AN EXPLORATION OF CULTURAL, INSTITUTIONAL, AND PSYCHOLOGICAL INFLUENCES ON UNDERGRADUATE STUDENTS' ACADEMIC ACHIEVEMENT

by

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Abstract

This study explored the influences of various cultural, institutional, and psychological factors on different measures of postsecondary students' academic achievement. The cultural factors were ethnicity and years living in Canada. The institutional factors included course type, semester course load, campus, and postsecondary experience. The psychological factors related to culture (perceived family orientation, individualism-collectivism, and strength of ethnic affiliation), institution (goal and institutional commitment, and classroom goal structures), and motivation (achievement motivation). A few background factors were considered, including demographic variables such as age and sex, and high school achievement. The study further investigated academic performance for students of different ethnicity in light of these cultural, institutional, psychological, and background influences. Unlike the majority of research regarding postsecondary achievement, this study was conducted at a large, Canadian commuter institution with open admission policies.

Results suggested that particular cultural, institutional, and culturally-related psychological factors may influence students' achievement. For example, along with high school grades, approximately 36 percent of variance in course performance was accounted for through cultural, institutional, and culturally-related psychological variables. A slightly different combination of variables helped to explain approximately 57 percent of variance in overall grade-point-average (GPA). The institutionally-related and motivationally-related psychological factors appeared to contribute little to explaining students' performance. Findings also suggested that students of different ethnicity may achieve at different levels. In particular, students who indicated Anglo-Caucasian ethnicity scored higher in course performance and overall GPA compared to East Asian, South Asian (Indo-Canadian), and students who reported another ethnicity. Further investigation revealed that these ethnic group differences may be associated with culturally-related psychological factors such as perceived family orientation.

For institutional persistence, an attempt was made to differentiate those students who dropped out for academic reasons compared to those who departed due to voluntary withdrawal. Results suggested that three factors (semester course load, sex, and overall GPA) may predict student dropout for academic reasons. Although not as tenable a model, the factors of semester course load, sex, and perceived institutional commitment may help to explain student dropout due to voluntary departure. Implications for future research and limitations to the study are discussed.

Keywords: achievement, higher education, culture, ethnicity

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Chapter 1
Introduction & Literature Review

Educational theories of achievement assume that postsecondary students are motivated to achieve. However, students most often do not achieve academically if the criterion for success is degree completion. In the United States, it is estimated that approximately half to two-thirds of postsecondary students complete their program of study. An analysis of national system data suggested that fewer than 54 percent of students in four-year baccalaureate degree granting institutions graduate within five years following first-year attendance (Geraghty, 1996). A longer term national completion rate for students aged 30 years or younger who attend four-year postsecondary institutions in the United States is about 63 percent according to Adelman (1999), a Senior Research Analyst for the U.S. Department of Education. These estimates vary depending on the criteria according to which rates of completion are measured. However, it is generally acknowledged that close to half of enrollees who enter higher education may not finish with a credential (Allen, 1999; Porter, 1990). Further, this 50 percent completion rate has remained relatively stable since the 1970s and may not only be symptomatic of undergraduate level studies (Burd, 2004). Doctoral level student attrition rates also have been estimated at approximately 50 percent (Lovitts, 2001). Such completion rates imply that major costs for very modest to low returns are being incurred by both individuals and the taxpaying public in the United States higher education system (Organization for Economic Cooperation & Development [OECD], 1999).

In Canada, the picture of rates for completion seems less clear. It is estimated that between 10 percent and 50 percent of students who start postsecondary studies may not finish with a college degree (Lewington, 1996, as cited in Clifton, Perry, Stubbs, & Roberts, 2004). In spite of these rates of completion, enrolments in the higher education system continue to rise. For example, enrolment at Canadian universities recorded its strongest increase in 28 years in academic year 2003-04 (Statistics Canada, 2005). Approximately 748,000 students were registered full-time in universities across Canada, an increase of nearly 100,000 students from 2001-02 to 2003-04. (This dramatic rise in full-time enrolments is in large part due to the double cohort of graduating high school students from Ontario, the largest province in Canada. This double cohort was a result of the Province of Ontario's decision to eliminate Grade 13 as the final year of high school in the province.) There were an additional 280,000 part-time university students in Canada suggesting that one of the significant challenges universities may confront over the coming decade is to expand capacity so as to respond to growing student demand (Association of Universities and Colleges of Canada [AUCC], 2004). However, enrolments for

the community college and institute sectors, which are considered significant components of the higher education system, are not included in these figures. A network of approximately 200 colleges in Canada fulfills various roles primarily related to technical education, vocational training, and university entrance/transfer preparation (Bélanger, Mount, Madgett, & Filion, 2005). It is estimated that the community college and institute segments contribute approximately 900,000 full-time and 1.5 million part-time learners to the Canadian postsecondary education system (Association of Canadian Community Colleges [ACCC], 2005). At any rate, an increase in participation in higher education combined with consistently low rates of completion suggests a need to understand better achievement behavior in postsecondary settings.

To account for poor rates of postsecondary degree completion, various models of student attrition have been proposed. Approximately three decades ago, Tinto (1975) provided a theoretical model of dropout behavior based on a combination of Durkheim's theory of suicide and a cost-benefit analysis from the field of economics. Suicide was posited to be more likely to occur when individuals were insufficiently integrated into the fabric of society. If college was viewed as a social system with its own values and structures, it could be reasonably expected that social conditions affecting dropout from the social system of the college would resemble those associated with suicide in the wider society (Tinto, 1975). This model of dropout required information on both the level of individual expectation of earning a degree and the intensity with which this expectation of obtaining a credential was held. Goal commitment was characterized by the degree to which an individual was generally committed or motivated to earn a college degree. An important facet of Tinto's (1975) model was that it applied to dropout from specific institutions of higher education rather than from the entire system of higher educational institutions. Institutional commitment represented the degree to which an individual was motivated to graduate from a specific postsecondary institution. Tinto's (1975) theory has been referred to as the student integration model.

Pascarella and Terenzini (1980) expanded Tinto's model of dropout behavior by suggesting that pre-college characteristics may be integral to examinations of postsecondary participation. They wrote, "an important issue in the study of college attrition, and Tinto's model, is the extent to which the assessment of differential levels of social and academic integration and institutional/goal commitment contribute to the prediction of persistence/dropout behavior when the influence of pre-college characteristics is taken into account" (Pascarella & Terenzini, 1980, p. 63). Pre-college characteristics included such factors as sex, racial/ethnic origin, initial program of enrolment, academic aptitude, high school achievement, high school extracurricular activities, informal contacts with faculty, parents' combined annual income, and mother and

father's formal education. In addition to Pascarella and Terenzini's (1980) theoretical model, more recent variations of Tinto's (1975) theory have included psycho-social factors such as psychological adjustment, academic and social integration, social support, positive and negative life events, self-esteem, and satisfaction with college (e.g., Napoli & Wortman, 1998). A comprehensive set of cognitive, demographic, institutional, psychological, and social characteristics and their interactions was posited to account for students' decisions to persist or withdraw from college. Today, it is generally acknowledged that a wide range of psychological, social, behavioral, and contextual factors along with pre-college characteristics, goals and institutional commitments, institutional contextual variables, and academic and social integration predict student retention or persistence (Robbins, Lauver, Le, Davis, Langley, & Carlstrom, 2004).

An underlying assumption of theoretical models of student achievement seems to be that students are motivated by the prospect of ultimately earning a credential. Indeed, degree completion appears to be the true bottom line for college administrators, legislators, parents, and most importantly students (Adelman, 1999). However, attaining a degree is not the sole measure of postsecondary academic achievement. For example, in his theory of dropout, Tinto (1975) suggested that under the rubric of dropout, there may be forms of leaving behavior that are very different in character. Distinctions may be made between students who drop out as a result of academic failure versus those students who do so voluntarily. Course performance as measured by instructor assigned grades may be the single most important factor in influencing college persistence, but only when dropout is due to academic dismissal. According to Tinto (1975), dropouts due to voluntary withdrawal often score higher on various measures of grade performance and ability than do many students who persist through the college system. Voluntary withdrawal may relate to a lack of congruency between the desires of the individual and both the intellectual climate of the institution and the social system composed of peers (Tinto, 1975). Also, differences may exist between students who permanently drop out of the postsecondary system versus those students whose leaving may be temporary in nature or may lead them to transfer to other higher educational institutions. Insufficient differentiation between varying forms of dropout has produced contradictory research findings (Tinto, 1975).

Another challenge for systematic analyses of postsecondary student outcomes may be a lack of clearly defined and adequately measured predictors (Robbins, Lauver, Le, Davis, Langley, & Carlstrom, 2004). For example, research that investigates academic achievement of ethnically diverse students generally conceives of membership in particular groupings as a predictor or independent variable, and an objective measure of achievement as an outcome or dependent

variable. Empirical work has suggested that members of particular ethnic groups may not achieve at similar rates compared to members of other ethnic groups on normative-based achievement measures. College dropout rates for Blacks and Hispanics (63 percent and 54 percent) are much higher than those of Whites and Asian Americans (42 percent and 37 percent) (Porter, 1990). Indeed, race can make a potentially important difference in students' chances of finishing college (Astin, 1997).

This type of cross-cultural research on school achievement is often criticized for categorizing those who indicate a particular ethnicity or race (Anglo-Caucasian, Black, East Asian, Hispanic, etc.) with little consideration for cultural differences within these ethnic groupings. For instance, Latinos represent a diverse variety of ethnic groups with unique heritages, yet educational research most often analyzes this group in aggregate (Garcia & Bayer, 2005). Cultural differences in achievement may be difficult to assess because of problems relating to what constitutes membership in a cultural and/or ethnic group. Out of a total population of approximately 29.6 million, Canada was home to almost four million members of visible minorities in 2001 (Statistics Canada, 2001 Census). Visible minorities thus accounted for about 13.4% of the total population, a proportion that has risen steadily from 4.7% in 1981. Visible minorities are defined as persons other than Aboriginal peoples, who are non-Caucasian in race or non-white in colour (Statistics Canada, 2001 Census). The extent to which Canada's racial diversity translates to cultural diversity is not clear. Boundaries that once defined group membership fade in time through intermarriage, conversion, and changing identities (Glazer, 2000). Physical differences change little with the passage of generations and are inherited within families, whereas cultural differences can disappear rapidly (Banton, 2001). Individuals may not be able to change their race, but may change their culture (Glazer, 2000). For example, third-generation Asians in Canada may be more culturally similar to third-generation Anglo-Europeans in Canada than to Asians in Asia.

Although race may be directly tied to physical characteristics such as skin color, hair color, and so on, culture may be socially transmitted or socially constructed, consisting of such things as practices, competencies, ideas, schemas, symbols, values, norms, institutions, goals, constitutive rules, and artifacts (Fiske, 2002). In short, race may be a *trait* while culture may be a *state* characteristic (Banton, 2001). Recent research has revealed that multicultural individuals can spontaneously change the cultural lenses that are available to them through multicultural learning, depending on which cultural perspectives are activated by particular contextual cues. Chinese-Americans, for instance, may not lose their Chinese identity as a result of acculturation. Instead, their Chinese identity may remain intact and may be evoked by appropriate contextual

cues (Hong & Chiu, 2001). Therefore, it may be difficult to determine whether particular thoughts and behaviors are contingent on the situation in which individuals are placed, and/or the cultures which may maintain and evoke these thoughts and behaviors. For example, East Asian postsecondary students may hold high standards for achievement. Whether these students are motivated by the context, such as a competitive classroom environment, and/or cultural factors, such as their parents' emphasis on the need to possess high standards, may be difficult to discern. It is not easy to locate cultural factors in racial group success or failure. In other words, culture does make a difference but it is very difficult to determine what in culture makes the difference (Glazer, 2000).

Studies on ethnically diverse students' academic achievement which also seek to measure differences in cultural factors are much less common, despite likely interpersonal and cultural differences on achievement variables. In an attempt to better understand the relationship of cultural influences on postsecondary student achievement, an exploration of these factors combined with various institutional, psychological, and background variables seems to be required. Rather than associate ethnic group membership with particular cultural characteristics - for instance, simply assuming that individuals who indicate East Asian ethnicity are more collectivist and Anglo-Caucasian students are more individualist - it seems preferable to assess cultural factors empirically. Empirical explorations of the influences of different cultural factors on postsecondary achievement may help to not only discern whether ethnic group differences in achievement may exist but why these differences may be present.

Cultural Factors and Student Achievement

The longstanding influence of Tinto's student integration model as a framework for postsecondary achievement may relate to its comprehensive nature. This said, Tinto (1975) indicated that a large number of questions require further attention, among them, the need to examine the relationship between race and dropout from higher education. He wrote, "it is clear that race is an independent predictor of dropout (independent of both ability and social status), but it is unclear in which ways this aggregate relationship occurs" (Tinto, 1975, p. 119). Proponents of cultural and socio-cultural perspectives have suggested that social and cultural factors play the most influential role in determining students' achievement. Maehr (1974) posited that achievement was a function of more or less ephemeral social expectations that were embodied in social and cultural norms. In a very real sense, a social group tells a person what to strive for as well as how to attain particular ends. The ways in which academic standards are formed and developed occurs from outside-of-the-mind influences. Achievement is related to the socio-

cultural origin of the student and to the socio-cultural context in which the student is educated (Maehr, 1974).

Research has pointed to some remarkable cultural differences pertaining to educational achievement (Boekaerts, 1998). Studies comparing the achievement of White and Black students consistently have shown higher academic success on the part of White students (e.g., Hall, 1975). Further, a study, which examined academic achievement of White, East Asian, Black, and Hispanic students, suggested that White and East Asian students were less likely to drop out of postsecondary studies compared to Black and Hispanic students (Porter, 1990). To help explain these different rates of achievement, researchers have suggested that members of various minority groups have vastly different experiences. For example, Blacks are castelike minorities – those incorporated into mainstream society as a result of slavery or conquest (Ogbu, 1986). Members in castelike minorities are hypothesized to fare poorly in schools primarily as a result of discrimination and stereotyping. A particular stereotype, which suggests that African Americans are unable to succeed in education, may lead to continued underperformance for members in this minority groups (Ryan & Ryan, 2005). Alternatively, East Asians are immigrant minorities – those who chose freely to emigrate from one society to another (Ogbu, 1986). Immigrant minorities perceive education as one of the primary avenues by which to succeed in society. As an immigrant minority, East Asians regard school positively and possess characteristics ideal to the academic setting (Phinney, 1990). This association of East Asians and high achievement in schools may relate to the model minority myth hypothesis. The model minority myth is a stereotype that particular ethnic groups make ideal citizens due to their hard-working and conscientious natures.

Although East Asians are perceived as having characteristics ideally suited for school settings, research shows no significant differences in academic performance that favor Asian American students (Maehr & Yamaguchi, 2001). Instead, studies conducted in Canadian postsecondary settings found that first year grade point averages (GPA) for Asian students were lower than those for European (White) students (Grayson, 1995; Grayson, 1997). The stereotype that East Asian students achieve at higher rates compared to other students may be perpetuated by results from international based assessments such as the Third International Mathematics and Science Study (TIMSS) in which students from East Asian countries such as Hong Kong, Japan, Korea, and Singapore have consistently outperformed individuals from other countries (Leung, 2002). However, little evidence appears to support the claim that East Asian students perform at rates above those of other ethnic groups in postsecondary schools.

The perception that East Asian students achieve at higher rates may relate to the commonly held belief that these students work harder in academic settings. According to East Asian cultural traditions, students who work hard do well in school. East Asians tend to attribute success in school to effort rather than to innate ability (e.g., Holloway, 1988; Holloway, Kashiwagi, Hess, & Azuma, 1986; Kim & Chun, 1994; Stevenson & Lee, 1990, as cited in Okagaki, 2001). The importance of effort and the malleability of human behavior as the route to accomplishment are linked to Confucian doctrine, which has a pervasive influence in East Asia (Chen & Stevenson, 1995). The Confucian ideal of the community man (*qunti de fenzi*) or social being (*shehui de renge*) may enhance the role and awareness of the social collective to which members belong. Here, the motive to achieve need not necessarily reflect a motive to achieve for *me* personally, as much as it reflects more impersonal, social, or collective orientations.

In East Asian cultures, academic achievement is seen as a social or filial duty affecting the entire family. Filial piety, which could be conceived as unconditional respect and obedience towards one's parents and by extension to one's superiors, is a core characteristic of collectivist cultures (Salili & Lai, 2003). In a study examining predictors of academic self-handicapping and achievement, cultural variations in the pursuit and effects of performance goals and perceived classroom performance goal structures were explored (Urdan, 2004). This research hypothesized that the individualism-collectivism cultural distinction would produce differences in the degrees to which individuals pursued achievement goals. Individualists may conceive of themselves and successes in academic settings in ego-oriented ways, while collectivists may perceive themselves and their accomplishments with consideration of group members such as family. Thus, a way in which individualists and collectivists may differ is in family orientation, defined as students' desires to please or provide for family members through academic achievement (Urdan, 2004). Participants for this study were high school students representing a number of ethnicities and nationalities. These participants also identified their generation relative to initial family immigration, namely first, second, or third.

Findings suggested that first generation students scored higher than third-plus generation students on English course performance, family orientation, and various performance orientations. When controlling for the variable of family orientation, generational differences in performance goals, perceived goal structure, and self-handicapping disappeared, suggesting that generational differences on motivational goals and behaviors may be due in part to differences in family orientation (Urdan, 2004). These findings were consistent with prior research, which found that first generation or immigrant students often scored higher on indices of achievement and motivation (Fuligni, 1997; Suarez-Orozco & Suarez-Orazco, 1995, as cited in Urdan, 2004).

It was hypothesized that immigrant students internalized the belief that the purpose of immigrating to North America was to access opportunities provided through the educational system. These students felt obligated to perform well in school to avoid letting their parents down and to be in a better position to care for family members.

The meaning of achievement may be culture-specific and culture may mediate achievement efforts in specific ways. For cultures high in individualism, personal goals are posited to be more important than in-group goals. For non-individualistic or collectivist societies, the needs of the group such as a family are put above individual needs (with the belief that in the long-run, this immediate act of altruism may be beneficial for all) (Markus & Kitayama, 1991). In general, individualism is thought to be more prevalent in industrialized Western societies such as the United States and Canada, while collectivism is hypothesized as more common in traditional Eastern societies such as China and Japan (Oyserman, Coon, & Kemmelmeier, 2002).

However, the prevalence of individualism in American culture versus collectivism in Asian cultures is debatable. Hong and Chiu (2001) examined individualism and collectivism in cross-cultural studies, and indicated that most empirical-based research showed no significant differences between members of different cultural groups. Little evidence, for instance, was found to support the assumption that Japanese were more collectivistic than North Americans. One meta-analysis of cross-cultural differences in individualism and collectivism suggested Americans reported higher levels of collectivism than Japanese, which contravenes the stereotype that Asians are more collectivist (Oyserman, Coon, & Kemmelmeier, 2002).

An explanation for these findings, which suggests little cross-cultural difference in individualism and collectivism, is that the perceptions of cultural factors such as individualism and/or collectivism held by individuals may differ widely from normally espoused societal views. The pattern of relationships at the national, organizational, or group level may not be replicated at the individual level (Bond, 2002). Although pressures exist for individuals within any social system to align themselves with socio-cultural norms, such isomorphism does not always exist. In other words, an individual may conceive of a factor such as individualism-collectivism differently from the way in which the group to which this individual belongs conceives of this factor.

In an attempt to better align individual with group conceptions of cultural factors such as individualism-collectivism, researchers have hypothesized a horizontal-vertical dimension orthogonal to the individualism-collectivism dimension (Singelis, Triandis, Bhawuk, & Gelfand, 1995). The addition of such a horizontal-vertical factor may highlight the possible interplay between individual-level cultural constructs such as individualism-collectivism and group-level values such as equality and respect for authority (Triandis & Gelfand, 1998). Triandis (1995, as

cited in Singelis, Triandis, Bhawuk, & Gelfand, 1995) suggested that the resultant four-square approach - horizontal collectivism, vertical collectivism, horizontal individualism, and vertical individualism - not only suits measurement purposes, but more importantly is supported by much relevant, past research. Each of the resulting quadrants may be described as follows.

(1) Horizontal collectivism is a cultural pattern in which the individual sees the self as an aspect of an in-group. The self is merged with the members of the in-group, all of whom are extremely similar to each other. Equality is the essence of this pattern. (2) Vertical collectivism is a cultural pattern in which the individual sees the self as an aspect of an in-group, but the members of the in-group are different from each other, some having more status than others. Inequality is accepted in this pattern, but serving and sacrificing for the in-group is an important aspect of this pattern. (3) Horizontal individualism is a cultural pattern where an autonomous self is postulated, but the individual is more or less equal in status with others. The self is independent, yet essentially the same as the self of others. (4) Vertical individualism is a cultural pattern in which an autonomous self is postulated, but individuals see each other as different. Inequality is expected as the self is independent and different from the self of others. Competition is an important aspect of this pattern (Singelis, Triandis, Bhawuk, & Gelfand, 1995).

In general, the extent of the influence of individualism-collectivism may in large part relate to one's affiliation with an ethnicity or ethnic group. However, conceptual difficulties surround a construct such as ethnicity. Ethnicity is often viewed as the way in which individuals perceive themselves; individuals can declare what they believe their ethnic origin to be (Banton, 2001). When an ethnic label is chosen or imposed, people may feel that a single label is inaccurate inasmuch as they are part of two or more groups. An individual whose father is of East Asian ethnicity and whose mother is Anglo-Caucasian may not identify with a single ethnic group. As such, determining ethnicity for research purposes is in itself a methodological problem that has often been ignored (Phinney, 1990). To help resolve this conceptual difficulty, subjective affiliation through statements relating to friendship and sense of belonging may complement the extent of association with an ethnic group (Phinney, 1990). Individuals may participate in specific cultural practices and customs. All individuals possess attitudes shaped through participation and association with members from the same and similar ethnic groups. It may be reasonable to assume that individuals whose friends are comprised primarily of members of the same ethnic group may be more likely to possess stronger ties to their ethnic group. In turn, these enclaves of individuals may be more likely to possess cultural factors similar to those located within the ethnic group within which they identify themselves (Nieto, 1996).

The strength of association with an ethnic group may affect and be affected by the processes of acculturation (the processes individuals undergo in response to a changing cultural context) and/or assimilation (an acculturation strategy in which people do not wish to maintain their own culture and seek to participate in the larger society) (Phinney, 1990). For example, non-Western individuals living in Western countries could find that the personal attributes valued by their cultural group are different from the ideals of the dominant culture (Boekaerts, 1998). Over time, cultural factors associated with individuals and their origins may fade as cultural tendencies from the dominant culture are adopted. The rates at which cultural characteristics from the larger society are assumed differ at individual and sub-group levels. Children of immigrant families, for instance, acculturate more rapidly to dominant cultures than do their parents (Farver, Narang, & Bhadha, 2002). Individuals of Asian ethnicity who have resided in a nation such as Canada for their entire lifetimes may possess cultural characteristics very similar to Anglo-Caucasians. Or, individuals of Asian ethnicity may possess cultural characteristics influenced by both Asian and Anglo-European cultures. Ethnic group members may identify themselves as only partly ethnic and partly mainstream due to the effects of these acculturation and assimilation processes (Phinney, 1990).

Consequently, there appears to be little agreement as to what or who constitutes membership in a *cultural* group. Cultures theoretically can, and occasionally are, discrete, bounded systems (Fiske, 2002). Commonalities in cultural characteristics may exist amongst individuals. However, the way in which individuals are grouped with other individuals within a cultural grouping warrants careful attention. For instance, Canadian society is racially diverse. Out of a total population of approximately 29.6 million in 2001, Canada was home to almost four million members who identified themselves as being a member of a visible minority (Statistics Canada, 2001 Census). Visible minorities then accounted for about 13.4% of the total population, a proportion that has risen steadily from 4.7% in 1981. The two largest visible minority groups are Chinese and South Asian (Indo-Canadian), with self-identified Chinese surpassing the one million mark for the first time in 2001 (Statistics Canada, 2001 Census). Certainly, not all members of a particular visible minority group possess similar degrees of the same cultural characteristics. Some individuals of Asian ethnicity may be more collectivist, while others may be more individualist. To complicate matters further, individuals can view themselves as having more than one ethnicity. Individuals' subjective conceptions of their self-ascribed ethnicity may or may not be associated with self-ascribed ethnicity of other members within the same ethnic group.

Not surprisingly, an important problem in research on culture is the lack of a clear definition and understanding of culture from a psychological perspective (Betancourt & Lopez, 1993). This may be expected considering the various definitions of, conceptualizations of, and purposes for the study of culture itself. Advocates of the sub-discipline of cross-cultural psychology most often seek to examine similarities and differences in individual functioning within various cultural and ethno-cultural, ecological groups. Cultural psychologists tend to view culture and behavior as essentially inseparable, implying that cultures may need to be understood in their own terms (Berry, Poortinga, Segall, & Dasen, 2002).

Differentiating between Cultural Factors and Culturally-related Psychological Factors

Regardless of whether one's perspective is grounded in cross-cultural psychology or cultural psychology, researchers have difficulty with examining the relationship between culture and psychology. In particular, measurements of cultural constructs at both cultural and individual levels have been only partially successful (Singelis, Triandis, Bhawuk, & Gelfand, 1995). Problems with the assessment of culture may relate to what actually constitutes a cultural factor. For instance, research on culture and psychology relies primarily on survey methodology. Critics of this form of data collection suggest that it may no longer be possible to confidently assume that cultural values can be measured with attitudinal surveys (Kitayama, 2002). There is increasing evidence that what people say is important to them may not necessarily reflect their actual behaviors or preferences (Peng, Nisbett, & Wong, 1997).

When factors relating to culture are examined through questionnaires, these measures may not necessarily reflect cultural factors but rather individuals' perceptions of these factors. In short, questions on surveys may gauge participants' *perceptions* of their cultural values rather than the cultural values themselves. For example, an earlier cited study, which examined cultural variations in academic self-handicapping and achievement, found that family orientation played an important role in influencing English course performance for first generation or immigrant students (Urdan, 2004). In particular, this study found differences in English achievement and family orientation for first generation students compared to third generation students. The research utilized a self-report measure to assess family orientation. Students rated on a scale the degree to which they were motivated to achieve so as to please or provide for family members. By using attitudinal measures, this study may have assessed students' perceptions of the level to which they wanted to please or provide for family members through academic achievement as opposed to assessing family orientation per se.

The distinction between perceived cultural factors and actual cultural factors is important since the implications drawn from findings concerning the two may differ. For example, proponents of cultural and socio-cultural perspectives suggest that social and cultural factors play the most influential role in determining students' achievement, as achievement is related to the socio-cultural origin of the student and to the socio-cultural context in which the student is educated (Maehr, 1974). If in the previously cited study, first generation students were actually motivated to achieve academically so as to please or provide for family members, and further, these students performed at higher rates, a reasonable link could be made between the culture-related drive to achieve for family (family orientation) and higher school performance. However, if first generation students perceived the extent to which they wanted to please or provide for family members through academic achievement to be greater than their actual culturally-induced family orientation would suggest, researchers would need to ask whether it was the students' perceptions that were related to school performance or their actual family orientation. In this sense, cultural factors reported through questionnaires may really be culturally-related psychological variables. Factors defined as culturally-related psychological factors are individuals' perceptions of cultural variables.

Although surrounded by conceptual confusion, culture may still be a useful and indispensable notion. Culture can be used to connote a relatively unchanging, objective, and stable "way of life of a group of people" (Berry, Poortinga, Segall, & Dasen, 2002, p. 229). In this sense, culture may not be individually perceived, but nonetheless furnished as systems of meanings, collective practices, coordinative competencies, and socially constituted goals (Fiske, 2002). As such, the defining attributes of cultures might best be thought of as fluctuating pressures or tendencies, which may or may not be manifest in a particular individual or context (Singelis, Triandis, Bhawuk, & Gelfand, 1995, p. 243). For example, a cultural factor such as individualism-collectivism may not be present to the same extent across all individuals and/or contexts. Instead, individuals can possess different degrees of individualist and/or collectivist tendencies depending on situations. Thus, the specific contexts in which individuals are placed may influence their collectivist and/or individualist tendencies.

Institutional Factors and Student Achievement

The context of education may have a great impact on learning and achievement (Boekaerts, 1998). The concept of "situated motivation" (Hickey, 1997, as cited in Pintrich, 2003) suggests that contextual factors are paramount to the fostering of cognition and motivation. The contextual approach examines cognition and motivation from the outside and may not necessarily focus on individual, intra-psychological processes. This outside-to-inside examination of achievement motivation may be more popular in educational research than in psychological research because this type of methodology may be interpreted to reflect the belief that teachers really make a difference in influencing students' thoughts and behaviors (Pintrich, 2003).

In a study examining students' motivation, cognition, and achievement, goal structure (defined as the type of achievement goal emphasized by prevailing instructional practices and policies within a classroom, school, or other learning environment) was investigated (Wolters, 2004). This research was conducted with junior high school students as participants located in a suburban school district in the southern United States. Goal structures were categorized into *mastery* - environments in which instructional practices, policies, and norms conveyed to students that learning was important, that all students were valued, and that trying hard was important - and *performance* - environments that communicated to students that being successful meant getting extrinsic rewards, demonstrating high ability, and doing better than others. This research found that students' own views of mastery and performance-approach structures in their classrooms were related to their personal goal orientations. This link was however correlational and not causal, suggesting that students' differing conceptions of achievement may have existed prior to entering the classroom setting, rather than being influenced by that setting.

Clifton, Perry, Stubbs, and Roberts (2004) examined the relationship between pedagogical environments and psychosocial dispositions of students and their academic achievement at a large, mid-western university in Canada. These researchers utilized as the study's conceptual framework human capital theory, a model which posited that students use their knowledge, power of reasoning and critical thinking, and psychological dispositions to obtain better occupations, increase incomes, and advance socially. Human capital theory may be consistent with the cost-benefit component of Tinto's (1975) student integration model. Along with academic and social integration into the postsecondary setting, these researchers included three psychosocial dispositions, namely self-esteem, perceived academic control, and coping strategies in their study. These psychosocial dispositions were conceptualized as being stable or trait-like attributes, while pedagogical environments were hypothesized as less stable (Clifton, Perry, Stubbs, & Roberts, 2004). Using structural equation modeling, this study found that

cumulative grade-point-averages for students from the faculties of Arts and Sciences were largely affected by their own psychosocial dispositions related to academic work. In particular, perceived academic control and coping strategies may have positive influences on academic performance.

Also in this study, a student's faculty was hypothesized to affect the rate at which individuals achieved. Findings suggested that undergraduate students enrolled in Arts programs were quite different from those students enrolled in Science programs (Clifton, Perry, Stubbs, & Roberts, 2004). Arts students were more likely to be older females who were enrolled in less credit hours of course work. These Arts students interacted less often with other students but more often with professors. Arts students reported slightly lower GPAs at semester end compared to Science students. However, detailed analyses using regression methods suggested that performance, as measured by GPA for Arts and Science students, may not necessarily be affected by the faculty in which students were enrolled.

Institutional factors such as academic course load per semester and the type of courses in which students enrolled may have influential effects on performance and persistence. In a study of new college students' success, Szafran (2001) examined the impact of institutional variables such as academic course load and course difficulty, together with additional factors including sex, minority student status, high school rank, high school size, SAT score, attendance at college orientation, and employment, on end of semester and end of year grade-point-average and retention. The sample consisted of first-year students at a comprehensive regional university in East Texas. All variables for this study were derived from the university's official student database. Academic credit load represented the total number of semester hours for which each student was registered on the census date for the semester. Course difficulty was measured by computing the percentile of students receiving a grade in the course of D or F. Individual course difficulty was calculated by averaging the difficulty of all the college-credit, letter-graded courses in which students were enrolled for a particular semester. Various types of regression analyses were utilized to discern the influences of credit load and course difficulty on students' achievement measures.

In terms of GPA, Szafran (2001) found that both credit hours and course difficulty may affect positively students' performance at the end of the semester and end of year. However, the variables of credit hours and course difficulty did not appear to play roles in semester retention. Indeed, few of the variables examined accounted for semester-to-semester retention. The researcher found that credit load may affect continuing student enrolment, but only for one-year retention (Szafran, 2001). This study also found that minority students received significantly lower grades than non-minority students; but, minority status came close to statistical significance

for retention (a positive effect). This finding may suggest that greater resistance to dropout may exist amongst minority students. Further investigation of the relationships of institutional factors such as year of college, course load, and course difficulty, and ethnicity was recommended.

An institutional factor that may heavily influence achievement variables such as grade-point-average and semester-to-semester persistence is the number of postsecondary courses which a student has successfully completed. Generally, researchers have posited that the longer individuals remain within the university or college system, the higher their performance and the greater their persistence. Empirical research has primarily focused on students' first year of study since students new to the postsecondary system are in general more prone to dropping out. The first few years are often cited as critical to determining students' later performance and persistence in the postsecondary system (Graunke & Woosley, 2005). Given that approximately half of enrollees in higher education may not complete a degree, it is estimated that 75 percent of these students leave in their first two years of college (Tinto, 1987). A study examining the empirical link between motivation and persistence at an institution located in the United States southwest suggested that approximately 40 percent of its students were lost between the first academic year and the beginning of the second year (Allen, 1999). First year attrition rates for institutions with open admission policies may be staggering. For instance, academic tracking at a community college in California revealed that a majority of students enrolled in one semester did not enroll in the following semester, as 55 percent of students who registered in the Fall of 1990 did not return for the Spring of 1991 (Fralick, 1993). These figures indicate that the longer students persist, and the greater number of courses they complete, the higher their chance for successful academic performance and the greater the likelihood of further persistence.

Research examining the relationship of academic achievement and retention was conducted at a publicly funded college in Canada's Maritimes (Kirby & Sharpe, 2001). Using two conceptual models of withdrawal, namely Tinto's (1975) student integration model and Bean's (1980) student attrition model, this research sought reasons for student leaving from one semester to another semester in a relatively selective program, namely that in engineering technology. Through student survey questionnaires, and focus groups and interviews with faculty and students, this study found that higher performing students persisted in their studies to a greater degree than their lower achieving peers (Kirby & Sharpe, 2001). Academic difficulty and students' academic problems were the most significant contributors to withdrawal at this postsecondary institution. Also, this research suggested that past academic performance, specifically high school achievement, differentiated between those students who persisted and

those who withdrew. In short, the better an individual performed in high school, the greater the likelihood of that individual remaining in postsecondary studies.

Various institutional factors may then relate to students' achievement. Past research suggests that factors such as academic course load, the type of courses in which students registered, and number of courses individuals have completed, may influence both performance and persistence. Additional institutional factors such as school size have also been posited as influences on student success (Ethington & Smart, 1986). For example, larger institutions may have a higher variety of social and academic communities that allow for greater opportunities for social integration. Students attending larger institutions may have higher levels of social integration which may lead to enhanced achievement at that institution. At any rate, campus size often is cited as having a significant, indirect impact on students' persistence through social integration (Napoli & Wortman, 1998). However, the relationship between a variable such as institutional size and achievement is not necessarily clear. Astin (1997) suggested that institutional size tended to have a negative effect on retention in that students in larger institutions may be more apt to drop out while those in smaller institutions may be more likely to be retained. Nonetheless, a meta-analysis of various psychosocial and study skills factors and college outcomes indicated that the contextual influence of institutional size was virtually uncorrelated with retention (Robbins, Lauver, Le, Davis, Langley, & Carlstrom, 2004).

Differentiating between Institutional Factors and Institutionally-related Psychological Factors

In general, research examining the influence of situations or contexts, in particular the classroom environment and institution, has suggested that various features of achievement situations may be related to students' subjective constructions of achievement (Maehr & Midgley, 1991). However, the nature of the relationship between institutional contexts and school success does not appear to be well understood. One difficulty in understanding the relation between the environment and student achievement may be that the majority of empirical research on constructs such as classroom goal structures relies on self-report questionnaires. When self-report measures are utilized, the actual goal structure within a particular context such as a classroom may not necessarily be assessed. Although adoption of mastery, performance approach, or performance avoidance goals is hypothesized to be influenced by goal-related messages in the achievement context (Ames, 1992; Urdan, 2004), the particular goals adopted may be related more to students' perceptions than situational realities. Students may understand their classroom to be mastery structured, and believe that they are in it to learn, but then react poorly if they

achieve lower grades in the course compared to others in the class. As such, similar to culturally-related psychological factors, perceptions of classroom goal structures may be conceived of as psychological constructs rather than actual contextual conditions.

In a related vein, degrees of academic and social integration measured through self-reports of goal and institutional commitment may not necessarily assess the level at which students are integrated into a particular institution. Rather, the constructs examined may relate only to students' perceptions of their academic and social integration. Individuals who enter the higher education system may have tangible goals in mind, e.g., to achieve a particular course grade, finish with a degree by a certain age, transfer to a professional program, etc. Indeed, an estimated 97 percent of first-time enrollees at baccalaureate institutions intend to complete their degrees at that given institution (Astin, 2004). However, whether these individuals behave in a manner which actually demonstrates commitment to such goals may be questioned. Self-reported measures of constructs such as goal and institutional commitment may not necessarily align with students' actual commitment to a goal and/or institution, but rather to the individuals' perceptions of their degrees of commitment toward a goal and/or institution. If so, the constructs of goal commitment and institutional commitment may best be understood as institutionally-related psychological variables rather than as context-related factors per se.

Motivationally-related Psychological Factors and Student Achievement

Researchers interested in basic questions about how and why some students seem to learn and thrive in school contexts (achieve academically), while other students seem to struggle to develop the knowledge and cognitive resources to be successful, must consider the role of motivation (Pintrich, 2003). Motivational theories are generally concerned with the energizing and directing of behavior. Researchers ask, what gets individuals moving and toward what activities or tasks do students move (Pintrich, 2003)? Historically, two research traditions on motivation have been predominant: 1) research focusing on how people are motivated to do that which others advocate; and 2) research focusing on how people are motivated by personally initiated thoughts and behaviors (Hernandez & Iyengar, 2001). Recent motivational theories of achievement have attempted to combine these traditions. Accordingly, achievement motivation has been construed both as the reason for behavior in achievement settings and as the aim or outcome that the individuals seek to attain in that setting (Elliot & Thrash, 2001). Theories of achievement motivation tend to emphasize quality (the reasons or targets for motivation) rather than quantity (the amount of motivation to achieve that students possess).

The psychological construct of achievement motivation has received considerable attention in educational and psychological research (Elliot, 1999). Achievement motivation theorists have concentrated on reasons and purposes for approaching and engaging in achievement tasks. These researchers generally have distinguished between mastery and performance orientations. Striving toward mastery goals is related to developing competence, gaining understanding and insight, and focusing on the improvement of individual skill. Conversely, performance goals are associated with comparing ability to others, competition, and valuing oneself in relation to others (Midgley, Kaplan, & Middleton, 2001). More recent models of goal orientations have introduced valence, either approach or avoidance, into the mastery and performance framework (Elliot & Harackiewicz, 1996). Initially, achievement goals were conceptualized as mastery-approach, performance-approach, or performance-avoidance. This perspective with three orientations was termed goal theory (Elliot & Harackiewicz, 1996).

Goal theory has been expanded with mastery goals now conceived as mastery-approach or mastery-avoidance oriented, while performance goals are viewed as oriented toward performance-approach or performance-avoidance. This multiple goal perspective suggests that students with a mastery-approach strive to attain task mastery or improvement. In contrast, mastery-avoidance students strive not to fall short of task mastery or not to lose their skills, abilities, or knowledge. Performance-approach students strive to perform better than others, while performance-avoidance students strive not to perform worse than others (Elliot & Thrash, 2001).

Little empirical work has been conducted using this four component model which includes mastery-approach, mastery-avoidance, performance-approach, and performance-avoidance orientations. Rather, several measures of goal orientations using a trichotomous framework have been developed and utilized given difficulties in conceptualizing mastery-avoidance (Elliot & Thrash, 2001). As such, the majority of research examines achievement motivation through a three or even two (mastery versus performance) component model. In a study which sought to predict the academic performance of college students, the researchers examined the role of achievement goals, ability, and high school performance in predicting academic success (Harackiewicz, Barron, Tauer, & Elliot, 2002). These authors posited that motivational variables may play a key role in predicting success, defined by both the normative standard of course performance and by a more personal standard of further interest in the course area. The primary predictor variable, achievement goals, was conceptualized as a situationally specific measure of achievement orientation. When pursuing mastery goals in a learning situation, a student's purpose was to develop competence by acquiring new knowledge and skills. When pursuing performance goals, a student's purpose was to demonstrate competence relative to

others (Harackiewicz, Barron, Tauer, & Elliot, 2002, p. 562). Participants were enrolled in an introductory Psychology course at a large Midwestern university in the United States. Through multiple regression analyses, this study found that ability and high school performance predicted academic performance in both the short and long term. Above and beyond these strong effects for ability and high school performance, the researchers indicated that adoption of performance goals in this course related to higher grades in other courses as well. However, this study found no positive effects of mastery goals on students' performance. Also, goal effects on academic performance were weaker over the long term (Harackiewicz, Barron, Tauer, & Elliot, 2002).

Bandalos, Finney, and Geske (2003) examined the relation of learning (or mastery) goals and performance goals on various learning strategies such as deep-processing of information, and on course achievement at two points during a semester. For undergraduate students in an introductory statistics course at a large, public, Midwestern university in the United States, goal orientations, test anxiety, self-efficacy, strategy use, and time spent on activities such as reading a textbook, working on end-of-chapter exercises, and studying for exams were assessed. Covariance matrices were constructed to report results. Findings from this study offered support for the role of achievement goals as predictors of self-reported strategy use, self-efficacy, and test anxiety. Further, both learning and performance goals were indirectly related to achievement through their relationships with self-efficacy, self-reported strategy use, and test anxiety at mid-semester. However, at the end of semester, only the indirect effects of learning goals were maintained. Direct relationships between learning goals and/or performance goals and postsecondary course performance were not well established.

In another study, the relation of achievement motivation goals and academic performance was examined for traditional and nontraditional college students (Eppler & Harju, 1997). For these undergraduate students enrolled in psychology courses at a large southeastern university in the United States, perceived goal orientations and variables such as Scholastic Aptitude Test (SAT) scores, work hours, reported hours studying, irrational beliefs, and academic performance in the form of cumulative grade-point-average at semester's end were assessed and considered. Using median splits, both traditional and nontraditional students were categorized as high or low in mastery or performance orientation. Through analysis of variance, these researchers found that students' GPAs were highest when they were strongly committed to either mastery goals alone or to both mastery and performance goals. Performance at the end of semester was lowest for students who rated both mastery and performance goals as relatively low. Following ANOVA, stepwise multiple regression was utilized to determine combinations of variables which best predicted GPA. It was found that the predictor variables of learning goals, SAT, and work hours

explained only a small portion of the variance in GPA, at approximately 21.5% combined (Eppler & Harju, 1997).

A positive constellation of outcomes has been associated with the pursuit of mastery goals, including relatively high intrinsic motivation, the use of deep cognitive and self-regulatory strategies, persistence in the face of failure, positive feelings about school and school work, and self-efficacy (Urdan, 2004). However, the expected positive relation between endorsing a mastery goal orientation and more tangible academic standards such as instructor-assigned grades has failed to materialize. Instead, a positive relation has been found between college students' performance approach goals and course achievement. It thus appears that performance approach goals but not mastery goals can be used to predict students' classroom performance (Wolters, 2004). One explanation for these findings could be that students may elicit multiple goals. There are no easy generalizations concerning what types of goals motivate different students. Certain goals may suit particular students, while these same goals may elicit deleterious consequences for other students. For example, performance approach goals may best match students with individualistic tendencies in highly competitive classroom settings. On the other hand, mastery goals may align better with students with collectivist tendencies in cooperative settings. Researchers currently do not have a good understanding of multiple goal dynamics across multiple contexts (Pintrich, 2003).

The Role of Age, Sex, and High School Performance on Student Achievement

Overall, models of achievement in higher education contain a comprehensive set of factors required to understand student performance and persistence. Variables like socio-economic status, as measured through parent's educational attainment, have been found to positively relate to academic achievement (Allen, 1999). However, socio-economic status may play less of a role in determining student success. A recent meta-analysis indicated that the traditional predictor of socio-economic status appeared to contribute little compared to high school GPA and standardized test scores when building a model for Grade Point Average (GPA) (Robbins, Lauver, Davis, Langley, & Carlstrom, 2004). Included in the majority of these models of school success are two demographic variables (age and sex) and high school performance.

Like variables such as ethnicity, goal and institutional commitment, and achievement motivation, the nature of relationships between factors such as age, sex, and postsecondary success does not appear well understood. For example, a study which suggested that age plays a role in affecting school performance found that older students in comparison to younger students

did better in college. These differences in cumulative GPAs were attributed to older students being more mature than younger students (Clifton, Perry, Stubbs, & Roberts, 2004). Yet, another study indicated that older students may perform at lower academic levels. These researchers posited that differences in performance may be due to older students having more work demands and subsequently less time to devote to their studies (Eppler & Harju, 1997).

Similarly, past research that has examined students' sex has suggested inconsistent relations to postsecondary achievement across studies. A few such studies have found that female students achieve higher GPAs than males (e.g., Clifton, 1997; Graunke & Woosley, 2005). Another study suggested that sex has little effect on student GPA or persistence (Allen, 1999). In still another study, the demographic variable of sex did not even remain in a regression model looking at degree completion for high school students (Adelman, 1999).

As for the variable of high school achievement, prior research generally has supported the notion that high school performance may act as the most important predictor variable for postsecondary success. In his widely acclaimed study, *Answers in the Tool Box*, Adelman (1999), a Senior Research Analyst for the U.S. Department of Education, indicated that students' academic preparation for postsecondary education, specifically their composition of high school courses and class rankings, played the most influential role in determining degree completion. Further, a meta-analysis of variables that predicted college outcomes suggested that a combination of traditional predictors such as high school GPA and standardized test scores accounted for approximately 25 percent of the variance when predicting first-year college performance. In comparison, the cumulative incremental contribution of three psychosocial factors (achievement motivation, academic goals, and academic self-efficacy) over and beyond those of the traditional predictors was estimated at approximately 4.3 percent of the variance in the GPA criterion (Robbins, Lauver, Le, Davis, Langley, & Carlstrom, 2004).

In general, the relationship between pre-college entry variables such as high school grades and standardized test scores is better understood for students attending four-year residential universities compared to commuter institutions. Fewer studies have investigated the relationship of pre-college entry variables and postsecondary success at for instance, colleges with open admission policies. The relatively smaller number of studies conducted at commuter institutions typically reported lower correlations between commonly used predictors like high school performance and achievement measures (Weissberg & Owen, 2005). The importance of high school grades as a predictor for postsecondary achievement may then be overstated when non-traditional, commuter institutions are examined.

Postsecondary Achievement in the Community College Sector

In the mid-1970s, Tinto (1975) suggested that there was already a very extensive literature on the problem of retention in higher education. In his seminal article, *Dropout from Higher Education: A Theoretical Synthesis of Recent Research*, he attempted to formulate a model that explained the processes of interaction between the student and institution that led individuals to drop out of institutions of higher education. He distinguished between those processes that resulted in definably different forms of dropout behavior by combining Durkheim's theory of suicide and a cost-benefit analysis of individual decisions pertaining to investment in educational activities. Tinto (1975) proposed a theoretical model which suggested that:

> the process of dropout from college can be viewed as a longitudinal process of interactions between the individual and the academic and social systems of the college during which a person's experiences in those systems (as measured by his normative and structural integration) continually modify his goal and institutional commitments in ways which lead to persistence and/or varying forms of dropout (p. 94)

Tinto (1975) acknowledged that individuals come to institutions of higher education with a variety of attributes such as sex, race, ability, pre-college experiences including grade-point-averages, academic and social attainments, and family backgrounds such as social status attributes, value climates, and expectational climates, each of which has direct and indirect influence on performance. However, central to Tinto's proposed model was the individuals' integration into the academic and social systems of the institution. The higher the degree of integration of the student into the college system, the greater was the commitment to the specific institution and to the goal of college completion.

Tinto's student integration model is often applied to traditional, residential university settings. For example, Pascarella and Terenzini (1980) suggested that their research on freshman dropout at a large university in New York State was clearly limited to its single-institution, single-year sample. These authors' statement of limitations echoed Tinto's earlier observation that additional research on the phenomenon of dropout was needed from urban (or commuter) institutions. Recent literature has suggested that the research base on postsecondary issues was clearly biased toward "traditional" White undergraduates, aged 18 to 22 years, who attended four-year institutions full-time, lived on campus, did not work, and had few if any family responsibilities. This research bias could reflect characteristic student populations at those institutions that employed the majority of scholars doing research on the impact of college. Of a synthesis of approximately 2,600 studies in the early 1990s, a liberal estimate is that only about five to 10 percent of literature reviewed was focused on the community college (Pascarella &

Terenzini, 2005). The research base was not aligned with recent developments in the postsecondary system, such as a dramatic increase in student diversity and an equally dramatic growth in the importance of two-year community colleges.

The demographic profile of students attending commuter colleges is substantially different from the profile of students enrolled in traditional residential institutions (Weissberg & Owen, 2005). In 1990, there were more than 1,300 colleges that the Carnegie Foundation classified as two-year community, junior, and technical. Combined, these institutions enrolled more than 5.5 million students in credit-granting courses. Including those in non-credit adult education programs, more than 10 million students participated annually in this sector of the American postsecondary system (Carnegie Foundation for the Advancement of Teaching, 1990). In 1996, community colleges constituted about 28% of all U.S. colleges and universities and approximately 39% of all public institutions. These community colleges enrolled about 37% of all U.S. undergraduates and about 50% of all undergraduates in public institutions. Although major players in the U.S. national higher education system, this segment has been largely ignored (Pascarella & Terenzini, 2005).

Nonetheless, some research studies have been conducted in community college settings. Napoli and Wortman (1998) assessed the validity of Tinto's student integration model by exploring whether academic and social integration influenced student persistence at a two-year community college in New York State. This study was based on the hypothesis that community college students were less likely to persist than four-year institution students due to multiple community demands. Specifically, community college students were more likely faced with problems adjusting both to the demands of higher education and to the demands of external communities, such as family, friends, and work, compared to students who attended residential institutions (Pascarella & Terenzini, 1991, as cited in Napoli & Wortman, 1998). In this study, the researchers also attempted to extend and further refine Tinto's theory by examining mediational influences of a comprehensive set of psychosocial factors, including conscientiousness, agreeableness, psychological well-being, self-esteem, social support, student satisfaction ratings, negative life events, and negative school events. Based on structural equation modeling and discriminant function analysis, findings suggested that Tinto's proposed constructs may influence persistence for community college students. The more academically integrated students had higher academic achievement and initial goal commitment. Also, this study found that non-minority (e.g., Caucasian) students demonstrated significantly greater initial goal commitment than minority (e.g., African-American and Hispanics) students.

In a related study, the generalizability of the constructs of goal commitment and institutional commitment was tested with a two-year community college sample (Wynne & Napoli, 2005). These researchers examined the impact of initial goal and institutional commitment on persistence of students at both short term (e.g., the Fall to Spring) and longer term (e.g., four semesters) intervals. A questionnaire originally constructed by Nora and Cabrera (1993, as cited in Wynne & Napoli, 2005) was administered to freshman students at a large, multi-campus community college in New York State. Through student records, retention was investigated at three semesters following the first Fall semester. Analyses through structural equation modeling suggested that both goal and institutional commitment may have salient effects within two-year community college samples. In terms of persistence, the causal model indicated that goal commitment may directly affect institutional commitment, which may in turn directly affect persistence. A suggestion from this result was that further research modeling the interplay of goal commitment and institutional commitment on the persistence process may be necessary (Wynne & Napoli, 2005).

In general, a major difficulty exists with examining the influences of particular variables in commuter college settings with open admission policies. That is, many schools do not utilize measures such as high school grades and especially standardized test scores as admission criteria. In Canada, standardized exams such as the Scholastic Aptitude Test (SAT) are rarely, if ever, used as part of admission procedures (Clifton, Perry, Stubbs, & Roberts, 2004). Also, colleges with open admissions policies may grant access to postsecondary studies through mature applicant and/or special category status. Thus, high school records may or may not exist for these enrollees. Even though high school performance was assumed to be the most important criterion for determination of postsecondary success, this may only be the case for traditional four-year degree granting institutions. Further exploration of this variable of high school performance seems required in the commuter college setting.

Purposes of the Study

This study explored the relationship of various cultural, institutional, and psychological factors on different measures of postsecondary students' academic achievement. The cultural factors were ethnicity and years living in Canada. The institutional factors included course type, semester course load, campus, and postsecondary experience. The psychological factors related to culture (perceived family orientation, individualism-collectivism, and strength of ethnic group affiliation), institution (goal and institutional commitment, and classroom goal structures), and motivation (achievement motivation). The influence of these factors was considered along with a few background variables such as age and sex, and high school achievement. In addition, the study investigated academic achievement for students of different ethnic background in light of the cultural, institutional, psychological, and background influences considered. The study's purposes and objectives are as follows:

1. To examine the influence of various cultural, institutional, psychological, and background variables on students' course performance.

   To compare course performance at the end of a semester for students of different ethnicity and attempt to discern which cultural factors may play roles in influencing course performance for these students.

2. To examine the influence of various cultural, institutional, psychological, and background variables along with course performance on students' overall grade-point-average (GPA).

   To compare overall grade-point-average (GPA) at the end of a semester for students of different ethnicity and attempt to understand which cultural factors may play roles in influencing overall GPA for these students.

3. To examine the influence of various cultural, institutional, psychological factors, and background variables along with overall grade-point-average on students' institutional retention from the Fall to Spring semester.

   To compare institutional retention from Fall to Spring semester for students of different ethnic groups.

Hypotheses

Prior research on postsecondary achievement has suggested that students' academic success may be a function of many interrelated variables including cultural, institutional, and/or psychological factors. A recent meta-analysis examining factors related to different college outcomes concluded that varying predictor categories had different relationships to a variety of performance and persistence measures (Robbins, Lauver, Le, Davis, Langley, & Carlstrom, 2004). This present study has a similar general hypothesis in that various cultural, institutional, and psychological factors are expected to play different roles in influencing course performance, overall grade-point-average, and institutional retention.

The review of literature conducted here indicates that psychological variables seem more influential in models of student performance while variables such as academic and social integration play influential roles in models of student persistence. For example, the theoretical model of dropout behavior proposed by Tinto has been utilized to investigate dropout behavior, and also performance in the form of grade-point-average (GPA) (Graunke & Woosley, 2005). In this study, which explored factors affecting the academic success of college sophomores at a predominantly residential public university in the United State's Midwest, variables such as institutional commitment were not significant predictors of performance. The researchers suggested that factors which contribute to the explanation of dropout behaviors may not play as pivotal a role in determining end of semester academic performance. Rather, commitment to an academic major and satisfaction with faculty interaction seemed to influence performance. Additional findings suggested that sex and ethnicity may act as predictors of Spring and Fall GPA with higher GPA being associated with female and Caucasian students (Grauke & Woosley, 2005).

Research on student persistence, specifically studies examining institutional retention, are less likely to incorporate psychosocial and/or psychological dispositions. However, psychosocial factors may be required to better understand students' decisions to persist or withdraw from colleges. For instance, psychosocial variables such as conscientiousness, agreeableness, psychological well-being, self-esteem, explained a significant and sizable portion ($R^2 = .21$) of variance in persistence and withdrawal behavior for a sample of community college students (Napoli & Wortman, 1998). Much more frequently, the influence of psychological constructs is normally sought for explanations of performance on learning tasks, such as an assignment, course, and/or related outcome.

Based on the literature reviewed above, it is predicted that, in the study reported herein, various outcome measures of postsecondary students' academic achievement will be related to

cultural, institutional, psychological, and background variables with specific hypotheses as follows.

1. Course performance will be more strongly associated with motivationally related psychological factors such as achievement motivation along with high school performance compared to the other variables considered.

   Little difference will be found in course performance between members of different ethnic groupings. This hypothesis is based on past research, which suggests that in spite of the model minority myth hypothesis, no significant differences in academic performance favors Asian students.

2. Another measure of performance, namely overall grade-point-average will be related primarily to course performance, but institutionally related psychological variables such as perceived goal commitment will display stronger associations than the other variables.

   Little difference will be found in overall GPA between members of different ethnic groupings. Although some students, such as those of Asian ethnicity, are perceived as having characteristics suited for academic settings, differences in overall GPA will not be uncovered.

3. Retention, as measured by the Fall to Spring semester transition may be strongly related to institutionally-related psychological variables such as goal and institutional commitment. Overall, cultural factors will relate more strongly to persistence compared to performance; however, the relationship of cultural variables and achievement will not necessarily be clear.

   Membership in ethnic groups will relate more to institutional persistence than to performance measures. This hypothesis is based on the premise that cultural factors are strongly associated with institutional factors.

Chapter II
Methods

Rationale

This study sought to explore the relationships of cultural factors (ethnicity and years living in Canada), institutional factors (course type, semester course load, campus, and postsecondary experience), and culturally-related, institutionally-related, and motivationally-related psychological factors (perceived family orientation, individualism-collectivism, strength of ethnic affiliation, goal and institutional commitment, classroom goal structure, and achievement motivation) to students' academic performance and persistence in a postsecondary university-college. The study also considered a few background variables such as age and sex, and prior high school performance. In addition, the academic achievement of students of different ethnic backgrounds was examined in relation to these cultural, institutional, and psychological influences.

Findings from this study may contribute to previous research conducted in the area of postsecondary achievement in at least two ways. This study attempted to discern the relationships that various cultural, institutional, and psychological factors have with student achievement. In general, studies that have examined the relationship of culture and postsecondary achievement have sought only to find differences in academic success between members of various ethnic groups. Thus, the majority of cross-cultural research has been interested in finding differences between different ethnic groups whose members are assumed to possess similar cultural characteristics. This study looked to understand the relationships of several culture related factors - ethnicity, years living in Canada, perceived family orientation, individualism-collectivism, and ethnic group affiliation - to various measures of student performance and persistence (course performance, overall GPA, and institutional retention). Also, unlike most extant studies, this study was undertaken at a Canadian commuter postsecondary institution with open admissions policies.

Participants

Of 600 targeted participants, 475 (79.2%) completed questionnaires. However, 13 questionnaires were discarded due to missing information resulting in 462 complete surveys. Also, 20 participants completed the questionnaire more than once. Specifically, 18 students twice completed the survey, while two students completed the questionnaire three times. For these 20 students, information derived from the questionnaires completed only the first time was used. Consequently, there were initially 440 participants for this study. These 440 participants were

students enrolled in lower level courses from 18 different course sections at a large, publicly funded postsecondary institution in British Columbia, Kwantlen University College (Kwantlen).

Kwantlen is a four-year degree granting institution which offers a comprehensive set of programs ranging from traditional undergraduate studies such as Arts and Sciences to vocational programs such as Trades. This university-college *hybrid* has four campuses located in three ethnically diverse regions of the Lower Mainland area of British Columbia: Langley, Richmond, and Surrey. Although this institution offers a number of selective-entry programs, the general admissions policy at Kwantlen is open, meaning that for entry, high school graduation is not required. This open admissions policy is similar to those at many community colleges within North America. Applicants do need to demonstrate proficiency in the English language through successful completion of high school English 12 or an equivalent course in order to undertake undergraduate level studies at Kwantlen. The campuses of Kwantlen University College do not contain residences. Consequently, this institution may be classified as a large, multi-campus, commuter, baccalaureate college according to the Carnegie Foundation for the Advancement of Teaching (2006). Students commute to this institution primarily for academic, and to a lesser extent social, purposes.

Even though Kwantlen now offers four-year degrees, this institution was originally formed as part of the community college system in British Columbia. Prior to the provincial government giving it degree granting authority in 1995, Kwantlen College was a two-year institution that achieved independence from the more established Douglas College in 1981. Kwantlen, much like many other members of the Association of Canadian Community Colleges (ACCC), is perceived as a transferring rather than a receiving institution. After two years of study, students typically transfer to traditional residential universities in British Columbia such as Simon Fraser University, The University of British Columbia, and/or the University of Victoria. As such, the profile of a student who leaves an institution such as Kwantlen may not necessarily align with that of a student who departs from a university such as Simon Fraser University. For example, students who leave Kwantlen may have relatively higher grade-point-averages than those who drop out of the traditional university system.

For this study, there were a higher percentage of female participants (54.4%) than male participants (45.6%). Participants' average age was almost 20 years but ranged from 17 to 43 years. In terms of ethnicity, the highest percentage of participants indicated an Anglo-Caucasian background (35.5%) with South Asian (Indo-Canadian) (27.5%), and East Asian (26.4%) also heavily represented. The remaining portion of participants (10.7%) indicated other ethnicities. Figures from Kwantlen's Office of Institutional Analysis and Planning (2005) suggest that this

study's sample may have a slightly lower percentage of females compared to the student population at large - overall, the Fall 2005 semester gender distribution was approximately 58% female to 42% male. In addition, this sample may be younger than that of Kwantlen's general student population which had an average age of approximately 24 years in the Fall 2005 semester. Finally, this sample may have an over-representation of South Asian (Indo-Canadian) and East Asian students. Fall 2005 reports suggest approximately 50% of Kwantlen's students are Caucasian (White), with 19% East Asian and 15% South Asian. About 16% of Kwantlen's student population may be of another ethnicity. The misalignment between this study's sample and the overall student population may be due to the courses in which participation was sought. Specifically, this study requested participation from students who were enrolled in 1000- and 2000-level Arts, namely Criminology and Psychology, and Sciences, namely Applied Sciences and Mathematics courses. Students in these Arts and Sciences undergraduate studies courses are generally younger and of more diverse ethnicity than students in college preparatory and/or vocational programs.

Instrument

A survey questionnaire was constructed that included several standard instruments. This questionnaire assessed a variety of cultural, institutional, and culturally-related, institutionally-related, and motivationally-related psychological factors thought to relate to academic achievement. The first page of this questionnaire consisted of a description of the study and a consent form for participation in the study. Also included on this initial page was a request seeking participants' permission for the researcher to obtain additional information through the Kwantlen student system database by using personnel identifiers. Specifically, it was asked that participants provide their student numbers. Along with student numbers, e-mail addresses were sought to facilitate contact following the study.

The next pages of the survey consisted of questions regarding culturally-related, institutionally-related, and motivationally-related psychological factors. Table 1 displays the standard instruments that constituted the survey questionnaire, including the number of items actually used and examples of these.

Table 1. *Culturally-related, Institutionally-related, and Motivationally-related Psychological Factors Reflected on the Survey Questionnaire*

Measure			
Culturally-related psychological factors	Instrument used to derive the survey questions	Items (n)	Example
Family Orientation (FO)	Family Orientation Scale (Urdan, 2004)	4	An important reason that I try to do well in school is to please my parents.
Horizontal Individualism (HI)	Individualism-Collectivism (Singelis et al., 1995)	4	I prefer to be direct and forthright in discussion with people.
Vertical Individualism (VI)	Individualism-Collectivism (Singelis et al., 1995)	4	It is important that I do better in class than others.
Horizontal Collectivism (HC)	Individualism-Collectivism (Singelis et al., 1995)	4	The well-being of my classmates is important to me.
Vertical Collectivism (VC)	Individualism-Collectivism (Singelis et al., 1995)	4	I usually sacrifice my self-interest for the benefit of my group.
Strength of Ethnic Affiliation (SE)	Strength of Ethnic Affiliation (Phinney, 1990)	4	I usually am proud to be of my ethnic origin.
Institutionally-related psychological factors	Instrument used to derive the survey questions	Items (n)	Example
Goal Commitment (GC)	Suffolk CC Entering Survey (Wynne & Napoli, 2005)	10	It is important for me to get a university degree.
Institutional Commitment (IC)	Suffolk CC Entering Survey (Wynne & Napoli, 2005)	10	I feel I belong at this institution.
Perf. Avoid Goal Structure (PAVS)	Patterns of Adaptive Learning Scales (Midgley et al., 2000)	5	In our class, it's important not to do worse than other students.
Perf. Approach Goal Structure (PAPS)	Patterns of Adaptive Learning Scales (Midgley et al., 2000)	3	In our class, getting good grades is the main goal.
Mastery Goal Structure (MGS)	Patterns of Adaptive Learning Scales (Midgley et al., 2000)	6	In our class, how much you improve is really important.
Motivationally-related psychological factors	Instrument used to derive the survey questions	Items (n)	Example
Performance Avoidance (PAV)	Patterns of Adaptive Learning Scales (Midgley et al., 2000)	4	One of my goals is to avoid looking like I have trouble doing the work.
Performance Approach (PAP)	Patterns of Adaptive Learning Scales (Midgley et al., 2000)	4	One of my goals is to show others that I'm good at my class work.
Mastery Goal Orientation (MGO)	Patterns of Adaptive Learning Scales (Midgley et al., 2000)	5	One of my goals is to master a lot of new skills this year.

As indicated in Table 1, culturally-related psychological factors were assessed through questions on family orientation (Urdan, 2004), individualism-collectivism dimensions (Singelis, Triandis, Bhawuk, & Gelfand, 1995), and strength of ethnic group affiliation (Phinney, 1990). First, perceived family orientation was measured through four questions previously utilized in a study examining achievement goals and culture of high school students from northern California (Urdan, 2004). For this present study, these four questions were modified to suit the particular postsecondary setting at Kwantlen. Next, individualism-collectivism (horizontal individualism, vertical individualism, horizontal collectivism, and vertical collectivism) was assessed using 16 questions derived from Singelis, Triandis, Bhawuk, and Gelfand (1995). These researchers

suggested the need to refine the individualism-collectivism construct so as to include vertical and horizontal dimensions. Their argument was based on the premise that a construct such as individualism-collectivism was too broad for easy measurement - the broader the construct the lower the fidelity (Cronbach, 1990, as cited in Singelis, Triandis, Bhawuk, & Gelfand, 1990). As such, it was important to make the distinction between vertical and horizontal individualism and collectivism. The final component of this section on culturally-related psychological factors sought to assess strength of ethnic group affiliation through four questions (Phinney, 1990). The total number of items for this section was 24 questions.

The first component of institutionally-related psychological factors (students' perceived goal and institutional commitment) was examined using questions which were derived from the Suffolk County Community College Entering Student Survey (Wynne & Napoli, 2005). According to the developers of this questionnaire, a variety of sources were utilized to construct the Suffolk County Community College Entering Student Survey including those from Pascarella and Terrenzini, 1979, 1980, 1983; Bean, 1980, 1982; Bean and Vesper, 1990; Mowday, Steers, and Porter, 1979; Dunham, 1984; Cabrera et al., 1992; Yukl and Latham, 1978; Hollenbeck et al., 1989; and Cabrera, Stampen, and Hansen, 1990 (as cited in Wynne & Napoli, 2005). Modifications were made to questions located on the Suffolk County Community College survey to suit the Kwantlen context, and 20 questions were ultimately used - 10 for goal commitment and 10 for institutional commitment.

Since adoption of mastery approach, performance approach, and performance avoidance goals may be influenced by goal related messages in the achievement context (Ames, 1992; Urdan, 2004), an effort was made to discern individuals' perceptions of classroom goal structures. To this end, questions from the Patterns of Adaptive Learning Scales (PALS) (Midgley et al., 2000) were used to assess goal structures. Although PALS has primarily been administered to elementary, middle, and/or high school students, slight modifications to its questions were made to suit postsecondary students. The total number of questions on goal structures was 14.

The PALS instrument also assesses students' achievement motivation. Achievement motivation is conceptualized in PALS through a three component model. The motivationally-related psychological factors (mastery-approach, performance-approach, and performance-avoidance motivation) were examined through a total of 13 questions.

The last part of the survey questionnaire requested demographic information including participants' age, gender, country of birth, country in which their mother and father were born, years living in Canada, language they first learned to speak, self-ascribed ethnicity, ethnic-group categorization, and visible minority status. This section had 11 questions. Overall, the survey

questionnaire consisted of 83 questions. [Please see Appendix A for a copy of the instrument's questions.]

Variables

The study used a combination of information taken from the survey questionnaire and from the institution's student system database. These variables were selected on the premise that a comprehensive set of factors related to postsecondary students' academic achievement. This said, the primary intention of this exploratory study was to seek which of particular cultural, institutional, psychological, and background variables associated with achievement.

Cultural factors. Ethnicity may be self-ascribed or self-categorized. In the survey questionnaire, three questions were asked that were pertinent to self-identified ethnicity. The first was an open question requesting that participants describe their ethnicity. Next, participants were asked to identify themselves as having one ethnic origin or ethnicity from the categories of Asian-Canadian, East Asian, European-Canadian, European, Indo-Canadian, South Asian, and another ethnicity (with the opportunity to specify). The third question asked whether participants belonged to a particular visible minority group. Participants who indicated Asian-Canadian or East Asian were grouped as East Asian. Those who indicated European-Canadian or European were grouped as Anglo-Caucasian. Those who indicated Indo-Canadian or South Asian were grouped as South Asian. Those who indicated another ethnicity were grouped as other. Number of years living in Canada was also recorded as an indirect indicator of acculturation.

Institutional factors. The institutional information collected consisted of the Faculty in which courses were offered (Arts versus Sciences), each student's semester course load, the campus location at which courses were offered, and the number of credit hours that each participating student had accumulated. The number of earned credit hours that each participant had accumulated was used to indicate individuals' experience within the postsecondary system. Earned credit hours referred to the number of credit hours completed by the student up to the start of the Fall 2005 semester. A credit hour was earned when students successfully completed a course, e.g., they received a grade of D or above and/or a grade of Mastery (MAS). Generally, one course is worth three earned credit hours. Earned credit hours were transformed into four categories: 1) low past experience, 2) low-medium past experience, 3) medium-high past experience, and 4) high past experience. Low past experience participants earned from 0 to 9 credit hours. Since nine credit hours is considered full-time for a given semester, this grouping consisted mostly of relatively new students. Students in the low-medium past experience category earned over 9 credit hours, up to and including 18 credits. The threshold of 18 credits represents a

full-time student for an academic year at Kwantlen. This grouping mostly consisted of students who had completed approximately 1 to 2 semesters of course work. Medium-high past experience participants were those who had earned over 18 credit hours up to and including 45 credits. This grouping was typically comprised of students who had finished approximately 1 to 1.5 academic years of coursework. Finally, high past experience participants were those who had earned over 45 credit hours. A total of 45 credit hours equated to three-quarters completion of a two-year Associate degree and/or Diploma at this institution.

Psychological factors. The culturally-related psychological factor of perceived family orientation refers to the degree to which individuals sense a need to please their parents (Urdan, 2004). Four items were used to measure family orientation. A sample item included, "An important reason that I try to do well in school is to please my parents." Individualism-collectivism represented the relationship between the individual and the collectivity that dominated in a particular society (Hofstede, 1980). As previously mentioned, this study distinguished between horizontal individualism (HI), vertical individualism (VI), horizontal collectivism (HC), and vertical collectivism (VC) through a total of 16 items (Singelis, Triandis, Bhawuk, & Gelfand, 1995). For horizontal individualism, sample items included, "I prefer to be direct and forthright in discussion with people." For vertical individualism, items included, "It is important that I do better in class than others." For horizontal collectivism, items included, "The well-being of my classmates is important to me." Last, for vertical collectivism, a sample item was "I usually sacrifice my self-interest for the benefit of my group." The culturally-related psychological factor, strength of ethnic group affiliation referred to the degree to which an individual perceived an association to an ethnic group. Four items were used to measure strength of ethnic group affiliation. A sample item was "I usually am proud to be of my ethnic origin." Participants rated their perceived family orientation, individualism-collectivism, and ethnic group affiliation on 5-point Likert scales ranging from not at all true (1) to very true (5).

The institutionally-related psychological factor of goal commitment refers to the degree to which an individual was committed or motivated to earn a college degree in general, while institutional commitment represented the degree to which an individual was motivated to graduate from a specific university or college (Tinto, 1975). Goal commitment was measured through 10 items, an example of which was "It is important for me to get a university degree." Institutional commitment was measured through 10 items. A sample item was "I feel I belong at this institution." Classroom goal structure represents the perceived type of achievement goal emphasized by prevailing instructional practices and policies within a class or related learning environment (Wolters, 2004). The study differentiated between performance avoidance goal

structure, performance approach goal structure, and mastery goal structure. Five items were used to measure performance avoidance goal structure with a sample item being "In our class, it's important not to do worse than other students." Three items were used to measure performance approach goal structure. A sample item was "In our class, getting good grades is the main goal." Six items were used to measure mastery goal structure, with a sample item being "In our class, how much you improve is really important."

The motivationally-related psychological variable of achievement motivation refers to students' goal orientations including performance avoidance, performance approach, and mastery goal orientation. Performance avoidance was measured through four items. A sample item was "One of my goals is to avoid looking like I have trouble doing the work." Performance approach was measured through four items, including "One of my goals is to show others that I'm good at my class work." Last, mastery goal orientation was measured through five items. A sample item was "One of my goals is to master a lot of new skills this year." All these psychological factors were assessed through items on the survey questionnaire to which participants responded on 5-point Likert scales ranging from not at all true (1) to very true (5). Negatively worded items for the survey questionnaire were reverse scored for directional consistency with positively worded items in the same scales.

Demographic variables. The age in years and sex of all participants were recorded.

High school performance. High school grades were course grades obtained by participating individuals in their senior year of high school. As an institution with an open admission policy, Kwantlen does not require high school graduation for entry. Therefore, applicants may be admitted without submitting high school grades. Consequently, Kwantlen student records do not contain an overall high school GPA. Nonetheless, the majority of enrollees in Kwantlen's undergraduate-level courses are high school graduates, as non-high school graduates normally registered in other, developmental-level courses. In addition, Kwantlen instituted in Fall 2003 an English proficiency criterion that required that entrants into undergraduate studies have a grade of C or above in high school English 12 or its equivalent. Since Mathematics 11 or an equivalent was also required to graduate from any British Columbia high school, English 12 and Mathematics 11 grades were widely available and relatively sound proxy measures for high school performance for Kwantlen students enrolled in undergraduate level studies in the Arts and Sciences.

As an institutional practice, high school grades are scaled into scores prior to input into the Kwantlen student database. High school course percentiles ranging from 86 to 100 percent correspond to 80 in Kwantlen's records; 73 to 85 percent correspond to 60; 67 to 72 percent

correspond to 50; 60 to 66 percent correspond to 40; 50 to 59 percent correspond to 33; and below 50 percent correspond to 0. For each participating student, codes for English 12 and Mathematics 11 were averaged to yield a single score for high school performance.

Course performance. Course performance represented the instructor-assigned grade allocated at the end of the semester. Within the Kwantlen database, letter grades are provided ranging from F (Fail) to A+. For this study, letter grades were transformed into a numerical scale ranging from a low of 0 to a high of 10. Thus, a letter grade of F corresponded to 0; D to 1; C- to 2; C to 3; C+ to 4; B- to 5; B to 6; B+ to 7; A- to 8; A to 9; and last, A+ to 10. Since grades of W (Withdraw) are considered GPA neutral at Kwantlen, these types of grades were excluded from this scale.

Overall grade-point-average (GPA). Overall GPA represented the average GPA computed for all postsecondary courses taken by the student. This variable, located within Kwantlen's database ranges from a low of 0.00 to 4.33. Overall GPA points correspond to the following letter grades: 0.00 to F (Fail); 1.00 to D; 1.67 to C-; 2.00 to C; 2.33 to C+; 2.67 to B-; 3.00 to B; 3.33 to B+; 3.67 to A-; 4.00 to A; and 4.33 to A+. It may be possible for enrollees to not have an overall GPA if, for instance, they withdrew from all courses in the first semester in which they registered.

Institutional retention. For this study, institutional retention referred to whether or not a student maintained registration at this particular postsecondary institution from the Fall 2005 to Spring 2006 semester. Those Fall 2005 students who registered in Spring 2006 as of the third week of classes were coded as persisting while those who did not register were considered as not persisting. Seven students finished their studies during the Fall 2005 semester, and were awarded a credential. These students were excluded from the institutional persistence measure.

Instrument reliability

Internal consistency of the survey questionnaire's measures was assessed through Cronbach's alpha [α], a widely used method for computing total test score reliability (Gall, Borg, & Gall, 1996). Table 2 presents Cronbach alpha scores for the culturally-related, institutionally-related, and motivationally-related psychological measures located on the survey questionnaire.

Table 2. *Cronbach Alpha Scores for Culturally-related, Institutionally-related, and Motivationally-related Psychological Factor Questionnaire Items*

Measure		
Culturally-related psychological factors	Items (n)	Cronbach's alpha
Family Orientation (FO)	4	.78
Horizontal Individualism (HI)	4	.74
Vertical Individualism (VI)	4	.76
Horizontal Collectivism (HC)	4	.70
Vertical Collectivism (VC)	4	.66
Strength of Ethnic Affiliation (SE)	4	.54
Institutionally-related psychological factors	Items (n)	Cronbach's alpha
Goal Commitment (GC)	10	.79
Institutional Commitment (IC)	10	.84
Performance Avoid Goal Structure (PAVS)	5	.85
Performance Approach Goal Structure (PAPS)	3	.71
Mastery Goal Structure (MGS)	6	.79
Motivationally-related psychological factors	Items (n)	Cronbach's alpha
Performance Avoidance (PAV)	4	.70
Performance Approach (PAP)	4	.79
Mastery Goal Orientation (MGO)	5	.85

In general, tests which yield scores with reliabilities of .80 or higher are sufficiently reliable for most research purposes (Gall, Borg, & Gall, 1996), although a less stringent threshold of .70 or higher may be utilized to classify scales as high in reliability (Oyserman, Coon, & Kemmelmeier, 2002). Results for the culturally-related psychological factors from Table 2 indicated internal reliability values ranging from a low of .54 (strength of ethnic affiliation) to high of .78 (family orientation). For family orientation, the reliability score of .78 in this study was higher than values obtained in a study from which these items were derived, in which αs = .72 and .73 (Urdan, 2004). For the individualism-collectivism culture related measures, this study's findings were consistent with research which sought to refine the horizontal and vertical dimensions of individualism and collectivism (Singelis, Triandis, Bhawuk, & Gelfand, 1995). Cronbach alpha reliabilities for this study were .67 for horizontal-individualism (HI), .74 for vertical-individualism (VI), .74 for horizontal-collectivism (HC), and .68 for vertical-collectivism (VC). The aforementioned alpha scores in Singelis, Triandis, Bhawuk, and Gelfand (1995), ranged from .67 to .74, and were said to constitute improvements to past reliability scores on most cultural measures. The relatively low reliability score of .54 for the strength of ethnic affiliation is less than ideal; however, this value is consistent with results of past studies on this measure (Phinney, 1990).

For the institutionally-related psychological factors, internal consistency coefficients appear to be consistent with previous studies. Past cited Cronbach alphas for goal commitment and institutional commitment range from .63 to .92 (Nora & Cabrera, 1996), while scores for

classroom goal structures were .83 for performance avoidance structure, .70 for performance approach structure, and .76 for mastery goal structure (Midgley et al., 2000). For motivationally-related psychological factors, previously reported alphas were .74 for performance avoidance, .89 for performance approach, and .85 for mastery goal orientation (Midgley et al., 2000).

Next, test-retest reliability was calculated for the questionnaires that were completed more than once by the sub-sample of 20 students described earlier. Data from only the questionnaires completed twice were used for test-retest computations. Table 3 presents test-retest Pearson correlations and squares of the correlate values for all culturally, institutionally, and motivationally related psychological variables.

Table 3. *Test-retest and Square Correlate Values for Items Completed Twice* (n = 20 participants)

Measure			
Culturally-related psychological factors	Number (n)	Test-retest (r)	r^2
Family Orientation (FO)	84	.68**	.47
Horizontal Individualism (HI)	84	.50**	.25
Vertical Individualism (VI)	84	.67**	.45
Horizontal Collectivism (HC)	84	.60**	.36
Vertical Collectivism (VC)	84	.61**	.37
Strength of Ethnic Affiliation (SE)	84	.74**	.55
Institutionally-related psychological factors	Number (n)	Test-retest (r)	r^2
Goal Commitment (GC)	210	.85**	.72
Institutional Commitment (IC)	210	.65**	.42
Performance Avoidance Structure (PAVS)	104	.44**	.19
Performance Approach Structure (PAPS)	62	.53**	.29
Mastery Goal Orientation Structure (MGS)	126	.40**	.16
Motivationally-related psychological factors	Number (n)	Test-retest (r)	r^2
Performance Avoidance (PAV)	83	.44**	.19
Performance Approach (PAP)	105	.58**	.33
Mastery Goal Orientation (MGO)	104	.58**	.33

**$p < .01$

Test-retest correlation scores ranged from a low of .40 (mastery goal orientation structure) to a high of .85 (goal commitment). These test-retest values showed that generally, scores on culturally-related psychological factors of perceived family orientation, individualism-collectivism, and strength of ethnic affiliation were slightly higher than those for perceived classroom goal structure and achievement motivation constructs. For family orientation, individualism-collectivism, strength of ethnic affiliation, classroom structure, and achievement motivation, test-retest values were lower than for goal and institutional commitment. The most important issue in computing test-retest reliability is to determine an appropriate delay between the two administrations of a test (Gall, Borg, & Gall, 1996). In this study, multiple test takers may

have completed the survey on the second occasion anytime from one week to four weeks following the final completion of the survey.

Relationship between Culturally-related, Institutionally-related, and Motivationally-related Psychological Factors in the Questionnaire

A correlation matrix of Pearson product moment coefficients was produced to discern the strengths of relationships between culturally-related, institutionally-related, and motivationally-related psychological variables located within the survey questionnaire (see Table 4). The intention of this display was to screen for possible independent variable multicollinearity.

As indicated in Table 4, correlations amongst the psychological variables measured by the survey instrument ranged from .003 to .72. According to Tabachnick and Fidell (2001), multicollinearity between independent variables may become problematic when bi-correlate values exceed approximately .70. One particular correlate value exceeded .70, namely that between performance avoidance (PAV) and performance approach (PAP) at .72. Bi-correlate values approached .70 for performance avoidance structure (PAVS) and performance avoidance (PAV) at .68, performance avoidance structure (PAVS) and performance approach (PAP) at .69, and mastery goal structure (MGS) and mastery goal orientation (MGO) at .66. Therefore, it was decided to perform further testing on data for the measures of classroom goal structure and achievement motivation.

Table 4. *Intercorrelations of Culturally-related, Institutionally-related, and Motivationally-related Psychological Factors Located within the Questionnaire*

Measure[1]	FO	HI	VI	HC	VC	SE	GC	IC	PAVS	PAPS	MGS	PAV	PAP	MGO
FO	1.00	.049	.36**	.40**	.48**	.37**	.052	.23**	.30**	.30**	.17**	.33**	.38**	.088
HI		1.00	.13**	.25**	.058	.052	.20**	.18**	.046	.092	.18**	.052	.081	.29**
VI			1.00	.091	.38**	.17**	.009	.050	.58**	.41**	.004	.44**	.56**	.033
HC				1.00	.34**	.11*	.31**	.38**	.052	.082	.40**	.14**	.15**	.40**
VC					1.00	.29**	-.008	.29**	.26**	.14**	.21**	.23**	.23**	.14**
SE						1.00	.039	.14**	.096*	.11*	.12*	.070	.13**	.030
GC							1.00	.36**	-.050	.003	.25**	-.023	.051	.36**
IC								1.00	.043	.063	.33**	.042	.081	.31**
PAVS									1.00	.44**	.006	.68**	.69**	-.027
PAPS										1.00	.21**	.30**	.28**	.11*
MGS											1.00	-.014	.006	.66**
PAV												1.00	.72**	.029
PAP													1.00	.075
MGO														1.00

[1] Please note: FO refers to family orientation; HI to horizontal individualism; VI to vertical individualism; HC to horizontal collectivism; VC to vertical collectivism; SE to strength of ethnic affiliation; GC to goal commitment; IC to institutional commitment; PAVS to performance avoidance structure; PAPS to performance approach structure; MGS to mastery goal orientation structure; PAV to performance avoidance; PAP to performance approach; and MGO to mastery goal orientation

**p < .01, *p < .05

Principal components analysis was conducted on the variables relating to classroom goal structure (performance avoidance structure, performance approach structure, and mastery goal orientation structure) and achievement motivation (performance avoidance, performance approach, and mastery goal orientation). Principal components analysis is a statistical technique applied to a single set of variables when interest is in discovering which variables in the set form coherent subsets relatively independent of one another (Tabachnick & Fidell, 2001). The initial principal components analysis was performed using oblique rotation with all classroom goal structures and achievement motivation variables. Two components from this initial analysis were extracted with component 1 accounting for 43.71% of the overall variance and component 2 an additional 28.20%, for a cumulative total of 71.91%. Table 5 presents (extraction) communalities for these variables.

Table 5. *Communalities from a Principal Components Analysis of Classroom Goal Structure and Achievement Motivation Variables*

	Communalities	
Factors	Initial	Extraction
Performance Avoidance Structure (PAVS)	1.00	.80
Performance Approach Structure (PAPS)	1.00	.37
Mastery Goal Orientation Structure (MGS)	1.00	.83
Performance Avoidance (PAV)	1.00	.76
Performance Approach (PAP)	1.00	.75
Mastery Goal Orientation (MGO)	1.00	.79

As indicated in Table 5, extraction values were generally high except for the score relating to performance approach structure (PAPS) at .37. Another principal components analysis was conducted with the classroom goal structure and achievement motivation variables, excluding the 3-questionnaire items relating to performance approach structure. Two components were again extracted but this time with component 1 accounting for 47.94% of the overall variance and component 2 an additional 33.20%, for a cumulative total of 81.14%. Table 6 presents (extraction) communalities for these variables.

Table 6. *Communalities from a Principal Components Analysis of Classroom Goal Structure and Achievement Motivation Variables, excluding Performance Approach Structure*

	Communalities	
Factors	Initial	Extraction
Performance Avoidance Structure (PAVS)	1.00	.78
Mastery Goal Orientation Structure (MGS)	1.00	.83
Performance Avoidance (PAV)	1.00	.81
Performance Approach (PAP)	1.00	.81
Mastery Goal Orientation (MGO)	1.00	.83

Figures from Table 6 indicate high extraction values for all factors ranging from .78 (performance avoidance structure) to .83 (mastery goal orientation). Results of further investigation through a rotated components matrix following oblique rotation appear in Table 7.

Table 7. *Pattern Matrix Showing Loadings from Oblique Rotation*

	Component	
Factors	1	2
Performance Avoidance Structure (PAVS)	.88	-.025
Mastery Goal Orientation Structure (MGS)	-.011	.91
Performance Avoidance (PAV)	.90	.001
Performance Approach (PAP)	.90	.045
Mastery Goal Orientation (MGO)	.024	.91

Tabachnick and Fidell (2001) indicate that loadings from oblique rotations are measures of the unique relationships among the components and the variable. Loadings on component 1 equal to and over .88 related to performance avoidance structure, performance avoidance, and performance approach. Loadings on component 2 equal to and over .91 related to mastery goal structure and mastery goal orientation. These results suggest that questionnaire items relating to achievement motivation and goal structure may have two underlying dimensions, namely performance and mastery. Consequently, composite measures for perceived performance and mastery were constructed by combining questionnaire items relating to performance avoidance structure (PAVS), performance avoidance (PAV), and performance approach (PAP), and to mastery goal orientation structure (MGS) and mastery goal orientation (MGO). Cronbach alpha values computed for these composite performance and mastery variables were as follows:

- Performance construct (n = 14 items) Cronbach alpha = .91
- Mastery construct (n = 11 items) Cronbach alpha = .88

Internal reliability values (Cronbach alphas) indicated improvement over previous values when questionnaire items relating to performance were grouped into one construct and mastery into another construct regardless of valence (e.g., approach-avoidance) and/or perceived goal structure. Next, test-retest values were computed for performance (excluding performance approach structure items) and mastery measures for the 20 students who completed the questionnaire more than once. Test-retest correlation values were as follows:

- Performance construct (n = 292 cases) Pearson correlation = .49**
- Mastery construct (n = 230 cases) Pearson correlation = .49**

**p < .01

Test-retest reliability measures for both the performance and mastery composite variables remained similar to previous scores computed for the separate goal structure and achievement motivation variables. Since the composite constructs of performance and mastery related to

participants' perceptions of their achievement orientations, these constructs were named performance orientation (PO) and mastery orientation (MO). The performance orientation and mastery orientation components are categorized under motivationally-related psychological factors for the remainder of this thesis.

Procedure

Approval for this study was granted through Simon Fraser University's Office of Research Ethics and Kwantlen University College's Research Ethics Board. Overall, risk to participants was deemed minimal. The targeted sample was 600 participants. Prior to the start of the Fall 2005 semester which ran from September to December, two academic Deans from Kwantlen's Arts and Sciences areas were informed of this study. Then in mid-September, 20 course instructors were contacted by electronic mail. In the e-mail message to instructors, the purposes of the study were outlined and the instructors were asked if a survey questionnaire could be distributed to students during class time. Ten instructors teaching 18 different course sections in 1000- and 2000-level Criminology and Psychology, and Applied Sciences (Engineering) and Mathematics courses agreed to allow classroom administration of the questionnaires. Following the third week of September until the third week of October, questionnaires were distributed and group administered at Kwantlen.

At each administration, a brief introduction was provided to potential participants describing the objectives of the study. An overhead transparency was utilized in classrooms equipped with projectors. Participants were informed that consent was voluntary, and that they could withdraw at any point by simply not continuing. It was requested that an identifier, namely a student number, be provided so that additional information could be derived from the institution's database. All participants signed letters of consent allowing student records to be accessed by the researcher. Confidentiality of this study's data and student identifiers was assured. Participants were informed that their names would be placed in a draw for a cash prize of $100.00. There was a possibility that participants may have already completed the questionnaire if they were enrolled in a class previously visited. If so, it was requested that the student once again complete the survey so as to slightly increase their chances for the lottery. The survey questionnaire took approximately 30 to 40 minutes to complete.

Following collection of survey questionnaire data, information on participating students was gathered through Kwantlen student records. Two institutional variables (course type and campus) were derived from the list of classroom visits, as the classes that were visited and the campuses at which these courses took place were recorded. Data for two institutional variables,

including semester course load and earned credit hours, and the high school performance variable were retrieved from the institution's records utilizing the student numbers provided on the questionnaire. The identifiers also enabled the compilation of objective measures of achievement such as course performance through instructor assigned grades and overall grade-point-average (GPA). Normally, course grades are not complete until approximately the first week of the following semester. Thus, performance measures were retrieved from student records in January 2006.

This study examined dropout which may be more temporary than permanent (Tinto, 1975). Although semester-to-semester institutional retention rates may not necessarily correspond to year-to-year retention or degree completion, semester rates at institutions with open admissive policies such as community colleges may act as reasonable persistence measures. For example, it has been found in the college setting that the number of students retained from semester-to-semester may be less than the number who drop out. Academic tracking at a community college in California reported that 55 percent of students enrolled in the Fall semester of 1990 did not return for the Spring semester of 1991 (Fralick, 1993). To assess institutional retention, the registration status of participants from the Fall 2005 semester to the Spring 2006 semester was determined in approximately the third week of January 2006. Since one goal of this study was to examine institutional persistence as it relates to academic achievement, students who graduated and thus discontinued their studies at Kwantlen were deemed to be successful. These graduates were thus excluded from analyses related to semester-to-semester persistence.

Chapter III
Results

Various analyses including multiple regression, logistic regression, analysis of variance (ANOVA), and analysis of covariance (ANCOVA) were conducted. Prior to performing these analyses, data were screened. First, the independent variables, namely cultural, institutional, culturally-related, institutionally-related and motivationally-related psychological variables, and background variables were examined for possible departures from normality. One such variable, namely age, was found with high levels of asymmetry (Skewness = 3.140, Std. Error of Skewness = .116; Kurtosis = 16.315, Std. Error of Kurtosis = .232). As a continuous variable, age was examined for possible outliers. Outliers are instances of extreme values on one variable or such a strange combination of scores on two or more variables that they distort data sets. Descriptive results revealed that ages averaged 19.90 years but ranged from 17 to 43 years. Participants' ages were transformed into standardized scores and screened for those cases greater than 3.29 (as per Tabachnick & Fidell, 2001). Seven such cases were found. These cases were subsequently excluded from further analysis (Tabachnick & Fidell, 2001).

Following deletion of these cases, symmetry values for age improved vastly (Skewness = 1.386, Std. Error of Skewness = .117; Kurtosis = 2.094, Std. Error of Kurtosis = .234). Although still at a higher than ideal level of asymmetry, the age variable was not transformed since data transformations as a remedy for normality are not universally recommended. Transformation often hinders interpretation, especially when a scale is meaningful or widely used (Tabachnick & Fidell, 2001). The resulting sample size was $n = 433$.

Another screen for normality suggested a somewhat higher level of asymmetry for course type (Skewness = 1.480, Std. Error of Skewness = .117; Kurtosis = .192, Std. Error of Kurtosis = .234). As a dichotomous variable (Arts coded as 0; Sciences coded as 1), course type was not evenly split. However, the split of 345 to 88 cases, an approximate 3.92 to 1 ratio, fell well within the accepted marginal range of about 10 to 1 (Tabachnick & Fidell, 2001). This variable of course type was thus retained.

Descriptive Analyses

Means or frequencies, standard deviations (SD), theoretical minimum and maximum, and actual minimum and maximum values for the variables in this study are presented in Table 8.

Table 8. *Summary of Cultural, Institutional, Culturally-related, Institutionally-related, and Motivationally-related Psychological, Background, and Achievement Variables*

Measure				Theoretical range		Actual range	
Cultural factors	n	Mean/Freq.	SD	Min	Max	Min	Max
Anglo-Caucasian ethnicity	150	34.6%	n/a	n/a	n/a	n/a	n/a
East Asian ethnicity	115	26.6%	n/a	n/a	n/a	n/a	n/a
South Asian ethnicity	121	27.9%	n/a	n/a	n/a	n/a	n/a
Another ethnicity	47	10.9%	n/a	n/a	n/a	n/a	n/a
Years living in Canada	433	16.01	5.86	Open		1	27
Institutional factors	n	Mean/Freq.	SD	Min	Max	Min	Max
Course in Arts	345	79.7%	n/a	n/a	n/a	n/a	n/a
Course in Sciences	88	20.3%	n/a	n/a	n/a	n/a	n/a
Semester course load	433	3.96	1.34	Open		1	8
Richmond campus	212	49.0%	n/a	n/a	n/a	n/a	n/a
Surrey campus	221	51.0%	n/a	n/a	n/a	n/a	n/a
Low past experience	131	30.3%	n/a	n/a	n/a	n/a	n/a
Low-medium past experience	102	23.6%	n/a	n/a	n/a	n/a	n/a
Medium-high past experience	118	27.3%	n/a	n/a	n/a	n/a	n/a
High past experience	82	18.9%	n/a	n/a	n/a	n/a	n/a
Culturally-related psychological	n	Mean/Freq.	SD	Min	Max	Min	Max
Family orientation (FO)	433	3.65	.91	1.00	5.00	1.00	5.00
Horizontal individualism (HI)	433	3.82	.72	1.00	5.00	1.75	5.00
Vertical individualism (VI)	433	2.87	.90	1.00	5.00	1.00	5.00
Horizontal collectivism (HC)	433	3.81	.68	1.00	5.00	1.50	5.00
Vertical collectivism (VC)	433	2.73	.78	1.00	5.00	1.00	5.00
Strength ethnic affiliation (SE)	433	3.44	.83	1.00	5.00	1.00	5.00
Institutionally-related Psychological	n	Mean/Freq.	SD	Min	Max	Min	Max
Goal commitment (GC)	433	4.06	0.58	1.00	5.00	2.20	5.00
Institutional commitment (IC)	433	3.40	0.64	1.00	5.00	1.40	5.00
Motivationally-related Psychological	n	Mean/Freq.	SD	Min	Max	Min	Max
Performance orientation (PO)	433	2.59	0.75	1.00	5.00	1.00	4.50
Mastery orientation (MO)	433	4.20	0.57	1.00	5.00	1.82	5.00
Demographic factors	n	Mean/Freq.	SD	Min	Max	Min	Max
Age	433	19.67	2.04	Open		17	28
Female	234	54.2%	n/a	n/a	n/a	n/a	n/a
Male	198	45.8%	n/a	n/a	n/a	n/a	n/a
Academic history	n	Mean/Freq.	SD	Min	Max	Min	Max
High school score	433	2.52	1.28	0.00	5.00	0.00	5.00
Achievement variables	n	Mean/Freq.	SD	Min	Max	Min	Max
Course performance*	414	5.29	2.89	0.00	10.00	0.00	10.00
Overall grade-point-average	433	2.45	0.85	0.00	4.33	0.00	4.33
Retained**	371	87.1%	n/a	n/a	n/a	n/a	n/a
Not retained	55	12.9%	n/a	n/a	n/a	n/a	n/a

*Please note: Course withdraws (W) were excluded from this variable as they are GPA neutral

**Please note: Graduates were excluded from the retention measure

Descriptive figures from Table 8 suggest that a reasonable proportion of ethnically diverse students may be represented in this study. Participants on average lived in Canada for a relatively high number of years (16.01) but with a range from one to 27 years. For institutional factors, a higher proportion of participants was enrolled in Arts courses than in Sciences courses. The average semester course loads neared four with a range of one to eight courses. An even number of participants was enrolled at the smaller Richmond campus and the larger Surrey campus. Postsecondary experience, as assessed through earned credit hours at the start of the Fall 2005 semester was approximately the same for those who indicated low (0 to 9 credit hours), low-medium (between 9 and up to and including 18 credit hours), medium-high (between 18 and up to and including 45 credit hours), and high (over 45 credit hours) course loads.

Regarding culturally-related psychological variables, these participants reported higher perceived levels of horizontal individualism, horizontal collectivism, and family orientation than of vertical individualism and vertical collectivism. In addition, these students indicated that they were highly committed to their educational goals, but less committed to the institution. On motivationally-related psychological variables, this study's sample reported much higher mastery orientation than performance orientation.

These students were relatively young with a mean age below 20 years. A somewhat even split of females and males participated in the study. Finally, composite scores for high school achievement appeared normal as the average fell just above the mid-point between the scores' minimum and maximum.

At approximately 5.29 on a scale ranging from 0 to 10, this sample's average performance in their courses was at a letter grade between B- and B. For overall grade-point-average, an average of 2.45 corresponds to a letter grade between C+ at 2.33 and B- at 2.67. The proportion of the sample retained from Fall 2005 to Spring 2006 semesters at this institution was 87.1%. This figure of 87.1% may be slightly higher than that of the institution at large. One cause of the higher institutional retention for this study's sample may be associated with the courses from which participants were drawn. In general, students in undergraduate level studies may be more likely to persist at this institution when compared to those enrolled in developmental and/or academic career preparatory courses.

Next, a correlational matrix was produced to examine relationships between the independent and dependent variables in this study. The production of a correlational matrix allowed for another check of possible multicollinearity among the revised independent variables, and for an initial examination of strength of relationships between independent and dependent variables. Table 9 presents the results.

Table 9. *Intercorrelations among Revised Independent and Dependent Variables*

Measure[1]	Ethnicity	Years	Type	Load	Campus	Experience	FO	HI	VI	HC	VC
Ethnicity	1.00	.37**	-.10*	.11*	.26**	-.001	-.30**	.013	-.13**	-.040	-.29**
Yrs. Canada		1.00	-.27**	-.12*	.21**	.11*	-.043	.036	-.16**	.025	-.20**
Course type			1.00	.38**	-.15**	.085	-.078	-.089	.042	-.076	.036
Course load				1.00	.12*	.10*	-.061	-.12*	.035	.038	.012
Campus					1.00	.084	.012	-.092	-.032	.023	-.060
Experience						1.00	-.043	-.056	.12*	-.041	-.033
FO							1.00	.051	.35**	.38**	.48**
HI								1.00	.12*	.26**	.058
VI									1.00	.081	.37**
HC										1.00	.33**
VC											1.00

[1]Please note: FO refers to family orientation; HI to horizontal individualism; VI to vertical individualism; HC to horizontal collectivism; VC to vertical collectivism; SE to strength of ethnic affiliation; GC to goal commitment; IC to institutional commitment; PO to performance orientation; and MO to mastery orientation.

**$p < .01$, *$p < .05$

Measure	SE	GC	IC	PO	MO	Age	Sex	HS	Grade	GPA	Retention
Ethnicity	-.20**	.033	-.088	-.12*	-.082	-.024	-.022	.24**	.20**	.20**	-.044
Yrs. Canada	-.070	.073	-.030	-.13**	-.039	.093	-.081	.15**	.11*	.030	-.039
Course type	.001	-.042	-.068	-.074	.091	.002	.14**	.16**	-.26**	-.028	.024
Course load	-.068	.11*	-.080	-.003	.045	-.19**	.070	.31**	-.004	.096*	.20**
Campus	.008	.099*	.092	-.042	.038	-.17**	-.040	.16**	-.024	.035	.025
Experience	-.041	.10*	-.029	.050	-.15**	.42**	.085	.049	.33**	.41**	.10*
FO	.37**	.052	.22**	.37**	.13**	-.14**	-.067	-.054	-.15**	-.20**	.028
HI	.049	.19**	.17**	.069	.25**	.042	.057	-.064	-.11*	-.084	-.025
VI	.17**	.001	.032	.60**	.004	.074	.054	-.054	-.035	.027	.008
HC	.11*	.32**	.38**	.11*	.44**	-.073	-.11*	.044	.040	-.019	.038
VC	.29**	-.012	.28**	.26**	.18**	.024	.051	-.085	-.13**	-.15**	.073
SE	1.00	.036	.14**	.11*	.077	-.085	-.022	-.002	-.11*	-.11*	.032
GC		1.00	.35**	-.008	.33**	.051	-.086	.044	.040	.064	.013
IC			1.00	.058	.34**	-.020	-.095*	-.16**	-.11*	-.098*	.029
PO				1.00	.002	.077	-.003	.13**	-.049	-.013	.019
MO					1.00	-.077	-.094	.022	-.11*	-.053	-.026
Age						1.00	.065	-.33**	.14**	.10*	-.048
Sex							1.00	-.11*	-.12*	-.055	.14**
High school								1.00	.24**	.25**	.022
Grade									1.00	.71**	.16**
Overall GPA										1.00	.22**
Retention											1.00

[1]Please note: FO refers to family orientation; HI to horizontal individualism; VI to vertical individualism; HC to horizontal collectivism; VC to vertical collectivism; SE to strength of ethnic affiliation; GC to goal commitment; IC to institutional commitment; PO to performance orientation; and MO to mastery orientation. **p < .01, *p < .05

Correlate values from Table 9 indicate that in general, multicollinearity amongst independent variables should not be a problem, with perhaps a few exceptions. Using Tabachnick and Fidell's (2001) criterion that collinearity with independent variables may pose problems at approximate correlate values of .70 or higher, a positive relationship of .60 between vertical individualism (VI) and the performance orientation (PO) construct neared this recommended threshold value. This finding should not be surprising in light of the similarities between the constructs of vertical individualism and performance orientation. Vertical individualism was posited to represent a cultural pattern in which an autonomous self was postulated. Individuals who were vertical individualist may see each other as different, expect inequality, and view competition as an important aspect of achievement (Singelis, Triandis, Bhawuk, & Gelfand, 1995). Similarly, the general performance oriented construct represented a view in which individuals' competence was compared to others and persons perceived competition as an integral component to performance (Midgley et al., 2000).

Another seemingly strong relationship was between family orientation (FO) and vertical collectivism (VC). These two variables correlated at a value of $r = .48$. Again this finding may not come as a surprise. Family orientation is thought to reflect individuals' desires to please or provide for family members through academic achievement (Urdan, 2004). Vertical collectivism is posited to represent a cultural pattern whereby the individual sees the self as part of an in-group. Serving and sacrificing for the in-group, such as a family, may be an important aspect of this pattern (Singelis, Triandis, Bhawuk, & Gelfand, 1995). Despite the higher than ideal correlate values between the independent variables of vertical individualism-performance and family orientation-vertical collectivism, these constructs were kept intact for further analyses, as neither relationship exceeded the Tabachnick and Fidell (2001) threshold.

Figures from Table 9 also indicate that the independent variables may relate differently to various performance and institutional persistence measures. For example, participants' self-ascribed ethnicity, e.g., Anglo-Caucasian, East Asian, South Asian, or another ethnicity, related positively with both course performance and overall grade-point-average at statistically detectable levels. However, a weak relationship was found between ethnicity and institutional retention. Interestingly, the culturally-related psychological characteristics of family orientation and vertical collectivism relate in negative directions with grade performance and overall GPA at statistically detectable levels. These negative values may suggest that the higher perceived family orientation and vertical collectivism, the lower performance in courses and GPA. No relationship was detected between family orientation and vertical collectivism with institutional retention.

The type of course in which students enrolled also resulted in a negative value suggesting that those in Arts courses (coded as 0) may perform at higher levels than those in Sciences courses (coded as 1). However, the type of course in which participants were enrolled did not appear related to overall GPA or institutional retention at statistically detectable levels. The institutional variable of postsecondary experience had moderately strong positive relationships with both course performance and overall GPA. Only the variable of semester course load appeared positively related to institutional retention. This positive relationship suggests that participants who enrolled in a higher number of courses for the Fall semester were more likely to remain enrolled at the institution for the following Spring semester.

The variable of high school score related positively to course performance and overall GPA. Students with greater high school grades were more likely to perform at higher levels. However, a relationship between high school scores and institutional retention was not detected. Age related positively to both course performance and overall GPA. This finding suggests that older students may have outperformed younger students. Little relationship was detected between age and retention. In addition, a negative relationship was found between females (code as 0) and course performance, suggesting that females may have performed in their courses at higher levels compared to males. On the other hand, participants' sex related positively to institutional retention, suggesting that males (coded as 1) may be more likely to complete the transition from Fall to Spring semester (those enrollees retained by the institution were also coded as 1).

In terms of the dependent or outcome measures, course performance was strongly related in a positive direction with overall grade-point-average. Both course performance and overall GPA were positively associated with institutional retention. The relationship between overall GPA and institutional retention appeared stronger at a value of $r = .22$ compared to that between course performance and institutional retention at $r = .16$. This finding suggests that students with higher overall GPA were more likely to remain enrolled at this institution.

Exploration of Relationships of Cultural, Institutional, and Culturally-related, Institutionally-related, and Motivationally-related Psychological Factors with Various Measures of Achievement

Following descriptive analyses, two types of regression (multiple and logistic) were conducted to explore the relationship of cultural, institutional, and culturally-related, institutionally-related and motivationally-related psychological factors with postsecondary students' academic performance and persistence. In addition, background factors (age and sex) and high school performance in the form of high school grades were considered. Generally, regression analyses are statistical techniques that allow for assessment of the relationship between

several independent variables and one dependent variable. Multiple regression analyses are ideally conducted with independent or predictor variables which are highly correlated with the dependent or criterion variable, but with low correlations among themselves. Although often interchanged, the term regression is usually utilized when the intent of analysis is prediction, while correlation is normally used when the intent is simply to assess the relationship between independent and dependent variables (Tabachnick & Fidell, 2001). This said, regression analyses reveal relationships among variables, but do not imply that the relationships are causal. Demonstration of causality is a logical and experimental, rather than statistical, matter (Tabachnick & Fidell, 2001, p. 115).

First, multiple regression analysis was conducted to investigate the relationship of various factors with course performance. Multiple regression analysis was chosen since the criterion of course performance was continuous. The model constructed used cultural, institutional, psychological, demographic, and high school variables as predictors with course grade as the criterion variable. For the next model, the same predictor variables were inserted. However, course performance was also included as an independent variable with overall grade-point-average as the dependent variable. Course performance was entered after cultural, institutional, psychological, demographic, and high school variables in the second model so as to maximize the value of R^2 (Tabachnick & Fidell, 2001). Sample size for this study at $n = 433$ appeared reasonable for multiple regression which has as a suggested rule of thumb, $N \geq 50 + 8m$ for testing multiple correlations and $N \geq 104 + m$ for testing individual predictors (where m is the number of independent variables) (Tabachnick & Fidell, 2001). The total numbers of independent variables used for these trial analyses were 19 and 20 predictor variables respectively.

The type of multiple regression analysis chosen for this study was stepwise. Stepwise regression is a somewhat controversial procedure whereby independent variables are added one at a time if they meet statistical criteria. However, independent variables may also be deleted at any step where they no longer contribute significantly to predicting the criterion variable. Stepwise was chosen over sequential regression since the primary intention of the study was to explore which variables contributed to students' achievement in higher education. Stepwise is used when the aim of the researcher is prediction; it is a model-building rather than model-testing procedure (Tabachnick & Fidell, 2001). This study was less concerned as to the sequence or importance of predictor variables in relation to the criterion variable. Rather, it sought to explore which variable(s) emerged when building models for different achievement outcomes. Variables are less likely to be excluded from models with a more liberal probability level (Tabachnick & Fidell,

2001). Therefore, a level for entry of .05 rather than .01 was set, given the exploratory nature of the study.

The second type of analysis utilized was logistic regression. Logistic regression analysis was performed to explore which factors and combination of factors best differentiated between students who persisted, namely between those students who transitioned from Fall to Spring semester versus those who did not. This type of regression allows for prediction of a discrete outcome from a set of variables that may be continuous, discrete, dichotomous, or a mix of these (Tabachnick & Fidell, 2001). Two sets of logistic regression analyses were conducted in an attempt to differentiate between students who dropped out due to academic reasons compared to those who did so due to voluntary departure (Tinto, 1975).

The first logistic regression sought to explore the relationship between various cultural, institutional, psychological, and background factors with institutional retention along with academic performance. Past research has indicated a positive relationship between academic performance and institutional retention (Tinto, 1975); however, this positive relationship was found in traditional, residential universities with selective admission policies. Less may be known about the relationship between performance and institutional retention at commuter institutions with open admission policies. Performance outcome, namely overall grade-point-average, was included as a predictor variable because the relationship between performance and persistence is not well understood. Overall GPA was chosen over course performance since the former, grade-point-average may act as more a "global" indicator of scholastic attainment - it underpins achievement behaviors in many courses taken over an extended period of time (Perry, Hladkyj, Pekrun, Clifton, & Chipperfield, 2005, p. 538-39).

Another logistic regression was conducted to explore the relationship between various cultural, institutional, psychological, and background factors with voluntary withdrawal from the institution. An attempt was made to control for wide differences in students' academic performance. For this analysis, the performance variable, overall GPA, was still inserted into the model. However, students who were in poor academic standing (an overall GPA of less than 2.00) at semester's end were excluded from the analysis. A cumulative grade-point-average criterion of 2.00 is the normal threshold for poor academic standing at most postsecondary institutions (Cruise, 2002). Although students who attain less than an overall GPA of 2.00 may not necessarily be forced to withdraw for academic reasons, the intent of this logistic regression was to determine which variables related to departure for those students who only performed at relatively higher rates. It may be inferred that those students with overall GPA of 2.00 or higher, and who did not return in the Spring semester left for voluntary reasons.

Ethnic Group Differences in Academic Achievement

Between each of the multiple regression analyses, one-way analyses of variance (ANOVA) and analyses of covariance (ANCOVA) were conducted to examine ethnic group differences in performance measures. The primary purpose of one-way analysis of variance is to answer the simplest of research questions, namely whether an independent set of groupings differ on a dependent variable (Coughlin, 2005). An ANOVA was first conducted with ethnic group as the independent variable and course performance as the dependent variable. Another ANOVA was performed with ethnic group as the independent variable and overall GPA as the dependent variable. Following each ANOVA, analysis of covariance (ANCOVA) through General Linear Modeling was conducted. The major question for ANCOVA is effectively the same as ANOVA but with a slight twist: are mean differences among groups on the *adjusted* dependent variable likely to have occurred by chance (Tabachnick & Fidell, 2001)? ANCOVA may help to explain why possible ethnic group differences in performance may exist by adjusting means of the dependent variables to what they would be if all participants scored equally on particular covariates. Differences between subjects on covariates are removed statistically so that presumably the only differences that remain are related to the effects of the grouping independent variable (Tabachnick & Fidell, 2001). Of interest to this study was to explore whether cultural and culturally-related psychological factors played influentially roles in course performance and overall grade-point-averages for particular ethnic groups. Therefore, each ANCOVA included the various culture related factors such as years living in Canada, perceived family orientation, individualism-collectivism, and strength of ethnic affiliation as covariates.

Last, a non-parametric test using chi-square was conducted to determine possible differences in institutional retention between members of different ethnic groups. An attempt was made to discern whether differences in ethnic groups existed in institutional persistence. The Statistical Package for the Social Sciences (SPSS) Version 14 was used to conduct all types of analyses.

Cultural, Institutional, Psychological, and Background Variables and Course Performance

Due to its somewhat controversial nature, cross-validation with a second sample is recommended when conducting stepwise (or statistical) regression. Cross-validation entails dividing a sample set into two random groupings. Stepwise regression is first performed on a larger sample and then the model that is constructed is validated through a second smaller sample. A recommended split is 80% for stepwise (or statistical) regression analysis, with the remaining 20% as the cross validation sample (Tabachnick & Fidell, 2001). For this study, participants were divided into two sets using this 80% to 20% ratio through a random selection process. Then, the cultural variables (ethnicity and years living in Canada), institutional variables (course type, course load, campus, and postsecondary experience), culturally-related psychological variables (perceived family orientation, individualism-collectivism, and strength of ethnic affiliation), institutionally-related psychological variables (goal and institutional commitment), and the motivationally-related psychological variable (achievement motivation) were inserted. Also included were the demographic variables of sex and age, and the high school composite grade score. Table 10 presents the results of stepwise regression (with end-of-semester course performance as the criterion or dependent variable) using only the larger sample of approximately 80% of the total sample (n = 331).

Table 10. *Multiple Regression Analysis through Stepwise of Various Influences on Student Course Performance at the End of the Semester* (n = 331)

					Change Statistics		
Variables	β	R	R^2	Adj. R^2	ΔR^2	ΔF	ΔF sig
Postsecondary experience	.359	.317	.101	.098	.101	36.77	.001
Course type	-.373	.436	.190	.185	.090	36.26	.001
High school score	.293	.537	.288	.282	.098	45.09	.001
Family orientation	-.146	.557	.311	.302	.022	10.62	.001
Campus	-.181	.572	.328	.317	.017	8.21	.004
Anglo-Caucasian	.131	.584	.341	.329	.013	6.64	.010
Horizontal individualism	-.143	.595	.354	.340	.013	6.50	.011
Horizontal collectivism	.106	.602	.363	.347	.009	4.40	.037

Overall, results from Table 10 suggest that eight variables may be used to build a model to predict course performance. With an R^2 value = .363, these eight variables accounted for approximately 36.3% of the total variance in students' course performance. The three most influential variables were two institutional factors, namely course type and postsecondary experience, combined with the high school composite score. With an additive R^2 value of .288, these three variables explained almost 29% of the total variance in course performance. In addition, the institutional variable of campus and culturally-related psychological variable of

perceived family orientation appeared to be related to course performance. Campus and family orientation, when added to the three variables of course type, postsecondary experience, and high school score, explained almost 33% of the total variance in course performance. The addition of the remaining three variables, horizontal individualism, Anglo-Caucasian membership, and horizontal collectivism helped lift the total variance in course performance that was predicted to 36.3%. Interestingly, none of the institutionally-related psychological (goal and institutional commitment), motivationally-related psychological (achievement motivation), and/or demographic (age and/or sex) variables are included in this model.

The correlation between predicted and actual scores was examined using data from the 20% remaining cross-validated sample (n = 82). This correlate value could be used to compare R^2 of the larger sample to an R^2 score of the smaller sample. A large discrepancy between R^2 for larger versus smaller samples may indicate over-fitting and a lack of generalizability of the stepwise analysis (Tabachnick & Fidell, 2001). A correlation value of R = .595 resulted which equates to R^2 = .354, a value slightly smaller but similar to the R^2 = .363 for the larger sample. This cross-validation procedure suggested that the model constructed with the eight cultural, institutional, culturally-related psychological, and high school variables listed in Table 10 may be a viable model for the prediction of course performance in this study.

Ethnic Group Differences in Course Performance

In light of the finding that cultural factors, in particular Anglo-Caucasian membership, and culturally-related psychological variables, namely perceived family orientation, horizontal individualism, and horizontal collectivism, may help to explain course performance, further analysis was conducted. A one-way analysis of variance (ANOVA) was performed to examine possible group differences by ethnicity in course performance. The independent variable for this analysis was ethnic group membership while the dependent variable was course performance at the end of the Fall semester. Table 11 presents descriptive findings of the ANOVA.

Table 11. *Descriptive Results for Course Performance by Ethnic Grouping* (n = 414)

					95% Confidence Interval	
Grouping	n	Mean	S.D.	Std. Error	Lower Bound	Upper Bound
Anglo-Caucasian	144	6.08	2.77	.23	5.62	6.53
East Asian	112	5.01	2.92	.28	4.46	5.56
South Asian	114	4.87	2.90	.27	4.33	5.41
Another Ethnicity	44	4.57	2.72	.41	3.74	5.40
Overall	414	5.29	2.89	.14	5.02	5.57

Findings from Table 11 suggest that for course performance (scale ranging from 0 to 10), Anglo-Caucasian students achieved highest with a mean score of 6.08, which equated to just over

a letter grade of B on this scale. Next, East Asian students averaged approximately one point lower at 5.01, with those indicating South Asian and another ethnicity averaging lower than both Anglo-Caucasian and East Asian students. A test of homogeneity of variances was conducted using the Levene statistic [F (3, 410) = .40, p = .75], suggesting that the assumption of homogeneity of variances was not violated. Table 12 presents the model summary for this ANOVA.

Table 12. *Model Summary for ANOVA, Course Performance by Ethnic Grouping* (n = 414)

	Sum of Squares	df	Mean Square	F	p
Between Groups	141.08	3	47.03	5.83	.001
Within Groups	3306.97	410	8.07		
Total	3448.05	413			

This model summary indicated that differences in course performance may exist at statistically detectable levels between members of different ethnic groups. To further investigate differences in course performance, post-hoc analysis through Bonferri pair-wise comparisons was conducted. Table 13 presents the results of this post-hoc analysis.

Table 13. *Post-hoc Analysis Evaluating the Pair-wise Comparisons, Course Performance by Ethnic Grouping* (n = 414)

					95% Confidence Interval	
(I) Grouping	J (Grouping)	Mean Difference (I-J)	Std. Error	p	Lower Bound	Upper Bound
Anglo-Caucasian	East Asian	1.07*	.36	.018	.12	2.02
	South Asian	1.21*	.36	.005	.26	2.15
	Another Ethnicity	1.51*	.49	.013	.21	2.81
East Asian	Anglo-Caucasian	-1.07*	.36	.018	-2.02	-.12
	South Asian	.14	.38	1.00	-.86	1.14
	Another Ethnicity	.44	.51	1.00	-.90	1.78
South Asian	Anglo-Caucasian	-1.21*	.36	.005	-2.15	-.26
	East Asian	-.14	.38	1.00	-1.14	.86
	Another Ethnicity	.30	.50	1.00	-1.04	1.64
Another Ethnicity	Anglo-Caucasian	-1.51*	.49	.013	-2.81	-.21
	East Asian	-.44	.51	1.00	-1.78	.90
	South Asian	-.30	.50	1.00	-1.64	1.04

*p < .05

Results from Table 13 indicated that differences between ethnic groupings may primarily relate to those between Anglo-Caucasian participants and participants who indicated membership in the other three ethnic groupings. In an attempt to discern whether culture related factors could explain ethnic group differences in course performance, analysis of covariance (ANCOVA) was conducted with ethnic group as the independent variable and other culturally-related factors as covariates. In ANCOVA, it is assumed that covariates are measured without error, i.e., they are perfectly reliable. In non-experimental research, covariates should be limited to those that can be measured reliably (Tabachnick & Fidell, 2001). Earlier, internal reliability for one of the

culturally-related psychological variables, strength of ethnic affiliation, was found to be at a lower than acceptable level (e.g., Cronbach alpha = .54). Thus, this variable was excluded from this portion of the analyses, while years living in Canada, perceived family orientation, horizontal individualism, vertical individualism, horizontal collectivism, and vertical collectivism acted as covariates. Course performance was the dependent variable. Test of the homogeneity of variances using Levene [F (3, 410) = .31, p = .82] suggested that the assumption of homogeneity of variances was not violated. Table 14 presents the ANCOVA findings.

Table 14. *ANCOVA of Course Performance, Ethnicity as Independent Variable and Culture Related Factors as Covariates* (n = 414)

Source of Variance	Adjusted SS	df	Mean Square	F	p
Corrected Model	304.77	9	33.86	4.35	.001
Intercept	239.12	1	239.12	30.73	.001
Years living in Canada	9.37	1	9.37	1.20	.27
Family orientation [FO]	53.76	1	53.76	6.91	.009
Horizontal individualism [HI]	67.85	1	67.85	8.72	.003
Vertical individualism [VI]	15.40	1	15.40	1.98	.16
Horizontal collectivism [HC]	67.30	1	67.30	8.65	.003
Vertical collectivism[VC]	17.75	1	17.75	2.28	.13
Ethnic group	56.69	3	18.90	2.43	.065
Error	3143.28	404	7.78		

Figures from Table 14 indicate that after adjusting for culture related variables such as years living in Canada, perceived family orientation and individualism-collectivism, course performance by ethnic group may not vary at statistically detectable levels [F (3, 404) = 2.43, p = .065]. The strength of the relationship between adjusted course performance and ethnicity was computed at η^2 = .088, suggesting that approximately 8.8% of variance in adjusted course performance scores may be associated with ethnicity. Adjusted marginal means were compared to unadjusted means for course performance to better discern these covariate effects. Table 15 presents the adjusted marginal means versus unadjusted means for each ethnic grouping.

Table 15. *Adjusted and Unadjusted Mean Course Performance for Ethnic Groups* (n = 414)

Ethnic Group	Adjusted Mean	Unadjusted Mean
Anglo-Caucasian	5.76	6.08
East Asian	5.23	5.01
South Asian	5.07	4.87
Another Ethnicity	4.53	4.57

Results suggest that adjusted means for course performance across ethnic groups are more similar than unadjusted means. A pair-wise comparison through Bonferroni supported this finding by indicating that statistically detectable differences in adjusted means between Anglo-Caucasian, East Asian, and South Asian participants do not exist when taking into account culture related factors. Covariates in ANCOVA may themselves be interpreted as predictors of the

dependent variable, in this case course performance. From Table 14, the factors of perceived family orientation, horizontal individualism, and horizontal collectivism, and the interaction between culture related variables and ethnicity appeared to contribute to course performance. The other variables of years living in Canada, vertical individualism, and vertical collectivism were less strongly related to course performance.

Cultural, Institutional, Psychological, and Background Variables and Overall Grade-Point-Average (GPA)

Stepwise regression was conducted using various cultural, institutional, psychological, demographic, and high school performance measures as independent variables, and overall GPA as the dependent variable. This model also included course performance as an independent variable, which entered after the other predictor variables. Course performance was included as a second inserted block altogether because of its possible suppressing effects on cultural, institutional, psychological, demographic, and high school variables (Hinkle, Wiersma, & Jurs, 1998). Overall grade-point-average acted as the dependent variable. The total sample was split into two groupings, one larger (80% of the sample, $n = 341$) and smaller (20% of the sample, $n = 72$) for cross-validation purpose. Table 16 presents the results of this stepwise regression analysis.

Table 16. *Multiple Regression Analysis through Stepwise of Various Influences on Student Overall GPA at the End of the Semester* ($n = 341$)

					Change Statistics		
Variables	β	R	R^2	Adj. R^2	ΔR^2	ΔF	ΔF sig
Postsecondary experience	.233	.434	.188	.186	.188	78.52	.001
High school score	.091	.501	.251	.247	.063	28.47	.001
Family orientation	-.080	.527	.278	.272	.027	12.65	.001
Anglo-Caucasian	.061	.540	.292	.283	.013	6.32	.012
Course performance	.593	.758	.574	.568	.283	222.26	.001

Findings from Table 16 indicate that only five variables may contribute to building a model for overall grade-point-average. In total, an R^2 value of .574 suggested that approximately 57.4% of total variance in this performance measure may be explained through this model. Perhaps not surprisingly, the variable of course performance accounted for the highest amount of variance in overall GPA with a contribution of $R^2 = .283$. The institutional variable of postsecondary experience and high school performance also were predictive of overall GPA. Perhaps surprisingly, one culturally-related psychological (perceived family orientation) and one cultural variable (Anglo-Caucasian membership) add to the predictive power of the model. The institutionally-related and motivationally-related psychological variables and demographic variables did not relate at statistically detectable levels to overall grade-point-average.

Using the small sample of 20% of the total sample for cross-validation (n = 72), a correlate value of R = .768 was computed which equates to R^2 = .590, a value which exceeds the R^2 = .574 suggested by regression results using data from the larger sample. In this analysis, the overall GPA of the cross-validation sample was somewhat better predicted by the regression equation than was the overall GPA of the larger sample that generated the equation. An unusual result; however, an outcome that allows for researchers to "breathe a sigh of relief after using stepwise (or statistical) regression" (Tabachnick & Fidell, 2001, p. 135). Consequently, the model constructed using these five variables may be useful for predicting overall GPA in this sample.

Ethnic Group Differences in Overall Grade-Point-Average (GPA)

To further explore the relationship between culture and overall GPA, a one-way analysis of variance (ANOVA) was conducted with ethnic group as the independent variable and overall GPA as the dependent variable. Table 17 presents descriptive results of the ANOVA.

Table 17. *Descriptive Results for Overall GPA by Ethnic Grouping* (n = 433)

					95% Confidence Interval	
Grouping	n	Mean	S.D.	Std. Error	Lower Bound	Upper Bound
Anglo-Caucasian	150	2.69	.82	.067	2.55	2.82
East Asian	115	2.47	.80	.074	2.33	2.63
South Asian	121	2.25	.86	.078	2.09	2.40
Another Ethnicity	47	2.15	.85	.13	1.90	2.40
Overall	433	2.45	.85	.041	2.37	2.53

Figures from Table 17 suggest that participants who indicated Anglo-Caucasian ethnicity possessed on average higher GPA at the end of the Fall semester compared to East Asian, South Asian, and students who indicated another ethnicity. As GPA ranged from a scale of 0 to 4.33 at this institution, a mean overall GPA of 2.69 corresponded to just above a B- average, while a mean overall GPA of 2.15 corresponds to a letter grade just above a C average. A test of homogeneity of variance using the Levene statistic [F (3, 429) = .24, p = .87] suggested that the homogeneity of variance assumption was not violated. Next, the ANOVA model summary was examined to determine whether or not statistically detectable differences exist between these groups in overall GPA (see Table 18).

Table 18. *Model Summary for ANOVA, Overall GPA by Ethnic Grouping* (n = 433)

	Sum of Squares	df	Mean Square	F	p
Between Groups	17.66	3	5.89	8.53	.001
Within Groups	295.10	429	.69		
Total	313.65	432			

The model summary for the ANOVA indicated that statistically detectable differences between ethnic groupings exist [F (3, 429) = 8.53, p < .001]. In an attempt to understand specific group

differences in overall GPA, post-hoc analysis through Bonferroni pair-wise comparisons was conducted. Table 19 presents the results of this post-hoc analysis.

Table 19. *Post-hoc Analysis Evaluating the Pair-wise Comparisons, Overall GPA by Ethnic Grouping* (n = 433)

					95% Confidence Interval	
(I) Grouping	J (Grouping)	Mean Difference (I-J)	Std. Error	p	Lower Bound	Upper Bound
Anglo-Caucasian	East Asian	.21	.10	.25	-.062	.48
	South Asian	.44*	.10	.001	.17	.71
	Another Ethnicity	.54*	.14	.001	.17	.90
East Asian	Anglo-Caucasian	-.21	.10	.25	-.48	.062
	South Asian	.23	.11	.21	-.058	.52
	Another Ethnicity	.33	.14	.14	-.055	.71
South Asian	Anglo-Caucasian	-.44*	.10	.001	-.71	-.17
	East Asian	-.23	.11	.21	-.52	.058
	Another Ethnicity	.097	.14	1.00	-.28	.48
Another Ethnicity	Anglo-Caucasian	-.54*	.14	.001	-.90	-.17
	East Asian	-.33	.14	.14	-.71	.055
	South Asian	-.097	.14	1.00	-.48	.28

*$p < .05$

Findings from post-hoc analysis suggested that statistically detectable differences in overall GPA may not exist between Anglo-Caucasian versus East Asian participants. However, differences may exist between Anglo-Caucasians and South Asians, and those who indicated another ethnicity. Analysis of covariance (ANCOVA) was conducted to examine whether ethnic group differences persisted after controlling for culture related factors and their interactions. Ethnic group was considered as the independent variable with years living in Canada, perceived family orientation, horizontal individualism, vertical individualism, horizontal collectivism, and vertical collectivism as covariates. Also, course performance was included as a covariate in an attempt to partition out variation attributable to this variable. Overall grade-point-average acted as the dependent variable. A test of homogeneity of variance using the Levene statistic [$F(3, 410) = 1.50$, $p = .22$] suggested that the assumption of homogeneity of variance was not violated. Table 20 presents findings for the ANCOVA.

Table 20. *ANCOVA of Overall GPA, Ethnicity as Independent Variable and Culturally-related Psychological Factors and Course Performance as Covariates* (n = 414)

Source of Variance	Adjusted SS	df	Mean Square	F	p
Corrected Model	154.61	10	15.46	46.76	.001
Intercept	19.19	1	19.19	58.05	.001
Years living in Canada	.35	1	.35	1.07	.30
Family orientation [FO]	1.28	1	1.28	3.86	.05
Horizontal individualism [HI]	.49	1	.49	1.47	.23
Vertical individualism [VI]	2.36	1	2.36	7.13	.008
Horizontal collectivism [HC]	.099	1	.099	.30	.59
Vertical collectivism[VC]	.071	1	.071	.21	.64
Course performance	121.49	1	121.49	367.46	.001
Ethnic group	2.90	3	.97	2.93	.034
Error	133.25	403	.33		

Results indicated that after adjusting for culture related variables such as years living in Canada, perceived family orientation and individualism-collectivism, and for course performance, differences in overall grade-point-average by ethnic group remained at statistically detectable levels [F (3, 403) = 2.93, p = .034]. The strength of the relationship between adjusted course performance and ethnicity resulted in η^2 = .537, suggesting that approximately 53.7% of variance in adjusted overall GPA was associated with ethnicity. (However, the vast majority of η^2 may be attributed to course performance as a covariate. This variable alone accounted for .477 of η^2 in the corrected model.) Adjusted marginal means were compared to unadjusted means for overall GPA to better discern the influences of the covariates. Table 21 presents the adjusted marginal means versus unadjusted means for each ethnic grouping.

Table 21. *Adjusted and Unadjusted Mean Overall GPA for Ethnic Groups* (n = 414)

Ethnic Group	Adjusted Mean	Unadjusted Mean*
Anglo-Caucasian	2.57	2.72
East Asian	2.50	2.48
South Asian	2.39	2.26
Another Ethnicity	2.32	2.19

*Please note: these unadjusted mean figures are slightly different from the mean scores computed in the one-way ANOVA due to the exclusion of cases with course withdraws for ANCOVA

Following adjustment through covariates, statistically detectable differences in overall GPA remained with Anglo-Caucasians performing at relatively similar levels as East Asians, but Anglo-Caucasian students having higher GPAs compared to South Asians and students with another ethnicity. Explanation could primarily be provided through variations in course performance, but differences in culturally-related psychological factors such as perceived family orientation and vertical individualism also make influential contributions to overall grade-point-average. The culture related factors of horizontal individualism, horizontal collectivism, vertical collectivism and especially, years living in Canada appeared to make little contribution to overall GPA.

In summary, culture related factors appeared influential in explaining differences in various performance measures for the ethnic groups in this sample. Along with membership in Anglo-Caucasian, East Asian, South Asian, or another ethnicity, the variable of perceived family orientation proved to be particularly interesting, as it emerged as a statistically detectable factor in previous regression analyses and analyses of variance. In an attempt to understand better the influence of perceived family orientation in ethnically diverse students' performance, a one-way analysis of variance (ANOVA) was conducted with ethnicity as the independent variable and family orientation as the dependent variable. Table 22 presents the descriptive results.

Table 22. *Descriptive Results for Perceived Family Orientation by Ethnic Grouping* (n = 433)

					95% Confidence Interval	
Grouping	n	Mean	S.D.	Std. Error	Lower Bound	Upper Bound
Anglo-Caucasian	150	3.29	.85	.07	3.15	3.42
East Asian	115	3.76	.94	.087	3.59	3.94
South Asian	121	4.08	.75	.068	3.94	4.21
Another Ethnicity	47	3.45	.85	.12	3.20	3.70
Overall	433	3.65	.91	.044	3.57	3.74

Findings indicate that Anglo-Caucasian participants rated perceived family orientation lowest, with a mean of 3.29 on a one to five-point scale, with South Asian participants reporting higher scores for family orientation at 4.08. A test of homogeneity of variance [F (3, 429) = 1.41, p = .24] suggested that the assumption of homogeneity of variance was not violated. Table 23 presents the model summary for this ANOVA.

Table 23. *Model Summary for ANOVA, Perceived Family Orientation by Ethnic Grouping* (n = 433)

	Sum of Squares	df	Mean Square	F	p
Between Groups	45.68	3	15.23	21.13	.001
Within Groups	309.14	429	.72		
Total	354.82	432			

The model summary indicates that statistically detectable differences in perceived family orientation may exist between different ethnic groupings [F (3, 429) = 21.13, $p < .001$]. To determine where differences exist, post-hoc analysis through Bonferroni pair-wise comparisons was conducted. Table 24 presents the results.

Table 24. *Post-hoc Analysis Evaluating the Pair-wise Comparisons, Perceived Family Orientation by Ethnic Grouping* (n = 433)

					95% Confidence Interval	
(I) Grouping	J (Grouping)	Mean Difference (I-J)	Std. Error	p	Lower Bound	Upper Bound
Anglo-Caucasian	East Asian	-.48*	.11	.001	-.76	-.12
	South Asian	-.79*	.10	.001	-1.07	-.52
	Another Ethnicity	-.16	.14	1.00	-.54	.21
East Asian	Anglo-Caucasian	.48*	.11	.001	.20	.76
	South Asian	-.32*	.11	.027	-.61	-.023
	Another Ethnicity	.32	.15	.19	-.073	.71
South Asian	Anglo-Caucasian	.79*	.10	.001	.52	1.07
	East Asian	.32*	.11	.027	.023	.61
	Another Ethnicity	.63*	.15	.001	.25	1.02
Another Ethnicity	Anglo-Caucasian	.16	.14	1.00	-.21	.54
	East Asian	-.32	.15	.19	-.71	.073
	South Asian	.63*	.15	.001	-1.02	-.25

*$p < .05$

Figures from Table 24 indicate that Anglo-Caucasian participants scored lower in perceived family orientation compared to both East Asian and South Asian students at statistically detectable levels. Further, East Asian participants reported lower family orientation compared to South Asian students. Indeed, South Asian participants rated their family orientation higher than all ethnic groupings at statistically reliable levels ($p < .05$).

Cultural, Institutional, Psychological, and Background Variables with Institutional Retention

Logistic regression was conducted to discern the relationship between various factors and institutional retention from the Fall to Spring semesters. This procedure, logistic regression, is well suited for describing and testing hypotheses concerning relationships between one or more categorical or continuous predictor variables and a categorical outcome variable (Peng, Lee, & Ingersoll, 2002). As with multiple regression analysis, different types of logistic regression are available, each type with its own purposes. Stepwise logical regression was utilized since this type is best employed as a screening or hypothesis-generating technique. More specifically, backward stepwise regression was conducted based on the maximum likelihood-ratio statistic (Tabachnick & Fidell, 2001).

For logistic regression, the first step is to establish that there is a relationship between the predictor variables and the outcome variable. Models constructed through logistic regression are said to provide a better fit to the data if they demonstrate an improvement over the intercept-only or null model (Peng, Lee, & Ingersoll, 2002). To test for model fit, the omnibus test of model coefficient was computed. In addition, a goodness-of-fit statistic was examined to assess the fit of the logistic model against actual outcomes.

Institutional Retention and Dropout Due to Academic Reasons

For the first logistic regression, the cultural variables (ethnicity and years living in Canada), institutional variables (course type, course load, campus, and postsecondary experience), culturally-related psychological variables (perceived family orientation, individualism-collectivism, and strength of ethnic affiliation), institutionally-related psychological variables (goal and institutional commitment), and motivationally-related psychological variable (achievement motivation) were inserted. Also included as independent variables were sex and age, and the high school composite score.

The purpose of this logistic regression was to explore the relationship between various cultural, institutional, psychological, and background factors, together with academic performance, with institutional retention. Therefore, all participants were included in this analysis regardless of their performance following the end of the Fall semester. Since less may be known about the relationship between performance and retention at commuter institutions with open admission policies, overall grade-point-average was inserted as an independent variable. Overall GPA was chosen over course performance as it may provide a more stable measure of participant's actual postsecondary performance. In addition, overall GPA appeared to be more strongly related to institutional retention compared to course performance (see the correlational matrix in Table 9). Table 25 presents model fit results for the logistic regression.

Table 25. *Logistic Regression Model Fit Statistics of the Various Influences on Institutional Retention* (n = 425)

Test	χ^2	df	p
Overall model – Likelihood ratio test	57.88	20	.001
Goodness-of-fit test – Hosmer & Lemeshow	8.09	8	.43

The overall model test coefficient, likelihood ratio was found to be at a statistical detectable level ($p < .05$). Thus, a positive relationship may be present between the predictor cultural, institutional, psychological, and background variables, and overall GPA with institutional retention. Also, an inferential goodness-of-fit statistic (Hosmer-Lemeshow) was non-significant ($p > .05$), suggesting that the model fit the data well. In other words, the hypothesis of a good model fit to the data was tenable (Peng, Lee, & Ingersoll, 2002). These findings were supported by a Nagelkerke R^2 value of .237, an additional descriptive measure of goodness-of-fit. Table 26 presents results for all independent variables inserted.

Table 26. *Logistic Regression Analysis of Various Influences on Institutional Retention* (n = 425)

Variable	β	SE β	Wald's $\chi 2$	df	p	Exp(β) (odds ratio)
Constant	-1.119	2.747	.17	1	.68	.33
Overall GPA	1.024	.234	19.19	1	.001	2.78
Anglo-Caucasian	-.615	.412	2.23	1	.14	.54
Years in Canada	.020	.034	.34	1	.56	1.02
Course type	-.146	.502	.085	1	.77	.86
Course load	.515	.146	12.43	1	.001	1.67
Campus	.041	.365	.013	1	.91	1.04
Postsecondary experience	-.107	.194	.30	1	.58	.90
Family orientation	.094	.239	.16	1	.69	1.10
Horizontal individualism	.124	.253	.24	1	.62	1.13
Vertical individualism	-.283	.241	1.38	1	.24	.75
Horizontal collectivism	.094	.291	.11	1	.75	1.10
Vertical collectivism	.267	.260	1.06	1	.30	1.31
Strength of affiliation	.200	.215	.86	1	.35	1.22
Goal commitment	-.026	.303	.007	1	.93	.98
Institutional commitment	.282	.289	.95	1	.33	1.33
Performance orientation	.027	.278	.009	1	.92	1.03
Mastery orientation	-.454	.357	1.62	1	.20	.64
Age	-.081	.099	.66	1	.42	.92
Sex	.995	.366	7.39	1	.007	2.70
High school score	-.231	.157	2.17	1	.14	.79

Figures from Table 26 suggest that only three variables, namely overall GPA, course load per semester, and sex, may predict institutional retention for this sample. According to Tabachnick and Fidell (2001), models constructed using logistic regression should be simplified by eliminating some predictors when a relationship is found between independent variables and a dependent variable. Therefore, another stepwise logistic regression was conducted using the three variables of overall GPA, semester course load, and sex as predictor variables and institutional retention as the outcome variable. Table 27 presents model fit statistics for this simplified stepwise regression analysis.

Table 27. *Logistic Regression Model Fit Statistics of Overall GPA, Course Load, and Sex on Institutional Retention* (n = 425)

Test	χ^2	df	p
Overall model – Likelihood ratio test	41.53	3	.001
Goodness-of-fit test – Hosmer & Lemeshow	8.00	8	.43

Results from Table 27 indicate that a positive relationship remains between overall GPA, course load, and sex as predictors and institutional retention as criterion following deletion of other cultural, institutional, and psychological variables. In addition, the goodness-of-fit statistic (Hosmer-Lemeshow) was non-significant ($p < .05$) and a Nagelkerke R^2 value of .173 suggested a good model fit. Table 28 presents logistic regression output when only overall GPA, course load,

and sex are inserted as independent variables with institutional retention as the dependent variable.

Table 28. *Logistic Regression Analysis of Overall GPA, Course Load, and Sex on Institutional Retention* ($n = 425$)

Variable	β	SE β	Wald's $\chi 2$	df	p	Exp(β) (odds ratio)
Constant	-1.451	.565	6.59	1	.010	.23
Overall GPA	.653	.168	15.03	1	.001	1.92
Course load	.417	.127	10.75	1	.001	1.52
Sex	.944	.334	8.00	1	.005	2.57

Figures from Table 28 support the previous finding that the three variables of overall GPA, course load, and sex may predict institutional retention from the Fall to Spring semesters. Logistic regression often results in classification tables in which predicted versus observed outcomes are computed. According to Hosmer and Lemeshow (2000, as cited in Peng, Lee, & Ingersoll, 2002), "the classification table is most appropriate when classification is a stated goal of the analysis" (p. 8). For this study, the intent of logistic regression through the stepwise method was exploratory in nature. Therefore, a classification table was not produced. Further, variable coding determines the direction of the odds ratio (Exp(β)) as well as the sign of the β coefficient. Coding therefore affects the interpretation of the odds ratio. A reasonable method with which to interpret odd ratios for logical regression may be to discern which statistically reliable predictors most change the odds of the outcome. These predictors may then be interpreted as most relevant. For example, the variable of sex (coded as 0 for female and 1 for male) resulted in an odds ratio of 2.57. This finding suggests that male students were 2.57 times more likely, than not, to remain enrolled from the Fall to Spring semester compared to female students. The farther the odds ratio from 1, the more influential the predictor (Tabachnick & Fidell, 2001). Results from Table 28 indicate that sex, overall GPA, and then course load are most related to institutional retention. Therefore, additional analyses were conducted for each of these variables keeping in mind that logistic regression is basically a between-subjects strategy (Tabachnick & Fidell, 2001).

Additional tests which sought differences between those students retained from Fall to Spring compared to those students not retained from Fall to Spring were performed. Specifically, differences between those retained by the institution compared to those not retained were investigated for the variables of sex, overall GPA, and course load. First, a non-parametric test using chi-square was conducted to determine possible differences in institutional retention between females and males. Table 29 presents a matrix illustrating the number and proportion of females and males retained and not retained from Fall to Spring semesters.

Table 29. *Institutional Retention Rates by Sex, Fall to Spring Semester* (n = 425)

Grouping	Female (% in group)	Male (% in group)	Total
Retained	190 (82.6%)	180 (92.3%)	370 (87.1%)
Not Retained	40 (17.4%)	15 (7.7%)	55 (12.9%)
Overall	230 (100.0%)	195 (100.0%)	425 (100.0%)

Figures from Table 29 indicate that a higher proportion of females did not transition from Fall to Spring semester compared to males. This difference in institutional retention rates was statistically detectable through Pearson chi-square, $\chi^2 = 8.81$, $p = .003$. Females appear less likely to persist from Fall to Spring semester at this institution.

Next, statistical analysis was conducted to discern whether differences in overall grade-point-average existed between those who transitioned from Fall to Spring versus those who did not transition from Fall to Spring. Since overall GPA is a continuous variable, a one-way analysis of variance (ANOVA) was performed with institutional retention as the independent variable and overall GPA as the dependent variable. Table 30 presents descriptive analysis for ANOVA.

Table 30. *Descriptive Results for Institutional Retention Rates by Overall GPA, Fall to Spring Semester* (n = 426)

					95% Confidence Interval	
Grouping	n	Mean	S.D.	Std. Error	Lower Bound	Upper Bound
Retained	371	2.51	.79	.041	2.43	2.59
Not Retained	55	1.95	1.10	.15	1.65	2.24
Overall	426	2.44	.86	.041	2.36	2.52

Results in Table 30 suggest that those students who persisted possessed in general higher overall GPA with a mean at 2.51, which equates to a higher letter grade (between C+ and B-) compared to those students who did not persist with mean at 1.95 (falling below a letter grade of C). However, a test of homogeneity of variance using the Levene statistic [$F(1, 424) = 16.78$, $p < .001$] suggested that the groupings of retained versus not retained students may not display similar variance in overall GPA. In short, the assumption of homogeneity of variance was violated. Although this result is undesirable, studies have demonstrated that ANOVA tends to be robust to the violation of the test of homogeneity of variance (Coughlin, 2005). Nonetheless, inferences drawn may need to be made with caution. Table 31 presents the model summary for the ANOVA with institutional retention as independent variable and overall GPA as dependent variable.

Table 31. *Model Summary for ANOVA, Institutional Retention and Overall GPA* (n = 426)

	Sum of Squares	df	Mean Square	F	p
Between Groups	15.34	1	15.34	22.02	.001
Within Groups	295.46	424	.70		
Total	310.80	425			

These ANOVA results support the finding that students retained from Fall to Spring had higher overall GPA compared to students not retained from Fall to Spring. Again, this result may need further investigation as the assumption of homogeneity of variances was violated.

Finally, a similar procedure, a one-way analysis of variance, was performed with institutional retention as the independent variable and course load as the dependent variable. Table 32 displays descriptive statistics for the ANOVA.

Table 32. *Descriptive Results for Institutional Retention Rates by Course Load, Fall to Spring Semester* (n = 426)

					95% Confidence Interval	
Grouping	n	Mean	S.D.	Std. Error	Lower Bound	Upper Bound
Retained	371	4.06	1.30	.068	3.93	4.19
Not Retained	55	3.27	1.50	.20	2.87	3.68
Overall	426	3.96	1.35	.066	3.83	4.09

Results from Table 32 suggest that students who were retained on average enrolled in a higher number of courses for the Fall term compared to those who were not retained by this institution. A test of homogeneity of variance through the Levene statistic resulted in $F(1, 424) = 3.45$, $p = .064$, indicating that the assumption of homogeneity of variance was not violated. However, the probability value of .064 neared the $\alpha = .05$ threshold. The ANOVA model summary is presented in Table 33.

Table 33. *Model Summary for ANOVA, Institutional Retention and Course Load* (n = 426)

	Sum of Squares	df	Mean Square	F	p
Between Groups	29.64	1	29.64	16.81	.001
Within Groups	747.61	424	1.76		
Total	777.24	425			

Table 33 supports the finding that those enrolled in a higher number of courses in the Fall semester were more likely to persist to the Spring semester compared to those who enrolled in a lower number of courses in the Fall term. This finding also should be considered with caution given the homogeneity of variance results. Once again, further investigation may be warranted.

Institutional Retention and Dropout Due to Voluntary Reasons

Another logistic regression was conducted to explore the relationship of various factors and institutional retention relating to voluntary dropout. The cultural variables (ethnicity and years living in Canada), institutional variables (course type, course load, campus, and postsecondary experience), culturally-related psychological variables (perceived family orientation, individualism-collectivism, and strength of ethnic affiliation), institutionally-related psychological variables (goal and institutional commitment), and the motivationally-related psychological variable (achievement motivation) were inserted. In addition, the demographic variables of sex and age, high school composite score, and overall GPA were included in this procedure. This component of the study tried to account for wide ranges in students' academic performance. Since an overall GPA of lower than 2.00 acts as a threshold for poor academic standing according to this and many other institutions (Cruise, 2002), students who attained less than 2.00 overall GPA at the end of Fall 2005 semester (n = 94) were excluded from analysis. Even though students with less than a 2.00 overall GPA were not necessarily required to withdraw, it may be inferred that those individuals who had an overall GPA of 2.00 or higher left for non-academic reasons. Table 34 presents the results for the logistic regression.

Table 34. *Logistic Regression Model Fit Statistics of the Various Influences on Institutional Retention, Students with Overall GPA of 2.00 or Higher (n = 332)*

Test	χ^2	df	p
Overall model – Likelihood ratio test	33.68	20	.028
Goodness-of-fit test – Hosmer & Lemeshow	17.25	8	.028

The overall model test coefficient, likelihood ratio was found to be at a statistically detectable level ($p < .05$). A positive relationship may be present between the predictor cultural, institutional, psychological, and background variables with institutional retention for those students with overall GPA of 2.00 or greater. However, an inferential goodness-of-fit statistic (Hosmer-Lemeshow) was significant ($p < .05$) suggesting that the model fit may not be ideal. In spite of this finding, the relationship between institutional retention and voluntary departure was further explored. Table 35 presents results for the independent variables inserted.

Table 35. *Logistic Regression Analysis of the Various Influences on Institutional Retention, Students with Overall GPA of 2.00 or Higher* (n = 332)

Variable	β	SE β	Wald's χ^2	df	p	Exp(β) (odds ratio)
Constant	-5.031	4.110	1.50	1	.22	.007
Overall GPA	-.023	.456	.003	1	.96	.98
Anglo-Caucasian	-.156	.567	.076	1	.78	.86
Years in Canada	.013	.048	.076	1	.78	1.01
Course type	.646	.705	.84	1	.36	1.91
Course load	.912	.235	15.13	1	.001	2.49
Campus	.269	.498	.29	1	.59	1.31
Postsecondary experience	-.193	.239	.65	1	.42	.83
Family orientation	.118	.314	.14	1	.71	1.13
Horizontal individualism	-.148	.338	.19	1	.66	.86
Vertical individualism	-.139	.312	.20	1	.65	.87
Horizontal collectivism	-.119	.404	.086	1	.77	.89
Vertical collectivism	.395	.405	.95	1	.33	1.49
Strength of affiliation	.175	.268	.43	1	.51	1.19
Goal commitment	.212	.406	.27	1	.60	1.24
Institutional commitment	.701	.372	3.55	1	.06	2.02
Performance orientation	-.204	.384	.28	1	.59	.82
Mastery orientation	-.292	.457	.41	1	.52	.75
Age	.105	.147	.51	1	.48	1.11
Sex	.826	.498	2.75	1	.097	2.28
High school score	-.064	.202	.10	1	.75	.94

Figures from Table 35 suggest that at statistically detectable levels, only one variable, namely course load per semester, may predict institutional retention for the sample of students with overall GPA of 2.00 or higher. However, although not statistically detectable at $\alpha = .05$, closer examination of the logistic regression results indicates that two additional variables, namely perceived institutional commitment ($p = .06$) and sex ($p = .097$) may relate to institutional retention. Thus, another stepwise logistic regression was conducted using the three variables of semester course load, institutional commitment, and sex as predictor variables and institutional retention as the outcome variable for those students with overall GPA of 2.00 or higher. Table 36 presents model fit statistics for this simplified stepwise regression analysis.

Table 36. *Logistic Regression Model Fit Statistics of Course Load, Institutional Commitment, and Sex on Institutional Retention* (n = 332)

Test	χ^2	df	p
Overall model – Likelihood ratio test	28.46	3	.001
Goodness-of-fit test – Hosmer & Lemeshow	16.05	8	.042

A positive relationship remains between course load, institutional commitment, and sex as predictors and institutional retention as criterion following deletion of other cultural, institutional, psychological, and background variables. However, a goodness-of-fit statistic (Hosmer-Lemeshow) was significant ($p < .05$) suggesting that again, the model may not fit the data well. This said, a logistic regression was conducted with only course load, institutional

commitment, and sex inserted as independent variables with institutional retention as the dependent variable. Table 37 presents the results.

Table 37. *Logistic Regression Analysis of Course Load, Institutional Commitment, and Sex on Institutional Retention* (n = 332)

Variable	β	SE β	Wald's $\chi 2$	df	p	Exp(β) (odds ratio)
Constant	-3.460	1.335	6.71	1	.01	.031
Course load	.811	.193	17.62	1	.001	2.25
Institutional commitment	.763	.321	5.65	1	.017	2.15
Sex	.887	.439	4.08	1	.043	2.43

Figures from Table 37 support the previous finding that the variables of course load, institutional commitment, and sex may relate to institutional retention for those students with overall GPA of 2.00 or higher. According to the odds ratio (Exp(β)), the variables of sex, course load, and institutional commitment appear most related to institutional retention for this subset of students. Therefore, additional analyses were conducted for these variables.

A non-parametric test using chi-square was conducted to determine possible differences in institutional voluntary withdrawal between females and males. Table 38 presents a matrix providing the number and proportion of females and males with overall GPA of 2.00 or higher retained and not retained from Fall to Spring semesters.

Table 38. *Institutional Retention Rates by Sex, Fall to Spring Semester, Students with Overall GPA of 2.00 or Higher* (n = 331)

Grouping	Female (% in group)	Male (% in group)	Total
Retained	155 (88.1%)	146 (94.2%)	301 (90.9%)
Not Retained	21 (11.9%)	9 (5.8%)	30 (9.1%)
Overall	176 (100.0%)	155 (100.0%)	331 (100.0%)

In general, figures from Table 38 indicate that approximately 9.1% of students were not retained, when only those with overall GPA of 2.00 or higher were included. Specifically, a higher proportion of female students with overall GPA of 2.00 or higher did not transition from Fall to Spring semester compared to males with similar academic performance. This difference in institutional retention rates neared a statistically detectable level through Pearson chi-square, χ^2 = 3.75, p = .053. For students with overall GPA of 2.00 or higher, females seem less likely to persist from Fall to Spring semester at this institution.

Next, a one-way analysis of variance was conducted with institutional retention as the independent variable and course load as the dependent variable for students with overall GPA or 2.00 or higher. Table 39 displays descriptive statistics for the ANOVA.

Table 39. *Descriptive Results for Institutional Retention Rates by Course Load, Fall to Spring Semester, Students with Overall GPA of 2.00 or Higher* (n = 332)

					95% Confidence Interval	
Grouping	n	Mean	S.D.	Std. Error	Lower Bound	Upper Bound
Retained	302	4.08	1.19	.068	3.94	4.21
Not Retained	30	3.10	1.35	.25	2.60	3.60
Overall	332	3.99	1.24	.068	3.86	4.12

For students with overall GPA of 2.00 or higher, results from Table 39 suggest that students who remained at the institution enrolled in a higher average number of courses for the Fall term compared to those who did not remain. A test of homogeneity of variance through the Levene statistic [F (1, 330) = 1.41, p = .236] indicated that the assumption of homogeneity of variance was not violated. The ANOVA model summary is presented in Table 40.

Table 40. *Model Summary for ANOVA, Institutional Retention and Course Load, Students with Overall GPA of 2.00 or Higher* (n = 332)

	Sum of Squares	df	Mean Square	F	p
Between Groups	26.18	1	26.18	18.04	.001
Within Groups	478.79	330	1.45		
Total	504.97	331			

Figures from Table 40 support the finding that for those with overall GPA of 2.00 or higher, and who were enrolled in a higher number of courses in the Fall semester were more likely to persist to the Spring semester compared to those who enrolled in a lower number of courses .

Last, a test which explored differences in perceived institutional commitment was performed between those students with overall GPA of 2.00 or higher and who were retained from Fall to Spring compared to those students not retained from Fall to Spring. A one-way analysis of variance (ANOVA) was conducted with institutional retention as the independent variable and institutional commitment as the dependent variable. Table 41 presents descriptive analysis for ANOVA.

Table 41. *Descriptive Results for Institutional Retention Rates by Institutional Commitment, Fall to Spring Semester, Students with Overall GPA of 2.00 or Higher* (n = 332)

					95% Confidence Interval	
Grouping	n	Mean	S.D.	Std. Error	Lower Bound	Upper Bound
Retained	302	3.39	.62	.035	3.32	3.46
Not Retained	30	3.19	.63	.11	2.95	3.42
Overall	332	3.38	.62	.034	3.31	3.44

Figures from Table 41 suggest that for those students with overall GPA of 2.00 or higher and who remained at the institution for Spring semester had in general higher institutional commitment with mean at 3.39 compared to those students who did not remain with mean at 3.19. A test of homogeneity of variance using the Levene statistic [F (1, 330) = .006, p = .941] suggested that the groupings of retained versus not retained students displayed similar variance in

institutional commitment. Table 42 presents the model summary for the ANOVA with institutional retention as independent variable and institutional commitment as dependent variable.

Table 42. *Model Summary for ANOVA, Institutional Retention and Institutional Commitment, Students with Overall GPA of 2.00 or Higher* (n = 332)

	Sum of Squares	df	Mean Square	F	p
Between Groups	1.17	1	1.17	3.08	.08
Within Groups	125.81	330	.38		
Total	126.98	331			

With a probability value nearing a statistically detectable level (p = .08), these ANOVA results suggest that students with overall GPA of 2.00 or higher and retained from Fall to Spring may have higher institutional commitment compared to students not retained from Fall to Spring.

In sum, stepwise logistic regression and subsequent statistical analyses revealed a few interesting findings. For dropout due to academic withdrawal, three variables (sex, overall grade-point-average, and course load) may constitute important differences between students who transitioned from Fall to Spring semester at this institution compared to those who did not. Although not as tenable a model, two of the same variables (sex and course load) and an institutionally-related psychological variable (perceived institutional commitment) may differentiate between those students who transitioned from Fall to Spring semester and those students who did not when including only those with overall GPA of 2.00 or higher.

Even though none of the cultural and/or culturally-related psychological variables considered related to institutional retention, earlier analyses of factors that may influence overall GPA suggested two of five variables were related to culture. The factors of Anglo-Caucasian membership and perceived family orientation appeared to account for significant portions of variance in overall GPA. Further, exploratory analysis of the variables influencing course performance, a construct strongly associated with overall GPA, suggested that eight factors predicted performance in courses. Of these eight factors, four were related to culture (perceived family orientation, Anglo-Caucasian membership, horizontal individualism, and horizontal collectivism). Consequently, whether or not differences between ethnic groups in institutional retention did indeed exist at statistically detectable levels was pursued further.

Ethnic Group Differences in Institutional Retention

A non-parametric test using chi-square was conducted to determine possible differences in institutional retention between members in different ethnic groupings. Similar to previous analyses, an attempt was made to differentiate between students who dropped out due to academic reasons compared to those who did so due to voluntary withdrawal. For the first chi-square test, all students regardless of their overall GPA were included. Table 43 presents a matrix illustrating the number and proportion of those retained and not retained by ethnic grouping.

Table 43. *Institutional Retention Rates by Ethnic Grouping, Fall to Spring Semester* (n = 426)

Grouping	Anglo-Caucasian (% in group)	East Asian (% in group)	South Asian (% in group)	Other (% in group)	Total
Retained	125 (85.0%)	100 (87.7%)	109 (91.6%)	37 (80.4%)	371 (87.1%)
Not Retained	22 (15.0%)	14 (12.3%)	10 (8.4%)	9 (19.6%)	55 (12.9%)
Overall	147 (100.0%)	114 (100.0%)	119 (100.0%)	46 (100.0%)	426 (100.0%)

Figures from Table 43 suggest that interestingly, students who indicated South Asian ethnicity appeared more likely to transition from the Fall to Spring semester. On the other hand, students who indicated other ethnicity were less likely to remain at the institution. However, this difference in institutional retention rates was not statistically detectable through Pearson chi-square, $\chi^2 = 4.55$, $p = .207$. Institutional retention rates from Fall to Spring semester do not appear to differ for members in different ethnic groups at this institution.

Another non-parametric test through chi-square was performed with a subset of students. Specifically, only those students with overall GPA of 2.00 or higher were included. The objective of this analysis was to determine whether there were ethnic group differences in dropout due to voluntary withdrawal. Table 44 presents the results.

Table 44. *Institutional Retention Rates by Ethnic Grouping, Fall to Spring Semester, Students with Overall GPA of 2.00 or Higher* (n = 332)

Grouping	Anglo-Caucasian (% in group)	East Asian (% in group)	South Asian (% in group)	Other (% in group)	Total
Retained	111 (90.2%)	86 (90.5%)	78 (94.0%)	27 (87.1%)	302 (91.0%)
Not Retained	12 (9.8%)	9 (9.5%)	5 (6.0%)	4 (12.9%)	30 (9.0%)
Overall	123 (100.0%)	95 (100.0%)	83 (100.0%)	31 (100.0%)	332 (100.0%)

Results suggest similar rates for institutional retention between Anglo-Caucasian and East Asian students when only those with overall of 2.00 or higher are considered. Again, South Asian students appear most likely to remain for the Fall to Spring semesters, while those who indicated another ethnicity seemed least likely to make the transition. However, ethnic group differences in institutional retention rates for those students with overall GPA of 2.00 or higher were not statistically detectable through Pearson chi-square, $\chi^2 = 1.58$, $p = .664$.

Chapter IV
Discussion & Implications

The primary purpose of this study was to explore the relationship of various cultural, institutional, psychological, and background factors to measures of postsecondary students' academic performance and retention. The study also investigated academic achievement for students of different ethnic background in light of the cultural, institutional, psychological, and background influences considered. Unlike the majority of previous research, the setting for the present study was a large, commuter institution with open admission policies located in Canada.

The Relationship of Cultural, Institutional, Psychological, and Background Variables with Course Performance

A total of eight cultural, institutional, culturally-related psychological, and background variables related to course performance. The three most influential factors included two institutional variables (course type and postsecondary experience) and the high school composite score. In addition, the institutional variable of campus, cultural variable of ethnicity, and culturally-related psychological variables of perceived family orientation, horizontal individualism, and horizontal collectivism contributed to a model explaining course performance. Findings suggested that none of the institutionally-related and motivationally-related psychological factors (goal and institutional commitment, and achievement motivation), and demographic factors (age and sex) were associated with this performance measure.

An institutional factor, namely course type, was strongly associated with course performance. Specifically, this study found that students who took an Arts course achieved at higher levels compared to students who enrolled in a Sciences course. Some past research supports this finding, while other research has found the opposite. For instance, students in particular fields such as Business, Psychology, or other Social Sciences have been reported to have higher retention rates compared to those enrolled in fields such as Engineering (Astin, 1997). However, another study suggested that Arts students reported slightly lower GPAs at semester's end compared to Science students (Clifton, Perry, Stubbs, & Roberts, 2004). Therefore, the claim that students in Arts courses outperform those in Sciences courses may be specific to this particular institution (Kwantlen). Further research, which looks at the influence on performance in relation to the type of courses in which students are enrolled, may be warranted. It could be of interest to see whether performance in particular courses is specific to institutions or whether any such phenomena are generalizable across postsecondary institutions. Cross-

institutional comparisons also may help to understand particular relationships between performance and course/subject area types.

Another institutional variable, postsecondary experience, related to course performance. In this study, postsecondary experience represented the number of credit hours earned by students. At this institution, earned credit hours are computed through the number of courses successfully completed. The finding that postsecondary experience may help predict course performance is consistent with the axiom, *success begets success*. Students who earned more credits through the successful completion of courses performed at higher levels at this commuter institution with open admission policies. This finding is supported by past research, which has suggested that the longer individuals remain within the higher education system, the higher their chances of persisting until completion (e.g., Allen, 1999; Graunke & Woosley, 2005). However, future studies may seek to further investigate the link between postsecondary experience and course performance, since most research appears concerned with the association between experience and persistence (rather than performance). More research could seek to uncover the specific facets of postsecondary experience that may help students succeed in courses.

For example, a study, which examined academic aptitude and prior knowledge as predictors of student achievement, was conducted by Thompson and Zamboanga (2004). At question was whether prior knowledge helps or hinders new learning. Students with greater preexisting knowledge may understand and remember more compared to those with limited prior knowledge. Alternatively, prior knowledge that is inaccurate, incomplete, or misleading may hinder learning (Thompson & Zamboanga, 2004). Results suggested that domain-specific prior knowledge facilitated learning in introductory psychology. The authors though suggested a need for additional research in this area (Thompson & Zamboanga, 2004). A particular question of interest is to examine if students who successfully complete courses in particular subjects are more likely to achieve in future courses in those particular subjects. This type of study could pinpoint better if course performance is associated with the knowledge accrued through past courses, or with enhanced motivation and interest which may be related to finishing courses. At any rate, the relationship between postsecondary experience and course performance may require more investigation.

This study also found that high school performance relates to course performance. This result comes as no surprise since prior research has generally supported the idea that high school performance acts as the most important predictor variable for postsecondary success (Robbins, Lauver, Davis, Langley, & Carlstrom, 2004). In the present study, the high school composite score was found to be the third most influential factor. In traditional, residential university

settings, high school performance (combined with standardized test scores) is often cited as the most important predictor variable for postsecondary achievement (Adelman, 1999; Robbins, Lauver, Davis, Langley, & Carlstrom, 2004). Therefore, this study's finding appears consistent with research conducted at commuter institutions, which has typically reported somewhat lower correlations between commonly used predictors such as high school performance and achievement measures (Weissberg & Owen, 2005). Less known is whether the relatively lower correlations between high school grades and achievement at non-traditional institutions are actually consequences of the profile of incoming student at non-traditional institutions. The demographic profile of students attending commuter colleges is hypothesized as substantially different from the typical profile of students enrolled in residential institutions (Weissberg & Owen, 2005). Conversely, lower correlations between high school performance and postsecondary achievement at commuter institutions may be associated with institutional practices. Some postsecondary institutions do not utilize measures such as high school grades for admission criteria; thus, these schools may have less than complete high school records. Further investigation of the relationship between background factors such as high school achievement and postsecondary performance is therefore surely warranted, especially in the commuter college setting.

An additional institutional factor, which related to course performance, was campus. The negative relationship between performance with campus location (Richmond campus coded as 0, and Surrey campus coded as 1) suggested that students who enrolled in a course at the smaller Richmond campus may outperform students at the larger Surrey campus. Past research has suggested that students in smaller institutions may be more likely to persist compared to those at larger institutions (Astin, 1997), although another study found that students attending larger institutions may have higher levels of academic performance (Ethington & Smart, 1986). At the institution in which the current study took place, the same students may commute and take courses on multiple campuses. It may thus be difficult to draw any clear conclusions from this finding that campus is related to course performance.

Of particular interest in this study is the finding that culture related factors, specifically ethnic group membership, perceived family orientation, horizontal individualism, and horizontal collectivism were associated with course performance. Ethnic group membership represented students' self-ascribed ethnicity. Family orientation was defined as students' desires to please or provide for family members through academic achievement (Urdan, 2004). Horizontal individualism was a cultural pattern whereby the self was independent, yet more or less equal in

status with others, while horizontal collectivism was a pattern in which the individual saw the self as an aspect of an in-group (Singelis, Triandis, Bhawuk, & Gelfand, 1995).

Previous research on culture and school achievement has suggested cultural differences in educational achievement (Boekaerts, 1998). Cross-cultural studies comparing the success of East Asian and Anglo-Caucasian students have found differences in individuals' conceptions of achievement. For example, past research has indicated that students from different cultural backgrounds perceived achievement in different ways (Chang, Arkin, Leong, Chan, & Leung, 2004). Chinese parents and teachers were more likely to stress the importance of trying hard in school. As such, individuals of Chinese ethnicity attributed their academic success to effort rather than ability (Chang, Arkin, Leong, Chan, & Leung, 2004). This finding is consistent with additional research, which has indicated that East Asian students tend to attribute success in schools to effort instead of innate ability (e.g., Holloway, 1988; Holloway, Kashiwagi, Hess, & Azuma, 1986; Kim & Chun, 1994; Stevenson & Lee, 1990, as cited in Okagaki, 2001).

Together, these studies indicate that cross-cultural differences in students' conceptions of and attributions to achievement are present. However, the exact link between cross-cultural differences in conceptions of and attributions to achievement on objective measures of achievement seems less clear. For example, a commonly held belief exists whereby East Asians are perceived to possess characteristics ideal to the academic setting (Phinney, 1990). This suggestion is consistent with the model minority myth hypothesis, a stereotype that East Asians are hard-working and conscientious in nature. Consequently, East Asians are often viewed as achieving at higher rates in school. Most research, however, has shown no significant differences in academic performance between Asian American and many other students (Maehr & Yamaguchi, 2001).

The present study found that Anglo-Caucasian students out-performed East Asian, South Asian (Indo-Canadian), and those students indicating another ethnicity in lower level Undergraduate courses. Thus, additional analyses were conducted to explore the finding that Anglo-Caucasian students achieved at higher levels than East Asian, South Asian, and students indicating another ethnicity. Correlate values suggested that the culturally-related psychological factors of perceived family orientation and horizontal individualism negatively related to course performance at statistically detectable levels. Although the relationship between horizontal collectivism and course performance appeared less strong, these findings combined suggest that students with higher levels of such culturally-related psychological factors achieved at lower levels in course performance. Additional tests suggested that ethnic group differences in course performance disappeared when controlling statistically for the three factors of perceived family

orientation, horizontal individualism, and horizontal collectivism. Interestingly, these culturally-related psychological factors may help account for ethnic group differences in course performance.

This finding that members of cultures, which emphasize the collective, may not "align" with academic settings in which performance of individuals are highlighted is consistent with past research. Students raised in a culture where competition between peers is seen as a healthy, normal part of development may perceive and interpret performance goal messages differently from those whose cultures place greater emphasis on cooperation (Urdan, 2001). In Western countries, standardized intelligence tests reflect the valued characteristics of individuals. Specific styles of perceiving, thinking, and learning are prized, whereas other styles are less cherished (Boekaerts, 1998). The result may be a divide between individually oriented and socially oriented achievement motivation with individually oriented motivation predominant in Western cultures and socially oriented achievement more common in Eastern cultures (Markus & Kitayama, 1991). As a result, students with individually-based needs and goals may suit environments in which individual performance is emphasized. Alternatively, students with needs and goals of a collective may perform better in environments in which individual performance is emphasized less. Nonetheless, the present study did not support this hypothesis since an association was not made between culture related factors and institutional related factors, in particular classroom goal structures. A possible reason is that the factor of classroom goal structures was ill-developed in the study. Further investigation is surely needed to understand better the relationship between culture related factors and the classroom environment.

In addition, little differentiation was found between students' perceptions of classroom goal structures and their own achievement motivation. Since students' perceptions of the classroom goal structure were strongly related to their achievement goals, composite constructs of mastery and performance orientations were created. Students with a mastery orientation were thought to have goals that were intrinsic. Mastery related to developing competence, gaining understanding and insight, and focusing on the task at hand. Conversely, students with a performance orientation possessed goals which were extrinsic. These students were concerned with demonstrating ability to others, competition, and focusing on the self in relation to others (Midgley, Kaplan, & Middleton, 2001).

An interesting result of the study was that the composite motivationally-related psychological factor of achievement motivation did not emerge as a contributing variable to a model explaining course performance. Motivation is often cited as the most influential determinant of school performance (Pintrich, 2003). Goal theorists generally maintain that

mastery goals are more productive than performance goals. However, controversy surrounds whether mastery or performance goals are beneficial to academic achievement at the postsecondary level (Brophy, 2005). For instance, a positive relationship has been found between college students' performance approach goals and course performance (Wolters, 2004).

A variety of reasons may account for why the achievement motivation construct did not relate to this study's performance or persistence measures. One possibility may be that achievement goal theorists currently do not have a good understanding of the precise conceptual nature of the achievement goal construct. The lack of clarity and specifically, the lack of guidelines regarding which characteristics are required for inclusion in the mastery and performance goal components, has yielded unclear results through empirical research (Elliot & Thrash, 2001). The present study's finding is consistent with the acknowledgement that no easy generalizations concerning what types of goals motivate students in particular postsecondary contexts exist (Pintrich, 2003). The result that the motivationally-related psychological factor of achievement motivation, with components of mastery and performance, did not relate to course performance supports the suggestion that researchers currently do not have a good understanding of multiple goal dynamics across multiple contexts (Pintrich, 2003).

The Relationship of Cultural, Institutional, Psychological, and Background Variables with Overall Grade-Point-Average (GPA)

Of the factors considered in this study, a total of five variables contributed to a model for overall grade-point-average. These variables included course performance and the high school composite score, along with a cultural (ethnicity), an institutional (postsecondary experience), and a culturally-related psychological (perceived family orientation) variable. As an outcome measure, grade-point-average highlights achievement behavior in multiple courses taken over time. GPA is considered a more global indicator of scholastic attainment compared to course performance (Perry, Hladkyj, Pekrun, Clifton, & Chipperfield, 2005). As such, overall GPA is more often used rather than course performance to assess postsecondary performance.

In the present study, students' course performance associated strongest with overall GPA, which was an expected result. The measure of course performance, after all, was used to compute students' overall GPA. The institutional variable of postsecondary experience and the high school composite score also were predictive of overall GPA. As previously mentioned, students who attain past success in higher education may be more likely to be successful in their future studies. Further, high school performance appears to act as a predictor for postsecondary achievement in general, as well as at commuter institutions. However, high school scores may not be as strong a

predictor for achievement at these types of schools as at more traditional, residential institutions. On top of course performance and postsecondary experience, approximately six percent of variance in overall GPA was explained by the high school measure.

Two culture related variables, namely ethnicity and perceived family orientation related to overall GPA. Further analyses of the relationship between ethnicity and overall GPA indicated that Anglo-Caucasian students possessed, on average, higher GPAs compared to East Asian, South Asian, and students who indicated another ethnicity. This finding is similar to results from a study which looked at the outcomes of first year students of different ethnicity in a Canadian university (Grayson, 1995). In Grayson's (1995) study, students of European origin had higher first term GPAs compared to Chinese, East Indian, Black, and students of other ethnicity. Even after adjusting for Ontario Academic Credit (OAC) marks, which are similar to the high school performance measures, Europeans outperformed students of different ethnicity. However, the author of this study found that although differences based on race were present in overall GPA at statistically detectable levels, race per se explained little, if any, of the total variance in the performance measure of overall GPA.

In a related study, academic achievement of first-generation students of different ethnicity was examined at a Canadian university (Grayson, 1997). This research found an important relationship between race and overall GPA. In particular, Chinese students had lower GPAs compared to students of European ethnicity. The author hypothesized that this difference in performance could be a result of difficulties with the English language for Chinese students. He also suggested that Chinese students may be victims of subtle forms of discrimination. Overall, a need for further research was indicated (Grayson, 1997).

In the present study, statistically detectable differences in overall GPA were not uncovered between Anglo-Caucasian and East Asian students, but rather between Anglo-Caucasian students, and South Asian and students who indicated another ethnicity. At the end of the Fall semester, Anglo-Caucasian students possessed higher overall GPAs compared to South Asians, and students who indicated another ethnicity. More investigation sought to explore whether ethnic group differences remained after controlling for culture related factors. Overall GPA remained similar between Anglo-Caucasian and East Asian students. Differences between Anglo-Caucasians and South Asians, and students of another ethnicity on this performance measure persisted even when controlling for culture related factors. This said, the culturally-related psychological factors of perceived family orientation and vertical individualism appeared to help explain differences in overall GPA by acting as statistically detectable covariates during analyses. Previous tests indicated that the factor of perceived family orientation was negatively

related to overall GPA, which suggested that the higher perceived family orientation, the lower students' overall GPA. Vertical individualism, defined as a cultural pattern in which an autonomous self was postulated and where individuals saw each other as different, related positively with overall GPA. This result suggested that the higher students' levels of vertical individualism, the higher their overall GPA. The relationship between vertical individualism and overall GPA was however weaker than that between family orientation and overall GPA.

For the three largest ethnic groupings in the study (Anglo-Caucasian, East Asian, and South Asian), specific analyses of the culturally-related psychological factor, perceived family orientation, suggested that South Asians (Indo-Canadians) scored highest, while Anglo-Caucasians rated lowest in family orientation. Scores in family orientation for East Asian students fell in between those of the South Asian and Anglo-Canadian groupings. In general, these results are similar to past cross-cultural research on school achievement. Students of Canadian European ancestry are thought to value independent learning goals more than East Asian, such as Chinese students, whose collectivist culture emphasizes filial piety (unconditional respect and obedience towards one's parents) (Salili, Chiu, & Lai, 2001; Salili & Lai, 2003). However, the finding that South Asian students rated highest in perceived family orientation is unique in at least two ways. First, few empirical studies on ethnic or racial identity have looked at South Asians (Kibria, 1996), although in Canada, the South Asian population comprises the second largest visible minority group behind East Asians (Statistics Canada, 2001 Census). Next, this finding supports the assumption that higher levels of perceived family orientation may relate to lower levels of overall GPA.

At any rate, additional research is needed to support the present study's finding that associates higher levels of perceived family orientation with lower course performance. For instance, students in the study who indicated another ethnicity scored lowest in family orientation. This result might indicate that additional factors not considered in the study may play significant roles in students' performance.

The Relationship of Cultural, Institutional, Psychological, and Background Variables with Institutional Retention

The association between various cultural, institutional, psychological, and background factors with institutional retention was explored. Institutional retention rates were defined by the proportion of students who dropped out of the institution from the Fall to Spring semesters. An attempt was made to differentiate between those students who dropped out for academic reasons compared to those who did so voluntarily. To do so, two sets of analyses were conducted. The first set included all students regardless of their overall GPA. The second analyses included only those students with overall GPA of 2.00 or higher at the end of the Fall semester.

Institutional Retention and Dropout for Academic Reasons

Three variables (sex, semester course load, and overall GPA) distinguished between students who dropped out and those who did not when all students, regardless of overall GPA, were included. Perhaps surprisingly, the institutional factor of postsecondary experience along with high school performance did not relate to student dropout. Further, no culture, culturally-related, institutionally-related, or motivationally-related psychological factors were associated with institutional retention.

Students' sex did relate to institutional retention. In particular, a greater proportion of male students remained at the institution compared to female students. Past research has found differences in achievement rates between male and female students. However, studies have normally suggested that males achieved at lower levels compared to female students (Clifton, 1997; Graunke & Woosley, 2005). Other research has suggested little difference in student persistence along the basis of sex (Allen, 1999). Thus, it may be difficult to draw any definitive conclusions from this finding, other than that females seem more likely to leave this commuter institution compared to male students following the Fall semester. Further investigation may be warranted.

Another factor, which helped to differentiate between those students who remained at the institution compared to those who did not was semester course load. Students with higher course loads were less likely to drop out of the institution compared to those with lower course load. This result is consistent with a study which found course credit hours to be a predictor of year-to-year persistence (Szafran, 2001). Specifically, students enrolled in a higher number of credit hours were more likely to persist compared to those registered in a lower number of credit hours after one year of study. Together, these findings suggest that students who invest more resources,

such as time and money (tuition fees and so on) into their postsecondary studies, are less likely to drop out of the institution in which they are enrolled.

The third variable to emerge in this set of analyses was overall GPA. Academic performance positively related to persistence for students who attended this commuter institution. In particular, students who remained at the institution had higher overall GPAs compared to students who dropped out - students with lower overall GPAs were more likely to drop out. This finding is consistent with past research, which suggested positive relationships between academic performance and retention (e.g., Kirby & Sharpe, 2001; Tinto, 1975). Academic difficulty has been cited as the most significant contributor to student withdrawal. Higher performing students seem less likely to drop out in commuter, postsecondary settings.

However, students' prior academic achievement did not appear as a contributing variable in a model predicting dropout behavior. This study found that high school performance did not relate at statistically detectable levels to institutional retention. Previous academic performance in the form of high school achievement has differentiated in past research between those students who persisted and those who withdrew from their postsecondary studies (Kirby & Sharpe, 2001). Therefore, a lack of association between high school performance and institutional retention may be unique to commuter settings with open admission policies. Further investigation may be needed to discern whether it is the profile of students who attends commuter colleges, institutional practices in recording high school records, and/or other factors that led to the statistically weak relationship between high school performance and institutional retention in this study.

None of the culture related variables emerged as factors that could be used to distinguish between those students who remained at the institution compared to those who did not. In light of the present study's findings that culture related factors were strongly associated with both performance measures (course performance and overall GPA), an expected result was a positive relationship between a cultural factor such as ethnicity and institutional retention. Specifically, the study found that Anglo-Caucasian students outperformed East Asian, South Asian, and students who indicated another ethnicity. Although performing at higher levels, Anglo-Caucasian students were less likely to persist from semester-to-semester compared to students in the other ethnic groupings. Instead, South Asian students, who performed at lower rates compared to Anglo-Caucasian and East Asian students, seemed more likely to continue at this institution (however, these ethnic group differences were not detectable at statistically significant levels). Future research may seek to uncover the role that ethnicity and culture related factors such as perceived family orientation play in persistence behavior. For instance, family orientation may

have a negative influence on student performance, but be positively associated with persistence for particular ethnic group members, such as South Asians. More research on the relationship between ethnicity and institutional retention is warranted to discern why students of South Asian ethnicity appeared more likely to persist in this large, commuter institution, and why Anglo-Caucasian, East Asian, and students of another ethnicity did not.

Institutional Retention and Dropout due to Voluntary Withdrawal

This study attempted to differentiate between those students who dropped out because of poor academic performance compared to those who withdrew for voluntary reasons. To do so, another set of analyses was conducted including only those students with overall GPAs of 2.00 or higher. A threshold of 2.00 GPA is common for poor academic standing at most postsecondary institutions (Cruise, 2002). Students with less than 2.00 may not necessarily be forced to withdraw on academic grounds. However, a reasonable assumption could be made that the primary reason for students with less than 2.00 overall GPA to drop out relates to academic difficulty. Previous findings reporting positive relationships between academic performance and institutional retention support this assumption (Kirby & Sharpe, 2001). In the present study, three variables (sex, semester course load, and perceived institutional commitment) helped predict students who withdrew compared to students who did not, when only those with overall GPAs of 2.00 or higher were included. However, this model was not as tenable as that found in the study's previous analysis of institutional retention.

For students with overall GPAs of 2.00 or higher, differences in both sex and semester course load were found between those students who persisted, and those who did not. Males were more likely to continue at the institution compared to female students. Students with higher semester course loads were also more likely to remain enrolled at the institution compared to those with lower semester course loads.

Another variable which emerged as a significant predictor of retention during this set of analyses was the institutionally-related psychological factor of perceived institutional commitment. Institutional commitment is defined as the degree to which an individual was motivated to graduate from a specific postsecondary institution (Tinto, 1975). This factor of institutional commitment differed from goal commitment (the degree to which an individual was generally committed or motivated to earn a college degree) in that dropout from an institution may not necessarily translate into withdrawal from the entire system of higher education. Even though an estimated 97 percent of first-time enrollees at baccalaureate institutions intend to complete their degrees at a given institution (Astin, 2004), approximately 60 percent of

undergraduates are estimated to attend more than one postsecondary institution in the United States (Adelman, 1999).

In this study, students who were retained rated higher in institutional commitment compared to those who were not retained, when only those students with overall GPAs of 2.00 or higher were considered. This finding was consistent with Tinto's (1975) student integration model, in that the higher degree of integration, the greater the commitment to a specific institution. Students who stayed enrolled at this institution self-reported as more committed to the institution.

This finding also provides partial support to previous research conducted in commuter college settings. Earlier research has suggested that commuter institutions may have a relatively higher number of students who transfer regardless of performance compared to traditional residential institutions. Compared to commuter colleges, residential campuses may be more likely to engender in their students a sense of belonging to the institutions (Weissberg & Owen, 2005). When students with overall GPAs of less than 2.00 were excluded, slightly over nine percent of Fall semester enrollees did not return for the Spring semester at this commuter institution. In other words, almost one of ten students was not retained by the institution from one semester to the next semester, even when only those students with relatively higher academic performance were considered.

Lower ratings in institutional commitment could relate to the profile of a student who initially enrolls at commuter institutions, which are primarily colleges with open admission policies. For example, institutional retention rates depend on the kinds of students that postsecondary institutions admit (Astin, 2004). Colleges generally possess open admission policies so that access to higher education is provided for those individuals who would not normally participate in the postsecondary system. A central role for the community college is to provide a low cost, accessible education for students working toward a baccalaureate degree (Romano & Wisniewski, 2005). Compared to residential institutions, the demographic profile of students attending commuter colleges may be substantially different (Weissberg & Owen, 2005). Students who first enroll in commuter institutions may be less committed to postsecondary institutions, regardless of which school(s) they attend. Particular individuals may have lower institutional commitment to the college at which they start, and after they transfer, also have lower institutional commitment than other students at the new institution. Not all students will benefit to the same extent or perhaps even in the same direction from the postsecondary experience (Pascarella & Terenzini, 2005). Future research, which follows cohorts of students

who transfer from one institution to another institution, may help to understand better the relationship between institutional commitment and retention.

In summary, the current findings on institutional retention suggest a relationship between academic performance and persistence. Students who perform at lower levels may be more likely to drop out. When performance was controlled for by considering only those students who performed at relatively higher levels (an overall GPA of 2.00 or higher), the factor of institutional commitment played a role in influencing students' decisions to remain or leave this commuter institution. Combined with past research, these findings suggest that commuter institutions with open admission policies may not retain students as well as traditional, residential universities because of lower commitment to the institution. However, past research suggests that differences in institutional retention may not be a result of initiatives or practices within the institutions themselves, but may reflect the particular profiles of students who enroll in particular institutions.

Consequently, achievement measures such as institutional graduation rates may not be very meaningful. It would not be wise to blame a college with superficially low graduation rates for the behavior of students who swirl throughout the higher education system (Adelman, 1999). Completion or graduation rates may be misleading indicators of an institution's capacity to retain its students. Further research examining students enrolled at commuter institutions with open admission policies is surely warranted to understand better performance and retention in the higher education system at-large.

Limitations

This study explored the influences of cultural, institutional, and psychological factors on various measures of postsecondary students' academic achievement at a large, Canadian commuter institution with open admission policies. As hypothesized, unique relationships were uncovered between the various factors considered with each outcome measure. Along with high school scores, three institutional (course type, postsecondary experience, and campus) and four culture related (ethnicity, perceived family orientation, horizontal individualism, and horizontal collectivism) factors predicted course performance. An institutional (postsecondary experience) and two culture related (ethnicity and perceived family orientation) factors, with high school scores and course performance, were strongly associated with overall grade-point-average. Three factors (sex, semester course load, and overall GPA) appeared to predict those students who dropped out for academic reasons, while three factors (sex, semester course load, and perceived institutional commitment) appeared to distinguish those students who dropped out due to voluntary withdrawal. These results aside, the study had a number of limitations.

Difficulty in Defining the Construct of Achievement

This study did not resolve the conceptual confusion surrounding the achievement construct. Educational achievement is usually established on performance-based measures such as instructor assigned letter grades in courses, grade-point-average, institutional graduation rates, and related outcome variables. However, academic achievement also may be considered through students' perceptions. In psychological studies, constructs such as self-efficacy beliefs, outcome expectancies, meta-cognitive knowledge, and achievement and performance goals commonly act as outcome variables (Robbins, Lauver, Le, Davis, Langley, & Carlstrom, 2004). Success may then be more individually defined. Achievement could mean having the opportunity to develop potential, enhance career options, realize ambitions, and increase self-satisfaction - all highly personnel measures (Fralick, 1993). Of course, society and individuals may possess different definitions or criteria for what constitutes academic success. Students who are not awarded an academic credential following college may still perceive themselves as obtaining success if, for instance, they find employment during the course of their studies. Students who did not graduate but attained life-long interest in a subject area because of postsecondary enrolment may perceive their experience as successful. An important indicator for success in education may be development of sustained interest in a discipline or topic (Harackiewicz, Barron, Tauer, & Elliot, 2002). Clearly, personal perceptions of achievement may not always correlate with objective measures of achievement.

This said, studies of postsecondary achievement may continue to benefit from examining how varying factors and their interactions relate to different objective measures of achievement. For example, measures of school performance appear not to be distinct in different cultures and/or societies. Achievement in the form of high letter grades is valued in independent, individualistic cultural contexts found in American society. Likewise, many of the most collective societies of the world currently appear extremely preoccupied with achievement of this same kind (Markus & Kitayama, 1991). Postsecondary students in Canada may thus have similar goals for achievement to university students in Japan.

Certainly, students may conceive of academic achievement in unique ways. Some students may develop their views of achievement through familial influences, teacher's influences, beliefs about their abilities, and other factors. School achievement does not relate only to objective measures of performance and persistence. Nonetheless, incorporation of cultural, institutional, and psychological factors into models which seek to better understand objective standards for postsecondary success such as course performance, overall grade-point-average, and institutional retention may contribute to education and psychological research. Broadly speaking,

these types of studies may continue to supplement the body of research that seeks to explain why some students attain academic success while others do not.

Difficulty in Defining the Construct of Culture

Culture may be defined in various ways. The way in which culture is defined often shapes the results of empirical research. For example, the concept of culture is often interchanged with ethnicity, race, or nationality (Betancourt & Lopez, 1993). Research has suggested cultural differences in educational achievement, which is usually translated as differences in performance between members of one ethnic grouping compared to those of another ethnic grouping. Research on culture, which seeks to find generalities across ethnic and/or racial groupings, treats each grouping as containing members who may be qualitatively distinct (Fiske, 2002). However, within-culture variations have been posited as much greater than between-culture variations (Hong & Chiu, 2001). For instance, the term Asian American includes people culturally identified with thousands of cultures comprising more than half the world's population. Latino American lumps together Americans with links to Cuba, Mexico, Costa Rica, Brazil, Uruguay, Ecuador, and many other nations, each of which includes diverse sub-cultures and social classes (Fiske, 2002).

Perhaps not surprisingly, research that has examined within-cultural variation has found differences at sub-group levels. In a study looking at intra-cultural variations within Latino students, differences in educational attainment were found between various Latino sub-groups such as Mexican Americans, and Americans of Puerto Rican and Cuban descent (Garcia & Bayer, 2005). In particular, Mexican Americans were significantly less likely than others to attain a college education when controlling for individual, family, and high school background factors (Garcia & Bayer, 2005).

Although the present study did not resolve the definitional problems relating to culture, it sought to discern whether various culturally-related psychological variables (such as perceived family orientation), along with cultural factors (such as ethnicity), could help explain differences in school achievement. Continuation of these types of studies may help to locate *what* in culture may play a role in influencing postsecondary students' achievement.

Methodological Issues with the Study

Implications of this study's findings may be limited to problems surrounding its methodology. First, the primary method of data collection was through survey questionnaires. Self-reported information may reflect perceptions rather than behavioral tendencies. For example, this study found family orientation (the desire to please family members through academic

achievement) to be strongly associated with course performance and overall GPA. Specifically, students who perceived themselves as higher in family orientation had lower course performance and overall GPA. However, at question is whether this higher level of perceived family orientation resulted in actual action to please family members through achievement. Did higher perceived levels of family orientation encourage students of different ethnic background to study for longer hours? Or, did higher perceived levels of family orientation lead to students of different ethnic backgrounds to hide assignments, in which they fared poorly, from their parents? Future research through means other than survey questionnaires may be needed, as questionnaires may limit the range of responses students of different cultures can offer. Researchers may be required to immerse themselves in classrooms and employ open-ended discussions with students. Researchers may then be able to understand better how perceived messages in schools are interpreted and translated into motivational beliefs, feelings, and behaviors (Urdan, 2004). Overall, methods such as participant observation, in-depth interviewing, and life-history collection should be promoted in cultural psychological studies (Fiske, 2002).

In addition, the data used for this study's analyses were collected at one point in time. Previous research has suggested that concepts such as ethnicity or race may be trait-like, while culture may be state-like (Banton, 2001). As such, individuals' ethnicity may be relatively stable, while culturally-related factors may change over time. Test-retest values for questionnaire items completed twice during this study provide partial support for the suggestion that culturally-related factors are less stable. For example, a test-retest correlate value of only 0.50 was obtained for horizontal individualism. Longitudinal studies measuring various cultural, institutional, and psychological factors at different times may help to clarify the relationship between these factors and academic achievement.

A related limitation of this study was that it examined institutional retention on a semester-to-semester basis. Achievement behavior, especially that pertaining to institutional retention, should be examined over extended periods (Pascarella & Terenzini, 1980). For example, students, who were enrolled in the Fall 2005 semester, but who then did not return in the Spring 2006 semester, may have continued their studies at this same institution in the Summer 2006 semester. Alternatively, these same students could be intending to re-enroll for the upcoming Fall 2006 semester. These students may then have "stopped out" (Allen, 1999), rather than dropped out completely from the institution. Further, it is unknown whether these students returned to the higher education system by enrolling at a different institution.

Last, results of the study may be limited to the type of institution at which the research took place. Kwantlen is a large, publicly funded Canadian institution. Like community colleges,

Kwantlen has open admission policies. Individuals who apply are not denied entry. The profile of a typical student who attends Kwantlen may then be similar to that of students in two-year colleges. However, like traditional, residential universities, Kwantlen offers both applied and non-applied four-year baccalaureate level degrees. Even though students who enter Kwantlen may intend to finish a four-year degree elsewhere, significant portions of students start at this institution with the goal of completing a bachelor degree there.

This exploration of the various influences on undergraduate students' academic achievement may be unique in that the study was conducted at a large, Canadian commuter institution. In general, research on achievement and dropping out in the postsecondary system has ignored a large component of higher education, namely non-university settings. The majority of research relating to postsecondary issues has focused on "traditional" White undergraduates, aged 18 to 22 years, who attend four-year institutions full-time (Pascarella & Terenzini, 2005, p. 2). The few studies conducted in non-traditional educational settings such as two-year commuter colleges have found differences in students' achievement patterns, but these results have in general been mixed (Napoli & Wortman, 1998). Continued research on achievement in both university and non-university settings may help educators understand better student achievement in the higher education system overall.

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Appendix A

SECTION I

Following are some questions about yourself as *a student in this class*. Please circle the number that best describes what you think using the scale below.

1 2 3 4 5

Not at all true Somewhat true Very true

1. It's important to me that I don't look stupid in class.	1	2	3	4	5
2. It's important to me that other students in my class think I am good at my class work.	1	2	3	4	5
3. It's important to me that I learn a lot of new concepts this year.	1	2	3	4	5
4. One of my goals in class is to learn as much as I can.	1	2	3	4	5
5. One of my goals is to show others that I'm good at my class work.	1	2	3	4	5
6. One of my goals is to master a lot of new skills this year.	1	2	3	4	5
7. One of my goals is to keep others from thinking I'm not smart in class.	1	2	3	4	5
8. It's important to me that I thoroughly understand my class work.	1	2	3	4	5
9. One of my goals is to show others that class work is easy for me.	1	2	3	4	5
10. One of my goals is to look smart in comparison to the other students in my class.	1	2	3	4	5
11. One of my goals is to avoid looking like I have trouble doing the work.	1	2	3	4	5
12. It's important to me that I improve my skills this year.	1	2	3	4	5
13. It's important to me that my teacher doesn't think that I know less than others in class.	1	2	3	4	5
14. It's important to me that I look smart compared to others in my class.	1	2	3	4	5
15. In our class, trying hard is very important.	1	2	3	4	5
16. In our class, showing others that you are not bad at class work is really important.	1	2	3	4	5
17. In our class, how much you improve is really important.	1	2	3	4	5
18. In our class, getting good grades is the main goal.	1	2	3	4	5
19. In our class, really understanding the material is the main goal.	1	2	3	4	5
20. In our class, getting right answers is very important.	1	2	3	4	5
21. In our class, it's important that you don't make mistakes in front of everyone.	1	2	3	4	5
22. In our class, it's important to understand the work, not just memorize it.	1	2	3	4	5
23. In our class, it's important not to do worse than other students.	1	2	3	4	5
24. In our class, learning new ideas and concepts is very important.	1	2	3	4	5
25. In our class, it's very important not to look dumb.	1	2	3	4	5
26. In our class, it's okay to make mistakes as long as you are learning.	1	2	3	4	5
27. In our class, it's important to get high scores on tests.	1	2	3	4	5
28. In our class, one of the main goals is to avoid looking like you can't do the work.	1	2	3	4	5

SECTION II

Following are some questions about yourself as *a student in general.* Please circle the number that best describes what you think using the same scale as before.

1 2 3 4 5
Not at all true Somewhat true Very true

1. It is important for me to get a university degree.	1	2	3	4	5
2. When I commit to a goal, I usually achieve it.	1	2	3	4	5
3. I am confident that I made the right decision in choosing to attend this institution.	1	2	3	4	5
4. My close friends rate this institution as a quality institution.	1	2	3	4	5
5. It is important for me to finish my program of study.	1	2	3	4	5
6. I think getting a university degree is a good goal.	1	2	3	4	5
7. My education at this institution will help me secure future employment.	1	2	3	4	5
8. Most students at this institution have values and attitudes similar to my own.	1	2	3	4	5
9. It is very important for me to graduate from this institution as opposed to some other school.	1	2	3	4	5
10. I am certain of what I want to major in.	1	2	3	4	5
11. I am satisfied with the prestige of this institution.	1	2	3	4	5
12. I am certain this institution is the right choice for me.	1	2	3	4	5
13. I set goals for myself and achieve them.	1	2	3	4	5
14. Most faculty, academic advisors, and administrators at this institution have values and attitudes similar to my own.	1	2	3	4	5
15. I am strongly committed to achieving a university degree.	1	2	3	4	5
16. I feel I belong at this institution.	1	2	3	4	5
17. I am certain of my career plans.	1	2	3	4	5
18. Depending on how things go, it is quite likely that I may have to revise my goal of getting a university degree.	1	2	3	4	5
19. It would not take much for me to abandon my university degree program.	1	2	3	4	5
20. My education at this institution will help me get a better job than an education from another institution.	1	2	3	4	5

SECTION III

Following are some questions about *your culture*. Please circle the number that best describes you.

1 2 3 4 5
Not at all true Somewhat true Very true

1. An important reason that I try to do well in school is to please my parents.	1	2	3	4	5
2. I prefer to be direct and forthright in discussion with people.	1	2	3	4	5
3. I want to do well in school so that I can be better prepared to take care of my family.	1	2	3	4	5
4. It is important that I do better in class than others.	1	2	3	4	5
5. Competition is the law of nature.	1	2	3	4	5
6. The well-being of my classmates is important to me.	1	2	3	4	5
7. The main reason I try to do well in school is to bring honor to my family.	1	2	3	4	5
8. I feel good when I cooperate with others.	1	2	3	4	5
9. It is important to me that my parents are proud of my achievement in school.	1	2	3	4	5
10. I often do "my own thing".	1	2	3	4	5
11. I am a unique individual.	1	2	3	4	5
12. I would sacrifice an activity that I enjoy very much if my family did not approve of it.	1	2	3	4	5
13. I enjoy being unique and different from others in many ways.	1	2	3	4	5
14. It annoys me when other people perform better than I do.	1	2	3	4	5
15. Children should be taught to place duty before pleasure.	1	2	3	4	5
16. When another person does better than I do, I get tense and aroused.	1	2	3	4	5
17. If a relative were in financial difficulty, I would help within my means.	1	2	3	4	5
18. I would do what would please my family, even if I detested that activity.	1	2	3	4	5
19. It is important to maintain harmony within a group.	1	2	3	4	5
20. I usually sacrifice my self-interest for the benefit of my group.	1	2	3	4	5
21. Over half my friends are of similar ethnicity.	1	2	3	4	5
22. I usually feel a natural need to associate with individuals who are of similar ethnicity.	1	2	3	4	5
23. I usually am proud to be of my ethnic origin.	1	2	3	4	5
24. My ethnic heritage is not too important to me.	1	2	3	4	5

SECTION IV

Following are questions about *some demographic characteristics*. Please answer these questions to the best of your ability.

1. What is your age? _____ years

2. Are you a female or male? _____

3. In which country were you born? _____

4. In which country was your mother born? _____

5. In which country was your father born? _____

6. For how many years have you lived in Canada? _____ years

7. Which language did you first learn to speak? _____

8. If you were to describe your ethnicity, what would it be? _____

9. If you are to have to describe yourself as having an ethnic origin or ethnicity, which *one* would it be (please check one)?

- o Asian-Canadian (a few examples include Chinese-Canadian, Japanese-Canadian, Korean-Canadian)
- o East Asian (a few examples include Chinese, Japanese, Korean)
- o European-Canadian (a few examples include British-Canadian, French-Canadian, Scandinavian-Canadian)
- o European (a few examples include British, French, Scandinavian, Russian)
- o Indo-Canadian
- o South Asian (a few examples include East Indian, Pakistani)
- o Another ethnicity (please specify) _____

10. Statistics Canada uses the Employment Equity Act to define the visible minority population as, "*persons other than Aboriginal peoples, who are non-Caucasian in race or non-white in colour. The visible minority population includes the following groups: Chinese, South Asian, Black, Arab/West Asian, Filipino, Southeast Asian, Latin American, Japanese, Korean, and Pacific Islander.*"

Do you belong to a visible minority group (Please circle)? Yes No

11. If yes, to which visible minority group do you belong? _____