasks (Spokane, 1991).

Career Decision-Making Self-Efficacy: Confidence in managing tasks associated with successful career choices (Betz, Klein, & Taylor, 1996).

Cognitive Learning Strategy: A plan for orchestrating cognitive resources, such as attention and long-term memory, to help reach a learning goal (Weinstein & Meyer, 1991).

Science-related fields: Fields of study that utilize scientific information outside of a Faculty of Science.

CHAPTER II

Review of Related Literature

The attainment of a university degree has become increasingly desirable in today's society, and this has been reflected in increasing enrolments in various programs across North American campuses. As the university student population has continued to expand, researchers and administrators have wanted to understand more about undergraduate university students' experience at their post-secondary institution. Results from a student satisfaction survey of senior undergraduates (University of Alberta, 1996) indicated that 88 percent of respondents attended university to improve the possibility of earning a good income and to gain career-related skills. However, with today's greater heterogeneity in the student population, there is a wide range of academic ability and achievement, with many students finding it difficult to attain their goals. Some students struggle considerably with their academic work and could be considered "at-risk" of being required to withdraw from their programs; many of these students have been required to withdraw, but were allowed to return on academic probation following a successful appeal. While on academic probation (which typically means that the student has to maintain a certain grade point average in order to prevent being required to withdraw yet again), these students continue to be vulnerable.

Being on academic probation may be related to a variety of circumstances, including difficulties establishing effective cognitive (learning and study) strategies and addressing career development concerns. This chapter contains a discussion of what we know about undergraduate student attrition (voluntary and

involuntary); a review of the most commonly cited theories of student attrition; research on factors affecting attrition of involuntary learners; and the theoretical bases that contribute to our understanding of the at-risk learner, in both the career development and cognitive strategy areas. It also includes a review of intervention strategies that have been attempted to increase students' competence with learning and study strategies and their career decision-making; and the description of a course-based intervention that incorporates strategy development for career planning and metacognition (learning and study strategies).

Undergraduate Student Attrition

Despite having received considerable attention and study as an issue of concern in higher education, university student attrition appears to be a pervasive, relatively stable phenomenon (Day, 2001). The majority of attrition research is American, where figures suggest that roughly one quarter of students attending four-year undergraduate institutions leave by the end of their first year (Tinto, 1993). In Canada, similar first-year attrition rates have been published; for example, 24% across 13 universities (Foley, 1998), and 21% across all programs at the University of Victoria (Conway, 1996). Lewington (1996) reported that a range between 10% and 50% of first-year entrants drop out of Canadian colleges and universities. Gilbert (1991) found that the overall average university attrition rate, for all years of study, was 42 percent, which is similar to published American attrition rates of approximately 50 percent (Arendale, 1993; Tinto, 1995).

While the attrition figures are consistent, knowing the figures and discipline of students who leave before completing their program does not tell us

enough about the characteristics and experiences of these students. Consequently, post-secondary institutions do not have enough information to enhance the likelihood of their students' academic success and degree completion (Tinto, 1995). The demographics of the post-secondary population have shifted, and the student body is more heterogeneous with regard to age, cultural background, and developmental stage than in the past (Arthur & Hiebert, 1996). As a result, post-secondary institutions across North America are noting a trend toward more "non-traditional" students, e.g., mature students, part-time students, international students, Aboriginal students, and students with disabilities. As post-secondary institutions address the needs of their increasingly diverse student populations through more inclusive and expanded student services, it would be expected that more "at-risk" students than ever before are on campus.

In addition to the demographic diversity within the student population, it is widely acknowledged that the reasons leading to student attrition are complex and multifaceted (e.g., Day, 2001). Students may depart from post-secondary study under two conditions – academic dismissal and voluntary withdrawal. As 75 to 85 percent of post-secondary departures result from a voluntary withdrawal (Tinto, 1993), these student leavers have received the vast majority of attention in the empirical research, while the factors that impact on students who were required to withdraw from their studies, despite the increase of incidence of academic dismissal (Tinto, 1995), have been largely ignored. Corman, Barr, and Caputo (1992) criticize the focus in the literature on the large voluntary withdrawal group, given the unique needs of students in academic difficulty and the subsequent

marginalization they can encounter. Perhaps now more than ever, given the saturation of literature regarding voluntary withdrawals, it would seem prudent to shift the focus of research toward students at risk of academic failure and being required to withdraw.

Student attrition comes at great cost to both the post-secondary institution and the student. Consequences for the post-secondary institution may include difficulty in establishing funding patterns, facilities planning, and academic curricula to be offered; as well, the loss of well-educated employees may represent a workforce unprepared to handle the responsibilities associated with particular occupations (Jones & Watson, 1990). With continuing financial constraints at post-secondary institutions, student retention has also become increasingly important to student and academic affairs administrators (Ferren & Aylesworth, 2000). Undergraduate completion rates have drawn the attention of the government and of policymakers, and thus have served as a benchmark or accountability standard toward which the post-secondary institutions strive (Trusty & Niles, 2004). Ultimately, the attrition of students affects the university's tuition income, and later their volume of alumni, which represent another source of fundraising. A further consequence may be added costs for recruiting new students to replace the ones lost through attrition.

For the student, the costs may be more of an emotional, financial, and vocational nature. Being required to withdraw from post-secondary studies may represent considerable embarrassment and humiliation; considerable loss of money

invested in tuition, books, as well as time spent studying which might have been spent making money otherwise; and the end of the pursuit of a dream career.

In the next sections, the predominant theoretical perspectives used to understand post-secondary student attrition are reviewed. Findings of relevant Canadian studies that distinguish students who were required to withdraw from students who voluntarily left their studies are also discussed, in order to have a more proximate understanding of students who successfully appeal their dismissal to return on academic probation.

Models of Post-Secondary Student Attrition

Tinto's Model of Academic Integration

The most commonly-cited and empirically evaluated theory regarding undergraduate student attrition is that of Tinto (1975; 1987; 1993), who suggested that attrition results from interactions between a student and his or her educational environment during a student's period of study in a post-secondary institution. He hypothesized that persistence is a function of the match between an individual's motivation and academic ability and the institution's academic and social characteristics. The theory posits that the match between an individual's characteristics and those of the institution results in the shaping of two underlying individual commitments: a commitment to completing his or her program (goal commitment) and a commitment to his or her respective post-secondary institution (institutional commitment). Tinto's stance is that the stronger the individual's goal of program completion and/or level of institutional commitment, the greater his or her probability of persistence.

From his theoretical perspective, Tinto developed the Student Integration Model (1975; 1987; 1993) that emphasizes the importance of *academic integration* (perceptions of the academic program; cumulative grade point average; intellectual development; interest and focus on learning and academic activities; interactions with faculty; and classroom participation) and *social integration* (perceptions of non-academic life, including involvement in university social activities, sense of social belonging, development of friendships) on post-secondary persistence. It also emphasizes the importance of *goal commitment* (commitment to graduating

with a certain degree) and *institutional commitment* (commitment to remaining at the particular institution). Students' characteristics such as family background (e.g, socio-economic status), personal attributes (e.g., sex, race, academic ability, and personality traits) and experiences (e.g., pre-university social and academic achievements, and work experience) are presumed to influence academic performance and initial levels of goal and institutional commitment, and these interact with various features of the university environment, which then affect both academic and social interaction in the university.

Tinto's theory has encountered numerous criticisms regarding specific theoretical elements. Empirical testing of his underlying structural patterns of academic integration, social integration, institutional and goal commitments has resulted in mixed findings, and the theory appears to overlook the role of external factors in shaping perceptions, commitments, and preferences (Cabrera, Castaneda, Nora, & Hengstler, 1992). Researchers have also found the theory difficult to apply to the attrition of mature students and part-time students, who may not be as influenced by their academic and social integration within the university (see Day, 2001). Despite these criticisms, most research on university student attrition is influenced by this model, which continues to be seen overall as conceptually relevant and useful in understanding student attrition (Day, 2001; Tillman, 2002).

Bean's Student Attrition Model

In evaluating Tinto's theory of attrition, Bean and Metzner (1985) found that Tinto does not address the role of external factors that affect non-traditional students (including mature, part-time, and commuter students), in their departure from post-secondary education. Their model indicates that dropout decisions are made on the basis of four sets of variables: (a) poor academic performance (GPA based on past [high school] academic performance); (b) intent to leave (including psychological and academic influences); (c) background and defining variables (e.g., high school performance and educational goals); and (d) environmental variables (e.g., finances, hours of employment, outside encouragement, family responsibilities, and the opportunity to transfer).

While this model is similar in structure to that of Tinto (1975), social variables from the off-campus environment are expected to play a greater role than college social integration variables for the non-traditional student population. The influences of family, friends, and employers are perceived to play a greater role in undergraduate attrition for this population.

Cabrera's Integrated Model of Student Retention

Cabrera, Castaneda, Nora, and Hengstler (1992) compared Tinto's Student Integration Model and Bean's Student Attrition Model to determine where these two perspectives converge and diverge in how they explain students' decisions to leave their postsecondary studies, through simultaneously testing the models' predictive validity. The researchers found that both theories correctly presume that college persistence is the the product of a complex set of interactions among

both personal and institutional factors, and that students' retention is the outcome of a successful match between the student and the institution. Cabrera et al.'s (1992) comparison of Tinto's student integration model and Bean's student attrition model also concluded that the student integration model is a stronger model than the student attrition model. They found that almost 70 percent of the Student Integration Model's hypotheses were confirmed, whereas only 40 percent of the hypotheses underlying the Student Attrition Model were confirmed. They suggested that the study provided the foundation for the development of an integrative framework that can help institutional researchers to understand the role of institutional and noninstitutional variables in students' persistence in their postsecondary studies.

Cabrera, Nora, and Castaneda (1993) proceeded one step further with these research findings and developed an integrated model of student retention that served to attempt to determine the extent to which Tinto's and Bean's models could be merged in explaining postsecondary students' persistence. This model emphasized the role of factors external to the institution as a critical construct important to the attitudes and decisions of students. It highlighted not only social and academic integration, but also the relationship between goal identification and persistence. Cumulative GPA and external variables, including family encouragement and financial attitudes can influence one's academic integration, his or her commitments to the institution, and produce an outcome of persistence (and retention). Despite Cabrera et al.'s efforts, their work continues to receive less attention in the literature. It is still unclear to what extent these models may apply

to those who are leaving university involuntarily, and the following section addresses what we have learned to date about involuntary leavers.

Research on Factors Affecting Attrition of Involuntary Leavers

As mentioned earlier, the literature on at-risk university students and attrition has traditionally focused on students who leave the university on a voluntary basis (i.e., "dropouts"). As the literature suggests, there are a myriad of reasons why students do not continue their education, and these may vary depending on how the student ends up discontinuing his or her studies. Two studies conducted in recent years at two large Canadian research universities have attempted to describe involuntary leavers and their experience.

The University of Saskatchewan prepared a Report on Attrition (1998) that presented findings of an investigation into possible factors influencing first year attrition at their institution. They surveyed students who voluntarily withdrew during their first year (VW), students who did not meet promotion standards (NP), and students who had successfully completed their first year (S), to determine if differences existed among the three groups and to ascertain the needs of first year students in general. Based on Tinto's attrition model (1975; 1987; 1993), they examined differences between these three groups in relation to background characteristics, academic integration, social integration, goal commitment, skills and motivation, and expectations of students.

Findings regarding background characteristics showed that students who are living away from home for the first time may be more likely to face academic dismissal than other students, likely due to the living adjustment as well as

adjusting to the academic environment. No differences were found in terms of gender, marital status, or presence of children. The NP students were the least likely to have taken any time off between high school and university.

Regarding academic integration, there was a significant difference between successful students' perceptions of their professors (more favourable) and those in the NP category. NP students missed significantly more classes per week than successful students. In examining social integration, social activities were most likely to interfere with schoolwork for the NP sample.

There were significant differences in the area of goal commitment; the NP group rated "parents wanted me to go" significantly higher than successful students.

When asked if they had adequate skills to succeed in university, the NP sample of students was least likely to perceive that they had adequate skills. There were no significant differences among the groups regarding participation in orientation sessions.

In relation to university expectations and workload, while all students perceived the amount of work as more than they expected, this was particularly so for NP students. NP students also found their registration materials less helpful than the other students. Only 39% of the NP sample received academic advising when they were informed that their academic standing was low, and students in the NP sample gave a higher rating than other students to the item "felt uncomfortable asking for advice" as a factor which affected their studies.

Finally, external factors were shown to have a profound impact on students' academic performance. Students in the NP and VW samples were more likely to report that external factors interfered with their school work, with the most common being medical problems, personal/emotional problems, family obligations, and the death of someone close. Financial difficulty did not appear to affect attrition in any of the groups.

In a similar fashion, The University of Alberta 1998 Student Leaver Study (Sorensen, 1999) examined student withdrawal and the many possible reasons why some students do not complete their programs. Leaders were divided into three categories: (1) *bowouts,* those who voluntarily left and informed the university that they were leaving; (2) *driftouts*, those who voluntarily left but did not inform the university that they were leaving; and (3) *pushouts*, those who were asked by the university to withdraw. Some of the findings were common among the three types of leavers:

- Few differences were found between returning and leaving students (e.g., marital status and presence of children);
- Parents' educational attainment of the leaving students was slightly less than for those who returned;
- When asked what students feel they could have done to better prepare themselves for attending university, the most prevalent response was better study habits or more effort in general. Many students indicated that they were simply not prepared for university or that their experience in high

school did not prepare them and that they should have found out more about university before they attended.

The report also found distinguishing characteristics of the *pushout* group, including:

- *Pushouts* were more likely to report that they left the university because of low marks or because they were suspended or expelled;
- On average, non-returning students (especially *pushouts*) attained significantly lower high school averages than returning students and students who left voluntarily;
- Males were considerably and significantly more likely to be *pushouts* than females (59.4% of males and 36.2% of females were asked to withdraw from the university);
- *Pushouts* were more likely to report that they "quite often" or "very often" went out with friends and drank alcohol and that they "strongly agreed" or "agreed" that they spent too much time partying;
- Students in the Faculty of Engineering were considerably more likely to be *pushouts* than those in other faculties.

While results of these studies show more about the experience of students who are required to withdraw, the findings also provide a rationale for learning more about the distinct features and experiences of students who were required to withdraw from the university and successfully appealed the original ruling. To understand the multidimensional nature of these at-risk learners, it is helpful to examine theoretical perspectives from career development and cognitive

psychology relevant to undergraduate students, and particularly as applicable to "at-risk" learners.

Career development theories such as Super's Life Span, Life Space theory (1994) and various formats of self-efficacy theory in relation to career (e. g., Bandura, 1977; Hackett & Betz, 1981; Lent, Brown, & Hackett, 1994) provide some insight on the career development of students who are on academic probation. A cognitive model of strategic learning (Weinstein, 1994; 1996) is also explained below.

Career Development Theories and the At-Risk Learner

Super's Life Span, Life Space theory.

Super's (1981, 1990, 1994) theory of vocational development and choice takes a life-span approach to the implementation of the self-concept in an occupation. Within Super's concept of life stages, students making the transition from high school to postsecondary study (ages 17 to 19 years old) are likely still in the exploration phase in which they are tentatively reviewing their needs, interests, competencies, values, and opportunities, and doing some initial field selection. As they approach 21 years of age, reality is given more weight in decision-making. Individual competencies, strengths and weaknesses are taken into account as professional education and labour market requirements are considered. A generalized field selection is converted to a specific career choice.

In the context of this study, Super's theory points to the career exploration needs of first- and second-year students. Without a comprehensive examination of career options, an individual may become mismatched with an occupation, leading

to a lack of success and jeopardize the ability to continue in his or her program. This lack of career decision-making skills and academic success can have a detrimental effect on a student's general and career self-efficacy.

Career self-efficacy theory.

Self-efficacy (Bandura, 1977) refers to a person's beliefs about his or her ability to successfully perform a given task or behaviour. A person's self-efficacy expectations influences one's coping behaviour and effort expended, and for how long in the face of obstacles and aversive experiences. Self-efficacy is developed through four channels: performance accomplishments; vicarious learning; verbal persuasion; and emotional arousal. Following Bandura's pioneering research on the concept, numerous other researchers have followed suit in investigating how self-efficacy theory can be applied to career decision-making.

Hackett and Betz (1981) suggested that self-efficacy expectations might help determine a person's career decisions and achievements. Luzzo, Hasper, Albert, Bibby, and Martinelli (1999) found in their review of the literature that career decision-making self-efficacy is significantly related to vocational interests, selection and persistence in college majors, and academic performance. Niles and Sowa (1992) found that career decision-making self-efficacy was significantly related to career indecision, commitment, motivation, and general self-efficacy.

McAuliffe (1992) asserted that self-efficacy and career self-efficacy are constructs that allow for explicit counselling strategies for change, and proposed that counsellors use the four channels of increasing self-efficacy expectations proposed by Bandura (1977). He suggested that counsellors can increase clients'

performance accomplishments by having the client successfully engage in a previously-intimidating behaviour and ascribing their success to their own efforts. To help clients achieve vicarious learning, the counsellor can encourage clients to interview people who have made a successful career move. Verbal persuasion can be accomplished through clients' view of their counsellor's expertise and trustworthiness, and will heed their counsellor's analysis of their own achievements. Finally, to address concerns of emotional arousal in career planning, relaxation training and biofeedback were suggested as examples of ways to try and change the relationship between emotions and behaviour. McAuliffe also suggests that counsellors encourage clients to keep daily logs of beliefs, emotions, and counter-thoughts, and dysfunctional and functional beliefs can be reviewed in session. The counsellor can also play an important role in helping the client to recognize and celebrate their progress. A self-efficacy focus also has the advantage of being usable in short-term interventions, such as a student counselling centre.

Betz (2004) identified career self-efficacy as part of a more comprehensive social cognitive model of career choice (Lent, Brown, & Hackett, 2002). Lent et al. (2002) conceptualized social cognitive career theory (SCCT), which stresses that self-efficacy expectations directly influence career interests. This theory postulates that self-efficacy-enhancing interventions would produce subsequent changes in career interests and influence career choice goals and actions. Betz (2004) also advocated for the use of self-efficacy theory and efficacy-based interventions to be added to the repertoire of career counsellors. Also following Bandura's (1977) four channels, she suggested a first intervention strategy where

the counsellor is to identify local resources where a person could seek out opportunities for achieving performance accomplishments, such as community colleges or technical schools. Secondly, the counsellor uses verbal persuasion (i.e., support and encouragement) in one-on-one sessions as well as in groups with topics such as communication and interpersonal skills to assist clients to develop competencies. When possible, the counsellor can provide vicarious learning and modeling when the counsellor knows people who have succeeded in a specific activity. Finally, to help the client manage their emotional arousal, the counsellor can teach basic anxiety management techniques (e.g., positive self talk) so that the client may learn to associate with practice of the previously feared career-related behaviours.

From these theoretical perspectives, it would seem that undergraduates' career self-efficacy could be enhanced through a career counselling intervention. Subsequently, greater self-efficacy may lead to better problem-solving and decision-making for students. For those on academic probation, this could also result in reduced attrition. The following section addresses how we can understand such students from a cognitive perspective.

Cognitive Approaches to the At-Risk Learner

Model of Strategic Learning.

Educational models that are focused purely on vocational preparation are not adequate to prepare students for lifelong learning, job enhancement, or career advancement (Weinstein & Van Mater Stone, 1993). Weinstein and colleagues (1994; 1996; Weinstein & Van Mater Stone, 1993) have discussed the importance

of being a "strategic learner," an individual who has knowledge in five areas: (1) knowledge about self as a learner – his or her strengths and weaknesses, preferences, academic goals, and how college fits into future goals; (2) knowledge about different types of academic tasks, i. e., reading for understanding, taking different types of tests, taking and using notes, and observing a demonstration; (3) knowledge about strategies and methods for acquiring, integrating, thinking about, and using new knowledge, i. e., paraphrasing, elaborating, comparing/contrasting; (4) prior content knowledge and how to use it to make sense of new information; and (5) knowledge of present and future contexts in which the new information could be useful, i. e., in the academic, personal, social, and occupational, as it helps students see the relevance of the new information to present or future goals.

Weinstein and Van Mater Stone (1993) suggested that these strategies alone are not sufficient for developing expertise. Students must also know how to monitor their own comprehension, through using self-assessment or self-testing to determine if they are meeting their learning goals. This will also allow them to generate "fix-up" strategies when problems arise, i.e., rereading a section or going to a tutor for help. Comprehension monitoring is also referred to as the "skill" component of strategic learning. Effective learning also requires motivation, or "will," as students must also want to learn. Motivation may be the result of many factors, including the establishment and use of goals, the degree to which a student can accomplish a task, to what students attribute their successes and failures (i.e, their own efforts or abilities, rather than the instructor or the difficulty of the test), as well as their interests and values. Thirdly, executive control is required, which

means that learners can orchestrate and manage their own learning. Weinstein and Van Mater Stone (1993) also identified this as "self-regulation" and stated that an expert learner is a self-regulated learner. Self-regulated learning, or strategic learning, requires the three elements of skill, will, and self-regulation.

Weinstein (1994; 1996) proposes that two primary methods can be used to teach strategic learning: the adjunct approach and the metacurriculum approach. The adjunct approach involves creating some adjunct, or addition, to a course or general curriculum, ranging from a seminar or workshop focusing on a specific topic or component of strategic learning to term- or year- long courses which focus on a broad range of strategies and skills. The metacurriculum approach involves integrating strategic learning strategy instruction with regular content instruction. This method can focus on strategies that are specific to the content of the course, a broad range of strategies and skills, or a combination of the two.

The following section addresses the intervention strategies that have been previously implemented at various postsecondary institutions and how their findings have led to the development of the current study.

Cognitive Strategies Interventions

Program for Academic Success and Satisfaction (PASS).

The Program for Academic Success and Satisfaction (PASS; Miles, 1989) is sponsored by the Counselling Department at Mount Royal College in Calgary, Alberta. The department offers a voluntary six-week, non-credit intervention program for academic high-risk students who are being placed on academic warning or are returning to the college after being disqualified. The curriculum in

this short-term intervention program focuses on developing students' abilities to assume greater responsibility for their own learning, including: (1) time management; (2) stress management; (3) textbook reading; (4) assertiveness training; (5) memory improvement; and (6) strategies for staying motivated. Instruction takes place in small group settings (10 to 15 students).

To explore the needs of academic high-risk students, Pybus (1991) evaluated the short-term PASS program using an exploratory method of data analysis using four descriptive statistical analyses and found support for PASS improving students' GPAs, enhancing their study habits and attitudes, and decreasing their student problems in the areas of academics, social-emotional concerns, career uncertainty, and motivation. There was little support to suggest that PASS enhanced students' self-esteem, and few gender differences were found. Due to a very low number of students on academic warning volunteering to seek assistance (3% of a sample of 1,122), mandatory credit courses were recommended. In spite of her literature review indicating that career uncertainty can contribute to students becoming academically at-risk (see also Orndorff & Herr, 1996), Pybus indicated that the program did not address students' career paths per se and recommended that career decision-making information should be incorporated into the PASS curriculum.

Weinstein's course-based intervention.

Based on her Model of Strategic Learning, Weinstein (1994; Weinstein & Van Mater Stone, 1993) describes an academic, semester-long course offered in the Department of Educational Psychology at the University of Texas (EDP310:

Introduction to Educational Psychology: Individual Learning Skills), taken by at-risk students on entry to postsecondary study, those who experience academic difficulties once in postsecondary study, and/or those who want to simply enhance their learning and study strategies repertoire. The curriculum was designed to help students gradually improve their learning strategies and skills, knowledge, attitudes, and motivation so that they can become more strategic learners.

The first three classes within this course focus on introductions and pretesting with measures that assess students' reading comprehension and strategic learning. This pretest data helps both the instructors and the students identify students' strengths and weaknesses so that individualization of assignments and priorities can be made over the span of the term. As these measures are only used for diagnostic assessment and not for grading purposes, they help create a baseline against which to measure future growth and achievements.

Students are presented at the start of the course with a model of themselves as managers of their own learning ("strategic learners"), and are introduced to theories of learning, metacognition, and motivation, among others. Relevant academic context and social climate variables, such as time constraints, instructor expectations, and forms of social support, are also described and discussed. Students are told they will learn how to generate management plans for common academic tasks such as taking notes in a lecture or from a book, listening in class, completing projects, giving presentations, preparing for and taking exams, and completing term projects.

The course emphasizes that strategic learners are goal-directed and use strategies in pursuit of their goals, and students are urged to examine existing goals and to generate new goals for their personal, social, academic, and occupational lives. They are then guided through a series of steps and activities designed to help them clarify their goals, prioritize them, and use them in relation to their academic tasks. Later in the course, specific topics include: knowledge-acquisition strategies; pre-, during-, and post-reading strategies; time management; dealing with procrastination; attention and concentration; note taking; listening skills; preparing for and taking tests; the relationship between understanding and long-term memory; and dealing with academic stress. The last portion of the course is reserved for integrating the strategic learner model and adapting it to various learning contexts, learner characteristics, and situational variables.

At the end of the term, the post-measures of level of learning strategies employed and learning comprehension are taken so that students can see where they improved. Students also receive feedback about areas they might want to continue working on through the university's academic support centre or other services relevant for the students' needs. This course appears to be highly effective, as students who take it tend to increase their grades by one grade point on a 4-point scale, tend to have a higher rate of retention at the university, and report greater satisfaction with the university as well as increases in self-esteem (Weinstein & Van Mater Stone, 1993).

Career counselling interventions.

Despite several authors' comments that developing a career and/or major course of study plan in addition to improving study skills is important in increasing retention (e. g., Fernandez, Whitlock, Martin, & Van Earden, 1998; Pybus, 1991), this aspect has rarely been incorporated into their intervention studies.

Polansky, Horan, and Hanish (1993) evaluated the separate and combined effects of study skills training and career counselling on student retention, based on four treatment conditions: (1) study skills alone; (2) career counselling alone; (3) combined (study skills plus career counselling); and (4) control. The benefits of academic learning (i. e., cognitive) interventions in improving GPAs and increased academic retention have previously been demonstrated (e.g., Pybus, 1991; Weinstein & Van Mater Stone, 1993); however, this study pioneered investigation into the specific relationship between career counselling and student retention. Results indicated that the study-skills alone condition significantly influenced retention, whereas the career counselling alone or in combination with study skills did not. Polansky et al. (1993) indicated that, because the statistically significant findings emerged in the context of multiple comparisons, the lack of a significant finding may be a possible artifact of family-wise error or due to the use of less sensitive career counselling outcome measures as compared to the study skills measures. Consequently, Polansky et al. (1993) recommended further research in this area to determine if a different career intervention approach (such as that proposed in the current study) may play an effective role in student retention.

Recent studies have examined the relationship between implementing a career course-based intervention and various outcomes, including retention, academic performance, and career development outcomes. Folsom, Peterson, Reardon, and Mann (2002) assessed the impact of a for-credit career course on five outcomes: 1) retention to graduation; 2) time taken to graduate; 3) the number of credit hours taken to graduate; the number of course withdrawals executed by students; and 5) academic success as indicated by cumulative GPA at graduation. When compared to a non-course participant group matched on gender, race, and high school GPA, Folsom et al. found that there was no statistically significant difference in retention to graduation rates between course participants and non-participants; no statistically significant between-group differences in time taken to graduate; and cumulative GPA at graduation. Despite the lack of significant results, the authors found that the course did have a slight positive impact on reducing the credit hours taken to graduate and on reducing the number of course withdrawals compared to non-participants.

In a Canadian study, Hung (2002) analyzed an undergraduate career development course focusing on theoretical models, concepts, and practices. She utilized pre- and post- course measures to assess career development outcomes, and reported that significant increases were found on measures of career certainty, in addition to significant decreases in career indecision, career choice anxiety, and generalized indecisiveness. The author suggested that the study and application of career development theory, concepts and practices can positively impact on university students' career development. It is conceivable, therefore, that the

integration of this kind of intervention could be beneficial to students on academic probation and that the provision of a career intervention merits further investigation.

To summarize, various researchers have reported the usefulness of various types of stand-alone career counselling interventions and cognitive strategy interventions, and one combined (but methodologically challenged) study skills and career counselling intervention. Consequently, the next step would be to create an improved combined cognitive strategy and career counselling intervention to determine its effectiveness in improving the academic outlook for at-risk students on academic probation.

CHAPTER III

Method

This study was designed to learn more about two main categories of information: (1) experiences and perceptions of students in science-related fields that have been placed on academic probation or academic warning; and (2) to learn about the impact of a course-based intervention that teaches cognitive learning strategies and career counselling interventions on students' GPAs, learning and study skills, and career decision-making self-efficacy. This study used two methods, quantitative and qualitative, in what is often referred to as a mixed-methods approach.

Mixed-Methods Approach

When conceptualizing a research study on a complex yet little understood issue such as how to understand and assist students on academic probation, it is important to consider different methodologies and determine which one(s) would be most appropriate. The author concurs with Patton (1990), who advocates making research decisions based on pragmatism and methodological appropriateness, as opposed to the traditional methodological rigidity found in both quantitative and qualitative paradigms. Patton refers to this as a "paradigm of choices," where different methods are appropriate for different situations, based on the purpose of the inquiry, the questions being investigated, and the resources available. Accordingly, in some situations, a mixed-methods approach would be most appropriate.

A mixed-methods approach (also referred to as a multiple methods approach) is a research design that incorporates more than one method, and there can be many variations of mixed-methods approaches applied in research. One variation of this approach would be the use of multiple paradigms of inquiry (i.e., quantitative and qualitative). In recent years, researchers have looked increasingly to the option of applying a mixed-methods approach, with the incorporation of both the quantitative and qualitative paradigms. Borland (2001) stated that

> The relationship between qualitative and quantitative research should not be considered in terms of a mutually exclusive dichotomy but rather as a continuum of complementary paradigms within systematic scientific inquiry that, when used in concert, produce complete or useful knowledge. (p.5)

He stressed that both paradigms combined can provide better support for decision-making than either paradigm in isolation. He also suggested that a "qualitative and quantitative" perspective is more congruent with systematic scientific research, rather than the "qualitative-versus-quantitative" position that has been the traditionally dominant understanding of the relationship between the two research paradigms.

McLeod (2000) outlined the ways in which qualitative and quantitative approaches may be combined within outcome studies, including: using the qualitative findings to help interpret quantitative results; drawing on qualitative findings when sample sizes are too small to allow statistical analyses of sufficient power to be carried out; using qualitative methods as a heuristic device to develop hypotheses that can be tested through quantitative methods; and using changes in

quantitative scores to identify sub-groups of clients to be studied further through the use of qualitative techniques.

McLaughlin, McLaughlin, and Muffo (2001) discussed the three models of multiple methods that are used in evaluating interventions, including the triangulation model, the bracketing model, and the complementary purposes model, and recommended that a complementary purposes model may have more utility for institutional researchers. For this reason, the researcher of this study decided to employ this approach, as the model purports that using multiple methods allows for each method to perform a different but complementary function. This, in turn, may enhance the interpretability of results (McLaughlin et al., 2001) and also fits well with the pragmatic approach to research (Patton, 1990). This can be prudent when researching a post-secondary population. The following sections explain the qualitative and quantitative research approaches taken in this study.

Qualitative Methodology

Borland (2001) indicated that the purpose of qualitative research is to "explain and gain insight and understanding of phenomena through intensive collection of narrative data" (p.11). Researchers have identified the strengths of qualitative research methodologies, including that they may be accessible to researchers and practitioners alike; they are effective in helping researchers probe more deeply into the research questions and understand the complexity of the student experience (Perl & Noldon, 2000). For these reasons, the benefits of incorporating a qualitative perspective were greater than the inherent limitations.

These include: the amount of time required to gather and analyze data and the difficulty in collecting data from enough participants to make generalizations about a given population; the vulnerability of their external and internal validity; difficulty in replication of the study; and stronger threats to its reliability (Perl & Noldon, 2000).

Qualitative Instruments

Three kinds of qualitative data were collected and analyzed: information shared in answering an open-ended question about why participants felt they were unsuccessful last academic year; qualitative course evaluation feedback; and a semi-structured interview.

Pre-course feedback questionnaire.

Students in EDPY 397 were asked to complete a feedback questionnaire that asked "Why do you believe that you were unsuccessful academically in your previous year of study?" within the initial classes of the course. The findings contribute to Research Question 1, "What are students' perceptions of the factors that lead to students in science-related fields being placed on academic probation or academic warning?," as they capture the perceptions students expressed at the onset of the course-based intervention.

Qualitative course evaluation.

It is standard practice for students to evaluate all credit courses anonymously at the end of each term. Normally, numerical ratings are required in courses with greater than 10 students, where students complete an optical scan form to answer questions on a Likert-style scale. As this was a pilot course (from

which research data was to be collected), the Department of Educational Psychology agreed to distribute the qualitative course evaluation forms that are normally given to classes with fewer than ten students.

The questions asked on that evaluation included: (1) Comment on the quality of instruction in this course; (2) Which aspects of the course were most valuable? (3) Which aspects of the course were least valuable? and (4) Are there any other comments you wish to make about this course? Students in EDPY 397 completed the evaluation in the absence of the researcher or the primary instructor, and a student volunteered to bring the completed evaluation forms to the Department of Educational Psychology. The written evaluation feedback was typed out verbatim by a department secretary, and the researcher was provided with only the typed version to help preserve participants' anonymity. The author decided to include these data in the study, as it contributes to our understanding of these students' experience in an intervention designed to assist them to ultimately improve their GPA and the subsequent implications and directions for further research.

Semi-structured interview.

The researcher developed a semi-structured interview protocol (see Appendix B) to learn more about students' experiences of having academic difficulty, and their perception of the factors that contributed to their poor academic performance and being required to withdraw (or at risk for being required to withdraw) from the university. A secondary purpose of the interview was to learn what has been helpful to participants, including attaining feedback

and recommendations regarding the pilot course taken. The semi-structure data and analysis also contributes to the results for Question 1: "What are students' perceptions of the factors that lead to students in science-related fields being placed on academic probation or academic warning?"

McLeod (2000) suggests that conducting a semi-structured interview may be advantageous for accessing a participant's experience with the issue(s) being studied, more so than by simply filling out a questionnaire. This may be due to the nature of the interview situation, which can encourage a more reflective stance from the participant. This in turn can result in the participant providing a much more clear and comprehensive account of a meaningful experience in his or her life. Additionally, McLeod noted that the language used in questionnaire items may invite certain kinds of brief answers, and this may be less likely to happen with a neutral interviewer that allows more space for the participant to express the complexities that are part of their experience (McLeod, 2000).

Quantitative Methodology

Quantitative Research Design

The purpose of quantitative research has been described by Borland (2001) as "to explain, predict, or control phenomena through focused collection of numerical data" (p.11). While this description reflects a purely experimental approach to quantitative research, it is not always possible to integrate randomized assignment and control over extraneous factors that may influence the results attained.

A quasi-experimental design was therefore used for this study, as the participants were not randomly assigned to participate in the course-based intervention. As described later in this chapter, issues such as a small sample size and ethical concerns with preventing at-risk students from obtaining assistance with their career development and learning and study skills also served as obstacles to incorporating an experimental design into the study. Despite the lack of pure experimental characteristics, Gall, Borg, and Gall (1996) assert that quasi-experiments can yield useful knowledge when a fully randomized, controlled study is simply not possible.

A cross between the nonequivalent control-group design (Campbell & Stanley, 1966) and the cohort design was employed. Dawson (1997) discusses how cohort designs have typically been considered to be stronger than nonequivalent-groups designs, as the cohorts are more likely to be closer to equal at the outset of an experiment. In this design, research participants are not randomly assigned to the experimental and control groups. The control group was a cohort (consisting of the previous academic year's population of students on academic probation or warning). The cohort was measured on only one pre-, post-, and follow-up measure – grade point average (GPA), as the course-based intervention, including the integrated pre-, post-, and follow-up measures, was not available at that time.

Dawson (1997) discusses the various threats to internal validity that are associated with this design. These include the passage of time between the two cohorts (history); the lack of random assignment of participants; the confounding differences that existed between the cohort before the intervention; and changes

surrounding instrumentation, testing, and selection. The following section addresses the instruments incorporated into the study to examine changes from before to after implementation of the intervention and the subsequent follow-up.

Pre-, Post-, and Follow-up intervention Instruments

Learning and Study Strategies Inventory.

The Learning and Study Strategies Inventory (LASSI; Weinstein, Schulte, & Palmer, 1987) is "a diagnostic assessment instrument that is used to help students (and their instructors) identify their strengths and weaknesses in ten different areas related to the skill, will, and self-regulation components of strategic learning" (Weinstein, 1996, p. 51). The 77-item self-scoreable inventory provides standardized scores and national norms for each of the following ten scales: Attitude, Motivation, Time Management, Anxiety, Concentration, Information Processing, Selecting Main Ideas, Study Aids, Self-Testing, and Test Strategies. LASSI scales that relate to the Skill component of strategic learning include Information Processing, Selecting Main Ideas, and Test Strategies. The Will component is represented in the scales of Attitude, Motivation and (Management of) Anxiety. The scales representing Self-Regulation include Concentration, Time Management, Self Testing, and use of Study Aids. Items are rated on a Likert-type scale ranging from "not at all typical of me" to "very much typical of me". A sample item is "I am able to distinguish between more important and less important information during a lecture" (Selecting Main Ideas scale). Correlations of coefficient alpha ranged from .68 to .86, and test-retest correlations ranged from .72 to .89 (Weinstein et al., 1987).

Research using the LASSI has demonstrated that low-achieving college students scored significantly lower than the average- and high-achieving students on all 10 scales, suggesting that cognitive and motivational factors are significantly related to students' learning and achievement, and that there appears to be a link between learning and study strategy implementation and academic achievement at the college level (Albaili, 1997).

Career Decision-Making Self-Efficacy Scale.

The Career Decision-Making Self-Efficacy Scale (CDMSES; Taylor & Betz, 1983) is a 50-item inventory designed to assess individuals' confidence in their ability to engage in career decision-making tasks. Taylor and Betz (1983) selected the behaviours indicative of the five career-choice competencies postulated by Crites (1961, 1965; cited in Taylor & Betz, 1983) in his model of career maturity to represent the domain of behaviours relevant to the career decision-making process. These five competencies (accurate self-appraisal, gathering occupational information, goal selection, making plans for the future, and problem solving) are represented in the CDMSES. Asking respondents to indicate their confidence in their ability to successfully complete each task assessed self-efficacy expectations for each of the career decision-making tasks. A sample item would be "Change majors if you did not like your first choice" (Problem Solving subscale). Confidence ratings are provided on a 10-point scale ranging from *complete confidence* (9) to *no confidence* (0). A total score is calculated by summing the confidence ratings for all 50 items.

Internal consistency reliability ranges from .86 to .89 for the subscales and .97 for the total score. Internal consistency reliability is high at .93, and six-week test-retest reliability is .83 (Luzzo, 1993). Luzzo (1996) reviewed psychometric evaluations of the scale and found support for its predictive, construct, and discriminant validity through its relationship with various constructs (e. g., vocational indecision, occupational self-efficacy, career salience, locus of control, and self-esteem). Research on the application of the CDMSE has shown that interventions designed to increase career decision-making self-efficacy should be strongly considered in programs to increase student retention (Peterson, 1993; as cited in Betz, 2001).

Additional Instruments

These additional instruments were used as part of the career intervention component of the course (see Appendix A) but are designed for a single administration and are not included in any data analysis for this study. They include the Strong Interest Inventory and the Myers-Briggs Type Indicator (Form F), described below.

Strong Interest Inventory.

The Strong Interest Inventory (SII; Harmon, Hansen, Borgen, & Hammer, 1994) was used to assess participants' career interests. It is a self-report inventory that includes 109 occupations, representing semi-skilled, skilled, managerial, professional, and scientific areas. Basic Interest Scales (25) assess their behavioural preferences for activities. General Occupational Themes indicate how interested an individual is in each of 6 types of work and work environments:

Realistic, Investigative, Artistic, Social, Enterprising, and Conventional. Reliability is good (coefficient alphas range from .90 to .95 and test-retest correlations from .86 to .91 for General Occupational Themes; coefficient alphas of .77 to .96 and test-retest correlations from .82 to .91 for Basic Interest Scales; and test-retest correlations from .87 to .92 for Occupational Scales) as are construct, predictive, content, and concurrent validity. Previous longitudinal studies indicated that "students tend to enter occupations in which they made high scores" (Super, Osborne, Walsh, Brown, & Niles, 1992, p. 75).

Myers-Briggs Type Indicator, Form F.

The Myers-Briggs Type Indicator, Form F (MBTI; Myers & McCaulley, 1985) is a 166-item, forced-choice personality inventory widely used in career counselling for helping students to identify suitable occupations for exploration. The MBTI has four bi-polar scales that describe individuals in terms of preferences: 1) Extraverted-Introverted (E-I), where an individual has either a more outward focus to his or her environment or a more inward focus to concepts and ideas; 2) Sensing-Intuitive (S-N), where an individual is inclined to attend either to the immediate, practical, and observable, or to future possibilities and implicit or symbolic meanings; 3) Thinking-Feeling (T-F), in which an individual makes decisions either by emphasizing thinking and objective logic, or feeling and subjective values; and 4) Judging-Perceiving (J-P), where an individual controls his or her life in a very organized, planned, expeditious way, making quick and final decisions, or adapts to life spontaneously through constant information-seeking and inquiring while keeping his or her options open. Healy & Woodward

(1998) stated that the face validity and predictability of the MBTI scales may help career counselling clients in developing insights and problem-solving strategies. Internal consistency has been found to be high (rs >.80); test-retest reliability has been reasonable (rs >.70).

Participants

The participant pool was limited to students in a science-related faculty at the University of Alberta, in their 2nd to 4th year of study, who were classified as being on academic probation (meaning that they were required to withdraw after attaining a GPA of less than 4.5 on a 9-point scale, or less than 1.6 on a 4-point scale but appealed successfully to return to their program) or on academic warning (GPA between 4.5 and 5 on a 9-point scale, or 1.7-1.9 on a 4-point scale). They had received a letter from the Office of the Associate Dean following the release of their final grades in June informing them of their status.

Approximately 80 students per year fall in this category; of those, 35 students successfully appealed for re-admission on academic probation for the 2000/01 academic year (Robert Hudson, Associate Dean, personal communication, June 20, 2000). These students were sent a letter from the Associate Dean, strongly encouraging them to enrol in a pilot for-credit course offered through the Department of Educational Psychology, EDPY 397: Cognitive Strategies, that was designed to assist students to increase their learning and study strategies and their career decision-making self-efficacy, thus improving their likelihood of academic success (see Appendix A).

To allow for this intervention to be equally available to all eligible students, quota sampling from this population was used. Due to a much smaller than expected enrolment in Term 1 (N=10), with perceived good outcomes of the course on the part of the faculty, the researcher was encouraged to run the course again in Term 2 (N=14 eligible for the study; the course was opened up in the second term also to students who were not on academic probation or academic warning).

For the quantitative course-based pre- and post- testing, there were 21 participants who agreed to have their data included in the study (9/10 students from Term 1 and 12/14 eligible students from Term 2 participated). Participants ranged in age from 19 to 30 (M=22.8, SD=4.14). All participants were in their second year or later of university. Eight were male and 13 were female. Fourteen students were Caucasian, four were Asian, two were Aboriginal, and one was South Asian. A matched-peer group of students from the previous academic year comprised the control group. Matching criteria included: (1) the students were to have been on academic probation status; (2) they were students in the selected science-related faculty. The control group transcripts were retrieved by Student Records staff in the faculty according to the criteria and the control group members were anonymous to the researcher.

For the qualitative interviews conducted following the course completion, 13 students in total (five men, eight women) chose to participate. Eight of 10 students enrolled in Term 1 agreed to participate; five out of 16 students enrolled in Term 2 agreed to participate. This discrepancy in participation rate may be

partly explained by additional difficulty involved in reaching students in the following academic year. Seven of these participants were Caucasian, four were Asian, and two were Aboriginal. Eight students were more of the "traditional" type, in their late teens to mid-twenties who entered post-secondary studies immediately following high school. Three students were "mature," as they were in their late twenties to early thirties, who returned to university after years of working or studying at another institution. Two students worked for a year following high school before attending university.

Procedure

EDPY 397: Cognitive Strategies.

EDPY 397: Cognitive Strategies was a pilot course developed through collaboration between the author and the Head of the Learning Resource Centre (an adjunct professor in the Department of Educational Psychology) at the University of Alberta. The calendar description of the course is as follows:

> EDPY 397 provides students with a background in the concepts underlying cognition and its application to learning and performance in post-secondary education. Opportunities to participate in laboratory exercises designed to enhance students' application of cognitive strategies, self-regulation, and career decision-making will be incorporated.

EDPY 397 was a 3-credit course graded on the university's former 9-point scale (now 4.5 point scale). The course design was heavily influenced by the lecture content of the previously discussed course offered in the Department of Educational Psychology at the University of Texas (EDP310: Introduction to Educational Psychology: Individual Learning Skills; Weinstein, 1994), and provided students with a background in the concepts underlying basic cognition

(learning) and its application to lifelong learning and performance in post-secondary education. The developers of the course were the instructors of the course. The aforementioned adjunct professor in the Department of Educational Psychology was the primary instructor, and a doctoral candidate in the Department of Educational Psychology (primary researcher) was responsible for the laboratory sessions.

The EDPY 397 course content included learning about cognitive development theories, career development theories, academic study skills, self-regulation in learning, motivation, and the importance of goal setting. Laboratory time was utilized for pre- and post- testing purposes, in addition to various exercises designed to enhance students' application of cognitive strategies, self-regulation and career decision-making. The curriculum was designed to assist students to gradually improve their learning strategies, skills, knowledge, attitudes, self-efficacy, and motivation so that they can become more effective lifelong learners (i.e., "strategic learners;" see Appendix A). Course requirements included four small exams (5% each, totalling 20%), an assignment requiring students to develop a self-regulation plan to manage themselves and their time during the semester (10%), a second assignment requiring the demonstration of summarization of themes in an article provided, an in-class lab assignment (20%), and a final exam worth 30%. An in-class lab assignment was worth 5%. Participation and attendance were also required and worth 5% for the lectures and 10% for the lab sessions. Required readings consisted of a number of articles

addressing various cognitive strategies and Kovach's (1999) book, *A collection of the best learning strategies on earth (2nd ed.).*

Informed consent.

Students who agreed to be participants met individually with the researcher at the start of the term, when the researcher explained the research study taking place in tandem with the course. The researcher indicated that the students were being invited to participate in research to learn more about the experience of students on academic probation, and provided them with a written informed consent form (see Appendix B). The researcher explained that the data collected would come from inventories completed during lab sessions as part of the course requirement. As well, for those who consented, the researcher explained that a follow-up interview would take place in the term following the term in which they took EDPY 397: Cognitive Strategies, to alleviate concerns of their feedback having an impact on the course grade. Students were asked to complete and return the consent form to the researcher in a sealed envelope that was not opened until final grades were assigned after course completion, regardless if they consented or did not consent to having their data included in the study. This allowed the researcher to be blind to which students were participants and non-participants in the study, and this could allay possible student concerns that their consent or lack of consent could impact on their grade. Students were also informed that even after they completed the signed consent form, they could withdraw from the study at any time without consequence.

For those who chose to participate in the follow-up interview, additional effort was made to further distance the researcher (who was also the co-developer and lab instructor of the course) in order to minimize students' censorship of negative feedback regarding the course. An experienced researcher and interviewer conducted the interviews.

Data collection.

Data collection consisted of various qualitative and quantitative sources. At the start of EDPY 397, students completed a form in the initial lecture asking why they were unsuccessful in their previous year(s) of study. In their first laboratory session, students completed the pre-intervention measures of the Learning and Study Strategies Inventory and the Career Decision-Making Self-Efficacy Scale (see Pre- and Post-Intervention Strategies) and the findings were debriefed with the students in the following laboratory session. The students completed these again toward the end of term as a post-intervention measure, and the students were debriefed again with the results, highlighting the differences in scores. A second post-intervention collection of data was initiated following the completion of another term, to help ascertain potential longer-term effects of the course-based intervention.

Semi-structured interviews were conducted with students who chose to participate, to learn more about their experiences of struggling academically. The interviews began with "warm-up" questions concerning the participants' current major and year of study, followed by the broad question "What were the factors that led you to being on academic probation/academic warning?" The interviews

then proceeded with questions that encouraged participants to elaborate on and clarify their responses and were guided by previous theoretical and empirical literature. Students were encouraged to discuss aspects of their experience that they felt were most salient for them.

Each interview was approximately 30 to 45 minutes in length. The interviewer utilized a microcassette recorder to record the interviews for later review by the researcher and for transcription purposes. The audiotapes were professionally transcribed and checked for accuracy by the researcher. The researcher replayed the audiotapes and edited transcripts accordingly to clarify statements that were unclear to the dictatypist. Participants signed an additional consent form when they presented for the interview (Appendix C).

Data Analysis

Qualitative data analysis.

The main purpose of the qualitative data collection and analysis was to answer Question 1, "What are students' perceptions of the factors that lead to students in science-related fields being placed on academic probation or academic warning?" A qualitative data analysis approach was used to evaluate an open-ended question on a pre-course questionnaire pertaining to why students felt they were unsuccessful in their previous academic year, as well as the information garnered from the qualitative course evaluation. Responses were grouped into similar categories, and the responses in each category were counted and rank-ordered from most to least common categories cited. This approach was also used to analyze the comments made by students in the qualitative course evaluation, due

to the small amount and brevity of replies. The qualitative course evaluation data analysis does not directly answer any of the research questions in this study, but is included for its contribution to recommendations offered by the students and the implications that follow.

Data analysis for the semi-structured interview transcripts was considerably more involved. The researcher initiated the analysis of the transcripts with a preliminary exploratory analysis, as suggested by Creswell (2002), to "obtain a general sense of the data, memoing ideas, thinking about the organization of the data, and considering whether more data are needed" (p. 265). Transcripts were read in their entirety several times to get a sense of each interview as a whole prior to breaking it down into parts.

Transcripts were then analyzed according to a procedure outlined by Weber (1990). A major component of thematic content analysis is the process of creating and applying a coding scheme to the data. Creswell (2002) defined coding as "the process of segmenting and labelling text to form descriptions and broad themes in the data" (p. 266). Following the identification of the substantive questions to be investigated and the text to be classified, relevant theories, and previous research, Weber identified the following steps:

1. *Define the recording units*, i. e., the basic units of text to be classified (word, phrase, sentence, theme, paragraph, or whole text). The current study will look at themes as recording units;
2. *Define the categories [themes]*, including whether or not the categories are to be mutually exclusive, and how narrow or broad the categories are to be;

3. *Test coding on a small sample of text*, as this will not only reveal ambiguities in the rules used to code in categories, but often leads to insights suggesting revisions of the classification scheme;
4. *Assess accuracy or reliability* by considering not only intra-rater reliability but also inter-rater reliability by having multiple raters code the same sample of text. Inter-rater reliability was found to be high in this analysis;
5. *Revise coding rules* if the reliability appears to be low;
6. *Return to step 3*, and this cycle will continue until the coders achieve sufficient reliability;
7. *Code all the text* after high coder reliability has been achieved. Creswell (2002) suggested that after coding an entire text, make a list of all code words, cluster together similar codes and look for redundant codes, with the objective of reducing a long list of codes to a smaller, more manageable number (e.g., 25-30). Take this list and go back to the data. Try out this preliminary organizing scheme to see whether new codes emerge. Circle specific quotes from participants that support the codes. Reduce the list of codes to get 5 to 7 themes reflecting the participants' experiences. Themes are similar codes aggregated together to form a major idea in the database; and
8. *Assess achieved reliability or accuracy,* as it cannot be assumed that if samples of text were reliably coded, then the whole text body was also reliably coded. Human coders are subject to fatigue and may be likely to make more mistakes as the coding continues. Reviewing the completed

coding is also important as the coder may realize that his or her understanding of the coding rules had change in subtle ways as the text was coded, leading to unreliability.

Quantitative data analysis.

Data were compared from pre-, post-, and follow-up course intervention on three measures using SPSS 13.0. To address Research Question 2, "Can a combined cognitive learning strategies/career counselling intervention program improve at-risk students' GPAs in science-related fields?," grade point averages (GPAs) were compared from the term prior to taking EDPY 397, the term in which EDPY 397 was taken, and the term following the EDPY 397 intervention. A repeated-measures analysis of covariance (ANCOVA) was employed to analyze the data to increase the strength of this quasi-experimental design. ANCOVA reduces the effects of initial group differences statistically by controlling for initial differences between groups before a comparison of the within-groups variance and between-groups variance is made.

In this study the experimental and control group are "equated" on GPA by using the pre-test GPA as a covariate in the ANCOVA. This type of analysis is useful when a researcher cannot select comparison groups that are matched with respect to all relevant variables, and can serve as a post hoc method of matching groups. While ANCOVA can compensate somewhat for a lack of randomized sampling, there still remain assumptions that need to be satisfied (Gall et al., 1996). In addition to the common assumptions such as normality, group independence and equality of variances, ANCOVA has other assumptions that

need to be met as well, including linearity of covariance, equality of slopes, independence of the covariate, and reliability of the covariate. To determine if the assumptions for ANCOVA were met, the data were examined for normality of distribution, equality of variances, linearity, and equality of slopes with descriptive statistics, scatterplots, t-tests, and univariate ANOVA.

Question 3, "Do at-risk students' learning and study skills improve significantly following this intervention?" involved comparison between the pre-test (at the start of the course-based intervention), post-test (at the end of the course-based intervention), and follow-up (after completing their term of study following EDPY 397) results of the ten subscales of the Learning and Study Skills Inventory (LASSI): Attitude, Motivation, Time Management, Anxiety, Concentration, Information Processing, Selecting Main Ideas, Study Aids, Self-Testing, and Test Strategies. As the control group was established from the previous year's cohort of students who were placed on academic probation, data were not available on this variable from the control group. Also, due to a smaller subgroup (n=10) having completed all pre-, post-, and follow-up measures and the assumptions not met for analysis of (co)variance, a non-parametric test was used to determine the mean differences between administrations of the subscales (Friedman test for related samples). The Friedman test can be performed when we cannot make the assumptions necessary for the parametric repeated measures ANOVA.

Question 4, "Do at-risk students have higher career decision-making self-efficacy following this intervention?" involved comparison between the pre-test (at

the start of the course-based intervention), post-test (at the end of the course-based intervention), and follow-up (after completing their term of study following EDPY 397) results of the totaled score of the Career Decision-Making Self-Efficacy Scale (CDMSE). Once again, as with the LASSI, the data from the CDMSE were attainable only from the intervention group. For the same reasons, a Friedman test was applied to evaluate the differences between administrations of this instrument.

As part of an effective research design and analysis, where the discussion centers around what the study intends to do, it is also prudent to discuss what the study cannot and was not meant to do, i.e., the limitations and delimitations of the study. These are discussed in the following sections.

Delimitations of the Study

Prior to discussing the limitations of this study, it is critical to outline the delimitations of the study (i.e., the parameters that the researcher establishes for the scope of the research study) that may affect external validity, in terms of what it does and does not intend to accomplish. The author chose to explore the effect of a cognitive and career development strategy-focused intervention with students on academic probation specifically from a science-related faculty for two reasons. First, it is a small faculty that expressed interest in accommodating EDPY 397 as a pilot course for an acceptable for-credit option course to assist students on academic probation.

Secondly, the researcher's interest is in learning more about students in science-related fields. Results from this study may or may not be generalizable to

students on academic probation/academic warning in the Faculty of Science or in other faculties.

A third delimitation of the study is that the researcher decided to get a quota sample from among those students on academic probation/academic warning, as these are students that are most at risk of dropping out or obtaining a weak grade point average that may risk their future educational and career opportunities. It is likely that students, with an acceptable or good performance according to the Faculty, would also benefit from this intervention and, if successful, this intervention could be applied to a broader population in future research.

Limitations of the Study

The current study was exploratory in nature and, as such, was inextricably accompanied by uncertainty as to whether the methodology and procedure would produce meaningful findings. For the purposes of this research, the population of students who were eligible to participate in this study typically represents approximately 5% of all students in a faculty of approximately 1400 students. It was therefore estimated that 70 students would fit the criteria, and that perhaps approximately half of these students would enrol, with the majority of these staying in the course and agreeing to participate in the study. Despite the determination of a reasonable estimate, it was not possible to determine how many students would choose to sign up for the course, and the numbers enrolled in the first term of the course were far less than expected (N=10). The researcher also

had no control over whether the students chose to complete the course or drop out of the course or study.

Many of the limitations of the study are related to its quasi-experimental design and subsequent vulnerability to threats of internal and external validity. Randomized sampling was not possible, and the sample size was small. Students self-selected for the quota sample (with encouragement from the Associate Dean's office), and this was chosen as a method for participant selection to ensure that each individual within the population of interest (as previously delimited) was given equivalent notice and offer to participate. It is possible that students who chose to participate differed in some way from those who chose to not participate. It is also possible that some students were unable to take the course due to conflicts in their timetable scheduling and consequent availability.

Another quasi-experimental limitation relates to the lack of a true control group – partially due to a small population from which the treatment (intervention) group came, and also due to ethical concerns regarding withholding a potentially beneficial intervention for at-risk students. While using a matched control group from the previous year's cohort may help to minimize some of the threats to internal validity (e.g., history and maturation), interpreting the findings is still challenging (i.e., whether the initial groups were the same before the intervention took place, and to what extent the findings may be generalized).

An additional limitation is in regards to the self-reporting required on the quantitative instruments used in this study. It is difficult to discern to what degree social desirability (i.e., wanting to demonstrate "progress" to themselves and to the

instructors) may have played a role in the students' test scores. The research design attempted to minimize the influence of social desirability by ensuring participants that their grades would not be contingent upon their self-report scores, and through emphasizing that there is a normal range of variability of test scores.

CHAPTER IV

Results

This chapter reviews the findings of a qualitative study to learn about the experiences and perceptions of students in science-related fields who are on academic probation or academic warning. As well, the findings of quantitative analyses are discussed to explore the potential impact of a course-based intervention on students' GPAs, learning and study skills, and career decision-making. The findings of the study are discussed below and are grouped with qualitative or quantitative results, respectively.

Qualitative Results

Pre-course questionnaire.

The pre-course questionnaire was used to collect data to help answer Research Question 1: "What are students' perceptions of the factors that lead to students in science-related fields being placed on academic probation or academic warning?" Seventeen of the 21 participants in the overall study completed the questionnaire. Participants described a variety of factors that led them to being on academic probation or warning in response to the specific question, "Why do you believe you were unsuccessful academically in your previous year of study?" Factors that were mentioned more than once were included in order of frequency. These are presented in Table 1.

According to the feedback provided by students at the beginning of the course-based intervention, students found that they struggled most with issues around lack of attention and concentration for the academic tasks at hand, as well

as having a lack of motivation to do anything about it. A few acknowledged their lack of study and learning skills and the negative effect this had on their academic experience. Other responses offered by more than one student included a lack of preparedness for university in general, and having to deal with family difficulties (illness, divorce). Many of the responses reflected a lack of "Self-Regulation," such as a tendency to procrastinate and a lack of time dedicated to studying. Many other responses demonstrated a lack of "Will" on part of the students, including a lack of interest/sense of apathy about university and, for some, this included a lack of desire to go to university in the first place. Some of these students added that they came to university on the suggestion of family members or friends, instead of a personal desire to obtain a degree. Two students attributed their academic difficulty to a lack of career direction (i.e., it was difficult to put in the effort required to do well when they did not know what they wanted to do with their degree).

Table 1

Participants' Reported Reasons for Academic Difficulty

Reasons for Academic Difficulty	n
Lack of concentration/attention	5
Lack of motivation	4
Lacking necessary learning and study skills	3
Not prepared for university (lack of maturity)	3
Family responsibilities/problems	3
Procrastination	3
Not enough time put into studying	3
Studying is boring	3
Lack of interest/apathy	3
Did not desire to go into university	2
Illness/health problems	2
Career indecision	2

Qualitative course evaluation.

The qualitative course evaluation provided valuable information regarding students' experience of taking EDPY 397. While these results do not directly answer a specific research question, the findings are relevant for the implications and future research directions discussed in Chapter 5. Twenty-three students completed the qualitative course evaluation form (it was not possible to separate participants from non-participants due to the anonymity of responses and removal of the researcher from this data collection). Responses and frequencies of the responses are displayed in Table 2.

Some students gave more than one answer to each question. When asked to comment on the quality of instruction in the course, the majority of students used

positive descriptors (e.g.,"good", "excellent"; 78.3%). Many students commented on the quality of the class material and instruction; quality of the instructors and the individualized attention they offered students; and the quality of the learning and study strategy assistance offered to students. Students were also asked about what aspects of the course were most valuable to them. Fourteen students (60.87%) indicated that the study strategies they learned in general were the most valuable. While five students indicated that everything in the course was useful, yet others were specific as to the type of strategy they learned and that was most valuable to them (e.g., time management, mentioned five times). Four students felt that what occurred outside of class (one-on-one meetings with instructors) was actually the most valuable aspect of the course. And when asked what was least valuable in the course, the most frequent response by six students was "none" (26.09%). Two students found the assessment instruments to not be very useful, and indicated that some of the readings were not useful to them. The meetings with instructors were seen by three students as having little worth. Ten students (43.48%) offered a final comment that the course was useful; other comments described it as "enjoyable" (two responses) and recommended it to all first-year students (two responses).

Table 2

Participants' Responses to the Qualitative Course Evaluation Questions

Question	Response	n
1. Comment on the quality of instruction in this course.		
	Positive general descriptor (good/excellent/fine/top notch/great)	18
	Class material explained well; clear	5
	Instructors were knowledgeable	3
	Additional appointments/one-on-one attention valuable	3
	Class material is useful; applicable	3
	Instructors were helpful and genuinely interested in students	2
	Helped me improve learning and study strategies	2
2. Which aspects of the course were most valuable?		
	Study strategies/tips (general)	14
	Everything was valuable	5
	Time management	5
	One-on-one meetings with instructors	4
	Self-regulation strategies	4
	Learning and Study Strategies/Career Assessment	3
	Increased self-knowledge as a learner	2
	Goal setting	2
3. Which aspects of the course were least valuable?		
	None; all was valuable/useful	6
	Learning and Study Strategies/Career Assessment	4
	One-on-one meetings with instructors were too frequent	3
	Some readings not seen as useful (not applicable/not on exam)	2
4. Are there any other comments you wish to make about this course?		
	Helpful/useful/highly recommended	10
	Should be made available to all (first-year) students	2
	Class was enjoyable	2

Semi-structured interview.

The data from the thirteen interviews provides a unique perspective on the experience of students in science-related fields who end up on academic probation, the variety of factors that contribute to their situation, what they have tried changing to improve their academic performance, how taking the intervention course has helped, and their recommendations regarding the course. The responses from these participants reflect many common themes of the perceived impacts on their academic performance. These themes fall predominantly in two areas: Academic Factors and Non-Academic Factors (see Table 1). Other themes include: Positive Changes Made Prior to taking the intervention course; how the intervention course was helpful; and Recommendations for the intervention course.

Despite the diverse majors and ages among this sample of interviewees, many themes were common across participants. As per Weber's (1990) content analysis procedure, sub-themes were clustered into broader categories to form themes. Because of the complexity of many participants' responses, many of the units of data reflected ideas that were relevant to more than one theme. These data were re-examined and categorized under the most relevant sub-theme. The results are organized and presented under headings matching those themes, outlined in Table 3.

It is important to note that there is no hierarchy to the order in which main themes and sub-themes are presented in Table 3. Each of the themes is considered equally relevant in understanding the participants' experience. The themes are,

however, organized somewhat chronologically. Not all quotations under each theme could be included. The quotations presented have been chosen either because they were representative of a few voiced experiences and perceptions among the participants, or because the participant has shared a distinct yet noteworthy experience or opinion. In some cases, certain possibly identifying details have been omitted in order to protect anonymity. All names have been changed and references to specific postsecondary institutions have been omitted to help protect the identities of participants.

Table 3

The Experience of Students in Science-Related Fields on Academic Probation

Students' Perceived Factors Contributing to Placement on Academic Probation/Academic Warning

- Academic Factors
  - Ill-fated Attitude Towards School
    - "Getting By" in High School
    - Low Motivation for University
    - Misguided Assumptions/Expectations
  - Directionless
    - Career Indecision
    - Unhelpful Career Guidance
    - No Role Models
  - Difficult Adjustment to University
    - Heavy Workload
    - Lack of Structure
    - College Vs. University
  - Institutionally Disconnected
    - Unaware of University Policies and Services
    - Institutional Lack of Interest
  - Lacking Strategies
    - Lack of Learning and Study Skills
    - Exam Anxiety
- Non-Academic Factors
  - Adjustment to New Lifestyle
  - Social/Personal Pressures
  - Family Issues
  - Financial Issues
  - Health Issues

Positive Changes Made Prior to Taking the Intervention Course

- Accessed Resources
- Extended Study Periods
- Attended Classes

Intervention Course Helpful

- Increased Goal-setting
- Increased Self-Care, Stress Management
- Increased Resourcefulness
- Setting Boundaries/Priorities
- Concept of Intelligence
- "Big Picture"
- More Efficient and Effective Learning Strategies
- Time Management/Organization
- Gave Hope for Change; Confidence

Recommendations for the Intervention Course

- Make Available to All Incoming Students
- How the Course is Presented to Students
- Application to Specific Fields of Study

Academic Factors

Participants discussed a wide variety of factors related to their academics as having impacted on their academic performance. Main themes included an ill-fated attitude towards school; being directionless career-wise; having a difficult adjustment to university; feeling institutionally disconnected; and lacking strategies. These themes, as well as the corresponding sub-themes, are discussed below.

Ill-fated attitude towards school.

Participants' comments fell within common sub-themes of having an attitude toward their studies that was not compatible with academic success. They spoke of being able to "get by" in high school with relatively no effort and achieve decent grades, whereas now the same (lack of) approach no longer is effective. They also spoke of having very low motivation for attending university, and due to extrinsic reasons they ended up pursuing studies at university. Finally, they identified numerous misguided assumptions and expectations that were not fulfilled regarding university life. These sub-themes are further outlined below.

"Getting by" in high school.

Several of the participants indicated that, in their high school years, they were satisfied with the academic performance they were able to achieve without putting in a lot of effort. Most of them said that their university experience has been considerably different, and that they have not been able to succeed with the same approach at a post-secondary level. Doug, a 25 year-old fourth-year

Environmental Conservation Sciences student, discussed his high school experience, where he succeeded based on his talent, skills and prompting from teachers, compared with his current struggle in university:

> In high school I wasn't very serious about academics. I could do reasonably well when I wanted to because I knew I actually had the talent and my professors [sic] told me that I had the skills that I really needed. And I could pull off an honours average when I really wanted to try. But I just...I wasn't all that serious about high school either, but I actually did better in that environment than I did in university because I'm more of a person that needs prompting. And in high school you get that sort of prompting from the teachers, that extra push and I could do reasonably well to very well, depending on the circumstances.

Maya, a 30 year-old second-year Forestry major, is now back at university for the second time to pursue better employment prospects, following her first attempt out of high school where she pursued three years of study in Education, followed by an eight-year break, and eventually a forest technician diploma. She described herself as a "slacker" in high school who "could get by on basically doing nothing."

Brandon, a 28 year-old fourth-year Environmental Conservation Sciences student, also returned to university after having first started university a year out of high school in the Faculty of Arts with no career direction. He later transferred to his current faculty, but was required to withdraw for the first time due to poor academic performance. During this time he took additional credits at a college and then pursued a diploma in renewable resources technology at a technical institute. He also commented on the lack of effort expended in his secondary studies, and that "just being there" was no longer enough in his post-secondary studies:

> I think a large part of that had to do with the fact that through junior high, through high school and everything else, I was very much able to...well pretty much do no work yet get by very well in high school and what not, I did pick a lot up just by being there. Just being there was enough. Here [in university] you've got put a little more in besides just being there. I think I still thought I could get by on bare minimum. Not studying, stuff like that ... my performance changed a little bit but my attitude was changing but not quick enough. Not enough to change my performance.

A subset of students perceived themselves as struggling academically due to lack of ability as well as to having a poor work ethic. Hayley, a 19 year-old second-year Human Ecology student, described herself in this fashion and consequently assumed that her career planning would not involve university:

> For me, in high school, I was not a good student at all. Like I had to go back and upgrade after because I didn't think I was even going to go to university after high school. I was ready to just...basically I was ready to drop out of high school because I was failing everything. So I didn't have a good work ethic in high school, so it was really hard for me to understand how much work had to be put in. So I was really not somebody who loved school at all. It was just not my thing, but I thought well you know...I'll go and it was like a continuing process but I knew it was good for me to go but it was hard to get myself motivated, and realize how much work I really needed to do.

Low motivation for university.

Many participants expressed experiencing low motivation for engaging in their university coursework as well as for even pursuing university studies. Doug described his experience of not having any particular motivation for attending university and how his preferred learning environment was in a different kind of post-secondary institute; however, he attended university on the advice of his parents.

> I wasn't really all that motivated to come to university. It was more of a kind of close my eyes and point to the program that I really wanted to go into ... Actually I really didn't want to go to university in the first place. I

> was already slated to go to a technical institute, I already had qualified for their computing engineering program. But my parents kind of coerced me to go to university because it was kind of the thing to do at the time, they thought. And me leading a sheltered life, I didn't really argue much against it, even though I really had my heart set on going into a technical institute.

He shared his speculations on how he sees this lack of motivation and possible mismatch of learning environment as a major cause of ending up on academic probation, from his experience:

> ...If you don't really have the motivation to be in university and actually accomplish what you need to do, then your academic career is probably going to suffer because you don't really want to do what you do and you don't really want to be here, and that's what I really found. Last term when I was on academic probation I decided I had to prove to myself that I actually I could do this and get some good grades. But before that, I was just like...what am I really doing here? Do I really want to be here? And so almost all the time, I found myself sort of slogging through university and just wondering do I really want to do this? Do I really want to be here? And I was just doing the work and just going through the motions but not really wanting to go through the motions ... I really didn't know what I want to do and I know a lot of people start out going like that, and if you get to like your third and fourth year of university and you're still not sure what you really want to do, like I was, I found that very, very tough going. And that is one of the causes that I found leads to academic probation. Your marks start going down because you don't really want to be here, you don't enjoy being here, and if that's how a student begins to think, then I seriously think that their academic marks may not result...or may just actually start going downhill and they may not actually not do so good. When in retrospect they actually can do very well, but they don't do very well because they just don't really want to be here.

Kelly, a 30 year-old Nutrition major, spoke about the difficulties she encountered in her process of returning to complete high school after having dropped out in grade eleven and becoming a mother in her late teens. Completion of high school was her initial goal, until she realized that a high school education would not suffice in allowing her to succeed:

> ...It [returning to complete high school] was a long process, it was a long three years. And even at that point I never thought of university. It was never a long term goal. I just wanted my grade twelve and I wanted to get a job. And I thought that everything will be fine and when I did get my grade twelve, I discovered that it wasn't enough to get myself ahead.

Misguided assumptions/expectations of university.

Several participants spoke of how their perceptions of university were somewhat misguided – that it was all about fun and freedom, but when they came to university they eventually found out that their perception was not only inaccurate, but threatening to their academic success.

> Trying to think back to what I thought of university, because when I was out of school, I came here just to do lunch with friends and stuff. So I'd come and hang out but you didn't go to classes or whatever. So I thought oh it's going to be so much fun there because you sort of have anonymity, which is good for somebody that may not have enjoyed high school, like me. ...It's like nobody cares what you do, you can do whatever you want, say whatever you want, be whoever you want to be and nobody's going to hold you to it and remember you forever and ever, like the next four years of your life. So I thought oh yes, like it's a good way to start fresh. But I didn't really think about [attending] classes. (Hayley, Nutrition)

> ...To be honest I think part of it was the fact that I just didn't really think it through [what university would be like]. I never really gave it any hard thought. I just thought again it would be a continuation of high school more or less, but with more freedoms I guess. More chances to really choose your own path, as far as what you were to learn. (Brandon, Environmental and Conservation Science)

Some of the participants discussed how the freedom actually created difficulties for them, as it came along with the students taking on more responsibility for their own learning:

> ...You begin to realize that university is actually very, very much different from high school. You're dependent on yourself and only yourself and basically there's no one telling you that you have to do this and that, although they set the deadlines, it's really all up to you controlling your life. And to me that was a shocker, because for most of my life my parents pretty much did everything for me. Before university and even now, I kind

> of led a very sheltered life. (Doug, Environmental and Conservation Science)
>
> I guess I thought it would have been the same as high school, but totally different – you totally got to do everything yourself. (Andrew, Crop Science)

Directionless

"I didn't know what I wanted to do" was a common refrain among participants. They identified dealing with career indecision, having unhelpful career guidance in high school, and lacking role models who had attended university, as factors that played a large role in finding a purpose and a motivation for doing well academically. These sub-themes are discussed below.

Career indecision.

Many participants spoke about their lack of career direction and cited this as a contributor to their academic struggles and eventual status of academic probation. Brandon commented on the difficulties he encountered in finding an enjoyable major, and how in the meantime he "followed along," pursuing what family members and friends had deemed as a suitable career direction. He was later able to reflect on how he did not pursue what he saw as being more reflective of his interests:

> I've been in school...well just to start the story off, I've been in school for quite awhile. I pretty much came to university a year after graduating high school. At that point I had absolutely...it's the typical story, I pretty much had no clue what I wanted to do. Of course my brother, again all my friends, everyone else was going, and I was pretty much just kind of following along, because it was the expected next step. Of course that's fairly typical. In going there again, I went to the arts faculty. Again just for the purpose of exploring what the university had to offer. Of course little did I know that basically first year courses throughout the faculties are pretty much standard. So again I was taking a...again the hard core math

> and chemistry and biology and just these things I guess. Very science oriented. Even though I wasn't [science-oriented] ...
> It's kind of interesting though because my whole family pretty much comprises of commercial artists or engineers, yeah...I just decided that I...I suppose just from a career perspective I thought that being in the sciences would help me out somewhat I guess, so I pursued that. Now thinking back, I suppose if I went into something like history of anthropology or educational psychology, I would have been done much sooner, I think I would have enjoyed my university experience all the more.

Doug also had the experience of lacking career direction and consequently defaulting to his mother's wishes, as well as trying to keep abreast of the career trends and making choices accordingly:

> I really didn't have any goals set whatsoever. And that was one of the main problems... Like I said I pretty much closed my eyes and pointed down. But there was some prompting from my mom. At that part of the game, environmental science was very big when I was going into university. And at first actually I went to food science because there were some fairly good careers regarding food sciences, but that kind of died off. And then I went to environmental sciences when they became very big. So that was the main motivator.

Kelly described her experience of pursuing science related fields, eventually leading to nutrition, despite her interest in pursuing other humanities and social science fields such as English and Psychology, and now wonders if it is still possible for her to pursue one of these better-suited options:

> ...My goal was to get the science side of health and also the holistic side of health. And I thought with this nutrition degree that I would get that scientific aspect of it. Working in a laboratory, which we did a lot of that. And then I applied for a job at a health food store. And I thought well that would be the other side of health. I can get my people skills there, learn about vitamins and so on. And I thought that was an excellent balance, but because I was never a science thinking student ever, I was always more of English...a right minded, creative thinker, I thought why did I do this to myself because I'm just not doing well in the sciences. But I just kept trying and now I'm sort of at the cross roads thinking maybe I should go back and finish my psychology degree, rather than just quit school altogether.

For several of the participants, they felt confident in their choice of faculty and/or occupational choice, and had some ideas about where their interests were, although they were still lacking clarification about what their focus would be:

> I didn't really know where I wanted to go. I'd gotten into the faculty I wanted, which was human ecology. So I knew I wanted to work with people, or else like...just generally with people because I really like the people aspect. So I knew I wanted to end up working with people, but I don't want to be in like medicine or anything like that. I'm much more of realist. I can look at a situation, and go ok, I know how we can help the people here. Or I like to help people be happy with what they've got, or make them happier. And human ecology really is that area, but I didn't really know where to focus when I first got in. (Hayley, 19, Human Ecology)

> I hadn't made the decision but I was kind of [leaning toward] sciences anyways and I felt pretty sure. I didn't really think of anything else that I really like that much, or didn't have too much information on anything else. That was kind of my main one, that I thought if I found something along the way maybe I'd change my mind or something. (Matt, 19, Human Ecology, wants to transfer into sciences)

Others, like Susan, a second-year Nutrition major, expressed a determined interest in becoming a dietician without knowing anything about the occupation, indicating that she did not have the critical occupational information that she would need to ensure that she is making the right career decision:

> First of all I had no real idea as to where I wanted to go with my career path. I know I wanted to be a dietitian, I knew the title, I did not know what they did. I didn't even know anything in relation to the job title. Except the fact that you will be a registered dietitian and so on and so forth.

For some students, the career indecision they experienced had considerable impact on their motivation to continue their studies. For Maya, this indecision resulted in several years of trying out mismatched fields, leading to the point of

frustration and being turned off from post-secondary studies altogether for several years.

> I went for my teaching degree [out of high school]. I went and spent two years there and then I thought well I didn't really like that, so I switched to arts and sciences and took environmental science for one year and then I was tired of school. So I said I'll take a little break, and that break ended up being a big break.

Unhelpful career guidance.

Some participants traced some of their lack of knowledge about their career options to the poor career guidance received in high school. The guidance counsellors were described as unknowledgeable and unhelpful. Andrew, a 22 year-old third year Crop Science major, described his career guidance in high school as comprising career testing with little or no interpretation: "We filled out one of those forms that shows you where your interests are and that was it ... It was pretty much a joke...". Hayley's experience was similar – however, the counsellor discouraged her from pursuing university studies based on the results of the career and personal inventories, which had a marked influence on her self-perception regarding pursuing her post-secondary studies:

> The counselling system in our school was not that great, from what I found, because I went to a counsellor when I was going back to register for school, for upgrading. I went to my old high school for a last minute precaution and I ended up going there. But I went to a counselling service because the counsellor there, she was a new lady at the school, she helped me get back in. But she gave me some little like personality tests. Sort of similar to what I did in the EDPY class. But it wasn't as intensive and she said well according to the type of readings we're giving you here, you're not the type of student that should go into university, you should be thinking about something else. University is not for you. So even before, like a year before even coming here, I was already, sort of in the back of my mind, thinking well if I don't make it I was already told I wasn't supposed to go there, so it's not my fault. Like tests have told me I shouldn't be here.

No role models.

For some students, an added difficulty from their perspective was the lack of any role models among family members or friends who have pursued post-secondary education. They spoke about not knowing what to expect:

> ...The transition was sort of hard. I didn't know what I was going into and I didn't have older siblings to tell me their experiences at university. So everything was just touch and go and see how it goes (Brenda, Human Ecology)

> I had no idea [what university would be like] because I didn't have any friends who had graduated and because the friends that I came here with were sort of like myself. So we all supported one another in a sense ... We didn't know what to expect, no. Because I'm an only child, I didn't have siblings that had gone to university. (Kelly, Nutrition)

Maya felt that if she had had someone who could have given her advice on how to plan her timetable, she wouldn't have ended up taking the courses and combination that she did:

> I thought well ok, I squeaked by. I'll do better this term but I should have planned out my classes better too, because I took two real hard classes together and I didn't know they'd be like that. But I was talking to some guy and he goes you're taking this class too? He goes oh my God, what did he call me...a brave girl he says, for taking these two classes. And I was like well I didn't know, you know. I failed chemistry horribly and my other classes, well I could have did better...

Adjustment to University

Elements of participants' adjustment to university were salient for them among the factors that contributed to their academic difficulty. The workload was heavier than they anticipated, they did not know how to handle the lack of structure compared to their high school/college experiences, and some of them

who attended college prior to university found the environment at the college much more conducive to their learning than at university. These sub-themes are further discussed below.

Heavy workload.

Numerous participants found that the workload at the university level was considerably higher than what they were anticipating, especially for students who had taken time off between high school and university. Hayley spoke about how she underestimated the work that would be involved, which in addition to her uncertainty of what to expect, led to feelings of being overwhelmed:

> I just thought ok, I know it's going to be a lot of work, and I've heard it's going to be a lot of reading, but I didn't understand it meant like hours of work a night. I thought they would still be like in high school where it's just like maybe an hour and a half of work, a night, or even like the whole week, and you'll be set, no problem ... I was so overwhelmed. And I didn't even have a grasp of like how much work I had to be doing ... Plus prior to coming to university, I was out of school for eight months, I was just working. So I didn't touch a textbook or anything like that for eight months and so coming into university, where you still have high school mentality but even that's kind of blurred. You come in and you're not really sure what to expect and how much work you really need to put in. So it was a combination of everything, that it just overwhelmed me all at once. And it just...it took its toll by the end of the year.

For Andrew, transitioning from having worked two years and having time and money to spare to adjusting to full-time studies and the necessary time invested was quite difficult:

> I had taken two years off out of high school and then came to university and it was just a huge change having the course load...I had worked for two years and lived at home and basically lived the good life – had money and it was nice. Then I came to university and then having to put in all that extra work....they say you have to put in four hours a night which is for sure what you have to do and I was just putting in four hours every three

> days or something like that. And obviously the results showed and I got my nice letter [from the Associate Dean, stating "Required to Withdraw" status].

Brenda, a 21 year-old third year student in Human Ecology (Family Studies), spoke about how the coursework overwhelmed her to the point where she would concentrate on one course to the sacrifice of others, or risk being constantly behind in all subjects:

> [University coursework had] A lot more information to process.....just some of the courses I had more reading than usual and I just couldn't catch up or I'd put off one subject and concentrate on another subject and then somewhere along the way...the whole one course I would be behind in.

Kelly became overwhelmed with her coursework and realized that she had taken too many difficult courses at one time, going against her gut intuition:

> I had put myself in a very difficult situation by taking a number of difficult courses in one semester. And in the back of my head I thought this is going to be challenging. And I should have listened to myself. And so I kind of had a sense that I wasn't going to do well, but I just went ahead and just tried anyway.

Similarly, Matt found out that he quickly became overwhelmed with the five difficult courses he took on in his first term at university:

> I went out quite a bit and didn't realize how much time I had to put into studying and getting stuff done and how hard school is going to be. So I kind of just put in five classes right away, like calculus and physics and...not too many easy ones.

Lack of structure.

A common comment among participants was that the lack of structure in university, with no one monitoring students' work, made for a difficult transition. Many participants found that their consequently poor time management skills led to procrastination and poor academic results. Brandon described his experience:

> ...With the way the university was set and again with the way I sort of operate, I suppose academically, it's quite easy to sort of...well the way the universities are set up, it's not quite as structured I suppose as a high school would be. So of course you have much more free time... I floated along but it got to the point to where...obviously a mid term comes up or something else comes up, like holy smokes...I really didn't do anything up to this point and there is so much to cover.

Doug commented on how he preferred the high school environment because he's "more of a person that needs prompting," and got "that extra push" from the teachers that helped him succeed. At university, however, it was a different story:

> And I barely scraped by because...I imagine that's a fairly common kind of scenario. ...And you begin to realize that university is actually very, very much different from high school. You're dependent on yourself and only yourself and basically there's no one telling you that you have to do this and that, although they set the deadlines, it's really all up to you controlling your life. And to me that was a shocker, because for most of my life my parents pretty much did everything for me. Before university and even now, I kind of led a very sheltered life.

Laura, a 22 year-old fourth year student in Environmental Conservation Science, spoke of her struggles with procrastination:

> I was in my third year and I didn't do so well, so then I had four courses and then a correspondence course, so the correspondence course didn't have to be done until later and I...I don't know, I think I had too much time, like I just...I thought I had lots of time so I can just do it later and then I got way too behind and I couldn't catch up in time. And then the next month, I had my normal side courses plus my correspondence course that I hadn't done yet, so I ended up doing six courses at once...

College vs. university.

Several of the participants had pursued college studies, some after high school, and some after taking a few years of university without a career direction. Many of them made references to the differences they saw between their college and university experiences, often favouring the environment they experienced in a

college setting. Brandon attended college and a technical institute following his first stint at university, and shared his observations regarding his appreciation of smaller classes and feeling like an important person in the technical institute environment:

> It [attending a technical institute] was really enjoyable. Again what I liked about it was the fact it was a change of scene. The classes themselves were so much smaller. Obviously you got to know your professors very well. I think in my case you were conspicuous and I think that made a huge difference ... I just found them [technical institute] much more student oriented, but in a very obvious manner ... you felt very valuable while you were attending that institution. You felt that you were needed, and again, they would do everything they could to...lead you in a successful direction. That's the thing. Obviously there is a good portion of work that you have to do as a student obviously to be successful in the program itself, but they definitely pushed you in a positive direction. They wanted you to succeed, that was a definite emphasis.

Kelly reflected on the huge increase in class size over what she was used to at her small college:

> ...I really noticed that you had less contact with the instructors, because I was in a class of thirty for three years [at a college where she completed her high school] and then I went to a class of sometimes three hundred ... And I really had to learn how to pace myself. Whereas when you're in high school courses they often remind you of what it is that you need for the next class. Whereas in a university lecture, nothing like that is mentioned again, other than the first day of the course. So that was something that I had to get used to.

Doug's appreciation of attending a technical institute was their hands-on approach to learning, which fits better with his own learning style:

> [Technical institute he attended] is a little different from university itself, where we learn how to learn over here, and accumulating a knowledge base. Whereas at the technical institute they actually teach you how to do things, hands on, and I'm much more of a hands on person than I am a kind of theoretical person, although I really do enjoy the theory side of it. I'm a little more talented with my hands than I actually am with my mind.

Other students also appreciated the greater similarity between high school and college, as this transition was more of an "easing in" to post-secondary study, particularly for students who moved away from home, like Laura:

> I think it definitely was [a stepping stone]– just because it was different but not too different which going from high school to university probably would have been a lot of bigger step especially cause going from college to university, I went to a completely different city. I didn't know anyone here and...It's more....college and university were more self directed, you do a lot more yourself and it's kind of higher thinking – like more....I don't know, it's more...

Disconnected

Another common experience among participants was their feeling of disconnection from the university. This took form in many ways - a lack of awareness of university policies and the various services available to them to assist them when they are having academic difficulties, and what they perceived as being a lack of interest at the university level in them as students, aside from the tuition money they pay. The paragraphs below further discuss these sub-themes.

Unaware of university policies, services.

The lack of familiarity with the policies regarding withdrawal from courses, as well as not knowing where to access advising and other student services that would assist them in making decisions regarding their program, were reasons also named by many participants as being contributors to their unsuccessful academic outcome. Matt discussed how he ended up failing two courses that he felt he could have withdrawn from earlier, but that he was unaware of the withdrawal date:

> Like there was a point too, the first term, like I didn't know about the withdrawal date or whatever from courses. So like about probably two weeks after somebody said that to me but it was too late by then. Where I kind of thought I'm stuck with these two classes, I hope I...kind of got to do pretty good in them ... I was stuck with two [on a 9-point scale] ....

Other students shared their experience of finding out they were required to withdraw, how they did not expect the news at the time it arrived, and how they weren't sure how to proceed at that point.

> I got a letter in the mail in October saying that I've been required to withdraw. So then I was like ok.....this is a problem! So then I went to my academic advisor - well, to our faculty office and said what do I do? I got this letter and now ... Well I knew I didn't do that well, but I didn't think I did so bad that I would be required to withdraw. (Laura, Environmental and Conservation Science)

> I had no idea of what must be done, what are the procedures. I didn't even know about the requirements for the internship until this year. So certain things that were just such total blanks to me, it didn't lead me to any motivation. I didn't have a real purpose, I didn't know my purpose and I didn't know what I needed. I didn't even know about the grade point requirement to stay in the program. I just know that as long as you are in the program you're in the program. I was not even aware that my marks were at risk until at the very end of the year when I...well, just a month or so before the next fall term, which was in September. So maybe about August or July, I received a letter and that really threw me off because I did not receive any warnings because there were people I know and some of them are friends that I associate with, who told me about their warnings during the midterm, when they got their midterm marks back. And had somewhat of a halfway probation warning, more or less, by the end of the first semester, to tell them that you are on warning. Whereas I did not receive that, so without receiving that I had no idea that my marks were in danger and so I just carried out my study habits the way I did, without realizing it wasn't a great one ... I did not know of the little things that you need to do. I didn't care to go for help for assistance or any of the extra potential help that I could have. (Susan, Nutrition)

Institutional lack of interest.

Many of the participants felt that the University was not invested in them as an individual aside from their tuition money, and that the institution is not

interested in helping at-risk students to succeed. Brandon described his experience:

> ...it was a little bit overwhelming I think, just coming in. Again it was just like...you've heard many times before, this is a very large institution. Many faces, easy to get lost. At that point it doesn't really seem like anyone cares a heck of a lot... I think just the fact that the university is offering a program like this [EDPY 397], just to show that there's someone out there who cares how students do here. It's a refreshing change. You think about it, and it's just like man oh man. They're here basically to bleed students dry and again they set you up in your first year pretty much to fail. They really want to weed the people who don't belong here out. But at the same time they still want that first year's tuition which is very important to them.

Andrew also expressed having a similar perception:

> [In high school] if your marks dropped they'd pull you aside and say is everything ok? Or do you need more help here or here....but yeah, university, they got your cheque, whatever ... no one is going to hunt you down. Obviously if you go in to a professor and express concern, they'll help you. But no one is going to find you and say hey.....
>
> ... It [attending a technical institute] was really enjoyable. Again what I liked about it was the fact it was a change of scene. The classes themselves were so much smaller. Obviously you got to know your professors very well. I think in my case you were conspicuous and I think that made a huge difference ... I just found them [technical institute] much more student oriented, but in a very obvious manner ... you felt very valuable while you were attending that institution. You felt that you were needed, and again, they would do everything they could to...lead you in a successful direction. That's the thing. Obviously there is a good portion of work that you have to do as a student obviously to be successful in the program itself, but they definitely pushed you in a positive direction. They wanted you to succeed, that was a definite emphasis.

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Lacking Strategies

Some participants acknowledged that they lacked appropriate strategies to maximize their academic success. They identified not having adequate learning and study skills, as well as an ability to cope with test anxiety, as discussed below.

Lack of study/learning skills.

As would be expected, participants encountered academic difficulties that they saw as related to their inadequate study and learning skills. Aside from

attempting to study more, Matt and Doug felt uncertain about how they could improve skills, including test-taking and concentration skills:

> I studied a little bit more [than in high school] but I didn't really know what to expect on the tests, I think that was a major part of it. All the tests, some of them only had five questions and if you didn't get that you're kind of...mostly the tests aspect, I didn't really understand... (Matt, Human Ecology)

> My first year I really goofed off a lot and then my second year, when I realized that I was having a lot of troubles because of my goofing off, I decided to get serious. And I kind of started to realize that I really didn't have the skills it took to be in university and I just began really struggling along, trying to make ends meet academically ... I tried to gain some sort of study habit to find out maybe what I'm doing wrong, but the way I tackled it was really kind of bad, because I decided maybe just to extend my study periods, but I really didn't realize that my concentration was seriously lacking, in that department. (Doug, Environmental and Conservation Science)

For some students like Hayley, the realization that she did not have the necessary study learning and study strategies in place to succeed, despite her efforts, was very discouraging.

> I had good intentions at the beginning of the year, at university. But then when...in some classes it was no matter how hard I worked, it still wasn't enough. Because I guess I didn't have the right techniques to work in the class. By the end of the year, I had just given up. I'm like you know what, I'm not coming back, so I'm not going to put any effort in. Like what's the point in studying if I'm not coming back. It doesn't matter if I fail or whatever, it's my decision, so no point. So I'd pretty much just given up all hope by the end of the year.

Exam anxiety.

Some participants also identified exam anxiety as having a negative impact on their course grades. Laura discussed how she has struggled with it since high school, and how it makes her "blank out" in exams:

> All these exams – even in high school, whenever I had an exam ...I know a lot of my exams I didn't do well on because I knew the stuff, but once I go in there I'm like oh no, I don't remember it, it's on the tip of my tongue.....I just can't remember and then I'd go out of the room and everything would come back.

Brandon spoke to his frustration of knowing the material, and yet having the anxiety paralyze him and impede his academic success:

> I find myself quite often in situations where I feel that, again...like I've got a good grasp of things, I know what's going on, and yet at the same time, and I have the tools to do, or to rectify the situation and yet I don't. And it's very frustrating that way just because I know what has to be done. I know what effort or technique it might involve to complete this, but at the same time I find myself...thoroughly frozen almost. Again it's the anxiety, it's the fear of.... and even now, with how long university has taken for me, just what happens after.

Non-Academic Factors

For many of the participants, non-academic factors that contributed to being on academic probation were at least as prominent as the more commonly discussed academic factors. Non-academic factors identified by participants as being influential to their academic difficulty included adjusting to a new living situation, social/personal pressures, family issues, financial issues, and health problems.

Adjustment to new lifestyle.

Several participants had to re-locate to attend university, for various reasons. Some moved to pursue a faculty/major not available in their local university; others came in from rural areas and found the adjustment to a "big-city

lifestyle" difficult. Both groups of participants identified missing their family and social network.

> The first year was brutal. I was really suffering from homesickness. You're no longer in that comfort zone that you have been so used to, for the past twenty years of your life. And all of a sudden this transition that you're not even near any relatives, and what not ... it did not cross my mind that it would be such a big task. I had problems of...with my roommates actually, that I'd just moved in with because I was placed with roommates that I'd never met before and were from all over the place. And not getting along with two out of three of them really well was... Not the best way to start off the year. So that was not...the atmosphere at home wasn't great and then you're stressed out with all these other factors like school...was not a main issue to me at that time. It was the adjustment. (Susan, Nutrition)

> There's a lot more things to do I guess but I don't like being in the city too much. I like being back home and going out with my friends back there. I go to the city to have fun all the time but I don't like living in the city. (Matt, Human Ecology)

Ashley spoke about the isolation in her new living situation, because she was younger than her peers and could not partake in the same social activities as them:

> I was a year younger than everyone else, so I wasn't legal, I couldn't go to any of the parties or the bars with everyone. So my first year I did a....I was on probation....I don't know, you make friends in the classes, but I wasn't with my family or my friends.

Social/personal pressures.

In addition to adjusting to a new living situation, social and personal pressures added to the difficulty of fulfilling academic requirements. Hayley spoke of how interpersonal difficulties with friends, as well as trying to find a place to "fit" socially and fulfill her perception of societal expectations, created a lot of pressure for her which distracted energies away from academics.

> I had a lot of personal things going on, where it was like I took on too much at once. Like I was having problems with one of my really good friends, so I guess you could call it like a break up with my best friend. So that caused a lot of turmoil. Plus I was trying to get involved in something on campus and it just wasn't working out but I was still trying to force myself to get into it because it was a social situation where I thought it would have been good ... One of the issues was that I was trying to join a fraternity and I'm not like a really big party person. And also I'm outgoing in some situations but in other situations I'm rather shy. So I found when I was in situations when I was going out with fraternity people, I'd become really shy and introverted. So I was trying to put alot of pressure myself there, like oh I should be meeting all these people and yet I wasn't. I had like certain expectations, like when you go to university, everybody tells you in high school if you aren't seeing anybody, if you're not dating anybody, when you to university you're going to find that so many guys are going to like you, because guys have a different mentality when they go to university. And I still wasn't finding anybody that was like that special someone. So it was just...I had so many pressures.

Other participants found it difficult to balance out their coursework responsibilities while maintaining a social life:

> I used to go out a lot with friends, even if I had an important assignment to do or even if I had exams to do because they pretty much did the same thing. See the problem is most of my friends never ended up going to university. They never actually ended up finishing. Some of them never finished high school and some of them went into say NAIT and university and they just dropped out because they didn't have any work ethic. And I hate to say it's a cop out, but it was kind of a bad influence on me at the time because I kind of wanted to do the same thing. (Doug, Environment and Conservation Science)

> Ah.....social aspect yes, it's what I expected but the amount of work....to be able to turn off that social part and get down and hit the books.....I wasn't prepared to make that....social was great but then there has to be a step where you say no, I've got to do work and block everything else out. (Andrew, Crop Science)

Family issues.

Several participants indicated that various changes in their family situation created considerable stress, which often resulted in a negative impact on their academics. Some participants spoke of being unable to spend time at home studying, and if they did, the family turmoil interfered with their ability to prepare for exams. Others were impacted on significantly, even though they are living several provinces away from the family.

> With my experience basically from high school to university, my parents were in the midst of a divorce and obviously there was a lot going on at home. They were separated and what not. And for me, I found myself not really being there a heck of a lot. It's kind of hard to put into words I suppose... (Brandon, Environmental and Conservation Science)

> My major issue at that time had been dealing with family conflicts, they're back in Toronto, but I tend to be the one who gets told each part and has to deal with everyone. So my family....my parents were having problems – my mom had just acknowledged the fact that my dad's abusive and an alcoholic and my sister at the time was living in the household, so she was talking about leaving and divorce and my little sister was totally hysterical the night before finals. So yeah, I didn't do well on the finals. I actually didn't talk to anyone about being exempted, I just didn't think of it at the time. So I failed two of my courses. (Ashley, Nutrition)

Two participants spoke of the major impact that the loss of family members had on their ability to focus on their academics. Kelly saw her mother-in-law's illness progress until she passed away from it, and the family obligations associated with her illness and passing were a significant distractor from coursework. Doug's mother also passed away as a result of illness earlier in his university studies: "...when my mother passed away, that really hit me very, very hard... was pretty much a shocker that put me into the down side."

Others experienced more positive changes that also created stress and pressures that can be difficult to handle. Brandon spoke of his engagement and marriage and how they added to the stress of other changes he was experiencing in his life.

> I actually had a lot of changes in my life at that point too [when I returned to university]. Very big changes as a matter of fact. At that point, in coming back to the university here, I was engaged and then I got married. Yes, those were big steps and again for me, I think a lot of it had to do with the fact that with all these stresses and outside pressures coming in, I still hadn't sort of got a good grasp on how to really manage myself.

Financial issues.

The need for participants to work part-time and/or seek student loan funding and the subsequent debt accumulation was key to their ability to pursue their university education. In the case of part-time employment, the number of hours worked was considerable, and has detracted from their study time. Seven out of thirteen participants indicated that they have been employed part-time during the academic year, and the number of hours worked ranged from four hours to as high as 30 hours per week. Five students acknowledged receiving funding through a student loan (two of whom also worked part-time). Two Aboriginal students indicated that they received funding for their post-secondary education through their band.

For Andrew, making ends meet financially was always on the back of his mind, particularly since he had difficulty accessing student loan funding due to living with his family, who expected him to support himself:

> ...When I upgraded, I only had two months to work in the summer and in my family, my parents paid for their own way through university so they expect it of us and I don't think that they should have to pay. So that's neither here nor there, but when I applied for a student loan, of course they say my parents should be contributing and I didn't have the summer time to make up enough, so it was tight. Well I made it and stuff but it was always in the back of my mind.

Others, like Matt, were able to access adequate funding, but as part of their transition to post-secondary study, they had to learn the hard way that the funds would have to last them throughout the term.

> I had a good student loan. And it was pretty good. You run out of money. Like I ran out of money and I spent a lot going out, I didn't know how much kind of...it took me a semester to learn. Now it's going alright I guess.

Health problems.

Two participants spoke of having health problems that interfered with their academic performance. Maya spoke of having to miss a large part of the term following a surgery and recovery from the surgery, with devastating consequences to her grades:

> I missed quite a bit of school in the first term because I had my appendix out and then I just kept getting sick after. I don't know if it's because of the anesthetic or what, but I was sick a lot ... I failed chemistry horribly and my other classes, well I could have did better, probably if I had applied myself more but I was sick during finals too then. It was just...sick last year. I was sick left and right ...[but] I just wrote my exams ... Well I just figured what can you do, you know. You're not going to go in there and say I'm sick. Right. It just sounds like an excuse right.

For Brandon, he identified his health problems as taking the form of depression following a disappointing academic performance:

> I was sort of...well more or less...I was plagued by health problems. I think partly, well I should say exacerbated no doubt I think by the fact that

> obviously my school performance here wasn't exactly the best. Obviously become depressed more or less...

As noted above, it is clear that there are many factors that participants perceived as contributing to their placement on academic probation (or academic warning). Some participants did, however, note that they were able to facilitate some positive changes in regards to their academic situation prior to participating in this intervention, as outlined in the following section.

Positive Changes Made Prior to Intervention Course

Prior to being enrolled in EDPY 397, several participants indicated that they had taken steps to attempt to improve their academic standing – some which were helpful and others that were less effective. Participants described themselves as having taken the initiative to access resources, such as a dean or other administrative figure, tutors, professors, academic advisors, and counsellors. Comments were also made regarding attempting longer study periods, and attending classes rather than avoiding them, as discussed in the following sections.

Accessed Resources

For some participants, the thought of getting a low enough GPA to be required to withdraw crossed their minds before it happened. Andrew decided to take steps to find out what the process is and how to appeal the request to withdraw from the university in the likely chance that he would, in fact, be required to withdraw.

> Well when I knew what my marks were going to be – because I got my final mark and the final class mark and did my GPA, my average, so I phoned my academic advisor for the first time ever and asked what's going

> to happen to me here? Because I worried they were going to kick me out which of course they did or they tried to, but she said not to worry, we can sit down and talk and write a letter to the Dean.

Another participant, Hayley, sought out the academic advisor on a regularly scheduled basis so that she could create some structure and accountability to keep her "on top of things":

> ... When I was on probation, but let back into school, I said one of my other plans was to go visit my academic advisor once a month. So of course every month you have to make sure that you're on top of things because who wants to go tell somebody who helped you get back into school, well actually I haven't been working at all, I'm way behind. So it made me stay on top of things, which was really good and I'm still seeing her now. We've actually put it up to every two weeks I'll go see her, because I don't have the EDPY class to keep me in check. It's just motivation.

Another student who was here studying from Asia, Jenny, indicated that she sought out academic advisors specifically regarding her ability to pursue nutrition given her language difficulties. Ashley mentioned having sought out not only academic advising, but also psychological counselling to help cope with family difficulties that were interfering with her ability to do well in her studies.

Susan, a nutrition student, required detailed information regarding her internship application process and feels more informed about her options:

> Now I know more of the requirements. I know if you don't meet a certain GPA don't bother applying. And all the other cut offs. And I know that it's not the end of the world to not receive an internship. There are other alternatives and there are a lot of things. And that is very broad.

Brandon spoke about his experience of taking action regarding his weak academic performance, by making a dean aware of his situation and by keeping in

frequent contact with him and soliciting feedback regarding how to proceed, and support regarding his academic difficulties:

> I did reach a point too where I pretty much spoke to the dean of academics at the time, and I was actually in frequent contact with him. And pretty much making him aware of my situation. So I was involved in that capacity. We discussed basically my standing here at the university, just as far as what I wanted to do because he's very good about that. I was a little bit gung ho, just as far as...because at this point it was further on in the year, of my second year at the university, where he actually did give me an opportunity to just basically...leave right now, no problems, don't worry about it. Just come back when you feel you're ready.

Another participant spoke about how accessing assistance from a tutor was invaluable. Yet another international student, Jenny, accessed her Canadian friends and professors as resources in the area of conversation skills, as she felt her difficulty with English was detrimental to her grades:

> Fortunately I have one Canadian friend and she helped me out especially on conversation skills and so at that time I improved my speaking pretty well, but not very fluent. And I talked my difficulty to my English teacher, my biology teacher, they helped me a lot. Sometimes I talk to them after class, they are very helpful to help me and I worked very hard on reading the textbook even though I had difficulty with my dictionary, everything.

Extended Study Periods

Doug, a fourth-year Environmental and Conservation Studies student, struggled with finding a way to improve his academic success. He attempted to improve his studying by increasing the amount of time studying, and found that this didn't work:

> I tried to gain some sort of study habit to find out maybe what I'm doing wrong, but the way I tackled it was really kind of bad, because I decided

> maybe just to extend my study periods, but I really didn't realize that my concentration was seriously lacking, in that department.

Attended Classes

Due to frustration and perhaps boredom, some participants indicated that they had been skipping class frequently, and they later decided they needed to attend class on a regular basis to assist them academically:

> Well my first goal was to try and go to all of my classes. I wasn't skipping alot in my first semester, like I barely skipped anything, but I thought well, all this hard work, you know. Going to class. So I thought ok, I'm going to go to all my classes, but then I ended up with the same professor for my one class, from the first semester to the second semester. Not a good thing because I did not enjoy her class first semester at all. (Hayley)

> Other than that, the major thing I needed to do was acknowledge that I needed to attend all my classes, and that was more just not staying at home and doing the textbook, but going to classes. It's more useful. I honestly don't know why I don't go....but that was my major change – and study techniques changed.
> (Ashley)

Intervention Course Helpful

After their experience of having successfully completed EDPY 397, many participants indicated that they had reaped several benefits from having taken the course. Participants mentioned that specific elements of the course, including emphases on goal setting, the importance of self-care and stress management, learning to be resourceful, and how to set boundaries and priorities were especially salient. They also found it helpful to learn a new perspective on the concept of intelligence, to appreciate how what they are learning means something in the "big picture" of things and how this helps create motivation, and that more effective and efficient strategies were important, including good time management and

organizational skills. This gave them hope for improving their academic outlook and the confidence to persevere; these elements are discussed below.

Increased Goal-Setting

One element of the course that seemed particularly influential on participants was learning how to be able to set realistic goals and to follow through with their achievement by breaking the goal down into smaller, more manageable parts. Kelly commented on how she sets goals for herself since having taken EDPY 397: "I think things out more thoroughly and again the planning on paper. Writing down my goals, my goals for the week, goals for the semester." Susan addressed the significance of knowing how to set goals for herself: "I know what I need to do in order to achieve what I need. So with more of a clear direction in my mind, now I can go forward, as opposed to not knowing where to start, not knowing any of the components required." Ashley related this specifically to career goal setting:

> ... It helped me focus on the fact that I had to have career goals, that I had to start paying attention to the fact that the future was coming three years from now and if I don't open my eyes, I won't get to accomplish my goals.

Increased Self-care, Stress Management

Many participants indicated that the course assisted them to recognize the importance of self-care in managing stress and performing well academically. Hayley indicated that she has recognized the need for her to balance out her academics and other external demands with what she wants to do, including leisure activities in the midst of the stressful schoolwork demands:

> ...I've been under a lot of stress this semester, since like Christmas, like just a lot of personal stress. So I'm trying to deal with that and I've

> actually been trying to take some time and just relax. I'm doing corny things like going to the museum, it's really relaxing and stuff ... even one of my good friends I met last semester, she's like you are the most high strung person I know. So I'm like yes, I know, I have to get back to basics with me and go back to what makes me happy and quit worrying about what everybody else will make them happy and bending to them instead of sticking to what I want.

Doug spoke of trying to adhere to other healthy habits, including eating and sleeping properly and balancing work with play:

> I make sure that I get three meals a day, two at least. I try and actually get as much sleep as I can, a minimum of eight hours per day because I find that's actually really useful to being awake and actually understanding academics. And I try and balance out leisure with work. I make sure that I do have leisure time but I also make sure that I schedule my studies so that I have time to finish what I need to do.

Numerous other participants expressed an interest in what they learned regarding eating and sleeping habits and their importance in our proper functioning. Maya discussed what she learned:

> What I found interesting was your REM sleeps and stuff and how that can interfere with your learning. I never really knew that and I was always one to stay up late studying, or wake up really early to study. I was always a crammer ...

Increased Resourcefulness

Participants spoke of being able to now seek out resources to assist them with their studies, whereas prior to EDPY 397 they felt they wouldn't have been aware of which resources to access or how to find out about them, or else they might have opted not to ask for help when they were having difficulties.

> ... If you were to ask me what do you think you would need to do for this? I would either be able to tell you I have to research more on this topic, which for me is kind of a normal answer, because I actually do like to do a lot of research. Or actually I could tell you the kind of resources I would need in order to be this, the qualification I would need to be this. Whereas

> before I was like well, I kind of want to be this but I don't really know what I have to do for it. (Doug)

> I'm not afraid to ask if I don't understand anymore, which I used to...not ask, and not ask anyone in the class. But I'll approach somebody if I've missed a class, rather than just carry on. ... I guess looking for resources, finding exams and asking the TA or the professor if they have hints or ideas they can give me for preparing for mid terms. (Kelly)

Setting Boundaries/Priorities

Some participants spoke about having to re-evaluate their priorities and set appropriate boundaries to ensure that they could accomplish their goals, regardless of what friends are expecting of them. Hayley described her experience:

> I have to get back to basics with me and go back to what makes me happy and quit worrying about what everybody else will make them happy and bending to them instead of sticking to what I want ... I guess...it's not being selfish but in a way it is. Like it's important to be selfish for yourself and do what's going to make you happy in the long run and it's hard to do that because I'm so used to being like I guess the "doormat" friend, where I'll let people use me and I'm like ok, well as long as you're my friend, I have no problem doing this for them. But I'm learning pretty quick ... It's way better if I just be selfish for myself and do what makes me happy and go against the grain, even if I have to ... I had a meeting with my academic advisor early this week and she's like you really have to stick to what you need to do because that's the only thing that's going to make you happy. I'm learning that more and more, as like all this stuff has been happening and going on, I'm like you know what if I just stuck to my guns and done what I want to do this wouldn't have been an issue.

Doug spoke about how his revised priorities, and how academics are outweighing his previous priority on socializing:

> Before I always used to go out whenever my friends would call me, regardless of what I had to finish. And now I put a lot more priority towards academics and seeing as how my academics is going to lead towards how well my career is going to go, I put a lot more motivation and effort into that.

Maya compares her more balanced current lifestyle with how she used to be and how everyone else's concerns came first:

> I've done up schedules for myself, so that I have an idea of what the month has in store for me and where I should be putting my time. Or how I should be using it, especially with work and when I'm going to get my study time in. Plus I don't overextend myself because I'm always telling people I'll do this, I'll do that, and then I don't have any time for myself or I'm always rushing to get stuff done, like last minute stuff. Stuff like that, so that's really helped me. It takes a little effort though to actually stick with it but it does help once you do.

Concept of Intelligence

For some participants, they felt that learning about the concept of intelligence and the incremental view of it (i.e., that intelligence can be increased) was very helpful, and it went against their previously held beliefs that "either you've got it or you don't," which minimize motivation to improve.

> I believed that IQ was already set. I definitely remember a questionnaire we took, I think it was...or a question they asked us whether or not we thought IQ was something you were born with or something that you could create yourself. And I definitely thought that you were born with it. So it was new to me that you could change it. You could change what you know and how you know it. (John)

> I thought basically if you were smart, you were born with it. Either you've got it or you don't. And either you know how to work with what you've got, that's it. I thought I'm not a smart person, so if it just doesn't work out obviously it was not meant to be that way. (Hayley)

"Big Picture"

Some participants, including Laura and Kelly, acknowledged that the course assisted them in determining what the "big picture" was and to actually evaluate what they are learning and why. Kelly commented:

> Looking at the bigger picture in the course, what does this professor, what is this course going to teach me. I think of that right away. And when I'm not able to answer a question for an assignment, I always step back and think well what's the purpose of this assignment, what's it going to teach me. And so I often ask myself those kinds of questions now. Whereas I never did before.

More Efficient and Effective Learning Strategies

Most of the participants indicated that they increased their efficiency and effectiveness in using learning strategies, and that this was the first time through all their years of education that they were taught how to improve their study strategies. Even though they felt they were familiar with some of the concepts, the course helped things to "click":

> I needed to be told the basic things, to sort of make it all click. Because I wasn't taught, I guess, in like elementary and junior high and high school, how to really study and stuff like that. And how to plan for things and set yourself up goals because it seems like alot of common sense, when you're told in class. Like this is so basic, like I know this already, but then you think wait...I need to be told it again in order for it to actually click. And that's all I needed was just for it all to click together and be told and to...slowly it's all falling into place now.

Doug found that being able to improve his learning and study strategies, that he actually enjoyed his studies more and felt more motivated to do well:

> And that was one of the very main things that I found very useful from ed-psych from 397, is the skills that you actually learn in class ... Study habits. Different ways to actually study. Different ways to read textbooks. Different ways to actually be able to recall information and seeing as how that was very, very helpful, it actually also indirectly influenced motivation. By being able to better recall information, being able to better understand it, being able to better apply it and being able to better basically dissect things and look at them from a different angle. It actually made you want to try harder because you were having more fun so to say, because you're actually doing better.

Some participants, including Susan and Hayley, commented on how the course normalized the need for study breaks while working, and that this brought a sense of relief.

> I really liked hearing that you don't have to study for three hours straight. I really like it when Karen told us that when you study, you're allowed to take...like if you can only concentrate for ten minutes take a short break and then go back because you'll get more done. Because I'd hear friends say I studied for four hours. I'm like how can you sit there for four hours and read a book? That just totally had...I could not comprehend it. But then when I heard...I take a break during that time, because I started talking to my friends about the class I was in and they're like oh yeah, I take breaks when I study. And I'm like I thought you sat there for four hours, they're like no. So hearing that you're allowed to take breaks, if you can't concentrate, take a break, relax a bit and then go back to it and you'll learn more. That gave me comfort to know that ok, it's ok that I have a short attention span. So there's ways to work around that.

Participants also commented on learning other strategies that they found helpful. Several participants indicated that they appreciated learning how to read a textbook properly. One student, Matt, commented that putting himself in a better studying environment was important to him, given that he lived in a fraternity with several other men.

Time Management/Organization

Participants offered unanimous feedback regarding having improved their time management and organization skills considerably through the strategies they learned in the course. Several commented on the importance of having a constant routine of organizing time and using it accordingly:

> I would say that time management I suppose for me, has always been an issue. That definitely did change. I found myself at least setting up more or less a constant, or I should say a very static...schedule where I would

> devote, again this particular hour to doing this. After class I would do this and it would not change for that point. For me, in the past it's like 'alright, I've done class, relax'. That was the end of it. (Brandon)
>
> I write everything down. I pay attention to my calendar more. I think the key for me was just to write everything down because I always thought that I could remember everything, appointments, but I need to write them down so I don't miss them. That's something I've changed. And just planning out my week ahead of time. So looking at what I have to do during that week, so that I don't miss deadlines or cram for a midterm or an assignment that I need to work on.
> (Kelly)
>
> ... I never realized how important it was to have a schedule that you have to stick to. Because basically if you have your week laid out and you know exactly what you should be doing, you know what to expect. It's not like I don't know what's coming ahead in the week ahead. I know I have to go to class, but I don't know when I'm going to fit anything else in. So as soon as I set a schedule for myself last schedule, oh my goodness, so much easier. Like I knew when I was going to be studying, so I had, even though I was only in three classes, I had all my studying done for the day, so at night I didn't feel guilty going out. But before, like...I didn't study during the day whenever, I would go hang out with friends. So I'd go home but I'd be so tired. I wouldn't study and then I'd be like I knew I should have studied but I've got to go to bed, got to go to school tomorrow. But as soon as EDPY [course] said ok, you should be sticking to a schedule and be able to have it like flexible enough so that you can fit things in, if something happens, but still you should be able to stick to the general guidelines. So you know what to expect and nothing really surprises you. (Hayley)

Gave Hope for Change; Confidence

A common sentiment among participants was that the course reinforced the material that they already knew, and that it is also possible to improve one's academic standing when on academic probation. This in turn was perceived as a confidence booster, which encouraged some participants to try harder:

> ... The course reaffirmed a lot of material I suppose which I already knew about. It gave proof to me that studies do exist where people like me behave in these particular ways, and have done these particular things and have succeeded or changed themselves. I've always known about that. In

> going to this course though, the nice thing is...it's hard to explain but it almost served again as a push for me to...well heck you can do these things and things do work. So why not give it a try ... the confidence is definitely sort of been boosted, without a doubt. I think just the fact that the university is offering a program like this, just to show that there's someone out there who cares how students do here. (Brandon)

> It feels alot better knowing that I can actually do what I do and having a new kind of goal in mind, being able to want to get into computer science and being able to actually apply all the skills that I have, my newfound skills and actually accomplishing a lot more. It feels good and actually I feel like I want to do it.
> (Doug)

Recommendations for Intervention Course

Participants were invited to share their recommendations for future offerings of the course content and process. Their suggestions included: making EDPY 397 available to all incoming students as a proactive measure in first-year university; to be sensitive to how the course is presented to students, so that it is not interpreted as "course for dummies;" and the additional thought to tailor the strategies more to specific areas of study. These themes are further discussed below.

Make Available to All Incoming Students

Participants offered recommendations that they felt would improve other students' experience in the course. Most participants commented that they felt this course should be made available to *all* incoming students, instead of waiting for them to struggle academically and end up being required to withdraw from the university. Some felt that this course would be best offered at the high school level.

> ...It's like you could use this kind of knowledge before you even get to university. When I was in high school, I was the worst student and I just thought well, whatever. I've already got what I got, so you can't change it. And so you need to be told younger, that you can work harder, you just have to learn different techniques to do it. It's like you need to be told. (Hayley)

> I actually think that this course would be really useful to a student who is coming into university or maybe a post secondary education because even though alot of students maybe do well, or do mediocre, I think there are some skills that they really could gain from this ... It was an enjoyable course in my opinion. And I think that students would be able to gain a lot of insight into their own skills or lack of skills, and be able to actually do a little bit better in university and be able to build up some of their skills for their careers, later in life. (Doug)

Ashley and Doug, however, did acknowledge that many students coming into university would not choose to take the course, because they feel quite confident about their academic ability coming in from high school.

How the Course is Presented to Students

Related to the previously mentioned concern, some participants felt it was important to be careful of how a course such as this is presented to students. Some

were concerned that it would be mistaken as a course for "slow" students and that it would be stigmatized.

> I think if you're in a position too though, where this course was offered and given a thorough run down of what it had to offer. And again not really presenting it in a manner where ok, for you students who have no clue or who are pretty slow, we have this great course that's offered...things like that. Not that you presented that way but I'm just saying presenting in such a way where it just becomes a course of interest. Something that would definitely be an asset to being here at the university. (Brandon)

Hayley added that the course would be seen as being more appealing by demonstrating how other student's GPAs increase, as many students are in pre-professional programs and need to maximize their academic success. She felt students would be more responsive to it framed in this positive way rather than because they don't have basic study skills.

> They just have to make sure that it doesn't come off as just a basic study skills class, even though it's not study skills but...it just has to be sure it's presented in an appealing way. And I think it's a really good thing is seeing students who's GPAs increase.

Application to Specific Fields of Study

Despite the breadth of material covered in the course, some participants would have liked to have seen greater emphasis on how the learning and study strategies are applied to specific fields of study. Doug addressed this wish, although he realized the course is meant for a broad audience:

> They teach you so many skills and how to apply them to all the studies. I wish they'd be able to maybe go into a little more detail and say this is how you can apply it to math, this how you can apply it to English, this is how you can apply it to chemistry, this is how you can apply it to studying for medicine, this is how you can apply it to studying for psychology. It was really, really general but I believe they just did it that way because there wasn't much time.

> And they asked us to come in and speak on an individual basis, if you have any problems or difficulties, studying these related fields. Now you know that's all good and true, but students have this tendency to not really go in when they need help.

The following section discusses the various quantitative results noted in this study.

Quantitative Results

Grade point average.

To address Research Question 2, "Can a combined cognitive learning strategies/career counselling intervention program improve at-risk students' GPAs in science-related fields?" a number of statistical analyses were applied. First, descriptive analyses to examine the means and standard deviations were performed and are presented in Table 4.

Both groups (intervention and control) demonstrated an increase in mean from pre-test to post-test; however, the mean GPAs decreased slightly a term later. This was analysed further using a repeated-measures ANCOVA, after checking for violations of assumptions. An examination of stem-and-leaf plots found that the GPA variables were normally distributed. An independent samples t-test using Levene's Test for Equality of Variances determined that equal variances can be assumed ($F=1.861$; $p=.180$) for the pre-intervention comparison of GPAs, meaning that the assumption is satisfied and that the pre-test GPA could be used plausibly as a covariate in the repeated-measures ANCOVA.

Table 4

Means and Standard Deviations for Grade Point Averages

	Pre-test			Post-test			Follow-up		
Group	M	SD	AdjM	M	SD	AdjM	M	SD	AdjM
Intervention	4.427	.743	4.205	5.442	.959	5.352	5.388	.889	5.305
Control	4.014	.938	4.205	5.368	.909	5.446	5.279	.959	5.351

N=21 for intervention and N=22 for control group, except for intervention follow-up, N=19 ; AdjM=Adjusted Mean

A scatterplot revealed homogeneous linearity demonstrated between the pre-GPA and the follow-up GPA, but this was not demonstrated between the pre-GPA and the post-GPA. ANCOVA is, however, fairly robust with respect to violations of the assumption of homogeneous linear regression (Glass, Peckham, & Sanders, 1972). Finally, the assumption of homogeneity of regression lines was examined and found to be tenable, $F(1, 37) = .134$, $p>.05$. The ANCOVA results ultimately suggest that the mean GPA of students in the course-based intervention is not significantly different than the mean GPA of students in the control group when using the pre-test GPA as a covariate, $F(1, 38) = .026$, $p>.05$).

Other findings related to GPA among the EDPY 397 participants are notable. Prior to taking EDPY 397, 70% of the at-risk participants' GPAs were unsatisfactory; following EDPY 397, only 20% of participants continued to have an unsatisfactory GPA.

Learning and study skills.

The Friedman test was used as a nonparametric measure to answer Research Question 3: "Do at-risk students' learning and study skills improve significantly following this intervention?" as it can be performed when we cannot make the assumptions necessary for the parametric one factor repeated measures ANOVA (Hinton, 2004) with the limited number of complete data sets (n=10 with the follow-up administration). Eight of the ten LASSI subscale means increased significantly over the pre-, post-, and follow-up administrations. These include: Motivation (χ^2_r =6.529; df=2; p<.05); Time Management (χ^2_r =10.308; df=2; p<.05); Concentration (χ^2_r =12.167; df=2; p<.05); Information Processing (χ^2_r =15.436; df=2; p<.05); Selecting Main Information (χ^2_r =16.629; df=2; p<.05); Use of Support Materials and Techniques (χ^2_r =6.324; df=2; p<.05); Self-Testing (χ^2_r =9.897; df=2; p<.05); and Test-taking Strategies (χ^2_r =6.788; df=2; p<.05). A post-hoc analysis for nonparametric statistics (Siegel & Castellan, Jr., 1988) was applied to the significant results to control for Type I error, and significant differences were maintained for Time Management, Concentration, Information Processing, Selecting Main Information, and Self-Testing (alpha = .05). Means and standard deviations are presented in Table 5.

Table 5

Means and Standard Deviations for LASSI scales

Scale	N	M	SD
Attitude			
Pre-test	10	31.9	4.46
Post-test	10	33.7	3.65
Follow-up	10	33.0	3.71
Motivation			
Pre-test	10	27.9	4.98
Post-test	10	31.6	3.92
Follow-up	10	29.9	4.48
Time Management			
Pre-test	10	19.0	6.48
Post-test	10	24.9	4.43
Follow-up	10	25.2	5.88
Anxiety (Management)			
Pre-test	10	23.8	5.73
Post-test	10	27.3	5.19
Follow-up	10	27.8	6.26
Concentration			
Pre-test	10	23.0	7.20
Post-test	10	27.8	5.90
Follow-up	10	27.0	5.85
Information Processing			
Pre-test	10	23.0	6.38
Post-test	10	29.3	4.45
Follow-up	10	28.5	4.77
Selecting Main Information			
Pre-test	10	15.0	4.52
Post-test	10	20.0	2.71
Follow-up	10	19.6	3.78
Use of Support Techniques			
Pre-test	10	22.2	5.61
Post-test	10	25.8	3.58
Follow-up	10	24.2	3.74
Self-Testing			
Pre-test	10	21.5	6.65
Post-test	10	27.3	3.20
Follow-up	10	26.0	5.85
Test Strategies			
Pre-test	10	26.7	5.19
Post-test	10	30.8	4.29
Follow-up	10	30.4	3.69

Career decision-making self-efficacy.

Question 4, "Do at-risk students have higher career decision-making self-efficacy following this intervention?" was also addressed using the Friedman test. Overall career decision-making self-efficacy was significantly greater following the course-based intervention (χ^2_r=11.128; df=2; p<.05). Subscale data were also analyzed in this manner, and four of the five subscales demonstrated increases that were statistically significant. These include: Accurate Self-Appraisal (χ^2_r =10.308; df=2; p<.05); Goal Selection (χ^2_r =7.200; df=2; p<.05); Making Plans for the Future (χ^2_r =7.316; df=2; p<.05); and Problem Solving (χ^2_r =6.513; df=2; p<.05). A post-hoc analysis for nonparametric statistics (Siegel & Castellan, Jr., 1988) was applied to the significant results, and significant differences were maintained for the overall career decision-making self-efficacy, and the subscales of Accurate Self-Appraisal, Goal Selection, and Making Plans for the Future at an alpha of .05. Means and standard deviations are presented in Table 6.

Table 6

Means and Standard Deviations for CDMSE overall and subscales

Scale	N	M	SD
Total			
Pre-test	10	297.3	43.87
Post-test	10	345.8	40.76
Follow-up	10	353.2	59.09
Accurate Self Appraisal			
Pre-test	10	59.7	8.73
Post-test	10	70.2	7.97
Follow-up	10	70.2	11.44
Gathering Occupational Information			
Pre-test	10	161.2	15.24
Post-test	10	70.9	11.84
Follow-up	10	72.3	14.28
Goal Selection			
Pre-test	10	59.3	8.58
Post-test	10	68.1	7.62
Follow-up	10	72.0	11.05
Making Plans for the Future			
Pre-test	10	59.5	12.34
Post-test	10	68.6	9.05
Follow-up	10	69.5	14.54
Problem Solving			
Pre-test	10	57.6	9.36
Post-test	10	68.0	8.84
Follow-up	10	69.2	10.51

CHAPTER V

Discussion

The overall research objective of this study was to learn more about the experience of students in science-related fields on academic probation. In particular, the author wanted to explore the factors related to academic difficulty, as identified by participants who have taken an intervention course designed to improve their learning and study strategies and sense of competency in making career decisions. The author also wanted to determine if a course-based intervention could assist students to increase their grade point averages and to clear academic probation or warning. The research findings are discussed below, along with a review of the implications for theory, education, and counselling. Implications for future research are also discussed.

Perceived Factors Contributing to Academic Probation/Academic Warning

Participants' perceived factors that contributed to their academic difficulties were grouped into academic and non-academic factors. Among the academic factors that participants identified were: an ill-fated attitude towards school, including having "gotten by" with relatively no effort in high school. This led to misguided assumptions and expectations that success in university would be achieved by using the same approach. Many also reported having little motivation to come to university in the first place, with an original plan to either pursue a more short-term post-secondary program, if any post-secondary study were to be pursued at all. As other researchers have found, some participants' parents were

influential the decision to attend university, despite the students' sense that university was not their best choice (University of Saskatchewan, 1998).

Participants' experience of being directionless came out clearly, with their description of having experienced considerable career indecision, unhelpful career guidance, and a lack of role models (e.g., parents, siblings) who had studied at university, that could help them in their career planning and "learning the ropes" about university life (e.g., Ciccocioppo, 1999). As with results from previous research, many students, especially those in the early part of their degree program, lack the knowledge and experience required to make an appropriate educational and occupational choice (Orndorff & Herr, 1996).

A common experience shared by many participants was having a difficult adjustment to university. As noted in the results of previous research with this target group (University of Saskatchewan, 1998), participants in this study perceived the workload to be significantly higher than they had expected. They struggled with the lack of structure, and those who had previously attended college found that university compared unfavourably to their college experience. The sample in this study, although small, contained greater diversity regarding participants' educational paths and age/time when they started university, ranging from those who sought admission directly from high school, to those who took considerable time off before starting (or returning to) university. This differs somewhat from previous research findings that suggest that students who were asked to withdraw tended to take no time off between high school and university (University of Saskatchewan, 1998).

Participants spoke of feeling institutionally disconnected, a sentiment not discussed in previous Canadian research findings (Sorensen, 1999; University of Saskatchewan, 1998). Students spoke of being unaware of university policies regarding withdrawal from courses, and not knowing about student services that would assist them in their educational/career decision-making. They perceived the university as lacking interest in them as an individual student, beyond the tuition money they paid to the institution. According to Tinto's theory (1993), these students' lack of institutional commitment may also impact their goal commitment (program completion). Many of those who had previously attended college found that the university experience compared less favourably to the college experience, in which participants experienced better access to professors, a smaller class size, a hands-on approach to learning, and greater ease of transition from high school to post-secondary study. Another difficulty noted by students, and one for which they accepted the most responsibility, was their lack of appropriate strategies to maximize their academic success (e.g., a lack of learning and study skills, as well as inability to cope with test anxiety.)

Participants also discussed a number of non-academic factors that they felt contributed to their eventual academic probation or academic warning status. They spoke of struggling with adjusting to a new lifestyle, often having had to move away from home and feeling homesick. Some participants had difficulty balancing their academic responsibilities along with the social/personal demands that they experienced. Personal and family issues/difficulties (e.g., deaths of family members, parental divorce) as well as positive pressures (e.g., marriage)

were reported to have caused considerable stress, impacting negatively on their academic performance. Financial difficulties were paramount, and many participants indicated that they were working considerable hours, detracting from their study time. Physical and mental health problems affected some students' performance. The attrition theories of Bean and Metzner (1985) and Cabrera, Nora, and Castaneda (1993) articulate the role of these non-academic factors better than Tinto (1993).

Participants in this study also spoke of the positive changes they have made prior to taking the course, how the course has been helpful, and recommendations for improving the course and enhancing the experience of students who would benefit from taking the course.

Positive Changes Made Prior to taking Intervention Course

Prior to being enrolled in EDPY 397, a few participants indicated that they had taken steps to attempt to improve their academic standing – some that were helpful and others that were less effective. Participants described themselves as having taken the initiative to access resources, such as a dean or other administrative figure, tutors, professors, academic advisors, and counsellors. Comments were also made regarding attempting longer study periods, and attending classes rather than avoiding them. It is difficult to discern the impact that these efforts to change, made previous to the course-based intervention being made available, may have had on their probationary academic performance.

How the Intervention Course was Helpful to Participants

Following their successful completion of EDPY 397, many participants indicated that they had reaped several benefits from having taken the course. Participants mentioned that specific elements of the course, including emphases on goal setting, the importance of self-care and stress management, learning to be resourceful, and how to set boundaries and priorities with regards to study time versus social time, were especially salient. They also found it helpful to learn a new perspective on the concept of intelligence, to appreciate how what they are learning means something in the "big picture" of things and how this helps create motivation, and that more effective and efficient strategies were important, including good time management and organizational skills. This gave them hope for improving their academic outlook and the confidence to persevere. Participants' responses reflect their appreciation of having the opportunity to learn the "skill", "will" and "self-regulation" elements of strategic learning, as described by Weinstein & Van Mater Stone (1993).

Recommendations for the Intervention Course

Participants proposed various recommendations for future offerings of the course content and process. Their suggestions included: making EDPY 397 available to all incoming students as a proactive measure in first-year university, or even as a high school course; to be sensitive to how the course is presented to students, so that it is not interpreted as "course for dummies;" and the additional thought to tailor the strategies more to specific areas of study.

Impact of Intervention Course on Grade Point Averages

Findings of analyses conducted to evaluate the effect of an intervention on GPA did not show significant differences between the group that attended EDPY 397 and the matched at-risk control group from the previous year, similar to the findings of Folsom et al. (2002). Despite students' initial increases in GPA following the term in which they took EDPY 397, the mean GPAs for these students went down again slightly in the academic term following the intervention. This pattern of GPAs increasing and decreasing was also seen in the control group. It is possible that the fear of ending up once again in a position of being required to withdraw (which often means expulsion when occurring for a second time) is sometimes enough, without further intervention, to encourage students to do whatever they need to in order to continue in their program. It could also be possible that with increased time at university since they were asked to withdraw, students' increased maturity, cognitive development, and experience at university has been important in their ability to clear probation. From the perspective of Cabrera et al. (1993)'s and Tinto (1993)'s theories, the students' academic improvement could be due to their increased goal identification and commitment, as well as their increased institutional commitment.

Impact of Intervention Course on Learning and Study Strategies

Participants from EDPY 397 reported significant increases in most learning and study strategies. They improved significantly in two of the three subscales that comprise the Skill component of strategic learning, according to Weinstein, Schulte, and Palmer (1987) – Information Processing and Selecting Main Ideas –

and these increases held over to the follow-up testing or, in some cases, went down minimally a term after the course-based intervention. These scales evaluate "students' learning strategies, skills, and thought processes related to identifying, acquiring and constructing meaning for important new information, ideas, and procedures, and how they prepare for and demonstrate their new knowledge on tests or other evaluative procedures" (Weinstein et al., 1987). These findings are congruent with the high value participants placed on learning hands-on study skills (discussed in the latter part of the course-based intervention, following provision of a theoretical foundation; see Appendix A).

Significant increases were also noted on three of the four subscale scores that represent the Self-regulation component of strategic learning, including Concentration, Time Management, and Self-Testing. Weinstein et al. (1987) indicate that these scales measure "how students manage, or self-regulate and control, the whole learning process through using their time effectively, focusing their attention and maintaining their concentration over time, checking to see if they have met the learning demands for a class, an assignment or a test, and using study supports such as review sessions, tutors, or special features of a textbook. Once again, these increases held over to the follow-up testing or, in some cases, went down minimally a term after the course-based intervention, implying that students continued to value and use self-regulation strategies after completion of the course-based intervention.

In contrast, the findings from analyses on subscales representing the Will component of strategic learning showed no significant increases on any of the

scales (Motivation, Attitude, and [management of] Anxiety). These scales measure "students' receptivity to learning new information, their attitudes and interest in college, their diligence, self-discipline, and willingness to exert the effort necessary to successfully complete academic requirements, and the degree to which they worry about their academic performance" (Weinstein et al., 1987). The lack of significant findings could possibly be attributed to many reasons. Some participants spoke of not having wanted to come to university in the first place, while others reported feeling that obtaining a degree is very important. With a small data set such as that in the current study, it is difficult to divide the group and conduct separate analyses to determine if different types of students respond differently to intervention in these areas.

Due to the quasi-experimental nature of this study, and the lack of a true control group that also would have completed this inventory, caution is required when interpreting these findings. There is no way of knowing for certain if the changes are attributable to the course-based intervention (or to some other factor or factors).

Impact of Intervention Course on Career Decision-Making Self-Efficacy

Participants demonstrated significant increases in their overall levels of career decision-making self-efficacy, which implies that their belief increased considerably regarding their ability to successfully complete tasks necessary to making career decisions. Participants' mean scores continued to go up over the three administrations of the Career Decision-Making Self-Efficacy Scale, suggesting that an intervention designed to increase a student's career decision-

making self-efficacy may have long-term positive effects. This finding was also noted by Sullivan and Mahalik (2000). While all five subscales of the CDMSE demonstrate this trend, only three demonstrated significant increases in career decision-making self-efficacy. These include Accurate Self-Appraisal, Goal Selection, and Making Plans for the Future. These findings could possibly suggest that the incorporation of course content and lab activities that address these various aspects of career decision-making self-efficacy (accurate self-appraisal, gathering occupational information, goal selection, making plans for the future, and problem solving), as was done in EDPY 397, may be effective not only in the short-term but also into the future. However, as with the data from the Learning and Study Strategies Inventory, the lack of a true control group means that we cannot know what is causing the increase in scores.

Implications for Theory

Tinto (1993) in his discussion of the causes and cures of student attrition, acknowledged that most researchers have failed to distinguish between different kinds of attrition, namely the difference between involuntary departure following being required to withdraw (academic dismissal) and voluntary departures that occur despite the maintenance of adequate grades. Despite his stance that "there is, in fact, an increasing array of students, young and old, from a diversity of backgrounds who enter higher education unprepared to meet the academic demands of college life" (p. 49) and that he anticipates that the incidence of academic dismissal will consequently increase, he reiterates that "only 15 to 25 percent" of all institutional departures arise because of academic failure, and that

"these departures reflect the inability and/or unwillingness of the person to meet the minimum academic requirements of college work" (p. 82), this implies that we need to know nothing further about the other elements of these students' experience and that they do not merit further study.

The current study's findings show that Tinto's Student Integration Model (1975; 1987; 1993) does not adequately address the concerns of some students, namely mature students. External factors, aside from the model's emphasis on academic and social integration, have impacted heavily on their academic struggles (as also noted by Bean & Metzner, 1985; Cabrera, Castaneda, Nora, & Hengstler, 1992). For many of the participants, especially those who were in their mid-twenties to early thirties, the qualitative analysis showed that academic and social integration within the university were lesser concerns than issues such as addressing having unclear career goals, financial difficulties, and family concerns, as noted in a previous literature review (Day, 2001).

Given the increasing diversity of the student body of most universities, including an increasing number of mature students, researchers need to re-evaluate the dominant theories of student attrition that address the traditional student population, such as that of Tinto (1993), to determine how the growing non-traditional student population's needs are being addressed and to prevent attrition among these students.

Implications for Education

There was considerable variety among participants who were part of the group of students put on academic probation the summer prior to having taken

EDPY 397, including numerous mature students who had never studied at the university level, or had done so many years ago. These students in particular expressed difficulty recognizing the expectations the university had of them. Because their experience as mature students is qualitatively different from those who enter university directly from high school, this sub-sample of students on academic probation would benefit from their own orientation and education regarding learning and study strategies. Many universities have incorporated such an orientation in recent years (e.g., the University of Calgary), in acknowledgment of the changing demographic and the needs of the increasingly heterogeneous body of students.

Participants suggested that more courses such as EDPY 397 should be offered related to learning and study strategies. They also suggested that this course could be valuable, even mandatory, for all students, at either the secondary or post-secondary level. The Administration at the University of Alberta and the science-related faculty were also keen about this type of course-based intervention, and hence the Fresh Start program was established by the Dean of Students in the 2001/2002 academic year. The purpose of the Fresh Start program was to allow students who were Required to Withdraw (RTW) the opportunity to re-establish satisfactory academic standing. EDPY 397: Cognitive Strategies changed its name to EDU 200: Cognitive Strategies for Academic Success and became an integral part of the Fresh Start program, with several sections of the course offered each academic year.

Newman and Doupe (2005) outlined various reasons why institutional "buy-in" could be established for such a program and the EDU 200 course, including alarmingly low institutional retention rates and the increasing presence of Key Strategic Initiatives at the university that focused on student retention. While EDPY 397 was a hard sell to faculties other than the science-related faculty, there are now seven faculties that are participating in the Fresh Start program and EDU 200, including Agriculture, Forestry and Home Economics, Arts, Education, Faculte St-Jean (Francophone campus), School of Native Studies, Physical Education and Recreation, and Science. The results of the Fresh Start program have exceeded the university administration's expectations with more than 50% retention of the participating students, and this reflects a retention rate that is significantly higher than what was seen prior to the Fresh Start program (Newman & Doupe, 2005).

While the buy-in for this type of intervention may have increased considerably across a large university campus, there were several large faculties that remained glaringly absent from the Fresh Start program. For example, a typical Engineering student's timetable is heavily loaded with courses (often up to 6 courses where other faculties typically allow a maximum of 5), in an inflexible schedule with minimal room for non-Engineering elective courses. There is often a high attrition rate in faculties of Engineering, particularly during the first year, and this loss of students continues when students receive the letter identifying their Required to Withdraw status the following spring. While representing a large shift in the typical Engineering curriculum, it may be beneficial to reduce the amount of

content and courses taken at one time so that students have the time to learn and use more sophisticated learning strategies, and to have time to reflect on what they have been learning.

The instruction of strategic learning and career decision-making in both EDPY 397 and EDU 200 is called an adjunct approach, as they represent an adjunct to a curriculum (Weinstein, 1994; 1996). While stand-alone adjunct classes in educational psychology may be well-suited to help students learn about cognitive strategies and how to enhance their development, it is important to acknowledge that cognitive learning strategies are concepts available to learning in all disciplines. A metacurriculum approach, where learning and study strategies are integrated appropriately into the curriculum of a particular field of study, can make explicit the learning strategies associated with success in particular contexts (Weinstein, 1994; 1996). Professors and instructors, accordingly, can be assisted and encouraged to integrate knowledge about learning specific discipline content and learning processes, particularly in courses outside the Faculty of Education in which staff generally have no background in educational psychology. Many universities have a teaching service office in charge of offering professional development workshops to faculty, and such training could be offered in this manner.

Similarly, a metacurriculum approach could be applied to the idea of connecting the course material to its applicability in occupations related to the subject area. This would be especially salient for students who do not see the relevance of their coursework, lack career direction, and who struggle

academically. The University of Calgary's Career Services office has proposed a new initiative in 2005 to incorporate more career-related programming into course time across various faculties and departments, and is collaborating with professors and faculties in this effort. While the content of these programs is more related to job search skills than career exploration and decision-making, these types of topics could also be incorporated into class time through collaboration with career placement services and career counselling services on campus.

Implications for Counselling

The implications for counselling that emerge from this study arise from participants' experiences at both the secondary and post-secondary levels of education. Guidance counselling in high school was described as unhelpful and discouraging, with guidance counsellors basing their advice to students on poorly debriefed career interest and personality inventories. The feedback students receive from guidance counsellors is highly influential, and so it is critical that guidance counsellors receive adequate training in career assessment and interpretation, so that they learn to rely less directly on the findings from the formal assessment to guide the assistance and advice they give to students. This career assessment and interpretation should be grounded in a theoretical base, such as Super's (1990) developmental approach. Super discussed how secondary and post-secondary education usually takes place during the "exploration" stage of career development, and it would be prudent for guidance counsellors to become familiar with the tasks that typically occur during this stage of career development.

The findings also suggest that students on academic probation may benefit from an intervention designed to increase their career decision-making self-efficacy. Researchers (Betz, 2004; Betz and Voyten, 1997; McAuliffe, 1992) suggested how counsellors can use interventions based on Bandura's (1977) four ways of increasing self-efficacy. Performance accomplishments can happen when counsellors assign career decision-making tasks and straightforward homework that allows clients to feel successful. Encouraging clients to engage in activities such as information gathering interviews and job shadowing, and using the experiences of other students who have successfully made fulfilling career choices, are ways to enhance their vicarious learning of occupational options. When counsellors support and encourage their clients in these efforts, they are engaging in verbal persuasion. Exploring clients' feelings about the career decision-making process taps into the emotional arousal they experience, and counsellors can teach clients anxiety management, relaxation techniques, and how to monitor self-defeating thinking regarding career planning (Sullivan & Mahalik, 2000). Incorporating these structured interventions into a counselling relationship along with the Career Decision-Making Self-Efficacy scale, assists to provide focused goals for counselling with a quantifiable measure of intervention success. This can be especially valuable with the short-term interventions typically offered in post-secondary student counselling centres (McAuliffe, 1992).

Some participants discussed having significant non-academic factors impacting on their academic performance, including dealing with the adjustment to university, social and personal pressures, family issues, financial issues, and health

issues. Turner and Berry (2000) found in the results of their longitudinal research on students presenting for counselling services that an average of 70% of clients reported their personal problems were affecting their academic progress. Nearly one in five students seeking counselling services reported that they were considering withdrawing from the university because of their personal problems. The authors found support for the role the counselling centres can provide in increasing student retention and graduation rates, and suggest that counselling centres and universities need more research and programs to specifically improve retention and graduation rates for first-year students who are struggling in both their personal and academic lives. The findings from the current study support this call for further programming in student services areas for this subset of the student population, such as workshops to assist students with learning and study skills.

As students required to withdraw from university may stand out as a particularly deficient group in terms of academic performance and behaviours, Sorensen (1999) suggested that the students performing at the bottom of the distribution may benefit from being identified and counselled before they are asked to withdraw from the university. Willett (2002) further proposed that students on academic probation that receive mandatory follow-up counselling (at least one visit) prior to enrolling, to assist them in designing an achievable academic plan, experienced greater persistence behaviour, decreases in course withdrawals, and decreases in course units attempted.

Implications for Future Research

The current study was an attempt to look at change across three terms of study with regard to students' grade point averages and their scores on measures of learning and study strategies and career decision-making self-efficacy. The sample size, however, was small and became smaller due to attrition at follow-up data collection a term after completing EDPY 397. Future research could also look into the improvement seen in the control group's grade point average, despite no intervention. Further longitudinal research studies with larger sample sizes and over a longer period of time are warranted to determine what the long-term effects of an academic and career intervention may be in retention of at-risk students.

Newman and Doupe (2005) recently discussed in brief the longitudinal study that was being established with participants from the Fresh Start program, to learn more about the long-term experience of students on academic probation. They indicated that information on several student variables was being collected. These variables included: High School matriculation; gender; Faculty upon entrance to university; rural versus urban; age; university transfer vs. direct entry; and scores on the Learning and Study Strategies Inventory. Gaining a better understanding through this type of research allows us to better serve the diverse needs of the student population via programming that meets these needs, for example, assisting students to understand and cope with their experience of transition to post-secondary education (Arthur & Hiebert, 1996).

Again given the small sample, it was not possible to fully explore the heterogeneity in the population of academic probation students in the current

study. The participants in this study described a myriad of factors that contributed to their academic difficulty, and further research would inform us more about specific recommendations for these different subsets of students on academic probation. While the author was interested in particular to learn about students in science-related fields that find themselves on academic probation, participants' responses to the open-ended interview questions did not reveal specific concerns related to students' fields of study. In general, larger population and sample sizes are advantageous as they would (a) allow for differentiation between types of students on academic probation; (b) permit the use of a stronger research design, where randomization and true control groups can be incorporated and threats to internal and external validity can be minimized further; and (c) subsequently, increase the power arising from the data analyses, with greater options for statistical analysis than is possible with nonparametric tests.

In summary, this study involved the creation of a course-based intervention that proved unique in the literature, with its combined career and learning and study strategies intervention. Participants reported through qualitative feedback and self-report quantitative instruments that they did increase their learning and study strategies and their career decision-making self-efficacy and felt that this course was important in making this happen. They also reported seeing positive changes in their grade point averages, despite these changes not being significantly different from their contemporaries of the previous academic year. Participants indicated that this course was very beneficial, academically, career-wise, and personally, and many suggested that this course should be offered to all first-year

post-secondary students. Administrators have also seen the value in this type of intervention for students at risk of academic failure, and it is gratifying to see this course evolve and grow, to where it now assists students in various faculties across campus to improve their academic standing. It is exciting to see numerous implications for theory, education, and counselling emerge from this study, and very encouraging to know that further longitudinal studies currently in progress will provide us with an even richer understanding of the characteristics of these students and what helps them to improve academically. Such findings can be applied in many different types of post-secondary environments to assist this often overlooked, yet very important, group of students.

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Appendix A

WINTER 2001

DEPARTMENT OF EDUCATIONAL PSYCHOLOGY
EDPY 397 Course Outline

Course: Introduction to Cognitive Strategies

Instructors: Dr. Karen Kovach, Anna-Lisa Ciccocioppo
Course Time: T R 9:30 to 10:50am Room: CAB 373
Lab Time: approximately 1/3 of the course will be devoted to labs. Check the lecture outline for the labs which will usually be held in the regular classroom.

Dr. Karen Kovach

2-400 SUB
phone: 492-2682 or 492-4991

Office hours: I am in everyday from Mon. to Fri. but I have a number of tasks I do. Please make an appointment to see me at any time you need to or e-mail me.

Anna-Lisa Ciccocioppo

6-141D EdN
phone: 492-5245 (to leave a message in the Ed Psych Dept)

Office hours: TBA

Description: "Student learning and study strategies play a crucial role in helping to determine what students learn in school and how successful they are at becoming lifelong learners." Weinstein, 1998, in Study Strategies for Lifelong Learning, p. 7.

This course is an introductory psychology course and provides students with a background in the concepts underlying basic cognition (learning) and its application to lifelong learning and performance in post-secondary education. Opportunities to participate in laboratory exercises designed to enhance students' application of cognitive strategies, self-regulation and career decision-making are incorporated. The curriculum is designed to help students gradually improve their learning strategies, skills, knowledge, attitudes and motivation so that they can become more effective lifelong learners (also called "strategic learners"). However, in order to meet these goals, students must have the *will* to accomplish the tasks.

Important Reminders: Various assessments will be used to help you monitor your skills and knowledge. Please try to have these done as it helps us to make sure that progress is being made.

Requirements: attendance, class participation, in-class assignments, hand-in assignments, readings, lab assignments, assessments, exams, at least one meeting per week with one of the instructors

Grading: The nine point scale will be used as a final grade. The weighting for each of the requirements is listed below.

Class exams and assignments:

Exam 1 – 5% - Jan. 30
Exam 2 – 5% - Mar. 1
Exam 3 – 5% - Mar. 20
Exam 4 – 5% - Apr. 10
If you miss any of the above exams, the weight will be shifted to the next exam.
Final Exam – 30% - 2 hours – 0900 Tues., April 24

Assignment 1 – 10% - Due Feb. 6
Assignment 2 – 20% - Due Mar. 27
Lab Assignment – 5% Due Feb. 15

Participation and Attendance in class – 5%
Lab component: 10% You need to attend all labs and complete the components.

Required Readings and Research Articles: These will be placed in the library for your convenience. See the attached Required Reading List. Some readings will be handed out in class. The Kovach (1999) book is available at the Academic Support Centre.

ASSIGNMENT #1 – Due Tues., Feb. 6

Self-Regulation Plan: Assessing Self-Knowledge

Outline a plan for managing yourself and your time for the semester. With your plan, outline your pre-, during-, and post-strategies. More details later.

ASSIGNMENT #2 – Due Tues., March 27

Alternate Learning Strategy: Strategic Knowledge

Using Weinstein and Mayer (1986), make a set of notes that summarize the essential themes in the article in no more than 3 pages. Your notes may be in any format we have discussed so far or you may create your own system (e.g., use a new type of elaboration strategy). The structure of the article's themes and contents should maintain their original integrity. I do not, however, want the standard summary notes as I assume that you already know how to do this. Again, make note of your pre-, during-, and post-strategies. More details later.

LAB ASSIGNMENT – Due Thurs., Feb. 15. This will be an in-class assignment.

REQUIRED READING LIST

Blum, D. (1998). Finding strength: How to overcome anything. Psychology Today, May/June, pp. 32-38 and 66-73.

Chatterjee, C. (1997). Praising your child: what works. Psychology Today, Sept/Oct, 1 page.

Dotto, L. (1990). REM sleep: 40 winks are worth remembering. The Globe and Mail, Sat., Mar. 24, p. D4.

Fleet, J., Goodchild, F. and Zajchowski, R. (1993). Effective memory. In Learning for Success: Skills and Strategies for Canadian Students. Toronto: Harcourt Brace and Co., pp. 37-52.

Fowler, B. (1999). Critical thinking across the curriculum project: Bloom's taxonomy and critical thinking. Available: http://www.kcmetro.cc.mo.us/longview/ctac/blooms.htm. (9/22/99).

Kovach, K. (1999). A collection of the best learning strategies on earth (2nd Ed). University of Alberta: Academic Support Centre, pp. 1-49. (You can purchase the book at 2-400 SUB for $10).

_____ (1999). Learning Skills Program: Bloom's taxonomy. Available: http://www.coun.uvic.ca/learn/program/hndouts/bloom.html. (9/7/99).

Robinson, D., and Kiewra, K. (1995). Visual argument: Graphic organizers are superior to outlines in improving learning from text. Journal of Educational Psychology, 87 (3), pp. 455-467. READ ONLY pages 455 to the end of the first paragraph on page 457.

Ross, S., Niebling, B., and Heckert T. (1999). Sources of stress among college students. College Student Journal, 33 (2), pp. 312-316.

Salembler, G. (1999). SCAN and RUN: A reading comprehension strategy that works. Journal of Adolescent and Adult Literacy, pp. 386-394.

Turnball, A. (1995). Forget about downtime, slumbering is for REMembering. Equinox, March/April, p. 16.

Weinstein, C. (1988). Executive control processes in learning: Why knowing about how to learn is not enough. Adapted from an address to the NAADE. March, pp. 48-56.

Weinstein, C., and Mayer R. (1986). The teaching of learning strategies. In Whitrock , M. (Ed), Handbook of Research on Teaching. New York: Macmillan, pp. 315-327.

LECTURE OUTLINE

We will stick to this schedule as closely as possible. There may be changes in some of the lectures.

DATE	TITLE	READING
Module 1	Cognition, Self-Regulation and Strategic Learning	
Jan. 9 – 11	Introduction to the course Skill, will and self-regulation -5 broad categories of knowledge	-Weinstein (1988) -class handout
Jan. 16	Lab1 – CDMSES, pre course form	
Jan. 16	Lab2 - LASSI	
Jan. 18	Pre-, post-, and during-strategies	-handout
Jan. 18	Lab3 – Strong	
Jan. 23 – 25	Self-management -as it relates to time -as it relates to stress -as it relates to test anxiety	-Kovach -Ross et al. -Dotto, Turnball
Jan. 30	**EXAM #1**	On lecture material, handouts, readings
Feb. 1	Lab4 debrief LASSI	APA handout
Feb. 1	Lab5 MBTI	
Module 2	Five types of knowledge	
Feb. 6 – 13 ***Feb. 6 – Assign #1 due***	-review exam #1 -self-knowledge general motivation self-esteem/self-efficacy goal setting career/decision making	-Chatterjee -handouts
Feb. 15	**Lab6 – in-class assignment due at end of class**	
Feb. 27	achievement motivation optimism	-handouts -Blum
Mar. 1	**EXAM #2**	-all material since exam #1
Mar. 1	Debrief CDMSES	
Mar. 6 – 15	-task knowledge Bloom's taxonomy -review exam #2 -content knowledge -context knowledge -strategy knowledge memory	-handout -Learning Skills Program, Fowler -handout -handout -Weinstein & Mayer -Fleet et al.

Mar. 15	MBTI debrief	
Mar. 20	**EXAM #3**	All material since exam #2
Mar. 22 – Apr. 3 ***Mar. 27- Assign #2 due***	-rehearsal strategies -elaboration strategies -organization strategies -conclusions Review for Exam #4	-Kovach -Weinstein et al, Robinson et al., Salembler
Apr. 5	Lab9 – repeat LASSI	Last day of class
Apr. 5	Lab10 – repeat CDMSES	
Apr. 10	**EXAM #4** Review for Final Exam	All material covered after exam #3
April 24, Tues. 9:00 – 11:00am	**FINAL EXAM**	**ALL MATERIAL AND THEMES COVERED IN THE COURSE**

LECTURE SCHEDULE (for instructors)
Guideline only

Lectures: ("Ref" means that these are the instructors' references; "Rd" means that this what you need to read, "Hdout" means you will receive this reading in class.)

DATE	TITLE	INSTRUCTOR	READING(S) And References
Lec 1 – Sept. 6	-what's it all about? -skill, will and self-regulation		Ref – Schunk, Weinstein et al. Rd. – Weinstein (1988)
Lec 2 – Sept. 8	-5 broad categories of knowledge students need		Ref – Schunk, Weinstein et al. Rd – Weinstein Hdout, Dotto
Lab 1-3 Sept. 11	LASSI	Anna-Lisa	assessment
Lab 2-4 Sept. 13	CDMSES	Anna-Lisa	assessment
Lec 5 - Sept. 15	Pre-, post-, and during-strategies		Ref – Weinstein et al
Lab 3-6 Sept. 18	Strong	Anna-Lisa	assessment
Lec 7 – Sept. 20	-self-management as it relates to time		Rd - Kovach
Lec 8 – Sept. 22	-self-management as it relates to stress		Rd – Kovach, Ross et al.
Lec 9 – Sept. 25	-test anxiety and its management		Ref – Mueller Rd - Kovach
Lec 10 – exam – Sept. 27	EXAM #1		All material covered in lectures, readings, class handouts
Lab 4-11 Sept. 29	Review LASSI		debrief
Lab 5-12 Oct. 2	MBTI	Anna-Lisa	assessment
Module 2 – Five Types of Knowledge			
Lec 13 – Oct. 4	-exam review -self knowledge		Ref- Weinstein et al.
Lec 14 – Oct. 6	-motivation (general)		Ref. – Dweck Rd. - Chatterjee
Lec 15 – Oct. 11	-self-esteem/self-efficacy	Anna-Lisa	Ref – Dweck Rd – Woolfolk Hdout
Lec 16 – Oct. 13	-goal setting	Anna-Lisa	Ref – Weintein et al. Rd – Woolfolk Handout
Lab 6-17 – Oct. 15	-careers/decision making	Anna-Lisa	Lab assignment due at end of class
Lec 18 – Oct. 18	-achievement motivation/ optimism		
Lec 19 – Oct. 20	-optimism exercise		Ref – Dweck, Seligman Rd – Seligman Hdout, Blum
Lec 20 – Oct. 23	EXAM #2		Lectures, readings, class handouts (all material

			since last exam)
Lab 6-21 Oct. 25	CDMSES	Anna-Lisa	debrief
Lec 22 – Oct. 27	-review exam -task knowledge		Ref – Weinstein et al., Bloom Rd – Learning Skills
Lec 23 – Oct. 30	-Bloom's taxonomy		Rd – Learning Skills Program, Fowler
Lec 24 – Nov. 1	-content knowledge		Ref – Weinstein et al. Rd – Weinstein Hdout
Lec 25 – Nov. 3	-context knowledge		Ref – Weinstein et al. Rd - Handout
Lec 26 – Nov. 6	-strategy knowledge		Ref – Weintein et al. Rd – Weinstein & Mayer
Lec 27 – Nov. 8	-memory		Ref – Fleet et al. Rd – Fleet et al., Kovach, Turnball
Lab 8-28 Nov. 10	Debrief MBTI	Anna-Lisa	assessment
Lec 28 Nov. 15	EXAM #3		. Lecture, readings, class handouts (since Exam #2)
Lec 29 – Nov. 17	-rehearsal strategies		Ref – Weinstein et al. Rd – Weinstein & Mayer
Lec 30 Nov. 20	-review exam #3 Exercise		
Lec 31 Nov. 22	-elaboration strategies		Ref – Weinstein et al. Rd – Weinstein & Mayer, Salembler
Lec 32 Nov. 24	Exercise		
Lec 33 Nov. 27	-organization strategies		Ref – Weinstein et al. Rd – Weinstein & Mayer, Robinson et al.
Lec 34 Nov. 29	-conclusions		
Lab 9-35 Dec. 1	LASSI (again)	Anna-Lisa	assessment
Lab 10-36 Dec. 4	CDMSES(again)	Anna-Lisa	assessment
Lec 37 Dec. 6	EXAM #4		Lectures, readings, handouts (since exam #3)
Final Exam	TBA		

Appendix B

Interview Protocol

Introduction

My name is Helen. Anna-Lisa and I have been working together on another research team for the past four years. She has asked me to talk with you today about the experiences that you have had leading up to your being on academic probation, what that experience has been like for you, as well as about the influence of features of the EDPY 397 course that have been helpful or not helpful to you in improving your learning and study strategies, your career decision-making, and subsequently your academic performance in your program of study.

Through your participation in this interview and in the study, you will assist us in obtaining a better understanding of the experience of at-risk students and the effectiveness of a course intervention. The information collected in this study Doug be used to further research and practice and may have a large impact on educational policies that affect students such as yourself.

Individual, identifiable participant data collected through this interview and from the other sources of data will be held strictly confidential. For purposes of accuracy, the individual interview will be tape recorded and transcribed with names and identifying details altered or removed, and selected quotes may be used in write-ups. The information will be used as part of a thematic analysis and will be integrated with other students' experiences. The tape will be used for transcription and subsequent accuracy check purposes only and will only be accessible to the researcher and a dictatypist. The tape will then be erased.

[Have participants sign the consent form]

Do you have any other questions?
I'll start the tape now. Please state the degree program you are in, major, and year of study.

Questions

[after having asked degree program, major, and year of study]

1) Experiences leading up to academic probation:

- What were the factors that lead to you being on academic probation?

- Tell me about your academic experience in high school.
- What difficulties, if any, did you encounter in your high school courses? What factors do you feel lead to these difficulties? [probes: poor teaching, poor guidance counselling, difficult/confusing material, loss of confidence in ability, lack of interest, lack of career knowledge/goals, lack of sufficient personal and/or academic support]

- What kinds of career guidance did you receive in high school (if any?)

- What did you want to do career-wise when you were in high school?

- What was the transition from high school to university like for you?
  [e.g., rural to urban move? relocation? loss of peer group & separation from family? loneliness? heavier workload? too steep of a learning curve?]

  - What did you think university would be like? Was it like that?
  - What were your goals when you first entered university?
  - How did you find the workload?
  - How did your academic performance change from high school to your first year of university? What do you think influenced this change?

- When did you become aware of your academic difficulties at University?
  - What did you do to try and correct it?
  - Did your lifestyle change from high school to university? [What patterns in eating, sleeping, recreation, etc. changed from high school to university? How?]
  - Have financial issues affected your academic program? [probe: have you had to work? How many hrs? Have you had to adjust the number of hours you work during the academic year?]
  - What kinds of career guidance, if any, did you receive at University?

- Have your career goals changed since you came/returned to university?
- How did you choose your current program of study?
  [What and who have been your career influences?]

2) Experience of EDPY 397:

- What new things did you learn in EDPY 397?
- What kinds of information about learning were most valuable to you?
- Were there parts that were not helpful? If so what?
- Did any of this result in a career goal, or a different way to get to your career goals?
- What have you changed in your studying/eating/sleeping/recreation/career planning/personal life as a result of taking the course? [Did your lifestyle change during the term?]
- Do you feel better prepared to make realistic decisions regarding learning/careers? Explain.
- Explain what skill, will, and self-regulation have meant to you as a student. Were you aware of these key components to success before? Which parts were new? old?
- How much of your increased cognitive learning strategies and career decision-making abilities would you attribute to the course? To other factors?
- Anything else you want us to know?
- How early on do you need to know?
- Students telling students – does it matter who tells you?

Appendix C

CONSENT FORM (Part 1; to be kept by the participant)

Title of Project: Intervention Strategies in the Academic and Career Development of At-Risk Undergraduate Students

Investigator: Anna-Lisa Ciccocioppo, Ph.D. candidate, Dept. of Educational Psychology

You are invited to participate in a research project in conjunction with the course EDPY 397: Cognitive Strategies. The purpose of this research is to build on our knowledge of the experience of at-risk students (i.e., students on academic probation or academic withdrawal) and learn more about career development and cognitive intervention strategies that may assist students to improve their academic status.

Through participating in this study, you will assist the researcher(s) in obtaining a better understanding of the experience of at-risk students and the effectiveness of a course intervention, while increasing self-knowledge regarding effective learning and career decision-making strategies and obtaining course credit towards your degree. As this course was modeled after a successful course offered at the University of Texas (Weinstein & Van Mater Stone, 1993), with the additional emphasis on career development, the benefits are seen as outweighing any adverse effects from this study, namely the time required for the pre-course meeting with the investigator and the follow-up interview. In addition to accessing the data collected throughout the course through the laboratory components, the investigator requires access to your secondary and post-secondary transcripts for grade point average data collection.

This information will be used to further research and practice and may have a large impact on educational policymaking. The group findings of the study will be submitted for publication in scholarly journals and for presentation at scholarly conferences. Your individual grades and findings will be kept strictly confidential among the investigator and research assistants. Prior to database entry, participants will be assigned an arbitrary identification number. Individual participant data will not be singled out and any identifying features will be removed. Data will be kept in a secure cabinet and will later be destroyed.

Your participation in the research study and your academic success in EDPY 397 are not contingent upon each other, despite data being collected through components of the course. You will be asked to sign a consent form and seal it in an envelope, and the instructors will not know who is participating and who is not until after final grades are assigned. You may choose to not participate in the study. If you choose to participate, you have the right to withdraw from the study at any time without academic penalty. You may remain in the course and obtain credit without remaining a participant in the study and with no consequence to your grades resulting from your withdrawal.

If you have any additional concerns, please contact: Anna-Lisa Ciccocioppo, Ph.D. candidate, Department of Educational Psychology, or Dr. Len Stewin, Department of Educational Psychology, len.stewin@ualberta.ca

STATEMENT OF INTENT TO PARTICIPATE

I have or intend to register in EDPY 397: Cognitive Strategies. I have read the course outline, the information provided above on the consent form, and understand that I have been asked to participate in a research study. I understand the benefits and risks involved in taking part in this research. I understand that by providing my agreement to participate, that I grant the instructors of the course permission to access my academic transcript for grade point average purposes. I also understand that I may contact the aforementioned persons at any time for further information about the research study. I acknowledge that I am free to withdraw from the study at any time without academic penalty and without having to withdraw from EDPY 397. I understand that confidentiality will be maintained throughout the study and that individual, identifiable data will not be communicated in any format.

Please place an "X" next to the statement that reflects your intentions.

I agree to take part in this research by having my data from this course included in the group data analysis. _____

I do not want to be involved in this research and would like my data from this course excluded from the group data analysis. _____

_____ _____
Signature of Participant Date

_____
Printed Name

_____
Address

_____
E-mail address

_____
Phone number

STATEMENT OF INTENT TO PARTICIPATE IN INDIVIDUAL INTERVIEW AND CONSENT FOR AUDIOTAPE RECORDING

The purpose of this individual interview within the context of my participation in the research study associated with the course EDPY 397 has been explained to me by Anna-Lisa Ciccocioppo, investigator and doctoral candidate in the Department of Educational Psychology. As explained on the original "Statement of Intent to Participate" that I have signed, I understand the benefits and risks involved in taking part in this research.

I understand that for purposes of accuracy, the individual interview will be tape recorded and transcribed with names and identifying details altered or removed. The tape will be used for transcription and subsequent accuracy check purposes only and will only be accessible to the researcher and a dictatypist. The tape will then be erased.

I acknowledge that I am free to withdraw from participating at any time without penalty. I understand that confidentiality will be maintained throughout the study and that individual, identifiable data will not be communicated in any format. I also understand that I may contact the persons listed below at any time for further information about the research study.

_____

NAME (please print) DATE

_____

SIGNATURE

For further information, please contact Anna-Lisa Ciccocioppo, doctoral candidate or Dr. Len Stewin, Professor and Chair, Department of Educational Psychology (len.stewin@ualberta.ca).

APPENDIX D