Development of Educational and Occupational Aspirations Throughout High School and Beyond

by

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A thesis submitted in conformity with the requirements for the degree of Doctor of Philosophy
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Ontario Institute for Studies in Education of the University of Toronto

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Abstract

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Preparations for, and implementation of, career related choices is one of the critical challenges inherent in the normative shift from adolescence to early adulthood. High school is an opportunity for individuals to crystallize educational and occupational aspirations; thus, decisions made during this time have profound consequences for either limiting or optimizing future endeavors.

Prospective data from a five year longitudinal study were used to examine the relative influence of background variables (e.g., academic achievement, age, gender, parental education) and self-perceived competence on the development of aspirations during adolescence, and subsequent educational pursuits in early adulthood. In addition, patterns of stability in the development of aspirations and orientation of life course goals among varied developmental pathways were examined. A qualitative component was also included in an attempt to capture personal experiences of perceived challenges and supports encountered in pursuit of aspirations.

Participants (n=210), drawn from a larger longitudinal database, completed self-report questionnaires at three time points: twice while in high school and once one to three years post-secondary. Questionnaire data was
combined with early high school academic achievement, as reported in Ontario School Record data. Educational aspirations were coded according to the level of post-secondary education one hoped to achieve. Occupational aspirations were coded according to the status level associated with desired occupation.

Four distinct educational pathways with varying degrees of socioeconomic promise were identified among this sample in early adulthood. Multivariate analyses indicated that academic achievement at the beginning of high school was the only variable that consistently predicted educational aspirations and educational pathway in early adulthood. Self-perceived competence in adolescence did not predict the development of aspirations in adulthood. No significant gender effects were discovered. The degree of stability of aspirations over the five year span varied among educational pathways. Qualitative responses provided only a general indication of supports and challenges experienced by participants; response patterns did not differ significantly among diverse educational pathways. Obtained results support early intervention to align aspirations and academic skill in order to establish optimal and realistic goals and develop an appropriate career plan as means to facilitate the realization of one’s full potential.
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Chapter 1

Introduction

In Western industrialized societies, the shift from adolescence to early adulthood is a major normative life transition associated with multidimensional developmental demands (e.g., biological, social, and cognitive changes) that can lead to diverse developmental trajectories or pathways (Wigfield, Eccles, & Pintrich, 1996). One critical challenge during this transition involves the preparation for, and implementation of, career choices. Although theorists generally agree that career development begins in childhood and continues throughout adulthood (Seligman, Weinstock, & Heflin, 1991), adolescence is an opportunity for individuals to begin to crystallize educational and occupational aspirations through high school course selection and re-evaluation of life course goals. Educational and occupational choices made during the transition from adolescence to early adulthood are critical components of adolescent development in general, and have profound consequences for either limiting or optimizing future endeavors and setting life-course trajectories. Consequently, decisions made at developmental transition points such as this alter developmental or life-course trajectories (Elder, 1998).

Educational and occupational choices are not made in a vacuum; rather, they occur within a context of complex cognitive and social development (Lent, Brown, & Hackett, 1994, 1996) and often with consideration regarding decisions about family formation, such as marriage and parenting (Thiessen & Looker, 1999). Therefore developmental changes in basic cognitive and social
processes must be considered when trying to gain a clearer understanding of individuals' choices and subsequent developmental pathways. This is especially important in relation to better understanding educational and occupational trajectories in the current economic climate of rapid technological and economic changes. Economic changes not only make post-secondary education increasingly necessary, but also make educational and occupational choices more complex. A comparison of educational aspirations and subsequent outcomes between two cohorts graduating from high school in 1987 and 1992 suggest that a larger proportion of Canadian youth are staying in school longer, continuing educational training after obtaining an initial undergraduate degree (Krahn & Lowe, 1999). It may be that young adults are investing in additional post-secondary education in response to increasing uncertainty in an unstable economy.

Most research examining transitional processes related to adolescent development concerns the transition from childhood to adolescence (Dornbusch, 2000). The transition out of adolescence into early adulthood has not received nearly as much empirical attention (Sherrod, Haggerty, & Featherman, 1993). This may be due in part to an ambiguous boundary between the end of adolescence and the beginning of early adulthood (Dornbusch, 2000). Arnett (2000) argues that development from late adolescence through the twenties (essentially 18 to 25 years of age) is neither adolescence nor early adulthood, but is better captured as a period of emerging adulthood. Graduation from high school is considered by many to be a consistent marker or indication of the
transition from adolescence to early adulthood (e.g., Stevenson, Kochanek, & Schneider, 1998; Thiessen & Looker, 1999; Vondracek, Lerner, & Schulenberg, 1986). The present study contributes to this underrepresented area of research by examining educational and occupational trajectories spanning a five year period that essentially encompasses two transitional periods: the transition from mid to late adolescence (transition within high school from more junior to more senior grades); and the transition from late adolescence to emerging adulthood or early adulthood (transition beyond high school as indicated by graduation from high school).

A further weakness in extant research around the development of educational and especially occupational aspirations throughout these transitions is the use of retrospective data. Retrospective recall of prior expectations may not be reliable measures of actual expectations held at an earlier stage of development (Rindfuss, Cooksey, & Sutterlin, 1999). There is an expressed need for longitudinal studies that begin when individuals are in adolescence and continue into adulthood (Csikszentmihalyi & Schneider, 2000; Dornbusch, 2000; Rindfuss et al., 1999; Vondracek et al., 1986). A longitudinal design allows for the direct measurement of developmental factors during adolescence that contribute to educational and occupational attainment in adulthood.

The present study offers a valuable contribution through the use of prospective, longitudinal data, exploring a five year span, beginning in the early or middle stages of high school (middle adolescence) and continuing one to three years after high school graduation (early adulthood). The present study
further expands on previous research by examining diverse developmental trajectories into early adulthood, ranging from making the transition to work right out of high school to pursuit of a graduate degree. Specifically, previous research has attempted to predict whether individuals would participate in post-secondary education by dichotomizing participants into two groups: those who attend university and those who do not attend university (Owens, 1992); or those who attend less selective American colleges (e.g., two year associate degree from an institution) and those who attend more selective American colleges (e.g., four year bachelor degree from a college) (Roney & Wolfe, 2000). However, the realm of possible choices beyond high school is diverse and multidimensional; thus, valuable information is lost regarding the life events of those who follow other pathways beyond high school. Some researchers question the validity and utility of this previous narrow focus, and have thus advised that the field begin to address background and developmental factors that may contribute to the pursuit of diverse developmental pathways, thereby providing a broader perspective on choices beyond high school (Owens, 1992).

Furthermore, previous studies of career development tended to focus primarily on males (Csikszentmihalyi & Schneider, 2000; Mau & Bikos, 2000). As will be discussed in more detail below, the development of educational and occupational aspirations and subsequent attainment may be significantly affected by the powerful socializing agent of gender. Therefore, in order to gain a more complete understanding of how aspirations develop over time and to
improve on previous research, developmental pathways for both males and females are considered in the present study.

Purpose

Educational and occupational aspirations reported in adolescence are significant predictors of eventual educational and occupational attainment in adulthood (Burke & Hoelter, 1988). Therefore, identifying factors that influence the development of aspirations is critical for clarifying how aspirations eventuate into diverse educational and occupational pathways.

The prospective longitudinal design of the current study provides the opportunity to study the effects of certain social, environmental, and psychological factors on the development of adolescents’ aspirations, life choices, and subsequent attainment in early adulthood. Critical decisions must be made following high school graduation, a time that is often plagued by instability and uncertainty as well as diversity and exploration (Arnett, 2000). The attrition rate from post secondary education is highest in the first two years following high school graduation (Pascarella & Terenzini, 1991). Thus, one to three years beyond high school affords a valuable window during which individuals have begun to experience success or possible challenges, thereby becoming clearly distributed among various educational pathways. Specifically, the stability of life course goals, educational aspirations, and occupational aspirations was assessed at three time points (twice while participants were in high school and once at one to three years after high school graduation). In addition, the predictive power of background variables (i.e., gender, age,
parental education, and academic achievement) and self-perceived competence on the development of aspirations were also assessed.

Thus, the purpose of the present study was to explore the role of the individual and contextual influences in constructing various educational pathways, as well as to identify patterns of stability or instability in the development of aspirations among varied developmental trajectories or pathways. A qualitative component was included in this study to capture personal experiences of perceived challenges and supports encountered in pursuit of educational and occupational aspirations. Ultimately, a better understanding of such factors will allow for the creation of more adaptive educational practices in high school to optimize the developmental trajectories of adolescents, during a stage in which critical life decisions and choices are being made.

**Theoretical Framework**

The foundation of vocational psychology or career development is based on the premise that a match between a person's abilities and the occupation best suited for those abilities results in a good occupational choice (Super, Savickas, & Super, 1996). The current literature on career development is vast, incorporating a number of theories that discuss career changes throughout the life span from a variety of perspectives and emphasize a number of key constructs. There are three main comprehensive career development theories: 1) Super's career development theory; 2) status attainment theory; and 3) social cognitive career theory.
1) **Super's career development theory** (Super et al., 1996) describes a series of clearly defined vocational tasks that must be accomplished in sequence, beginning roughly at age 11 and continuing until late adulthood (i.e., growth, exploration, establishment, maintenance, and disengagement).

2) **Status attainment theory** (Hotchkiss & Borrow, 1996) emphasizes a sociological perspective in which educational and occupational aspirations and attainment are imbedded within a broad social stratification. That is, educational and occupational aspirations reflect the effects of stereotypes, cultural expectations, and social attitudes based on gender, race, or socioeconomic background.

3) **Social cognitive career theory (SCCT)**, based primarily on Bandura's (1986, 1997) social learning theory, is a framework designed as a complement or conceptual link to other theories of career development (Lent & Brown, 1996; Lent et al., 1994, 1996). The basis of this theory emphasizes the interaction between a person's self-perceptions or self-concept and social processes (e.g., gender, a socially constructed construct) in directing behaviours and choices. There is a continuous reciprocal interaction between behavioural, cognitive, and environmental influences (based on Bandura's triadic reciprocal model of causality) (Bandura, 1986, 1997).

Social cognitive career theory provides a tentative framework for understanding how educational and occupational aspirations develop over time, as well as for exploring the influence that contextual variables such as gender and socioeconomic resources, and psychological variables (such as self-
perceived competence) have on educational and occupational aspirations. From this theoretical perspective, it is assumed that, over time, a variety of influences interact to shape career selection and interest. Therefore, this theory provides a framework for clarifying developmental diversity and individual variability in choices and achievement related to educational and occupational behaviours (e.g., developmental diversity). Each event or personal experience could potentially have great influence on educational and occupational aspirations because of the accompanying changes in context. Furthermore, each event may have a differential effect on males and females. Consistent with a life span developmental framework, educational and occupational planning must adapt or accommodate other roles such as spouse or parent (Farmer, 1997).

Super's career development theory also emphasizes the critical role of self-concept in career development, and it does provide a developmental perspective; however, social and environmental concepts are not integrated. Moreover, this classic theory of career development is best suited to fit experiences of middle-class white boys and men (Farmer, 1997) and therefore is not well suited as a framework for the present study in which possible gender differences are of particular interest. Furthermore, the current study considers the direct and indirect influence of socioeconomic background and gender, as well as the contribution of self-perceived competence, which are not incorporated within the framework of the status attainment theory. Thus, the social cognitive career theory (SCCT) is the most comprehensive and developmentally appropriate theoretical framework to complement the current study.
Adapted from general social cognitive theory (Bandura, 1986, 1997), self-efficacy, outcome expectations, and personal goals are three key concepts within the social cognitive career theory framework through which people regulate their educational and occupational related behaviours (Lent & Brown, 1996; Lent et al., 1994, 1996). That is, self-efficacy, outcome expectations, and goals interrelate with personal, contextual, and environmental factors to explain academic and career related choices and attainment. Self-efficacy refers to a person's beliefs about his/her abilities to successfully perform a task or behaviour under existing task conditions (Lent & Brown, 1996; Lent et al., 1994, 1996). Within the social cognitive perspective, self-efficacy is believed to be acquired and modified through different types of learning experiences, including the quality of personal performance, vicarious learning, and persuasion from the social environment.

Several researchers have shown that self-perceptions of one's abilities are powerful moderators of achievement behaviours (Eccles, 1987; Henderson & Dweck, 1990; Weiner, 1974). More specifically, experiences of success tend to increase positive beliefs about one's own competence within a specific domain, while experiences of failure tend to increase one's negative beliefs. Furthermore, self-efficacy is influenced through differential socialization patterns and from the internalization of related experiences. That is, socially constructed variables such as socioeconomic status (Hotchkiss & Borrow, 1996; Osipow & Fitzgerald, 1996) and gender (Eccles, 1994; Fitzgerald, Fassinger, & Betz, 1995) can influence the availability of educational and occupational related
opportunities, thereby having a direct or indirect effect on self-efficacy and subsequent career development.

For the purposes of the present study, self-perceived competence, a concept closely related to self-efficacy, will be utilized. Within the present study, self-perceived competence refers to one’s expectation for success (outcome expectations) based on self-perceptions of one’s ability or competence to perform a task under existing conditions (self-efficacy). This cognitive or psychological construct is formed through interpretations of interactions with the environment and significant others (Nurius, 1986). Therefore, a vulnerable and developing self-perception is critically influenced by factors within one’s cultural environment. Self-perceived competence as is defined in the present study incorporates constructs of self-efficacy and outcome expectations as outlined within the social cognitive career theory framework.

Personal goals in part motivate behaviours, playing an essential role in career development. According to Bandura (1986, 1997), personal goals are defined as one’s intention to participate in a specific activity or to produce a particular outcome. Setting personal goals assists one in organizing and sustaining behaviours. As discussed above, social cognitive theory outlines a complex interplay between self-efficacy, outcome expectations, and goals in the self-regulation of behaviours. More specifically, goals are believed to impact the development of self-efficacy, and in turn, self-efficacy and outcome expectations (together forming the construct of self-perceived competence in the present study) affect the goals that one chooses, and consequently the effort invested in
their attainment (Bandura, 1986, 1997). In the present study, the structure of life course goals is dichotomously categorized into two domains: career/achievement orientation (the pursuit of task oriented goals in the interest of mastery and material gain) and social/affiliative orientation (the pursuit of integrative or interpersonal goals such as belongingness and equity) (Ford, 1982).

**Relevant Research and Main Constructs**

The current study explores the development of general life course goals, and more specifically, educational and occupational aspirations through a number of demographic, social, and psychological influences that have been recognized as influential in the research literature (e.g., Farmer, 1997; Mau & Bikos, 2000; Rojewski & Yang, 1997). The specific variables of interest are: academic achievement; parental education; age; gender; and self-perceived competence. In the following sections, the research relevant to each of these major constructs is reviewed.

**Life Course Goals**

As indicated above, chosen life course goals play an essential role in defining educational and occupational aspirations and act to motivate one’s behaviours (Bandura, 1986, 1997), thereby affecting eventual levels of attainment. Specifically, life course goals, which become salient in middle adolescence (Nurmi, 1991), are cognitive representations of what an individual is attempting to achieve and one’s expectations for the future, and function to direct and motivate behaviour towards realizing desired outcomes (Ford, 1982; Nurmi, 1993). Motivation is a strong predictor of achievement (Henderson & Dweck,
Thus, setting life course goals is a means of directing one's own developmental pathway. Similarly, educational and occupational aspirations are based on one's expectations for the future and are specific expressions of life course goals in the domain of career development.

In the present study, life course goals are dichotomously categorized as either career/achievement orientated or social/affiliative orientated. Potentially, a conflict exists between the pursuit of achievement and affiliation (Schneider & Coutts, 1985). That is, endeavors in one area may threaten the realization of goals in the other domain; social pursuits (maintaining affiliation) may interfere with time needed to invest in career or achievement pursuits (promoting the self) and vice versa. This conflict is particularly salient for women who tend to traditionally value affiliative and achievement goals simultaneously, but place greater emphasis on family obligations and personal relationships than men (Rindfuss et al., 1999). Gender based issues are discussed in more detail below.

Perhaps in response to a potential conflict between career and social oriented goals, individuals tend to invest their energy in a single focus, either engaging in career or social oriented pursuits (Hicks, Murphy, & Patrick, 1995). Thus, lowered levels of achievement may result when individuals attempt to concentrate on, maintain, or invest in both domains (Schneider & Green, 1977). Moreover, achievement oriented goals are more reliable predictors of achievement behaviours than affiliative oriented goals (Schneider & Coutts, 1985; Schneider & Green, 1977). Given such, the present study incorporates an
examination of the orientation of life course goals (either predominately career/achievement or social/affiliative in nature) and the development of educational and occupational aspirations as they correlate over the course of development from middle adolescence into early adulthood.

**Educational and Occupational Aspirations**

Educational aspirations, the level of education one hopes to attain, and occupational aspirations, the domain of interest and/or socioeconomic status of a career one hopes to attain, are highly correlated. Thus, these two concepts are frequently discussed simultaneously in career development literature (Burke & Hoelter, 1988; Eccles, 1994; Hollenger & Fleming, 1992; Mau & Bikos, 2000; Paul, 1997; Wall, Covell, & MacIntyre, 1999). As indicated above, educational and occupational aspirations established in adolescence significantly predict educational and occupational attainment in adulthood (Burke & Hoelter, 1988). However, research outlining the consistency of educational and occupational aspirations expressed during adolescence is inconclusive, such that some researchers report relative stability and other researchers report little stability. More specifically, Rojewski and Yang (1997) concluded from their four year longitudinal study that occupational aspirations are relatively well established in early adolescence and stay somewhat stable throughout adolescence. Likewise, Trusty (2000) reported that educational aspirations remained stable over a six year period (from grade 8 to 2 years beyond high school) for over three quarters of his sample. Conversely, Mau and Bikos (2000) reported that educational and occupational aspirations increased among participants in their six year
longitudinal study (from grade 8 to 2 years beyond high school). As well, Kelly (1989) found dramatic changes in the socioeconomic status level of occupational aspirations between the ages of 11 and 17 (approximately grade 6 to grade 11). Most notable, there was an increase in the number of boys, and a decrease in the number of girls who aspired to the top two status categories (i.e., professional/managerial and intermediate). In the present study, the stability of educational and occupational aspirations will be examined in order to clarify this question. Note that educational and occupational trajectories will be considered separately to identify whether there are any unique patterns.

**Background Variables**

Extant research has identified a variety of variables that appear to predict the longitudinal stability of educational and occupational aspirations expressed throughout high school, and the consistency at which individuals pursue educational and occupational aspirations beyond high school. Academic achievement, parental education, parental expectations, and socioeconomic status are consistently the strongest predictors of both educational and occupational aspirations during adolescence (Dai, 1996; Kelly, 1989; Mau & Bikos, 2000; Owens, 1992; Trusty, 2000; Wilson & Wilson, 1992) as well as the consistency to which aspirations expressed during high school are pursued in young adulthood (Wagenaar, 1984). These constructs are discussed in more detail below.

**Academic Achievement.** Previous research indicates that school performance significantly affects the development of students' educational and
occupational aspirations. Specifically, adolescents with higher aptitude, or better developed academic skills, consistently report higher educational and occupational aspirations, as compared to peers with lower aptitude, or less well developed academic skills (AAUW, 1999b; Mau & Bikos, 2000; Owens, 1992; Rindfuss et al., 1999). That is, level of academic achievement is significantly predictive of educational and occupational aspirations in adolescence and eventual educational and occupational attainment in early adulthood (Csikszentmihalyi & Schneider, 2000; Wagenaar, 1984).

**Parental Education.** Family factors such as parental education and parental expectations have been found to influence adolescents’ educational aspirations (Bandura, Barbaraneli, Caprara, & Pastorelli, 2001; Csikszentmihalyi & Schneider, 2000; Goyette & Xie, 1999; Mau & Bikos, 2000; Wilson & Wilson, 1992). Higher levels of parental education suggest that parents are more likely to hold more prestigious and profitable jobs, thus resulting in a high socioeconomic status (e.g., Entwisle & Astone, 1994; Steinberg, 1991; Stricker, 1988). It appears that socioeconomic status provides an indication of relative financial resources available to participants, which in part enables the development and realization of educational and occupational aspirations due to expenses related to post-secondary education (e.g., tuition, residence fees).

In addition, adolescents are more likely to have high educational aspirations (i.e., undergraduate or graduate level degree) if their parents have high levels of education (i.e., at least an undergraduate level degree) (Wilson & Wilson, 1992). Socioeconomic status of desired occupations reported by
adolescents has also been found to relate to parental education (Mau & Bikos, 2000). This pattern may be expressed through the level of cognitive stimulation provided by the environment to which adolescents are exposed. Moreover, higher parental expectations for their children’s education is related to higher educational aspirations reported by adolescents themselves (Wilson & Wilson, 1992). However, it may be that socioeconomic status is linked indirectly to children’s educational aspirations and academic achievement through parental perceived efficacy (Bandura et al., 2001). That is, parents with high socioeconomic status have a stronger belief in their own efficacy to affect and shape their child’s academic development and career trajectory, thereby raising the expectations that they have for their child’s future. Thus, in turn, higher parental expectations raise children’s own self-efficacy and aspirations.

**Age (Developmental Stage).** Substantial cognitive changes occur during adolescence in which thinking can become more abstract and hypothetical, allowing individuals to become more self-aware and self-reflective (Keating, 1990). This developmental shift in cognitive competence and decision-making skills has a significant impact on self-perceptions and expectation outcomes. Furthermore, individuals in different stages of adolescent development are also exposed to different experiences (e.g., length of time in high school), which could differentially affect information processing. Thus, more advanced cognitive skills that develop during adolescence influence development in all domains (Keating, 1990). Therefore, educational and occupational aspirations (cognitive representations of educational and occupational desires) are likely to be more
salient among students in later stages of adolescence than among students in earlier stages. Subsequently, careful consideration was given to age in the present study as participants were in different stages of high school, and hence in different stages of adolescent development at the beginning of the study. More specifically, when this study began, some students were in the early stage of high school (mid adolescence), and some were in the middle stage of high school (mid to late adolescence).

**Gender Differences.** Studies examining the effect of gender on educational and occupational aspirations during adolescence have been inconclusive. For example, Asakawa, Hektner, and Schmidt (2000), Csikszentmihalyi and Schneider (2000), and Dai (1996) reported that there were no significant gender differences in educational aspirations among senior level high school students. However, Wilson and Wilson (1992) found educational aspirations reported by male high school students were significantly higher than those reported by female classmates. Conversely, Mau and Bikos (2000) found that although educational and occupational aspirations increased among the majority of high school students throughout high school and two years beyond high school, female students reported higher educational and occupational aspirations than their male classmates. This is consistent with the finding by Rojewski and Yang (1999) in which female adolescents consistently reported higher occupational aspirations than their male peers. Higher female occupational aspirations may be a manifestation of increased awareness of high level, professional career opportunities currently available to women, perhaps an
outcome of increased observation of female role models in professional careers (AAUW, 1999b; Mau & Bikos, 2000; Rajewski & Yang, 1999).

Career planning appears to be more interactive or contextually based for females than for males. More specifically, research suggests that females tend to have an orientation towards the world that is relational in nature, thus considering career aspirations within the context of other life roles such as spouse/mother (Farmer, 1997; Hollinger & Fleming, 1992; Mau & Bikos, 2000; Poole, Langan-Fox, Ciavarella, & Omodei, 1991). That is, young women wishing to have children in the future may make educational and occupational choices that reflect intentions to exit the labour force to raise children or that allow for smooth re-entry into the labour force after taking maternity leave. Such considerations could presumably impact educational and occupational aspirations and choices.

In 1999, the American Association of University Women released a report, entitled Gender Gaps: Where Schools Still Fail Our Children (AAUW, 1999b), highlighting advances in gender equity within the educational system. It was noted that familiar gender gaps in math and science are beginning to diminish; however, females continue to be under-represented in high school computer science, biotechnology, and environmental science courses. Furthermore, gender based inequity continues to exist within the development of occupational aspirations. Girls contemplate and pursue a more constricted set of career opportunities than boys. In addition, gender differentiation exists among school-to-work initiative training programs whereby females tend to cluster into
traditionally female-oriented occupations in health care, education, and office technology, while males tend to dominate in industrial and engineering programs. Information from the National Science Foundation confirms that women continue to be underrepresented in the physical sciences (National Science Foundation, 1997).

Persistent orientation towards female dominated professions may be a way for high achieving females to resolve a conflict between traditionally feminine values relational in nature (i.e., affiliative or social oriented goals), and the challenges associated with traditionally competitive masculine activities (i.e., career or achievement oriented goals) (Eccles, 1994; Rimm, 1999; Sullivan, 1997). Moreover, girls' career development may be somewhat more delayed or less well formulated than that of boys due to anticipation of multiple roles, making career commitment complex (Farmer, 1997).

In a recent nationally representative longitudinal study completed in the United States by Sullivan (1997), high school females were reported to have a stronger overall academic performance (a common finding, e.g., AAUW, 1999b) and displayed more interest in school than male classmates. Accordingly, Sullivan suggested that the females in this study appeared more confident in their abilities than might have been predicted by previous research. Furthermore, an optimistic trend was noted in the increasing number of women entering college and women aspiring to obtain advanced level professional degrees (e.g., graduate level degree) (Sullivan, 1997). Despite this hopefulness, gender discrimination continues to exist in many occupational fields, and females
continue to follow traditional occupational pathways, resulting in inequitable labour force composition, which may result in lost talent. This may in turn prove to be detrimental for society (Rayman, 1997).

To the extent that women have internalized a culture's definition of a woman's role, women may define success or achievement in more relational terms than the traditional masculine definition bound by academic and vocational attainment (Eccles, 1994; Rimm, 1999). Consequently, Eccles (1994) proposed that asking why females are not selecting and advancing in the same fields as men is a futile question. More valuable and serviceable questions address the rationale provided by females and males for educational and occupational choices. Moreover, research over the past five years has begun to focus on differences among females, shifting away from the assumption that females are a homogenous group (AAUW, 1999b), thus recognizing developmental diversity among and between males and females.

Gender is a culturally defined term that is accompanied by stereotyped biases and socialization practices. The social processes associated with gender stereotyping may have a continuous and cumulative influence on one's development. That is, gender differences seem to increase with age (AAUW, 1999b), especially as individuals enter later stages of development and contemplate family formation. Again, the balancing of career and affiliative oriented goals or roles can create conflict for women. For example, in the study completed by Rindfuss and colleagues (1999), in which they followed participants for 14 years from the last year of high school until 30 years of age,
males were much more likely to move to higher status occupations over time, whereby females were more likely to maintain at lower level occupations or leave the labour force entirely. Family formation has a substantially larger impact on women's occupational status attainment and expectations as compared to men (Rindfuss et al., 1999). This suggests that women are more likely to adjust their educational expectations downward over time than are men, especially following family formation (i.e., in the event of marriage and children).

**Self-Perceived Competence.** As indicated above, self-perceived competence is a cognitive construct that is developed or learned through interaction with the environment (Nurius, 1986). With expanding societal demands and new challenges in adolescence (i.e., expanding role requirements), self-perceptions become increasingly differentiated (Harter, 1990). Consequently, self-perceived competence is shaped by basic characteristics such as gender and age, which act as pervasive influences of social and cultural factors. That is, gender biased experiences and cognitive maturation conceivably affect development of self-perceived competence (Crain, 1996).

Numerous research studies have proposed that females may have lower general self-perceived competence compared to males based on gender biases; females have been traditionally viewed as possessing less socially desirable nurturance type psychosocial traits, as opposed to socially valued leadership traits traditionally associated with males (Hanes, Prawat, & Grissom, 1979). However, this argument has not been strongly supported by empirical evidence
(Crain, 1996). Moreover, gender seems to have a limited effect on the development of global self-perceived competence and may in fact have limited value as an influencing agent (Crain, 1996).

Self-perceived competence is both a multidimensional and hierarchically structured construct. Accordingly, empirical research indicates that some gender differences are evident during adolescence within the academic domain of multidimensional self-perceived competence, with particular gender discrepancy noted within the hierarchical structure of academic subject area. More specifically, males tend to score higher on math related domains of academic self-perceived competence, while females tend to excel in domains of verbal skill (e.g., English and reading) (Marsh, Byrne, & Shavelson, 1988). However, noted differences in domains of academic self-perceived competence did not result in differences on global self-perceived competence measures (Hattie & Marsh, 1996). Furthermore, no gender differences in math and reading self-perceived competence were evident prior to adolescence, suggesting that these domain specific differences tend to be consistent with, or perhaps reinforced by, gender stereotypes (Crain, 1996).

In addition, a fairly consistent relationship between specific facets of academic self-perceived competence and academic achievement in corresponding academic domains has been reported in previous research (Hattie, 1992; Marsh, 1993). For example, there was a stronger correlation between achievement scores in English and math and domain specific English and math self-perceived competence respectively as compared to a more
general academic self-perceived competence (Marsh, 1993). Therefore, it appears that there is a stronger correlation between achievement and specific academic self-perceived competence measures as opposed to a global self-perceived competence or even a general academic self-perceived competence measure. The natural repercussion of suspected gender differences in domain specific academic self-perceived competence and achievement is the threat that females and males may be underachieving in certain areas. Subsequently, there may be a great deal of untapped talent in the languages and related field by males, and in the math and science fields by females. One realistic consequence for females is the lack of opportunities in advanced scientific professions, which tend to also be among the most prestigious and financially rewarding occupations (Eccles, 1994; Farmer et al., 1999).

Information on how self-perceived competence develops over time is limited. How socially dictated expectations affect a developing self-esteem is unknown (Hattie & Marsh, 1996). A large scale, cross sectional study of participants 9 to 19 years of age conducted by Crain and Bracken (1994) indicated that non-significant developmental changes occurred in multidimensional measures of self-perceived competence as a function of age. Dusek and Flaherty (1981) also concluded from their longitudinal study that age had minimal affect on multiple dimensions of self-perceived competence development from grades 5 to 12, concluding that self-perceived competence was stable and consistent during adolescence. Likewise, Block and Robins (1993) also concluded that measures of self-perceived competence remained
stable during adolescence and into early adulthood (ages 14 to 23) whereby individuals who reported relatively high or relatively low perceptions of competence at age 14 tended to subsequently report relatively high or relatively low perceptions of competence respectively at age 23. Trusty (2000) has suggested that the effects of self-perceived competence may not be as strong longitudinally as compared to possible effects at an earlier stage of development. However, individual differences in development or differences among groups of individuals who pursue diverse developmental trajectories or pathways were not considered in these studies.

Given that self-perceived competence is thought to be influenced by social factors and experiences within one's environment, self-perceived competence potential changes tend to be gradual as the environment that individuals are exposed to changes. Self-perceived competence appears to become increasingly differentiated and defined with adolescent development (Bracken, 1996), corresponding with developmental tasks such as forming and implementing educational and occupational aspirations.

Although self-perceived competence is thought to regulate goal setting (outcome expectations), research on how self-perceived competence relates to the development of educational and occupational aspirations has been inconclusive. Academic self-perceptions and career aspirations during high school were found to be strong predictors of turning expectations into outcomes in young adulthood (Paul, 1997). Higher self-perceived competence has been correlated with higher educational and occupational aspirations (Mau, 1995;
Trusty, 2000). However, Trusty (2000) cautioned that the empirical effects of self-perceived competence may have been limited in his research because all the participants in his study reported high educational aspirations. Therefore, causation cannot be concluded from the homogenous nature of both educational aspirations and self-perceived competence among the sample. In a five year longitudinal study, Owens (1992) reported that one's attitudes towards one's self and society did contribute to post high school decisions; however, the influence of self-perceived competence was much less than that of family and school performance contingencies among his sample of male participants only. Likewise, Bachman and O'Malley (1986) concluded from their five year longitudinal study (beginning in high school) that self-perceived competence had minimal impact on educational attainment when academic skill and socioeconomic status were controlled.

**Experienced Challenges and Supports in Pursuit of Aspirations**

Anticipated and experienced obstacles or challenges affect one's perceptions of opportunities and expectations for the future, which in turn are reflected in the orientation of life course goals and educational and occupational aspirations. Thus, to help gain a clearer understanding of one's perceptions of personal challenges and supports, a qualitative component was included in the present study. More specifically, participants were asked in high school and again after high school graduation to describe anticipated and experienced challenges and supports in relation to educational pursuits. That is, how do people's experiences at home, at school, and in the community impact
educational and occupational choices? Moreover, particular interest lies in clarifying if challenges and supports are differentially experienced by males and females and among individuals who pursue diverse developmental trajectories.

Few studies relevant to career development have contained a qualitative component that inquires into the reasons that people provide to explain educational and occupational trajectories. It is important to attend to experiences that encourage individuals to pursue certain pathways in order to understand the dynamics that influence achievement related choices (Eccles, 1994). The unique design of two studies discussed in more detail below (AAUW, 1999a; Paul, 1997) incorporated both quantitative and qualitative data through the use of focus groups (AAUW, 1999a) and comprehensive questionnaire items (Paul, 1997). The qualitative components of these studies focused on challenges, opportunities, motivations, and goals for the future. Reports of quantitative data were supplemented with qualitative data, providing a richer, more in-depth understanding of factors that presented challenges and supports in pursuing educational and occupational goals. Likewise, the present study was designed to incorporate both qualitative and quantitative data analysis in order to explore the impact of personal experiences of challenges and supports on the pursuit of educational and occupational aspirations.

Not all young adults achieve the educational and/or occupational aspirations they proposed during adolescence (Armstrong & Crombie, 2000; Hollinger & Fleming, 1992; Paul, 1997; Rindfuss et al., 1999; Wagenaar, 1984). For example, Wagenaar (1984) and Paul (1997) both reported approximately
one third of participants in independent studies failed to attain their educational or occupational aspirations one year after graduation from high school. The greatest consistency between aspirations and outcome was among individuals planning and subsequently enrolling in an undergraduate program (Paul, 1997; Wagenaar, 1984). Again, academic achievement, socioeconomic status, and gender (factors that have a continuing influence) were the best predictors of the consistency at which young adults pursued educational and occupational aspirations established in adolescence (Armstrong & Crombie, 2000; Hollinger & Fleming, 1992; Paul, 1997; Rindfuss et al., 1999; Wagenaar, 1984). Wagenaar (1984) proposed that the high level of consistency among participants with plans for, and subsequent pursuit of, an undergraduate degree is due to more planning and investment of time and money than other post high school plans, and thus may require more commitment. Furthermore, such students may have made plans for post-secondary education earlier than students who followed other, less traditional pathways, and it may be that making plans and decisions for the future at an earlier stage in development enhances the implementation of such plans.

The type of academic program and courses taken in high school also predicted the consistency rate at which expectations were implemented, with the highest rate of follow-through among participants in the university preparation academic stream (Paul, 1997). Moreover, Paul (1997) suggested that high aspirations may have been misaligned with lack of preparation (and perhaps basic skills) among adolescents in vocational and general level academic
streams in high school who did not pursue post-secondary education. Specifically, the three most frequently reported reasons or circumstances for not pursuing post-secondary education among this subgroup were: academic difficulties in high school (e.g., poor study habits, underdeveloped academic skills); family responsibilities; and insufficient finances. Although most of the participants in Paul’s study (1997) reported positive educational and occupational aspirations in high school, Paul expressed concern about inadequate links between aspirations and the steps necessary for their attainment. This suggests that early intervention is optimal to coordinate aspirations and preparation as one potential way to help individuals establish realistic aspirations and realize their ultimate potential.

The American Association of University Woman recently released a report entitled Gaining a Foothold: Women’s Transitions Through Work and College (AAUW, 1999a) in which questionnaire data and focus group discussions were combined to capture perceptions of social supports and varied experiences in high school among students who either made the transition from high school straight into college/university or a school to work transition. More specifically, students who went to college/university reported achieving above average grades in high school and were also more likely to have parents with post secondary education and less family or parental responsibilities, as compared to peers who made the transition to work after high school. Parents of students who went to college/university were more likely to stress the importance of higher education to their children, as well as have the income to financially support a
college/university education. Also, students in advanced level classes (university preparation stream) were more likely to receive encouragement to attend college/university from teachers and school guidance counsellors. Grades, parental encouragement, and support from school personnel can become cumulative and reinforcing of students' pursuit of, and attainment of, post secondary education (AAUW, 1999a; Wall, Covell, & McIntyre, 1999).

**The Present Study**

In the present study, prospective data from a five year longitudinal study (with three time points) with a normative sample of adolescents followed from the early or middle stages of high school (mid adolescence) to one to three years beyond high school (early adulthood) was used to examine whether different groups of adolescents change in different ways across this important life transition. Specifically, this study will address the following questions regarding the development of educational and occupational aspirations:

1. How do life course goals and educational and occupational aspirations develop over a five year time span that incorporates the transition from adolescence to early adulthood (from Time 1 to Time 3)? Are there observable differences in how these constructs develop over this transitional period among males and females and among participants of different ages?

2. Do developmental changes in self-perceived competence (specifically in reference to self-perceived global self-worth, scholastic competence, and intellectual ability) expressed during high school (from Time 1 to Time 2) predict educational and occupational aspirations after high school graduation?
(Time 3) after controlling for differences in background variables (gender, age, parental education, and academic achievement) and prior aspirations?

3. Four distinct educational pathways or trajectories were identified in early adulthood based on current educational status and presence or absence of aspirations for further education. Thus, the following questions focus on the potential differences among individuals pursuing diverse educational trajectories:

a) Are there observable differences in background characteristics (gender, age, parental education, and academic achievement) and/or educational and occupational aspirations at the early or middle stages of high school (at Time 1) among individuals who choose to follow diverse educational pathways?

b) Are there observable differences in how educational and occupational aspirations develop during high school (Time 1 to Time 2) among participants who choose to follow diverse educational pathways?

c) Are there observable differences in how occupational aspirations develop after high school graduation (Time 2 to Time 3) among participants who choose to follow diverse educational pathways?

d) How well do background variables and prior educational and occupational aspirations (Time 1 and Time 2) predict educational pathway?

4. What factors do participants anticipate and experience as supports or challenges in the divergence from, or persistence in, educational aspirations? Are there observable differences in response patterns between males and
females or among participants who choose to follow diverse educational pathways?
Chapter 2

Method

Participants

There were a total of 210 participants (81 males, 129 females) included in the present study. Participants were drawn from a larger, ongoing longitudinal study, which originated in 1993 with a population of students from two public high schools (grades 9 to 13) located in the same suburban area in southern Ontario. Students were from predominately middle or upper middle class Caucasian, intact two-parent families. The participants in the present study completed data collection at three time points: spring of 1993 (Time 1); spring of 1995 (Time 2); and summer of 1998 (Time 3).

All participants in the present study were in the early (grade 9 or 10) to middle (grade 11) stages of high school when the study began (Time 1). More specifically, at Time 1, 90 participants (37 males and 53 females) were in grade 9, 75 participants (27 males and 48 females) were in grade 10, and 45 participants (17 males and 28 females) were in grade 11. Consequently, two years later at Time 2, participants were in grades 11, 12, and 13, respectively. Likewise, three years later at Time 3, participants were one, two, or three years beyond high school. For clarity, abbreviations will be used to identify grade and wave of data collection for each group of participants (e.g., participants in grade 9 at Time 1 will be identified as G9T1; identified two years later in grade 11 at Time 2 as G11T2; and identified three years later when one year post-secondary as PS1T3). Abbreviations are presented in Figure 1, which depicts a flow chart of cohort grouping over the three time points covered by this study.
Also, the participants in the present study were enrolled in the advanced level academic program during high school. Completion of an advanced level high school diploma traditionally takes five years (grades 9 to 13) and is considered a university preparation academic stream. Furthermore, completion of an advanced level diploma is a mandatory requirement for entry into Ontario universities. In contrast, students in the general stream generally take four years to complete a general level diploma and graduate after grade 12. In the present study, only students in the advanced level academic stream were chosen in order to examine the developmental trajectories of students who began high school with similar aspirations of university level post-secondary education, as indicated by the choice of academic stream during high school. That is, at the beginning of high school, it is more likely for individuals aspiring to achieve a technical certificate or a college diploma to enroll in a general level program, which can be completed in four years and is traditionally more focused on vocational training. However, students with aspirations of attending university must complete advanced level courses to be eligible for university entry. As indicated in the introduction, academic stream or academic program in high school significantly impacts
the development of educational and occupational aspirations (e.g., Paul, 1997).
Furthermore, students in various academic streams are treated differently by school personnel (i.e., guidance counsellors, teachers) and other students, as well as have varying aspirations, and experience various degrees of success in obtaining such aspirations (AAUW, 1999b). Therefore, this study was limited to students in an advanced academic program to eliminate academic program as a confounding factor.

The number of participants in the oldest age group (G11T1) was smaller than the number of participants in the two younger age groups (G9T1 and G10T1) due to scheduling restraints and/or early graduation. Inclusion in Time 1 and Time 2 data collection was subject to participation during a single administration at each time point; thus, retention rate from Time 1 to Time 2 was dependent on who was present during the single testing session at both Time 1 and Time 2 (recruitment is discussed in more detail below in the procedures section). However, during test administration, a spare period or study time was available to senior level students completing grade 13 (which is not an option for students in earlier grades). Therefore, a number of senior students may not have been present during Time 2 data collection, thus reducing the number of eligible participants in this cohort. In addition, some students may have completed the advanced level curriculum at an accelerated rate (in less than five years), thus graduating before Time 2 data collection occurred (reducing eligibility). Furthermore, between Time 1 and Time 2, some advanced level students may have opted to complete a four year general level diploma as opposed to a five year advanced level diploma, and therefore, graduated the previous year after completing grade 12. Consequently, the subsample from the present study who was in grade 11 at Time 1
(G11T1) and grade 13 at Time 2 (G13T2) (n=44) may be somewhat biased, favoring those students who completed an advanced level degree, and completed it within a standard five year period. Comparatively, participants in the younger grades at Time 1 (G9T1 and G10T1) may have decided not to complete the final year of an advanced diploma (grade 13) after Time 2 data collection, opting instead to graduate with a general level degree or grade 12 diploma (typically completed in four years), which restricts university entry. Furthermore, participants in the younger grades may have also completed an advanced level degree at an accelerated rate after Time 2 data collection, resulting in different experiences within and beyond high school, which in turn may have affected the development of educational and occupational aspirations. These possible alterations to completing an advanced level diploma in the typical five year period would not be germane for participants in the younger age groups who were in grade 11 or 12 during Time 2 data collection (G11T2 and G12T2), as it would not have affected their eligibility for participation at Time 2 or Time 3.

Further diversity among the sample based on age or grade at Time 1 would presumably exist due to differences in developmental stage and related experiences. More specifically, when the study began, some participants were in early to mid adolescence (mean age of 14.5 years G9T1 and 15.5 for G10T1) and other participants were in mid to late adolescence (mean age of 16.5 years for G11T1). Presumably, this range in developmental stage and corresponding differences in developmental experiences would have an effect on the development of educational and occupational aspirations. Thus, age or grade at Time 1 was factored in all analyses to account for any possible cohort effects.
There were a total of 1033 participants in grades 9 to 11 from the advanced level stream who completed a questionnaire at Time 1. From this original sample, 60% or 623 participants completed a second questionnaire at Time 2. Excluding those in grade 11 at Time 1, the retention rate from Time 1 to Time 2 was 65%. Approximately two thirds (n=420) of students who participated in the first two waves of data collection (n=623) expressed interest in participating in future data collection, thereby forming the pool of eligible participants for Time 3 data collection. Approximately 80% (n=344) of these eligible participants could be located to discuss participation in Time 3 data collection. Nearly two thirds of people contacted (61%) completed a third questionnaire at Time 3 (n=210). Therefore, the retention rate from Time 2 to Time 3 of participants who expressed interest in participating and could be located after high school graduation was 61%.

Response rate by gender at each wave of data collection was comparable; response rate differed among males and females by 5% or less at each time point. The retention rate among participants by grade at Time 1 was also comparable; response rate by grade at Time 1 was consistent within a 4% range. The number of participants, percentage of female respondents, and retention rate for all three waves of data collection by grade at Time 1 are summarized in Table 1.

Students from the present sample who participated in all three waves of data collection (n=210) differed from students who participated in one or two waves of the larger longitudinal study (with equal opportunity to participate in the third wave) (n=823)
**Table 1**

**Number, Percent Retained, and Percent Female of Participants at Time 1, Time 2, and Time 3 by Grade at Time 1**

<table>
<thead>
<tr>
<th>Grade at Time 1</th>
<th>Time 1 (N=1033)</th>
<th>Time 2 (N=618)</th>
<th>Time 3 (N=210)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>% Female</td>
</tr>
<tr>
<td>Grade 9</td>
<td>421</td>
<td>100</td>
<td>52</td>
</tr>
<tr>
<td>Grade 10</td>
<td>355</td>
<td>100</td>
<td>47</td>
</tr>
<tr>
<td>Grade 11</td>
<td>257</td>
<td>100</td>
<td>52</td>
</tr>
</tbody>
</table>
on two background variables: parental education and academic achievement at the beginning of high school (based on the average mark of all grade 9 credits reported in Ontario School Records). Differences in parental education and academic achievement between these two samples are presented in Table 2. Mean level of parental education (mean of mother’s and father’s highest level of education as reported at Time 1) differed at a trend level only, $F(1, 1012)=2.75$, $p<.10$; this pattern did not differ by gender or age, with no interaction between gender and age.

Table 2

Differences in Parental Education and Academic Achievement Between Three Wave Longitudinal Sample and One or Two Wave Longitudinal Sample by Grade at Time 1

Parental Education: †

<table>
<thead>
<tr>
<th>Grade at Time 1</th>
<th>3 Wave Participants (N=210)</th>
<th>Wave 1 and 2 Participants (N=804)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td>Grade 9</td>
<td>90</td>
<td>2.83</td>
</tr>
<tr>
<td>Grade 10</td>
<td>76</td>
<td>2.91</td>
</tr>
<tr>
<td>Grade 11</td>
<td>44</td>
<td>3.03</td>
</tr>
</tbody>
</table>

Academic Achievement (%): ***

<table>
<thead>
<tr>
<th>Grade at Time 1</th>
<th>3 Wave Participants (N=210)</th>
<th>Wave 1 and 2 Participants (N=784)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td>Grade 9</td>
<td>90</td>
<td>78.70</td>
</tr>
<tr>
<td>Grade 10</td>
<td>76</td>
<td>77.19</td>
</tr>
<tr>
<td>Grade 11</td>
<td>44</td>
<td>78.94</td>
</tr>
</tbody>
</table>

*** Difference between samples is significant at $p<.001$
† Difference between samples is significant at a trend level, $p<.10$
It is interesting to note that when parental education was broken down into the individual components of fathers' and mothers' level of education, mean level of fathers' education was not significantly different between participants in the present study who completed three waves of data collection and students who participated in one or two waves of the larger longitudinal study. However, there was a significant difference between wave samples in mothers' mean level of education, $F(1, 999)=3.75$, $p<.05$, whereby mothers of participants who completed three waves of data collection had, on average, significantly higher levels of education compared to the mothers of participants who completed one or two waves of data collection. Mean level of mothers' education did not differ by gender or age, with no interaction between gender and age.

Secondly, although all participants followed the same curriculum guidelines as determined by the school board, and subject to a similar composite of required and elective courses, group differences were discovered. Females in both samples received significantly higher grades at the beginning of high school compared to their male classmates ($F[1, 208]=4.79$, $p<.05$ for those who completed three waves of data collection, $F[1, 782]=31.34$, $p<.001$ for participants who completed one or two waves of data collection). Furthermore, as can be seen from Table 2, participants who completed three waves of data collection received higher grades ($p<.001$), on average, at the beginning of high school compared to participants who completed only one or two waves of data collection. Therefore, the present sample appears to be somewhat self-selected with respect to early high school academic achievement, composed of young adults who, on average, achieved at a higher academic level at the beginning of high school than the more general high school population. Furthermore, academic
achievement at the beginning of high school did not differ by grade at Time 1 for either the three wave sample or the one/two wave sample. Therefore, academic achievement at the beginning of high school was comparable for participants in the present study who were in different grades at Time 1. It thus affords a more restricted range on this variable. See Appendix A for more detailed information about potential biases inferred by grade at Time 1 beyond academic achievement.

**Questionnaire**

A self-report questionnaire was designed at the beginning of the longitudinal study to tap into critical educational, social, and psychological processes influencing adolescent achievement. The original version of the questionnaire, which was administered at Time 1 and Time 2, was composed of questions and scales divided into six main sections: 1) background information; 2) future orientation; 3) life course goals (Ford, 1982); 4) perceptions of math and science; 5) self-perception profile for college students (Neemann & Harter, 1986); 6) social support (open-ended questions included at Time 1 only). At Time 3, the original questionnaire was modified in two ways: 1) the perceptions of math and science and the self-perception profile sections were eliminated; 2) additional open-ended questions related to high school experiences and perceived challenges and supports associated with current educational achievement were added. Items analyzed in the present study from Time 1, Time 2, and Time 3 questionnaire data included background information, future orientation, life course goals (Ford, 1982), the self-perception profile for college students (Neemann & Harter, 1986), and social supports (specifically open-ended qualitative questions). Specific measures are described in more detail below in the variables section.
**Procedure**

At both Time 1 and Time 2, self-report questionnaires were group administered to all students in attendance at two high schools during the designated class time. Questionnaires were administered on one occasion only in each high school at each time point. Therefore, participation at both Time 1 and Time 2 was dependent on attendance during two single session administrations, first in the spring of 1993 and again in the spring of 1995. Participants were asked at Time 1 and Time 2 to complete a consent form confirming their voluntary participation, and to indicate if they were willing to be contacted for future participation in data collection by releasing their home telephone number and address on the consent form. There were a total of 640 students in the advanced academic stream who completed a questionnaire at Time 1 and again at Time 2. Of these 640 students, 420 or two-thirds (66%) indicated interest in participating in future data collection (by releasing their telephone number on the consent form). Consequently, based on expressed interest, these 420 students were the only individuals considered eligible for Time 3 data collection. Research officers were able to successfully locate 344 or 82% of the interested sample by telephone. Final response rate of individuals who completed a useable questionnaire at Time 3 was 210 (61% of interested sample). See Appendix B for a description of recruitment procedures at Time 3.

**Measures**

The variables included in the present study are related to career development, and more specifically to the development of educational and occupational aspirations. Independent variables for the present study include demographic and background
variables (gender, age, academic achievement, parental education) and a measure of self-perceived competence (Neemann & Harter, 1986). Life course goals (Ford, 1982), educational aspirations, and occupational aspirations were the outcome measures of interest for the present study. Scale information, means, and standard deviations for independent and dependent variables are summarized in Table 3. Finally, this study incorporated qualitative measures from Time 1 and Time 3 questionnaire data highlighting personal experiences of educational supports and challenges. Each construct is described in more detail below.

Independent Variables (Demographic and Background Variables)

Gender. The sample was relatively balanced by gender: 81 males (39% of sample) and 129 females (61% of sample). Extant research, as discussed above in the introduction, suggests that the development of educational and occupational aspirations can be influenced by gender related experiences. Therefore, gender was factored into all analyses to explore its effects on the development of life course goals and educational and occupational aspirations for this population.

Age. The mean age of participants at the time of Time 1 data collection (May 1993) was 15.5, ranging from 14 to 17 years of age. The mean age of participants by grade at the beginning of the study was as follows: 14.5 years of age (range from 14 to 15.5 years of age) in grade 9 at Time 1 (G9T1), 15.5 years of age (range from 15 to 17 years of age) in grade 10 at Time 1 (G10T1), 16.5 years of age (range from 16 to 17.5 years of age) in grade 11 at Time 1 (G11T1). Essentially, participants in different grades at Time 1 range in stage of adolescent development. That is, participants in
Table 3

Independent and Dependent Variables with Measurement Scale, Mean (Standard Deviation), and Range

<table>
<thead>
<tr>
<th>Variable</th>
<th>Scale and Range</th>
<th>Mean (SD)</th>
<th>Range</th>
</tr>
</thead>
</table>
| Gender                    | Male or Female                                                                  | 81 males (39% of sample)  
                             | 129 females (61% of sample)                                                   | Overall mean at Time 1 = 15.5 years  
                             |                                                                             | Grade 9 at Time 1 = 14.5 years  
                             |                                                                             | Grade 10 at Time 1 = 15.5 years  
                             |                                                                             | Grade 11 at Time 1 = 16.5 years  
                             |                                                                             | 14 to 17 years of age  
                             |                                                                             | 14-15.5 year of age  
                             |                                                                             | 15 to 17 years of age  
                             |                                                                             | 16 to 17.5 years of age  |
| Age                       | Grade at Time 1 (Grade 9 - 11)                                                  |                                                                            |                            |
| Grade 9 Average           | Average percentage of all credits completed during the first year of high school (taken from Ontario School Record data) | 78.2% (7.95)                                                             | 54.4 - 95%                 |
| Parental Education        | Reported at Time 1  
                             | 5-point scale:  
                             | 1. grade school  
                             | 2. high school diploma  
                             | 3. for 2 years of university or college  
                             | 4. undergraduate degree  
                             | 5. graduate or professional degree | 2.90 (.88)                                                               | 1.5                        |
| Self-Perceived Competence | Residual change scores from Time 1 to Time 2 for scholastic competence, intellectual ability, and general self-worth subscales of The Self-Perception Profile for College Students (Neeman & Harter, 1986); see Appendix C | Scholastic Competence = .00 (.52)                                          | -1.67 - 1.14               |
|                           |                                                                                 | Intellectual Ability = .00 (.57)                                            | -2.39 - 1.27               |
|                           |                                                                                 | Global Self-Worth = .00 (.48)                                               | -1.36 - 1.0                |
Table 3 continued

<table>
<thead>
<tr>
<th>Variable</th>
<th>Scale and Range</th>
<th>Mean (SD)</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life Course Goals</td>
<td>12 item scale (Ford, 1982); 6 items measure career/achievement goals and six items measure social/affiliative goals; life course career goals used in analyses; see Appendix D</td>
<td>Time 1 - 9.07 (3.60)</td>
<td>0-15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Time 2 - 8.86 (3.85)</td>
<td>0-15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Time 3 - 7.62 (3.56)</td>
<td>0-15</td>
</tr>
<tr>
<td>Educational Aspirations</td>
<td>Time 1, Time 2, and Time 3 4 point scale:</td>
<td>Time 1 - 3.02 (.52)</td>
<td>1-4</td>
</tr>
<tr>
<td></td>
<td>1. high school diploma</td>
<td>Time 2 - 3.20 (.73)</td>
<td>1-4</td>
</tr>
<tr>
<td></td>
<td>2. college or technical diploma</td>
<td>Time 3 - 3.21 (.77)</td>
<td>1-4</td>
</tr>
<tr>
<td></td>
<td>3. undergraduate degree</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. graduate or professional degree</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occupational Aspirations</td>
<td>3 point scale (1 is low and 3 is high) based on Socioeconomic Classification (Pineo, Porter, &amp; McRoberts, 1977); see Appendix E</td>
<td>Time 1 - 2.83 (.38)</td>
<td>2-3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Time 2 - 2.80 (.40)</td>
<td>2-3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Time 3 - 2.60 (.52)</td>
<td>1-3</td>
</tr>
</tbody>
</table>
grade 9 and 10 at Time 1 (G9T1 and G10T1) (mean age 14.5 and 15.5 years respectively) were in the mid stage of adolescence, participants in grade 11 at Time 1 (G11T1) (mean age of 16.5 years) were in the late stage of adolescence. Thus, grade at Time 1 was used to capture the age range among participants in different grades at the beginning of the study because participants in different grades at Time 1 were in different developmental stages. Potential developmental effects were statistically factored into all analyses.

**Academic Achievement.** As discussed above, relevant research has concluded that level of academic achievement is significantly correlated with educational and occupational aspirations and eventual attainment (e.g., Mau & Bikos, 2000). Therefore, academic achievement at the beginning of high school (grade 9 average) was included as an independent variable to explore its effect on the development of life course goals and educational and occupational aspirations for this population. Academic achievement at the beginning of high school was determined from the average mark of all grade 9 credits recorded in participants’ academic records (Ontario School Records) for the first year of high school (i.e., 1992/1993 academic year for participants in grade 9 at Time 1, 1991/1992 academic year for participants in grade 10 at Time 1, 1990/1991 academic year for participants in grade 11 at Time 1). Academic achievement for participants in the present study (those who completed three waves of data collection) is presented in Table 2. As noted above, academic achievement at the beginning of high school did not differ by grade at Time 1. Furthermore, females achieved at a significantly higher rate at the beginning of high school compared to male counterparts, $F(1, 208)=4.79, p<.05$. 
Parental Education. Parental education is one of the key indicators of financial resources (or socioeconomic status) (Entwisle & Astone, 1994; Stricker, 1988) and parental expectations for their children's education (Wilson & Wilson, 1992). In the present study, parental education was coded as an average of mothers' and fathers' highest level of education as reported by participants at Time 1. Responses were coded on a five point scale: 1) grade school, 2) high school diploma, 3) 1 or 2 years of university or college, 4) Bachelor's degree, 5) Master's or Doctoral degree. On two occasions, stepfathers' educational level was substituted for fathers' educational level when information regarding fathers' level of education was not reported. Mean level of parental education for participants in the present study (those who completed three waves of data collection) is presented in Table 2.

Self-Perceived Competence. The self-perception profile for college students (Neemann & Harter, 1986) was designed to measure one's perception of abilities and qualities spanning 13 domains of functioning. For the purposes of the present study, only subscales measuring self-perceived scholastic competence, intellectual ability, and global self-worth were used, consisting of 13 forced-choice items with a score ranging from one to four. Scholastic and intellectual items were chosen to provide self-perceptions specifically related to academic functioning. Global self-worth provides an overall or general measure of self-perceived competence, not solely dependent on academic functioning. Extant research has been inconclusive regarding the most reliable measure of self-perceived competence (e.g., general or domain specific) to capture its effect on development. Therefore, general, academic, and intellectual measures of self-perceived competence were included in the present study to explore
the effects of general and specific domains of self-perceived competence on the development of educational and occupational aspirations. The scale has demonstrated psychometric properties that are described by Neumann and Harter (1986). Items contained in self-perception profile for college students are presented in Appendix C.

The self-perception profile was administered at Time 1 and Time 2 only. As noted in the questionnaire section, a modified version of the original questionnaire (utilized at Time 1 and Time 2) was administered at Time 3; the self-perception profile was one of the items eliminated from the original questionnaire at Time 3. The measures of self-perceived competence available encompass the transitional period within high school from Time 1 to Time 2 (i.e., from grade 9 to 11, grade 10 to 12, and grade 11 to 13). Exploration of the changes in general and academic self-perceived competence during the transitional period within high school was of interest in the present study as a means of assessing its effects on the development of educational and occupational aspirations beyond high school.

To measure change in self-perceptions from Time 1 to Time 2, a residual change score was used instead of a difference score (i.e., Time 1 scores subtracted from Time 2 scores). Residual change score is considered a much more stable, robust way to measure change (Stevens, 1996). To create the residual change score, Time 2 scores were regressed on Time 1 scores and the residuals were retained (forming the residual change score), thus removing all variance at Time 2 that was attributable to Time 1 scores. A negative residual change score indicates that self-perceived competence in a given area decreased over the two year period from Time 1 to Time 2, with the reverse being true for a positive residual change score. Residual change scores for each
subscale were used as predictors (independent variables) in all analyses. Block and Robins (1993) used a similar technique of residual change scores to evaluate individual differences in self-concept change from age 14 to 23.

Self-perceived competence residual change scores by gender and grade at Time 1 are presented in Table 4. Test of between subject contrasts indicated that there were no significant differences in any of the three self-perceived competence subscales by gender or age (grade at Time 1). Thus, changes in general, intellectual, and academic self-perceived competence do not significantly differ among this sample by gender or age.

**Dependent Variables**

**Life Course Goals.** As discussed in the introduction, self-reported goals are cognitive representations of what one is attempting to achieve (Nurmi, 1993), which direct and motivate behaviour (Ford, 1992). Given that motivation is a strong predictor of academic achievement beyond intellectual abilities (Henderson & Dweck, 1990), a measure of motivation that incorporates the balance between achievement and affiliative goals becomes relevant in the present study as a means to explore any corresponding changes in goal structure or motivation over time with the development of educational and occupational aspirations.

A 12 item survey modified from the 10 item survey designed by Ford (1982) was used to measure the balance between career/academic and social/affiliative life course goals. Items contained in the “Goals in Life” section of the questionnaire are presented in Appendix D. Six items reflect career/academic goals, such as having a fulfilling
Table 4:

Self-Perceived Competence Residual Change Scores from Time 1 to Time 2 by Gender and Grade at Time 1

<table>
<thead>
<tr>
<th></th>
<th>Global Self-Worth</th>
<th>Scholastic Competence</th>
<th>Intellectual Ability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Residual</td>
<td>SD</td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>75</td>
<td>.03</td>
<td>.54</td>
</tr>
<tr>
<td>Female</td>
<td>119</td>
<td>-.02</td>
<td>.44</td>
</tr>
<tr>
<td>Grade at Time 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade 9</td>
<td>84</td>
<td>-.03</td>
<td>.46</td>
</tr>
<tr>
<td>Grade 10</td>
<td>69</td>
<td>.01</td>
<td>.48</td>
</tr>
<tr>
<td>Grade 11</td>
<td>41</td>
<td>.05</td>
<td>.54</td>
</tr>
</tbody>
</table>

Note: No significant differences among sample by gender or grade at Time 1

career, and six items reflect social/affiliation goals, such as having a fulfilling family life (family formation).

At Time 1, Time 2, and Time 3, participants were asked to rank order goals from 1 to 12 with the most important goal ranked first with a score of one. Consequently, the lower the rank, the higher the item was prioritized. In order to counterbalance the ipsative nature of this scale (e.g., when lower rank orders [higher priority] are given to a career goal, remaining rank orders available for social goals are higher [lower priority]), the top five ranked items were re-coded on a five point scale such that the top ranked item received a score of 5 points and the second highest ranked item received 4 points, and so on, for a total of 15 points distributed between career and social categories.
Only the top five goals were recorded in this fashion as it was assumed that the most thought and consideration into one's future orientation was applied in the first half of the scale, capturing one's most pertinent and, consequently, most motivating goals. A higher score for either career or social goals indicated an emphasis placed on career/academic or social/affiliation oriented life course goals.

Despite using a revised coding scale on the top five ranked goals only, the ipsative nature of the scale was maintained; career and social goals were essentially perfectly negatively correlated ($r = -1.00$ at Time 1 and Time 2, $p< .001$ and $r = -.99$ at Time 3, $p< .001$). Due to the virtually perfect correlation between career and social oriented goals, subsequent analyses involving life course goals will be conducted using career goals only.

**Educational Aspirations.** At Time 1 and Time 2, participants were asked, "What level of education do you expect to get?". Similarly, at Time 3, participants were asked, "What level of education do you intend to get?". Responses were coded on a four point scale: 1) high school diploma; 2) college diploma or technical certificate; 3) undergraduate degree; 4) graduate or professional degree.

**Occupational Aspirations.** At Time 1 and Time 2, participants were asked, "If you could have any job or career that you wanted, what kind of job would you like to have?". Similarly at Time 3, participants were asked a series of questions related to occupational aspirations: 1) to indicate if he/she is working summer only, part time, part time while in school, or full time; 2) to describe his/her current job and work responsibilities; 3) to indicate if his/her current job or career is (yes, no, or somewhat) related to the job or career that he/she eventually wants to have; 4) to describe his/her
desired occupation if his/her current job is not entirely related to his/her desired occupation. Coding of occupational aspirations at Time 3 was dependent on the response given to the last portion of this question.

Although the present study is not testing a sociological or status attainment model, the goal of the study was to capture possible changes over time in the status or the prestigious nature of desired occupations that may be affected by changes in educational aspirations, self-perceived competence and other social processes (as suggestive of social cognitive career theory). Moreover, prestige level influences people's perceptions about the relative worth, power, and status of occupations (Stevens & Cho, 1985), which in turn is reflective of one's expectations and estimates of ability incorporated in one's career choice (Hotchkiss & Borrow, 1996). Prestige or status level of occupational aspirations was coded using the three point socioeconomic classification based on the Canadian census developed by Pineo, Porter, and McRoberts (1977) indicative of unskilled, semiskilled/technical-semiprofessional, and professional occupations (see Appendix E).

If more than one desired occupation was described in questionnaire data, the first occupation reported was coded for prestige or status level only. Moreover, if a desired occupation was not reported, or participants responded with an answer to indicate desired occupation was undecided or unknown, prestige or status level was not coded, and consequently, participants were not included in relevant analyses.

At Time 3 (one to three years beyond high school graduation) some participants had achieved their educational aspirations and were employed in their desired career field or desired job. Therefore, at Time 3, if participants reported a current job that was
directly related to their desired job and did not respond to the question requesting a
description of desired job if different from current job, current job was coded as desired
occupation at Time 3. However, if current job was not reported to be directly related to
desired job and no description of a desired job was given at Time 3, insufficient
information was available, and therefore not included in relevant analyses. Sufficient
descriptions of desired occupations were provided by at least three quarters of the
participants for all three waves of data collection to allow for a status rating, and thus to
be included in data analysis (88% response rate at Time 1, 94% response rate at Time
2, and 74% response rate at Time 3). The nature of items used to inquire about
desired occupations did not elicit sufficient information to code for type of job or job
category.

Qualitative Responses

In addition to the quantitative data discussed above, qualitative information was
also obtained from responses to open ended questionnaire items at Time 1 and Time 3.
Qualitative responses highlight individuals' perceptions of supports and challenges both
anticipated and experienced in pursuit of educational aspirations. As emphasized by
Eccles (1994), it is essential to attend to such experiences in order to better understand
the process by which individuals make achievement related choices. Qualitative
responses will address three main themes: 1) anticipated educational challenges; 2)
experienced educational challenges; 3) experienced educational supports.

Appropriate qualitative coding schemes to capture anticipated and experienced
challenges and supports could not be located in relevant research; therefore, coding
schemes were created (see Appendix F - Anticipated and Experienced Challenges to
Educational Attainment, and Appendix G - Experienced Supports to Educational Attainment). For the most part, a data-driven approach (Boyatzis, 1998) helped guide the creation of the current original qualitative coding schemes. More specifically, preliminary themes were first identified within a randomly chosen subsample of qualitative responses (n=50). Next, these preliminary themes were compared with themes outlined from similar qualitative data analysis discussed in the introduction (AAUW, 1999a; Farmer, 1997; Rayman, 1997). That is, a hybrid approach (Boyatzis, 1998) was used to create the current coding schemes in which both a data driven approach and a prior research driven approach were used in part to create themes addressed in the current coding schemes: financial resources, support from others, intrapersonal skills, degree of commitment, and environmental conditions.

Anticipated Challenges to Educational Attainment. Participants were asked at Time 1 to describe any obstacles or challenges they anticipated encountering in pursuing their educational aspirations. Specifically, participants were asked, “Please explain what might come in the way of your desired education”.

Experienced Challenges to Educational Attainment. At Time 1 and Time 3, participants were asked to identify obstacles or challenges experienced in pursuit of their education to date. Specific questions stated: “What would you say has been the biggest challenge or problem that you have faced in pursuing your educational goals?” (Time 1); “What have been the most significant challenges or problems that you have faced in pursuing an education this far?” (Time 3). The same qualitative coding scheme developed to code anticipated challenges was used to code experienced challenges.
(see Appendix F - Anticipated and Experienced Educational Challenges to Educational Attainment).

**Experienced Supports to Educational Attainment.** At Time 3, participants were asked to describe factors that they found supportive in pursuing educational goals. Specifically, participants were asked, “What factors have you found to be the most helpful or beneficial in pursuing an education this far?” A coding scheme similar to that used to code anticipated and experienced challenges was created to code experienced supports (see Appendix G - Experienced Supports to Educational Attainment).

**Method of Analysis**

Four main research questions are addressed in the results section. First, developmental changes in life course goals, educational aspirations, and occupational aspirations were assessed with a series of repeated measures analyses of variance (ANOVA). This is an appropriate design to capture performance trends over time (Stevens, 1996). Wilks' Lamdas, the most familiar multivariate test statistic (Tabachnick & Fidell, 1996), was used to determine significance level for all multivariate analyses.

Secondly, hierarchical regression analyses were used to investigate how well developmental changes in self-perceived competence (Time 1 to Time 2) predicted educational and occupational aspirations beyond high school (Time 3). Hierarchical regression analysis is the most appropriate analytical procedure to assess the prediction of a continuous or non-categorical dependent variable after other covariates have already been entered into the equation (Howell, 1992; Tabachnick & Fidell, 1996).
Several different multivariate analyses were used in the third section, which focused on developmental trajectories. To begin (i) four distinct developmental trajectories (educational pathways) were identified. Secondly (ii), a multivariate analysis of variance (MANCOVA) with age as a covariate was completed to determine differences among the four educational pathways in background variables and aspirations at Time 1. Next (iii), a repeated measures multivariate analysis of variance (MANOVA) was used to assess differences in the development of educational and occupational aspirations among the four educational pathways during the within high school transition from Time 1 to Time 2. Similarly (iv), a repeated measures analyses of variance (ANOVA) was used to assess differences in the development of occupational aspirations among the four educational pathways during the beyond high school transition from Time 2 to Time 3. Finally (v), the predictive power of antecedent characteristics during high school (at Time 1 and Time 2) on the educational pathway pursued beyond high school (at Time 3) was assessed through a series of hierarchical regressions.

The final research question addressed qualitative responses to items about perceived educational experiences. Responses were classified into six categories, and described in terms of percentage of responses. Response patterns were presented in reference to three populations: 1) among the general population; 2) between gender, 3) among the four educational pathways. Presenting qualitative data as response patterns based on percentage of responses by identified group (e.g., by gender) is a common technique used to describe self-report qualitative data (e.g., AAUW, 1999a; Farmer, 1997; Rayman, 1997).
Chapter 3

Results

The results will be presented in four main sections:

1. development of life course goals, educational aspirations, and occupational aspirations over time (Time 1 to Time 2 to Time 3);

2. the effects of developmental changes in self-perceived competence (Time 1 to Time 2) on educational and occupational aspirations beyond high school (Time 3);

3. i) identification of four diverse developmental trajectories or educational pathways,

ii) differences in background and educational and occupational aspirations among educational pathways at the beginning or middle stages of high school (Time 1),

iii) differences in the development of educational and occupational aspirations among educational pathways during the within high school transition (from Time 1 to Time 2),

iv) differences in the development of occupational aspirations among educational pathways during the transition beyond high school (from Time 2 to Time 3),

v) prediction of educational pathways from antecedent characteristics and prior aspirations (at Time 1 and Time 2);

4. analysis of qualitative responses outlining personal experiences of educational challenges and supports.
1. **Development of Life Course Goals, Educational Aspirations, and Occupational Aspirations Over Time**

Developmental changes in aspirations were assessed through repeated measures analyses of variance (ANOVA). Repeated measures ANOVAs were completed separately for each of the three dependent measures: life course goals, educational aspirations, and occupational aspirations. To begin, three repeated measures ANOVAs were completed to determine changes in life course goals, educational aspirations, and occupational aspirations from Time 1 to Time 2 with gender (male or female) and age (grade 9, 10, or 11 at Time 1) as between subject factors. Age was included as a between subject variable to identify any possible developmental differences (or cohort differences) among participants in different grades at the beginning of the study. This resulted in three 2 (time) X 2 (gender) X 3 (age) repeated measures ANOVAs. In the same way, to assess the changes in life course goals, educational aspirations, and occupational aspirations during the beyond high school transition from Time 2 to Time 3, a structurally similar series of 2 (time) X 2 (gender) X 3 (age) repeated measures ANOVAs were conducted. Likewise, to assess the changes in life course goals, educational aspirations, and occupational aspirations during the overall transition from the early/mid stages of high school or mid adolescence (Time 1) to beyond high school or early adulthood (Time 3), between subject factors of gender and age remained as between subject factors. However, the time variable increased to three levels, incorporating data from Time 1, Time 2, and Time 3. This resulted in three 3 (time) X 2 (gender) X 3 (age) repeated measures ANOVAs. Results of repeated measures analyses are presented in Table 5.
Table 5

Changes Over Time in Life Course Goals and Educational and Occupations Aspirations by Gender and Grade at Time 1 Using Repeated Measures ANOVA

<table>
<thead>
<tr>
<th>Effect/Variable</th>
<th>Time 1</th>
<th>Time 2</th>
<th>Time 3</th>
<th>Main Effect (Wilks' Lambda)</th>
</tr>
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<tbody>
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<td></td>
<td>N</td>
<td>Mean</td>
<td>SD</td>
<td>N</td>
</tr>
<tr>
<td><strong>Time</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life Course Career Goals</td>
<td>201</td>
<td>9.07</td>
<td>.25</td>
<td>201</td>
</tr>
<tr>
<td>Educational Aspirations</td>
<td>183</td>
<td>3.03</td>
<td>.52</td>
<td>183</td>
</tr>
<tr>
<td>Occupational Aspirations</td>
<td>131</td>
<td>2.82</td>
<td>.38</td>
<td>131</td>
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<tr>
<td><strong>Time by Gender</strong></td>
<td></td>
<td></td>
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<tr>
<td>Life Course Career Goals</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Males</td>
<td>76</td>
<td>9.46</td>
<td>3.10</td>
<td>76</td>
</tr>
<tr>
<td>Females</td>
<td>125</td>
<td>8.84</td>
<td>3.76</td>
<td>125</td>
</tr>
<tr>
<td>Educational Aspirations</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
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<td>2.93</td>
<td>.49</td>
<td>70</td>
</tr>
<tr>
<td>Females</td>
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<td>3.09</td>
<td>.53</td>
<td>113</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>49</td>
<td>2.82</td>
<td>.39</td>
<td>49</td>
</tr>
<tr>
<td>Females</td>
<td>82</td>
<td>2.83</td>
<td>.38</td>
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Table 5

continued

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<thead>
<tr>
<th>Effect/Variable</th>
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<th>Time 2</th>
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<th></th>
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<tr>
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<td>SD</td>
<td>N</td>
<td>Mean</td>
<td>SD</td>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td>Time by Grade at Time 1</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Life Course Career Goals</td>
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<td></td>
<td></td>
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<tr>
<td>Grade 9</td>
<td>85</td>
<td>9.38</td>
<td>3.61</td>
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<td>8.67</td>
<td>3.52</td>
<td>72</td>
<td>8.46</td>
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<tr>
<td>Grade 11</td>
<td>44</td>
<td>9.14</td>
<td>3.42</td>
<td>44</td>
<td>8.33</td>
<td>3.69</td>
<td>44</td>
<td>7.40</td>
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<td>31</td>
<td>2.71</td>
<td>.46</td>
<td>31</td>
<td>2.65</td>
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F (4, 388) = .30
F (4, 352) = .07
F (4, 254) = 1.23

*** p < .001
The importance placed on life course career goals decreases during the transition from mid adolescence to early adulthood (Time 1 to Time 3). However, when the overall transition from Time 1 to Time 3 is broken down into two time components, transition within high school (Time 1 to Time 2) and transition beyond high school (Time 2 to Time 3), it becomes clear that the most dramatic decrease occurs during the transitional period beyond high school (Time 2 to Time 3). $F(1, 209)=22.18, p<.001$; the decrease in life course goals within the high school transition period (Time 1 to Time 2) is not significant. A subsequent drop in life course career goals indicates a rise in life course social goals. Tests of between subject contrasts indicate that there are no significant differences in the developmental pattern of life course career goals by gender or age, and there is no interaction between gender and age.

Conversely, educational aspirations significantly increase during the transition from mid adolescence to early adulthood (Time 1 to Time 3). When the transition from Time 1 to Time 3 is broken down into two time components, transition within high school (Time 1 to Time 2) and transition beyond high school (Time 2 to Time 3), it becomes clear that the overall increase in educational aspirations is driven by a significant increase in educational aspirations reported during the transition period within high school (Time 1 to Time 2). $F(1, 182)=12.65, p<.001$. Educational aspirations do not significantly change during the transition period beyond high school (Time 2 to Time 3). More specifically, as can be seen from Table 5, the mean score for educational aspirations at Time 1 indicates that at the beginning or middle stages of high school (Time 1), participants on average report that an undergraduate degree is the highest level of desired education. In later stages of high school (Time 2),
participants on average begin to report higher levels of desired education such as graduate or professional degrees.

Occupational aspirations decrease during the transition from mid adolescence to early adulthood (Time 1 to Time 3). As above, when the transition from mid adolescence to young adulthood (Time 1 to Time 3) is broken down into the two time components, within high school transition (Time 1 to Time 2) and beyond high school transition (Time 2 to Time 3), it becomes clear that the overall decrease in occupational aspirations is driven by a significant decrease in occupational aspirations reported during the transition period beyond high school (Time 2 to Time 3), \( F(1, 148) = 21.58, p < .001 \). Occupational aspirations do not significantly change during the transition period within high school (Time 1 to Time 2). During high school (Time 1 to Time 2) the mean status levels of socioeconomic classification (Pineo et al., 1977) indicates that the vast majority of participants report that they desired a job with the highest socioeconomic classification, such as managerial and professional specialty occupations (e.g., doctor, teacher). In comparison, a decrease in the mean score of socioeconomic classification during the beyond high school transition (Time 2 to Time 3) indicates that following high school graduation, fewer participants identify high level, specialized jobs as desired occupations.

To summarize, during the overall transition from mid adolescence to early adulthood (Time 1 to Time 3) there is an increase in educational aspirations and a decrease in occupational aspirations and life course career goals (indicative of a subsequent increase in social life course goals). The developmental stage at which these shifts occur differ among variables. More specifically, during the transition within
high school (Time 1 to Time 2), there is an increase in educational aspirations, and both occupational aspirations and life course career goals remain relatively stable. Conversely, during the transition beyond high school (Time 2 to Time 3), there is a decrease in both occupational aspirations and life course career goals, and educational aspirations remain relatively stable. These patterns are consistent by gender and age. An increase in educational aspirations during the within high school transition followed by a subsequent decrease in occupational aspirations beyond high school is not congruent, suggesting that there is a great deal of variability in aspirations over time among participants.

2. The Effects of Developmental Changes in Self-Perceived Competence

Hierarchical regression analyses were used to investigate how well developmental changes in self-perceived competence (Time 1 to Time 2) predicted educational and occupational aspirations beyond high school (Time 3). More specifically, residual change scores for self-perceptions about scholastic competence, intellectual ability, and global self-worth were used as a measure of change in self-perceptions over time. In a hierarchical fashion, background variables (gender, age, academic achievement, and parental education) and prior aspirations (educational and occupational aspirations at Time 1) were entered as controls into the first and second blocks of the model, respectively. Residual change scores for self-perceptions about scholastic competence, intellectual ability, and global self-worth were entered into the third and final block. That is, the ability to predict educational and occupational aspirations beyond high school (at Time 3) from developmental changes in general and academic self-perceived competence (from Time 1 to Time 2) was investigated after
the effects of background and prior aspirations (at Time 1) were statistically controlled. Time 3 educational and occupational aspirations (dependent variables) were analyzed in two separate analyses. Raw and standardized betas, standard errors, R², and change in R² are presented in Table 6 for educational aspirations and in Table 7 for occupational aspirations.

It is clear from Tables 6 and 7 that academic achievement at the beginning of high school is a consistent and highly significant predictor of both educational and occupational aspirations beyond high school. That is, even after other background variables (parental education, gender, and age) and prior educational and occupational aspirations (Time 1 and Time 2) have been statistically controlled for, academic achievement at the beginning of high school is a strong predictor of educational and occupational aspirations beyond high school. Prior educational aspirations (Time 2) provide additional predictive power for educational aspirations beyond high school; likewise, prior occupational aspirations (Time 2) provide additional predictive power for occupational aspirations beyond high school. Developmental changes in self-perceived competence do not significantly predict educational or occupational aspirations beyond high school, accounting for only approximately an additional 1% of the variance. Moreover, self-perceived intellectual ability, scholastic competence, and global self-worth at Time 1 and Time 2 were not significantly correlated with educational or occupational aspirations beyond high school (Time 3), further confirming that general and academic self-perceptions reported in high school are not significantly related to educational and occupational aspirations beyond high school for this sample. Correlation results are presented in Table 8.
Table 6

Summary of Hierarchical Regression Analyses Examining the Influence of Developmental Changes in Self-Perceived Competence on Educational Aspirations beyond High School

<table>
<thead>
<tr>
<th>Variable</th>
<th>Block 1</th>
<th></th>
<th>Block 2</th>
<th></th>
<th>Block 3</th>
<th></th>
<th>ΔR²</th>
<th>R²</th>
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<td>SE B</td>
<td>β</td>
<td>B</td>
<td>SE B</td>
<td>β</td>
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<td>.06</td>
<td>.05</td>
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<td>.04</td>
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<td>Academic Achievement</td>
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<td>.07</td>
<td>.43***</td>
<td>.02</td>
<td>.01</td>
<td>.23***</td>
<td>.02</td>
<td>.01</td>
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<td>.12</td>
<td>-.14</td>
<td>-.12</td>
<td>.11</td>
<td>-.07</td>
<td>-.12</td>
<td>-.07</td>
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<tr>
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<td>.07</td>
<td>.04</td>
<td>.00</td>
<td>.06</td>
<td>.01</td>
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<tr>
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<td>-.01</td>
<td>-.03</td>
<td>.10</td>
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<td>.53</td>
<td>.08</td>
<td>.47***</td>
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<tr>
<td>Intellectual Ability Residual Change Score</td>
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<td>.05</td>
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<tr>
<td>Global Self-Worth Residual Change Score</td>
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<td>.06</td>
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</table>

*** p<.001
### Table 7

**Summary of Hierarchical Regression Analyses Examining the Influence of Developmental Changes in Self-Perceived Competence on Occupational Aspirations beyond High School**

<table>
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<tr>
<th>Variable</th>
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<th>Block 3</th>
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<th>R²</th>
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<td>.05</td>
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<td>Intellectual Ability Residual Change Score</td>
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<td>Global Self-Worth Residual Change Score</td>
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</table>

* p<.05  
** p<.01  
*** p<.001
Table 8

Pearson Correlations Between Self-Perceived Competence and Educational and Occupational Aspirations at Time 3

<table>
<thead>
<tr>
<th>Construct</th>
<th>1</th>
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<th>6</th>
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<td>.43**</td>
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<td>6. Global Self-Worth at Time 2 (n=208)</td>
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** p<.01 (2-tailed)
Identification of Four Distinct Educational Pathways

The third section (divided into five parts) explores the diverse developmental trajectories experienced by adolescents/young adults during the critical transition beyond high school. The first and preceding step of this analytical procedure was to identify a series of possible trajectories (educational pathways). Participants’ current educational attainment (current or highest level of education obtained at Time 3) was combined with educational aspirations reported at Time 3 to identify five distinct educational pathways taken by the current sample of young adults. That is, information regarding current educational status and presence or absence of aspirations for further education was used to distinguish five different pathways or trajectories participants’ are engaged in during early adulthood (Time 3). The following five educational pathways were identified:

1. **High school group** consists of participants who were out of the educational system at Time 3 after graduating from high school with either a four year general level diploma or a five year advanced level diploma and did not pursue any form of post secondary education \( n=28 \) or 13% of the sample;  

2. **College group** consists of participants who were either: a) out of the educational system at Time 3 after graduating from a college or technological program, or b) in the educational system at Time 3 pursuing a college diploma with no intentions of obtaining more advanced educational training after graduation from college \( n=18 \) or 9% of the sample;  

3. **College-university group** consists of participants who were in the educational system at Time 3 pursuing a college diploma or technical certification with intentions to
obtain an undergraduate degree (or higher) in the future (n=21 or 10% of the sample);

4. **Undergraduate group** consists of participants who were in the educational system at Time 3 pursuing an undergraduate degree with no intentions to pursue a graduate level or professional degree (n=61 or 29% of the sample);

5. **Graduate group** consists of participants who were in the educational system at Time 3 pursuing an undergraduate degree with intentions to pursue a graduate or professional degree in the future (n=82 or 39% of the sample).

A multivariate analysis of variance (MANCOVA) with age (grade at Time 1) as a covariate, and gender and educational pathway (five categories) as between subject factors was completed to determine if groups differed at the beginning of the study on two main constructs: 1) background variables (academic achievement and parental education); 2) educational and occupational aspirations (at Time 1). Age or grade at Time 1 (grade 9, 10, or 11) was entered as a covariate in order to control for any possible developmental differences (age or grade related) in background and aspiration measures, thus controlling for any possible cohort effects. Gender was entered as a between subject variable to assess any possible gender differences in background and aspirations at Time 1. That is, a MANCOVA was run to determine characteristics at the early or middle stages of high school (Time 1) that differentiate individuals who follow different educational pathways beyond high school (Time 3). For this analysis, a multivariate design was chosen over a univariate design as a multivariate test has a power advantage when there is a sufficient sample size (i.e., 10 or more subjects for each variable) (Stevens, 1996).
Repeated contrast comparisons, which compare the mean of each level or group to the mean of the subsequent level or group, were used to examine educational pathway group differences on background and educational and occupational aspirations at Time 1. More specifically, the high school group was compared to the college group, the college group was compared to the college-university group, the college-university group was compared to the undergraduate group, and the undergraduate group was compared to the graduate group. The repeated contrast comparison method was selected in order to determine if significant differences in background and educational and occupational aspirations at Time 1 existed between groups with comparable educational status and educational aspirations in early adulthood (Time 3). It was decided that in order to increase power, groups with similar educational aspirations in adulthood, and comparable background variables and educational and occupational aspirations during mid adolescence (Time 1) could be collapsed together. Thus, repeated contrast comparisons were utilized to accomplish this goal, allowing for comparisons to be made between groups with the most similar level of educational attainment and educational aspirations at Time 3.

Educational pathway differences based on repeated contrast comparisons were as follows: the high school and college groups significantly differed on educational aspirations at Time 1 ($p<.05$); the college and college-university groups significantly differed on both educational aspirations at Time 1 ($p<.01$) and mean level of parental education ($p<.05$); the undergraduate and graduate groups significantly differed on academic achievement ($p<.01$). There were no significant differences in background variables or educational aspirations or occupational aspirations at Time 1 between the
college-university group and the undergraduate group. This suggested that participants in these two groups have the same goal of completing an undergraduate degree, but have followed alternate interim pathways. Given that these two groups do not differ in their presentation at the beginning of the study, and aim to complete their post-secondary education with an undergraduate degree, these groups were collapsed into one group: the undergraduate group. For the remaining analyses, four educational pathways were used:

1. the high school group consists of participants who were out of the educational system at Time 3 after graduating from high school with either a four year general level diploma or a five year advanced level diploma and did not pursue any form of post secondary education (n=28 or 13% of the sample);

2. the college group consists of participants who either were a) out of the educational system at Time 3 after graduating from a college or technological program, or b) in the educational system at Time 3 pursuing a college diploma with no intentions of obtaining more advanced educational training after graduation from college (n=18 or 9% of the sample);

3. the undergraduate group consists of participants who were either a) in the educational system at Time 3 pursuing a college diploma with intentions of obtaining an undergraduate degree, or b) in the educational system at Time 3 pursuing an undergraduate degree with no intentions of obtaining more advanced educational training (n=82; 39% of sample);
4. the graduate group consists of participants who were in the educational system at Time 3 pursuing an undergraduate degree with intentions to pursue a graduate or professional degree in the future (n=82; 39% of sample).

3 ii) Differences Among the Four Educational Pathways in Early/Mid Stage of High School (Time 1)

Again, a multivariate analysis of variance (MANOVA) was completed to determine characteristics at the early or middle stages of high school (Time 1) that differentiate individuals who followed the four identified educational pathways beyond high school (high school group, college group, undergraduate group, graduate group). More specifically, a MANOVA with age, gender, and educational pathway as between subject factors was completed to determine if participants in the four educational pathways differed at the beginning of the study (in the early or middle stages of high school at Time 1) on two main constructs: 1) background variables (academic achievement and parental education); 2) educational and occupational aspirations. This resulted in a 3 (age) X 2 (gender) X 4 (educational pathway) MANOVA. Differences among educational pathways in background variables, age, educational aspirations, and occupational aspirations at Time 1 and Time 2 are presented in Table 9.

Main effects were found for educational pathway, F(12, 496)=5.53, p<.001 and gender, F(4, 165)=2.76, p<.05, but there were no interaction effects between educational pathway and gender. To expand, significant between subject differences among educational pathways exist on the following three variables: academic
# Differences Among Educational Pathway in Background Variables, Age, and Educational and Occupational Aspirations (at Time 1 and Time 2)

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<th>Educational Pathway</th>
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<td>Undergraduate</td>
</tr>
<tr>
<td>N</td>
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<tr>
<td>% female</td>
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<td>67</td>
</tr>
<tr>
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<td>73.5 (SD=8.17)</td>
<td>73 (SD=6.77)</td>
<td>77.34 (SD=7.52)</td>
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<tr>
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<td>17</td>
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<tr>
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<tr>
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<tr>
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<tr>
<td>% of total sample</td>
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<td>Occupational Aspirations***</td>
<td>2.75 (SD=.44)</td>
<td>2.40 (SD=.51)</td>
<td>2.77 (SD=.43)</td>
<td>2.91 (SD=.28)</td>
</tr>
</tbody>
</table>

*p<.05  
***p<.001
achievement at the beginning of high school, $F(3, 168)=15.29$, $p<.001$, educational aspirations at Time 1, $F(3, 168)=8.40$, $p<.001$, and occupational aspirations at Time 1, $F(3, 168)=3.32$, $p<.05$. The difference among educational pathways on mean level of parental education was at a trend level only, $F(3, 168)=2.32$, $p=.08$, with parental education among the college group somewhat lower than that of the other three groups. The Tukey procedure was used to conduct post-hoc comparisons among the four educational pathways. This procedure, which investigates all pairwise group differences, was chosen because of its protection against Type I errors (Stevens, 1996).

With respect to academic achievement, post-hoc comparisons among educational pathways indicate that: academic achievement is not significantly different between the high school and college groups; academic achievement is significantly higher for the undergraduate group compared to the high school and college groups ($p<.05$); academic achievement for the graduate group is significantly higher than that of all other educational pathways ($p<.001$). Academic achievement by educational pathway is presented in Figure 2.

With respect to educational aspirations, Tukey's post-hoc comparisons among educational pathways indicated that: educational aspirations at Time 1 reported by the high school group were significantly lower than those of the graduate group ($p<.01$), but comparable to those of the college and undergraduate groups; the educational aspirations at Time 1 reported by the college group were significantly lower than those of the undergraduate and graduate groups ($p<.001$). Educational aspirations at Time 1 by educational pathway is presented in Figure 3.
With respect to occupational aspirations, Tukey’s post-hoc comparisons among educational pathways indicate that: occupational aspirations at Time 1 reported by the high school group were comparable to those reported by all other educational
paths; occupational aspirations at Time 1 reported by the college group are significantly lower than those of the undergraduate (p<.05) and graduate (p<.001) groups; occupational aspirations at Time 1 reported by the undergraduate and graduate groups do not significantly differ. Occupational aspirations at Time 1 by educational pathway is presented in Figure 4.

**Figure 4 - Occupational Aspirations at Time 1 by Educational Pathway**

![Bar chart showing occupational aspirations at Time 1 by educational pathway](image)

To summarize, at the beginning of the study, in the early/middle stages of high school, academic achievement is scattered across the educational pathways. Not surprising, academic achievement was highest for the group who plans to pursue advanced post-secondary training at the graduate level (graduate group). However, it is important to note that academic achievement between those who pursued a college degree (the college group) and those who choose not to pursue any form of post-secondary education (high school group) is essentially identical (mean difference of .5%). In contrast, the high school group reported ambitious educational and
occupational aspirations, comparable to aspirations reported by the undergraduate group.

3 iii) Differences Among Educational Pathways During the Within High School Transition (Time 1 to Time 2)

Differences in the development of educational and occupational aspirations among the four educational pathways during the within high school transition (from Time 1 to Time 2) were analyzed by a repeated measures MANOVA. Again, a multivariate design (MANOVA) was chosen over a univariate design (ANOVA) due to a power advantage (Stevens, 1996). Three between subject factors were included: gender (male or female), age (grade 9, 10, or 11 at Time 1), educational pathway (four trajectories). This resulted in a 2 (time) X 2 (gender) X 3 (age) X 4 (educational pathway) MANOVA. In this analysis, the dependent variable was composed of the mean of Time 1 educational aspirations, Time 2 educational aspirations, Time 1 occupational aspirations, and Time 2 occupational aspirations. Follow-up univariate tests were used to clarify main effects.

A multivariate test of the within subjects contrasts indicates that change in aspirations over time is at a trend level only, $F(2,138)=2.39$, $p<.10$. However, there was a significant time by educational pathway effect, $F(6,276)=2.51$, $p<.05$. More specifically, follow-up univariate testing indicated that the within subject difference was driven by a difference in the mean of educational aspirations at Time 1 and Time 2 among educational pathways, $F(3,139)=4.62$, $p<.01$; mean of occupational aspirations at Time 1 and Time 2 among educational pathways was not significantly different (see Figure 5). (Significant changes in educational aspirations, but not in occupational
Within the high school transition, educational aspirations are shifting among educational pathways, becoming clearly distinct; conversely, occupational aspirations remain stable during this same period with no noted developmental shifts. The changes in educational aspirations from Time 1 to Time 2 by educational pathway are presented in Figure 6.

Post-hoc comparisons using the Tukey procedure indicate two main differences within the high school transition among educational pathways. First, the mean of Time 1 and Time 2 educational aspirations was not significantly different between the high
school and the college groups, but both were significantly different from the undergraduate and graduate groups. As noted earlier, educational aspirations at Time 1 were comparable for the high school and the college groups. Furthermore, change in mean scores for educational aspirations at Time 1 to Time 2 for both the high school and college groups was minimal (mean difference = .02 for the high school group; mean difference = .13 for the college group). This indicates that these two groups reported comparable educational aspirations while in high school, and educational aspirations within the high school transition remain relatively stable for both groups. Therefore, academic achievement at the beginning of high school and development of educational and occupational aspirations throughout high school are comparable for the high school
and the college groups. However, it is important to note that the high school group, the group that did not follow the most socially desirable or economically profitable route beyond high school, does not appear to be significantly different from the college group during the high school transition. Therefore, because of a similar developmental trajectory of educational and occupational aspirations throughout high school (Time 1 to Time 2), it is difficult during high school to discriminate individuals who choose to pursue post secondary education at the college level from those who do not pursue post-secondary education directly out of high school (and up to three years after high school graduation).

Secondly, the developmental shifts experienced by both the undergraduate and graduate groups were independently unique. More specifically, both the undergraduate and graduate groups experienced an increase in educational aspirations during the developmental shift or transition within high school (Time 1 to Time 2). As noted earlier, educational aspirations at Time 1 between the undergraduate and graduate group are comparable; however, the increase in educational aspirations among the graduate group while in high school (mean difference = .5) was significantly higher compared to that of the undergraduate group (mean difference = .1).

Tests of between subjects contrasts indicate significant difference in age, $F(4,278)=2.57, p<.05$, and among educational pathways, $F(6,276)=12.3, p<.001$, with an age by educational pathway interaction, $F(12,276)=1.88, p<.05$. In reference to an age by educational pathway interaction, univariate follow-up analysis indicates a clear distinction in mean occupational aspiration scores among educational pathway grouping by age. More specifically, among the oldest participants at the beginning of the study
(G11T1), there is a clear contrast between the high occupational aspirations reported by the undergraduate and graduate groups, as compared to the lower occupational aspirations reported by the high school and college groups (consistent with the identification as the two highest and two lowest achieving groups respectively). In contrast, the pattern among younger participants at the beginning of the study (G9T1 and G10T1) was not as consistent or clearly distinguishable by educational pathway (the range in the socioeconomic status level of desired occupational was wider among educational pathways).

Moreover, a cross-sectional perspective suggests that distinctions among educational pathways are becoming more defined over time. More specifically, mean occupational aspirations scores were stable for both undergraduate and graduate groups among all age groups at Time 1 (G9T1, G10T1, G11T1) (ranging from 2.69 to 2.93); conversely, mean occupational aspirations scores among the high school and college groups varied by age group at Time 1 with an inconsistent pattern. That is, the patterns are less stable among participants who were in an earlier developmental stage at the beginning of the study (G9T1 and G10T1), compared to participants in a later developmental stage when the study began (G11T1). Furthermore, this suggests that the high school and college groups experienced the most variability or instability in the development of educational and occupational aspirations throughout high school, which may in part explain the decline in educational attainment beyond high school as compared to both their own educational aspirations as reported at Time 1, and educational attainment of the two higher achieving educational pathways (i.e., undergraduate and graduate groups).
Differences Among Educational Pathways During the Beyond High School Transition (Time 2 to Time 3)

Differences in the development of occupational aspirations among educational pathways during the transition beyond high school (from Time 2 to Time 3) were analyzed by a repeated measures ANOVA design. As above, gender, age, and educational pathway were entered as between subject factors, forming a 2 (time) X 2 (gender) X 3 (age) X 4 (educational pathway) ANOVA. However, in this analysis, the mean of Time 2 and Time 3 occupational aspirations was the only the dependent variable. Educational aspirations at Time 3 were used in part to determine which educational pathway individuals were assigned, and consequently would have contaminated analyses of differences among educational pathways if included as a dependent variable. Therefore, the beyond high school transition was analyzed with the change in occupational aspirations from Time 2 to Time 3 as the only aspiration outcome measure. Changes in occupational aspirations among educational pathways over the transition period beyond high school (Time 2 to Time 3) are presented in Figure 7. Changes in occupational aspirations among educational pathway over two transitional stages, within high school (Time 1 to Time 2) and beyond high school (Time 2 to Time 3), are presented in Figure 8.

A multivariate test of within subject contrasts indicates a significant decrease in occupational aspirations from Time 2 to Time 3, $F(1, 126)=16.27, p<.001$. There is also a significant time by age effect, $F(2, 126)=3.61, p<.05$, and time by educational pathway effect, $F(3, 126)=3.88, p<.01$; however, there is no interaction between age and educational pathway over time. Post hoc testing using Tukey’s procedures indicates
Figure 7 - Changes in Occupational Aspirations from Time 2 to Time 3 by Educational Pathway

Figure 8 - Changes in Occupational Aspirations from Time 1 to Time 2 to Time 3 by Educational Pathway
that the age by time effect reported above is produced by a distinct decrease in occupational aspirations from Time 2 to Time 3 for participants in the early stages of high school at the beginning of the study (mean difference = .34 for G9T1 and mean difference = .42 for G10T1). In contrast, the occupational aspirations reported at Time 2 and Time 3 by participants in a later stage of high school at the beginning of the study (G1T1) are consistent (mean difference = .005). This age effect is consistent with the pattern noted above in which there is more stability in the development of aspirations over time among participants who were in a later developmental stage at the beginning of the study (G11T1), as compared to participants in an earlier developmental stage (G9T1 and G10T1).

Occupational aspirations among all educational pathways decreased during the beyond high school transition (Time 2 to Time 3); however, within subject educational pathway contrasts are driven by the degree of relative decline. That is, as can be seen from Figure 7, the high school group experienced a notable decline in occupational aspirations after graduation from high school (mean difference of .56 compared to mean difference ranging from .02 to .23 for the other educational pathways). This decline in occupational aspirations corresponds with departure from the educational system after achieving a high school level education only. Experience with restricted job opportunities due to limited education may have potentially contributed to depleted career hopes and choices. Tukey’s post hoc comparisons indicated that the mean of Time 2 and Time 3 occupational aspirations were comparable for the high school and college groups and the mean scores for these two groups are significantly lower than the mean scores for the undergraduate and graduate groups (p<.001). Examination of
Time 2 and Time 3 scores indicate that the development during this transition period is actually very different for the high school and college groups, despite statistically similar mean occupational aspirations scores. That is, the high school group reported higher occupational aspirations at Time 2 compared to the college group, but the high school group experienced a more pronounced decline in occupational aspirations during the beyond high school transition (Time 2 to Time 3). Because comparable mean scores of Time 2 and Time 3 occupational aspirations exist between the high school and college groups, varied trajectories are not initially evident.

To provide more information about the transitions beyond high school (Time 2 to Time 3), mean scores for educational aspirations at Time 1, Time 2, and Time 3 by educational pathway are presented in Figure 9. As evident from Figure 9, trajectories of educational aspirations from Time 2 to Time 3 vary among educational pathways. Repeated measures ANOVA analyses indicate that: educational aspirations decrease from Time 2 to Time 3 for both the high school and the college groups, $F(1, 26)=11.01, p<.01$ and $F(1, 17)=9.00, p<.01$ respectively; educational aspirations remain stable from Time 2 to Time 3 for the undergraduate group; and educational aspirations increase from Time 2 to Time 3 for the graduate group, $F(1,81)=42.29, p<.001$. It is important to note that although the high school group has the lowest educational training at Time 3 and has exited the educational system, this group has educational aspirations at Time 3 that are somewhat higher than the college group, $F(1, 44)=2.87, p<.10$. This seems to suggest that the high school group has aspirations for post-secondary education, however, at Time 3 have not (yet) re-entered the educational system.
3 v) Prediction of Educational Pathway from Antecedent Characteristics

The predictive power of antecedent characteristics during high school (background variables and educational and occupational aspirations at Time 1 and Time 2) on the educational pathway pursued beyond high school (at Time 3) was assessed through a series of hierarchical regressions. The dependent variable, educational pathway, is conceptualized as a continuous variable based on increasing socioeconomic status (socioeconomic hierarchy) afforded by advanced level of skills obtained through varying degrees of educational and vocational training (as indicated by educational pathway). More specifically, as a continuous dependent variable,
educational pathway ranges in socioeconomic status from minimal educational/vocational training opportunities among the high school group, to extensive, specialized educational/vocational training opportunities among the graduate group.¹

A series of eight hierarchical regression analyses were completed; each regression targeted one aspiration measure to determine its influence after background variables and other aspiration measures had been statistically controlled. Specifically, in hierarchical fashion, background variables (gender, age, parental education) and academic achievement were entered as controls into the first and second blocks, respectively. Next, in the third block, one of the four aspiration measures (either educational aspirations at Time 1, educational aspirations at Time 2, occupational aspirations at Time 1, or occupational aspirations at Time 2) was entered to assess the independent contribution of this variable. The fourth and final block was composed of the remaining three aspiration measures, which assessed any additional predictive power beyond background variables and the targeted aspiration measure. This procedure was completed four times for each aspiration measure entered in isolation into block three. This model was then replicated with changes made between blocks three and four of data entry as described above to examine the influence of each aspiration measure after background and all other aspiration measures have been statistically controlled.

¹ Note that logistic regression is the appropriate statistical analysis to address the predictive power of antecedent characteristics with educational pathway operationalized as a categorical variable (Howell, 1992; Tabachnick & Fidell, 1996). However, efforts to complete a series of logical regressions with this database were not successful due to a very high frequency of zero entry cells, which threatened the validity of the results. It did appear, however, that the results generated from the compromised logistical regressions were nevertheless consistent with the pattern established by the linear regressions reported.
Two significant findings were evident in these series of hierarchical regressions. First, not surprisingly, results indicate that academic achievement at the beginning of high school is a consistent and highly significant predictor of educational pathway beyond background variables (gender, parental education, age). This is consistent with hierarchical regression results presented above where academic achievement consistently predicted educational and occupational aspirations at Time 3. It is evident that academic achievement in the early stages of high school significantly influences development beyond high school.

Second, hierarchical regression results indicate that both educational aspirations at Time 1 and Time 2 are significant predictors of educational pathway beyond background variables and academic achievement. However, the contribution made by educational aspirations at Time 1 is not significant beyond the contribution made by educational aspirations at Time 2. Again, this is consistent with hierarchical regression results presented above where educational aspirations at Time 2 consistently predicted educational and occupational aspirations at Time 3. Ultimately, academic achievement and educational aspirations reported at Time 2 were the most consistent predictors of post-secondary achievement. A summary of hierarchical regressions examining the predictive power of educational aspirations at Time 1 on educational pathway is presented in Table 10, and a summary of hierarchical regressions examining the predictive power of educational aspirations at Time 2 on educational pathway is presented in Table 11.
Table 10

Summary of Hierarchical Regression Analyses Examining the Predictive Power of Educational Aspirations at Time 1 on Educational Pathway

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<th>Block 3</th>
<th>Block 4</th>
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* p<.05  
** p<.01  
*** p<.001
Table 11

Summary of Hierarchical Regression Analyses Examining the Predictive Power of Educational Aspirations at Time 2 on Educational Pathway

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* p<.05  
*** p<.001
Summary of Developmental Pathway for the High School Group

The high school group experienced more instability during the overall transition from middle adolescence to early adulthood (Time 1 to Time 3) relative to all other educational pathways, especially during the transition beyond high school (from Time 2 to Time 3 - late adolescence to early adulthood). At the beginning of the study, this group closely resembled the undergraduate group on reported educational and occupational aspirations (differing on significantly lower academic achievement only). During the within high school transition (Time 1 to Time 2), the developmental pattern of the high school group closely resembled that of the college group. The high school group experienced a sharp decline in occupational aspirations in early adulthood (at Time 3). Thus, the less than optimal educational and occupational trajectories followed by the high school group did not become notably distinct until after high school graduation. This pattern makes it difficult to identify students during high school who are at risk of discontinuing their education after graduation.

Summary of Developmental Pathway for the College Group

Academic achievement and educational and occupational aspirations at Time 1 as reported by the college group are comparable to the high school group, but significantly lower than the academic achievement and educational and occupational aspirations at Time 1 as compared to the undergraduate and graduate groups. Furthermore, level of parental education is somewhat lower (at a trend level) among the college group as compared to all other educational pathways. A lower level of parental education is consistent with lower educational aspirations as identified in previous
research (Wilson & Wilson, 1992). There is a steady or gradual (non-significant) decline in educational and occupational aspirations from Time 1 to Time 2 to Time 3 among the college group, which is consistent with a college level education and intermediate status level occupations. Aspirations are consistent with subsequent attainment.

**Summary of Developmental Pathway for the Undergraduate Group**

The undergraduate group began high school with well developed academic skills, and educational and occupational aspirations reported at Time 1 clearly reflected the desire for a university level education and a high status occupation. Aspirations remained essentially stable throughout the transitions within high school (Time 1 to Time 2) and beyond high school (Time 2 to Time 3). Moreover, this group is in the process in early adulthood (Time 3) of obtaining the educational and occupational aspirations established in adolescence.

**Summary of Developmental Pathway for the Graduate Group**

Similar to the undergraduate group, the graduate group began high school with well developed academic skills (significantly higher than all other educational pathways), and educational and occupational aspirations reported at Time 1 clearly reflected the desire for a university level education and a high status occupation. Educational aspirations increased throughout the transition within high school (Time 1 to Time 2) and beyond high school (Time 2 to Time 3), creating a pathway distinct from that of the undergraduate group. Occupational aspirations of high status occupations remained stable throughout the transition within high school and beyond high school (Time 1 to Time 2 to Time 3). Moreover, this group is in the process in early adulthood (Time 3) of obtaining the educational and occupational aspirations that were established
in adolescence, with plans to continue to excel. The graduate group represents the most optimal developmental pathway.

4. Experienced Supports and Challenges to Educational Attainment (Qualitative Analysis)

Qualitative responses reported at Time 1 and Time 3 were classified into six categories: 1) financial resources/restraints; 2) emotional support/lack of emotional support; 3) self-perceived intrapersonal resources/limitations [e.g., motivation, academic skills]; 4) decision/indecision; 5) environmental supports/constraints; 6) other [e.g., religious beliefs, illness, family responsibility]. The coding scheme for anticipated and experienced challenges related to educational attainment is presented in Appendix F, and the coding scheme for experienced supports related to educational attainment is presented in Appendix G.

Response patterns are described below in reference to: 1) the general population; 2) gender [difference in response patterns for males and females]; and 3) educational pathway (high school group, college group, undergraduate group, graduate group). Results must be interpreted with caution as response rate was limited among the general population (i.e., overall response rate on the four qualitative items ranged from 44-90%), and response rates tended to be inconsistent among educational pathways (i.e., response rate among the four educational pathways on the four qualitative items ranged from 66-100%). A series of analyses of variance indicated that the number of anticipated and experienced challenges and supports were not affected by gender or age. That is, overall response rate did not differ significantly between males and females or among participants of different ages.
Time 1: Anticipated Challenges to Educational Aspirations

At Time 1, almost half of the participants (44%) reported anticipating at least one challenge or obstacle to achieving their educational aspirations, and 8% of participants anticipated experiencing two or more challenges (56% of participants did not report anticipating any educational challenges).

Almost one half (48%) of all reported anticipated educational challenges were related to financial concerns, approximately one third (32%) of the responses related to self-perceived intrapersonal limitations (e.g., lack of self-discipline or lack of required skills such as grades), and one tenth (10%) of the responses were coded as "Other" (e.g., illness or family responsibilities). Response pattern was comparable for males and females within a 14% range for each of the six possible categories; females did report anticipating educational challenges related to intrapersonal limitations somewhat more frequently than males (36% response rate for females and 22% response rate for males).

This general response pattern was maintained when anticipated challenges to educational aspirations were analyzed by educational pathway (see Figure 10). High school, undergraduate, and graduate groups all reported financial restraints as the most frequently anticipated challenge to obtaining educational aspirations at comparable rates (47%, 55%, and 60% of responses respectively). Furthermore, among these three groups, self-perceived intrapersonal limitations was the second more frequently reported anticipated challenge, also at proportionally similar response rates (33%, 34%, and 29% respectively). Conversely, the college group reported financial restraints and self-perceived intrapersonal limitations as the two most frequently anticipated
educational challenges; however, the ordinal was reversed compared to the other
groups with 20% of responses related to financial concerns and 40% of responses
related to intrapersonal limitations.

Time 1: Experienced Challenges to Educational Attainment

The majority of participants (76%) reported experiencing at least one challenge
to educational attainment during high school. A small minority (4%) reported
experiencing two or more educational challenges. Overall, self-perceived intrapersonal
limitations were the most frequently reported educational challenge. Response patterns
were comparable for males and females within a 5% range for each category. This
pattern was maintained when responses were analyzed by educational pathway (see
Figure 11). Not surprising, challenges related to financial restraints were not reported
given that at Time 1, individuals were still in high school and for the most part, financially dependent on parents.

**Time 3: Experienced Challenges to Educational Attainment**

An overwhelming majority of participants (90%) reported experiencing at least one challenge related to educational attainment. About half of the sample (53%) reported experiencing two or more challenges. Among the overall sample, self-perceived intrapersonal limitations and financial restraints were the two most frequently reported challenges. Response patterns for males and females were comparable within a 4% range for each category.

Response pattern of experienced challenges to educational attainment, broken down by educational pathway, is presented in Figure 12. Financial restraints were reported at proportionally similar rates among all educational pathways. Moreover,

![Figure 11 - Experienced Challenges to Current Educational Attainment at Time 1 by Educational Pathway](image-url)
financial restraints were not reported proportionally more often among the high school group, participants who exited the educational system after high school, than among other participants who pursued some level of post secondary education. Therefore, it does not appear that financial restrictions or limitations were more of a deterring factor in pursuing post secondary education for the high school group than for participants from other groups who did pursue a post secondary education. Again, as reported above, financial resources available to the high school group (based on parental education) were comparable to financial resources available to participants in the undergraduate and graduate groups.
Lack of support from family, peers, and/or school personnel was not identified proportionally more often by participants who obtained lower levels of educational attainment (i.e., high school and college groups). Therefore, lack of emotional support from others does not seem to be a plausible hypothesis (based on responses given) to explain factors that may be deterring individuals from obtaining higher levels of post secondary education. Conversely, high school and college groups reported challenges related to indecision or lack of commitment to future goals proportionally more often than the undergraduate and graduate groups. This suggests that increased decisiveness around future goals may remove some challenges, or provide some support, to pursuing or obtaining higher-level education. (However, this does not seem to be supported by proportionally more reported supports related to decisiveness or commitment to future goals by the undergraduate and graduate groups, as discussed in the experienced supports section below.)

Participants in the graduate group reported experiencing proportionally more challenges related to self-perceived intrapersonal limitations (42% of responses) compared to the high school and college groups (27% and 20% of responses respectively). Perhaps the graduate group has formed self-perceptions through social comparison, and thus being exposed to peers with comparable academic skills and more demanding academic situations has threatened their self-perceptions. Yet these challenging experiences and vulnerable self-perceptions do not appear to have discouraged this group from pursuing higher levels of education.
Time 3: Experienced Supports to Educational Attainment

The majority of participants (84%) reported experiencing one type of support in obtaining their current educational level. Approximately one quarter of participants (26%) reported experiencing two or more types of support. Support from family, peers, and/or school personnel was the most frequently reported support to educational attainment by the full sample overall. Response pattern was comparable for males and females within a 7% range for each category.

Response pattern of experienced supports to educational attainment, broken down by educational pathway, is presented in Figure 13. As in the overall sample, all educational pathways identified support from others as the most frequently experienced support. The high school group reported experiencing more support from the

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**Figure 13 - Experienced Supports to Current Educational Attainment at Time 3 by Educational Pathway**

[Bar chart showing the response rate (%) for different types of support by educational pathway.]

Type of Support:
- Sufficient Finances
- Emotional Support
- Interpersonal Skills
- Decisive
- Environmental Supports
- Other

Legend:
- □ High School
- ■ College
- □ Undergraduate
- ■ Graduate
environment than other groups. It may be that people in this group found jobs that they enjoyed and/or found financially rewarding, increasing the motivation or temptation to continue working and not pursue a post-secondary education. Furthermore, consistent with observations made earlier regarding the proportional impact of financial restraints for pursuing post-secondary education among the high school group, sufficient financial support was not identified by the high school group proportionally less often as a support or benefit as compared to the group with the highest educational goals, the graduate group. This is also consistent with comparable parental educational levels.

It is interesting to note that the two groups with the lowest educational attainment levels (the high school and college groups) had the lowest response rates identifying experienced supports (61% response rate for both high school and college groups, compared to 90% for both undergraduate and graduate groups); response rate among educational pathways on other items was more consistent. Participants in these two groups were out of the educational system at the time of Time 3 data collection, and therefore may have felt more removed from the educational system, thus finding it more difficult to identify past supports. Comparatively, participants in the two remaining groups (undergraduate and graduate groups) were still in the educational system at Time 3, and hence, reporting on currently experienced supports.

Comparison of Anticipated Educational Challenges at Time 1 and Experienced Educational Challenges at Time 3

Response patterns comparing anticipated educational challenges reported at Time 1 and experienced educational challenges at Time 3 are presented in Figure 14 for the high school group, in Figure 15 for the college group, in Figure 16 for the
undergraduate group, and in Figure 17 for the graduate group. Self-perceived intrapersonal limitations were reported as the first or second most frequently anticipated challenge to educational attainment at Time 1 by all educational pathways. Comparatively, self-perceived intrapersonal limitations were reported respectively as the first or second most frequently experienced challenge to educational attainment at Time 3 by all educational pathways, except the college group. Specifically, the college group reported self-perceived intrapersonal limitations as the most frequently anticipated challenge at Time 1; however, financial restraints were the most frequently reported challenge experienced at Time 3. It is not clear if the college group pursued a lower level of education than hoped for at the beginning of the study due to financial limitations or whether participants were discouraged, or threatened by self-perceived intrapersonal limitations. It is important to again note, as reported above, that the college group has a somewhat lower socioeconomic background (based on mean level of parental education) than the other educational pathways. Therefore, financial restraints may be a realistic challenge to financing more advanced educational training, thus necessitating an exit from the educational system after college due to financial constraints.

The high school and college groups, on average, had the lowest academic achievement levels at the beginning of high school compared to the undergraduate and graduate groups. It may be that through time, the college group began to adjust their educational plans to realistically match their academic abilities with academic program, choosing to pursue a college diploma as opposed to a more advanced university degree. Similarly, the high school group may have begun to realize that successfully
Figure 14 - Anticipated and Experienced Educational Challenges for the High School Group

Figure 15 - Anticipated and Experienced Educational Challenges for the College Group
Figure 16 - Anticipated and Experienced Educational Challenges for the Undergraduate Group

Type of Educational Challenge

- Financial Restraints
- Emotional Support
- Intrapersonal Limitations
- Indecision
- Environmental Constraints
- Other

Response Rate (%)

- Anticipated at Time 1
- Experienced at Time 3

Figure 17 - Anticipated and Experienced Educational Challenges for the Graduate Group

Type of Educational Challenge

- Financial Restraints
- Emotional Support
- Interpersonal Limitations
- Indecision
- Environmental Constraints
- Other

Response Rate (%)

- Anticipated at Time 1
- Experienced at Time 3
completing a university degree may not be realistic and perhaps became disillusioned, thereby exiting the educational system after high school (and perhaps exploring potential job opportunities). Furthermore, for the high school and college groups, challenges related to indecision were experienced more frequently at Time 3 than anticipated at Time 1. It appears that experiencing more indecision than anticipated may have had a negative impact on level of educational attainment.

The undergraduate and graduate groups both reported experiencing more challenges related to economic climate/environmental constraints at Time 3 than anticipated at Time 1. Further analysis of responses in this area indicated that the majority of responses reflected the climate of the job market dictating the most profitable and prosperous field of study to pursue, despite interest. Participants in these groups may have felt restricted in their educational pursuits as they learned more about employment possibilities and options made available through their current educational program.

Conversely, the undergraduate and graduate groups experienced fewer challenges at Time 3 related to financial restraints than anticipated at Time 1. This in part may explain why the graduate group realistically plans to pursue a graduate degree, which will require additional financial resources. That is, the graduate group may have discovered that financing post secondary education was less challenging than anticipated, therefore in part motivating them to aspire to achieve an even higher level of education.
It is interesting to note that the graduate group seems to have experienced more challenges related to self-perceived intrapersonal limitations at Time 3 than anticipated at Time 1. It may be that at Time 1 these participants were feeling more confident and competent. However, as they began to pursue post-secondary education (perhaps being more challenged or exposed to new educational experiences) they appear to have become slightly less confident or sure of their own self-perceived competence.

**Comparison of Experienced Educational Challenges at Time 1 and Time 3**

Participants in all four educational pathways reported experiencing challenges related to self-perceived intrapersonal limitations proportionally less frequently at Time 3 than at Time 1. Although the fraction of self-perceived intrapersonal limitations reported decreased proportionately over time, the impact of experienced challenges is not known. Moreover, experienced educational challenges reported at Time 3 were more diverse than educational challenges reported at Time 1, most likely because no financial restraints were experienced at Time 1 when in high school, and almost one third of experienced challenges reported at Time 3 were related to finances.

**Summary of Main Findings**

Briefly, the following are the main findings from this study:

1. During the within high school transition (Time 1 to Time 2), there was an increase in educational aspirations among the full sample, and occupational aspirations and life course career goals remained relatively stable. Conversely, during the transition beyond high school (Time 2 to Time 3), educational aspirations remained relatively stable, while occupational aspirations and life course career goals significantly decreased.
2. Developmental changes in general and academic self-perceived competence did not predict educational and occupational aspirations beyond high school (Time 3). Moreover, academic achievement was the only background variable to consistently predict educational and occupational aspirations beyond high school (Time 3).

3. Four educational pathways with varying degrees of socioeconomic promise were identified: high school group, college group, undergraduate group, and graduate group. These groups differed on academic achievement and Time 1 educational and occupational aspirations. Level of parental education was not significantly different among educational pathways.

4. During the within high school transition (Time 1 to Time 2), there was a shift in the development of educational aspirations among educational pathways. That is, patterns became clearly distinct, with the graduate group (the highest achieving group) reporting increased educational aspirations. Conversely, occupational aspirations of obtaining high status level jobs remained stable among all educational pathways.

5. During the transition beyond high school (Time 2 to Time 3), distinct patterns in the development of aspirations among educational pathways continued to emerge. A dramatic decrease was evident in occupational aspirations among the high school group, the group with the lowest socioeconomic promise.

6. Academic achievement was found to be a consistent and highly significant predictor of educational pathway.
7. Qualitative analyses suggest that personal experiences of supports and challenges in relation to educational attainment do not appear to differ significantly between gender, or among educational pathways.
Chapter 4

Discussion

The purpose of the present study was to use prospective, longitudinal data to examine individual and contextual influences on the development of educational and occupational aspirations during the transition from middle adolescence to early adulthood. How such factors influenced the pursuit of diverse developmental pathways or trajectories was of particular interest. As outlined in the introduction, research that expands on the realm of choices after high school graduation beyond predicting university attendance has been limited. Also, few studies investigate individuals’ own perspectives of factors that advanced or hindered attainment in early adulthood. Thus, the major emphasis of this chapter will be five-fold: 1) to discuss how the current findings first fit within social learning theory, and secondly, relate to prior research; 2) to explore the differential impact of individual and contextual influences on diverse educational and occupational trajectories (educational pathways); 3) to discuss the limitations of the present study; 4) to discuss implications for future research; and 5) to discuss the theoretical and practical implications regarding career development.

Current Findings in Relation to Theory and Prior Research

Social learning theory (Bandura, 1986,1997) was used to provide a theoretical framework for the present study. Individuals do not function as autonomous units within a vacuum. Accordingly, individual (e.g., self-perceived competence, goals) and environmental or contextual (e.g., parental education,
gender) influences interact over time to define and shape behaviours and beliefs (Bandura, 1986, 1997). More specifically, factors that have continuing and reciprocal influence are thought to be the best predictors of the development of aspirations and eventual attainment. Principally, extant research identified parental education and academic achievement (Dai, 1996; Kelly, 1989; Mau & Bikos, 2000; Owens, 1992; Trusty, 2000; Wagenaar, 1984; Wilson & Wilson, 1992), gender (Mau & Bikos, 2000; Rojewski & Yang, 1999; Wilson & Wilson, 1992), and self-perceived competence to a lesser extent (Mau, 1995; Paul, 1997; Trusty, 2000), as influential in the development of educational and occupational aspirations.

Overall, the current findings were not consistent with a social cognitive model. As discussed in more detail below, predominate factors within the social cognitive career theory (SCCT) (Lent & Brown, 1996; Lent et al., 1994, 1996), mainly individual factors of self-perceived competence and personal goals, were not directly influential in predicting subsequent achievement among the current sample. It is important to note that individual and contextual influences interact and inter-relate in complicated ways to affect outcomes. Hence, such interactions may identify the influence of some variables at a statistically significant level in particular predictive models only, depending on the combination of independent variables.

Level of parental education did not significantly predict educational or occupational aspirations in the present study. This is not consistent with previous research indicated above (e.g., Csikszentmihalyi & Schneider, 2000;
Wilson & Wilson, 1992). However, parental education was somewhat restricted in this relatively homogeneous sample (i.e., participants originated from the same middle-class community). It may be that level of parental education tends to be a stronger predictor among a more diverse population. Moreover, group differences may be evident with a more direct measure of parental expectations (e.g., information direct from parents about their expectations for their children), or with a more direct measure of financial resources (e.g., direct and specific measures of parental income).

Consistent with previous research (AAUW, 1999b; Csikszentmihalyi & Schneider, 2000; Mau & Bikos, 2000; Owens, 1992; Rindfuss et al., 1999), aptitude or academic achievement at the beginning of high school (mid adolescence) was highly predictive of aspirations and attainment in early adulthood. This is a particularly significant finding given the restricted range of this variable, thus reinforcing its predictive power. Although participants obtained, on average, grades around 78% at the beginning of high school, and all participants were enrolled in an intellectually challenging, university preparation academic stream (i.e., advanced academic stream) in high school, variability in aspirations and attainment in early adulthood (i.e., educational pathways) was consistently predicted by early high school academic achievement. This has practical implications for high school practices regarding matching academic skill and preparation for appropriate occupational and post-secondary choices. Practical implications are discussed in more detail below.
The basis of social learning theory (Bandura, 1986, 1997) would argue that gender, a social process, theoretically has a continuing impact on beliefs and behaviours (e.g., educational and career related choices and attainment) through an interactive and reciprocal process. However, current results did not identify that gender differentially affected the development of educational and occupational aspirations among the current sample during the transition from mid adolescence to early adulthood. This finding was somewhat expected based on the promising advances in gender equity within the educational system (AAUW, 1999b) and the more optimistic attitude of today's young women (Sullivan, 1997). Similar to the findings reported by Csikszentmihalyi and Schneider (2000), Dai (1996), and Asakawa and colleges (2000), the females and males in this sample reported comparable educational and occupational aspirations in adolescence and in early adulthood. Moreover, the females from the present study are intelligent, confident, and ambitious. These highly correlated factors, evident in adolescence, were most likely reinforcing and cumulative throughout the transition from mid adolescence to early adulthood (AAUW, 1999a; Wall, et al., 1999). Consequently, these women seem to represent a group of promising and talented individuals who aspire to obtain careers with the highest socioeconomic status, and may not be representative of a more general population of young women.

The optimistic future that the females in this study envision for themselves contradicts society's general trends (AAUW, 1999b; Sullivan, 1997). Research suggests that gender differences increase with age. Thus, gender may have a
continuous effect on the development and re-evaluation of educational and occupational aspirations, whereby gender differences may become more apparent during later developmental stages (i.e., as individuals near their thirties and begin to contemplate family formation) (Farmer, 1997; Hollinger & Fleming, 1992; Mau & Bikos, 2000; Poole et al., 1991). As was evident in the longitudinal study completed by Rindfuss and his colleagues (1999), as females approached their thirties, they experienced more inconsistency in, and challenges to, career advancement in the event of family formation as compared to males.

Essentially, the effects that gender will have on a woman's career development will in part be determined by constraints placed on her by social structures (e.g., employers' policy around maternity leave and flexible work schedules). Moreover, gender is culturally defined; therefore, the extent to which a woman has internalized society's definition of a woman's role will impact self-perceptions of success and competence (Eccles, 1994; Rimm, 1999). This, in turn, will impact the development and definition of personal and professional aspirations as more relational/affiliative (traditionally feminine) or career/achievement (traditionally masculine) oriented. It is impossible to determine the gender effects this population will experience in the future in relation to educational and occupational aspirations.

Within the framework of social learning theory (Bandura, 1986, 1997), self-efficacy or self-perceived competence is a dominant force in influencing future behaviour, in part affecting the goals that one chooses and subsequently pursues. However, in the present study, measures of developmental differences
in self-perceived competence during adolescence did not contribute to predicting educational and occupational aspirations in adulthood. These results contradict the findings reported by Paul (1997) in which academic self-perceptions reported in high school significantly predicted achievement in early adulthood. However, current results are consistent with the longitudinal findings reported by Bachman and O'Malley (1986) and Owen (1992) in which self-perceived competence had minimal impact on aspirations and achievement beyond academic skill and parental factors.

Significant effects of self-perceived competence on subsequent development may not be pertinent in the present study due to the homogenous nature of the sample, as reflected by consistently high self-perceptions from mid to late adolescence (Time 1 to Time 2). Furthermore, it may be that the influence of self-perceived competence was not fully captured by the current instrument. That is, within social learning theory, the impact of self-perceived competence may be more evident through the influence exerted on other individual constructs (e.g., motivation and decisiveness) or contextual influences (e.g., gender), which may have more direct affect on development. It may also be that, as some have suggested (Block & Ribins, 1993; Crain & Bracken, 1994; Dusek & Flaherty, 1981; Trusty, 2000), self-perceived competence tends to be stable throughout adolescence; thus, the effects of self-perceived competence are perhaps not as influential longitudinally, as compared to possible effects at earlier developmental stages. More longitudinal studies examining the influence
of developmental changes in self-perceptions on subsequent attainment are needed to clarify the direct and indirect effects.

Furthermore, the direct impact of goal orientation (i.e., career versus social) during adolescence and early adulthood was not as significant as suggested by the social cognitive career theory (SCCT) (Lent & Brown, 1996; Lent et al., 1994, 1996). Current results indicate that there was a decrease in the emphasis placed on career oriented life course goals during the transition from mid adolescence to early adulthood, yet, educational aspirations increased during this same period. Goal orientation findings need to be evaluated more closely within a developmental context. Essentially, the instrument used in the present study to assess goal orientation (Ford, 1982) forced participants to rate importance dichotomously between career/achievement and social/affiliative oriented goals. This suggests that goal domains are in competition (creating potential conflict by choosing to invest energy in either domain). However, an increase of interest in one domain may not necessarily indicate a decrease of interest and investment in the alternate domain. The decrease in life course career goals noted during the transition from late adolescence to early adulthood may not actually indicate a decrease in desire to achieve or advance in school or work in exchange for advancement of social or affiliated oriented goals.

The nature of social or affiliative items included in this scale may be more representative of the developmental stage of emerging or early adulthood as compared to adolescence. Therefore, response patterns in early adulthood may be more reflective of long term planning (such as family formation) at a time
when individuals enter a later developmental stage (e.g., endorsing goal item “Having or Getting a Fulfilling Family Life); whereby, in comparison, thinking and planning may have been more short term during adolescence (e.g., endorsing goal item “Successfully completing advanced training for my career/Getting Good Grades at University”). This may not be indicative of a de-emphasis on career or academic type goals in isolation, but perhaps an indication that in early adulthood individuals are beginning to think about balancing affiliative and career oriented goals as they become more likely to contemplate family formation. Potential gender differences in goal structure may become more apparent over time. As suggested above, gender differences may become more pronounced as individuals begin to experience challenges related to family formation more traditionally associated with later developmental stages.

**Educational Pathways**

Development of educational and occupational aspirations throughout the transition from mid adolescence to early adulthood was observed differently among participants pursuing four distinct educational pathways or trajectories with varying degrees of socioeconomic promise (high school group, college group, undergraduate group, and graduate group). Ultimately, even when a group of students appear to be relatively homogeneous, the needs and developmental trajectories are diverse.

First, there was a disconcerting decline in educational and occupational aspirations observed among the high school group during this time. In particular, the high school group reported a significant deterioration in occupational
aspirations after graduating from high school, which may be a reflection of experience with restricted job opportunities resulting from lack of post secondary education. That is, the high school group appears to have adjusted their occupational aspirations downward to become more consistent with the minimal job prospects available with limited education. As well, educational aspirations were lowered (aspiring towards a college diploma instead of an undergraduate degree) to become more consistent with their significantly lower academic skills (as indicated by academic achievement at the beginning of high school), as compared to peers who have successfully pursued an undergraduate degree. In comparison to more successful peers (i.e., the undergraduate group), it appears that the educational aspirations held by the high school group in the early stages of high school may have been unrealistically high; thus, perhaps causing individuals to become disillusioned and confused, resulting in a departure from the educational system after graduating from high school. Fortunately, however, educational aspirations reported in early adulthood suggest that some participants in the high school group hope to eventually re-enter the educational system to obtain a college diploma or even an undergraduate degree.

Less concerning, there was a steady or gradual (non-significant) decline in educational and occupational aspirations from mid adolescence to early adulthood reported by the college group, which is consistent with a college level education and intermediate status level occupation. This fairly consistent pattern of aspirations and subsequent attainment suggests that this group began high school with fairly realistic expectations based on academic skill, which were
significantly lower than peers in higher level educational pathways (i.e., undergraduate and graduate groups). It is also possible that individuals in the college group began high school with plans to pursue a college level education based on more limited financial resources and/or perhaps somewhat lower parental expectations for post-secondary education, relative to classmates (based on a somewhat lower level of parental education).

The developmental trajectory experienced by the undergraduate group was also somewhat stable. For the most part, the high educational and occupational aspirations established by this group in mid adolescence are consistent with attainment in early adulthood. The steady pursuit in early adulthood among this subsample to obtain an undergraduate degree, as proposed in adolescence, is in keeping with the research reported by Wagenaar (1984), suggesting that planning and investment of money required to pursue a university degree may, in part, help to solidify goals.

Alternatively, the developmental trajectory pursued by the graduate group excelled beyond the high educational aspirations (i.e., undergraduate degree) established in mid adolescence, representing the most optimal and socioeconomically promising pathway. A significantly higher level of academic achievement at the beginning of high school distinguished this group from the other educational pathways at the beginning of the study. Not surprisingly, this suggests that academic skill is an essential component to successfully pursue high educational aspirations.
It is interesting to note that although measures of self-perceived competence were comparable among educational pathways, participants in the graduate group reported experiencing proportionally more challenges related to self-perceived intrapersonal limitations (such as underdeveloped academic skills) in early adulthood, as compared to lower achieving peers in the high school and college groups. Perhaps the graduate group has formed self-perceptions through social comparison. Consequently, exposure to peers with comparable academic skills and more demanding academic situations (i.e., in university) may have threatened their self-perceptions (Bachman & O'Malley, 1986). Yet these challenging experiences and vulnerable self-perceptions do not appear to have discouraged this group from pursuing higher levels of education. Unfortunately, corresponding self-perception scores (i.e., self-perception profile for college students [Neemann & Harter, 1986]) beyond high school are not available to determine if there is a corresponding decline in a quantitative measure of self-perceived competence in young adulthood.

Age or developmental differences were evident only in the interaction with educational pathway with respect to degree of instability in reported educational and occupational aspirations over time. That is, the educational aspirations reported by participants in the early stages of high school at the beginning of the study (G9T1 and G10T1) and in either of the two lowest socioeconomically promising educational pathways (high school and college groups) were more unstable than those reported by participants in the mid stage of high school at the beginning of the study (G11T1) and from higher socioeconomically promising
educational pathways (undergraduate and graduate groups). This interaction is not surprising from a developmental perspective whereby the ability to think critically increases in adolescence (Keating, 1990), and with time, individuals tend to become more focused and certain of future plans with increased information. Nor is it particularly surprising that participants who pursued less socioeconomically promising pathways experienced the most instability.

Academic achievement among participants in the high school and college groups, on average, was lower than that of the undergraduate and graduate groups. Thus, individuals in the high school and college groups may have been struggling with uncertainty about their own capabilities and the implications for the success of future endeavors. This is also consistent with more frequent reports of experiencing indecision as a challenge to educational attainment in early adulthood by the high school and college groups, as compared to the undergraduate and graduate groups (obtained from qualitative analysis). A correlation between indecision and lowered socioeconomic potential can only be observed at this point; it is not possible to determine causation.

Unfortunately, not a great deal of insight into factors that may have differentially affected the development of educational and occupational aspirations among participants in varied educational pathways, and between males and females, was obtained through the current qualitative data. One hypothesis is that the experiences one is exposed to in adolescence do not differentially affect development in early adulthood at a significant level, perhaps because pathways or trajectories are established in earlier stages of
development. It may be that factors that do differentially affect development in early adulthood were not identified or included in the present study. For example, information pertaining to external restraints that may have resulted in unsuccessful attempts to pursue an alternative pathway were not elicited (i.e., individuals from the high school group may have actually applied to either college or university programs, but were not accepted). Thus, a more personal exploration of the realm of possible influences that differentially affect individuals may be more effective if obtained through an interview approach.

Limitations

The following limitations should be considered when interpreting the results of the present study. Although the sample size was large enough to yield statistically significant findings, the present sample was a relatively small and homogeneous group. More specifically, the participants were all from the same middle-class urban community and the overwhelming majority come from intact, two parent homes. Furthermore, the majority of the sample is Caucasian. Therefore, the ability to generalize the findings of this study to adolescents from different races, ethnic backgrounds, and lower class and/or rural communities should be done with considerable caution. In keeping with the social cognitive career theory, the impact of socially constructed variables (social processes) such as socioeconomic status, gender, and ethnicity/race can interact to shape career aspirations and selection (Lent & Brown, 1996; Lent et al., 1994, 1996).

Moreover, the academic achievement level at the beginning of high school among the present sample was significantly higher than that of individuals lost
through attrition. Because of more advanced academic skills, this may be considered a high functioning sample, and therefore, results may not be representative of a more general high school population where students' academic skill level and academic success are more variable. It is very interesting that even within this relatively homogeneous Caucasian, academically skilled, middle-class sample, developmental pathways are clearly diverse.

Furthermore, when the original longitudinal project was created in 1993, the focus was not specifically career development, as is the case in the present study. Therefore, some of the specific questionnaire items utilized in the present study were limited in scope and depth. That is, although the questionnaire items are comparable to those of other studies (e.g., Mau & Bikos, 2000), it would have been valuable to have questions that provided more in-depth information about desired area or domain of post-secondary education (e.g., specific program and length of study) and type of desired occupation (e.g., provide the option of a check list with interest categories if undecided about specific desired occupation). This type of focus would afford more opportunity to analyze changes in desired educational and occupational domains. Such analyses may yield more gender based differences. It may be that, as argued by Sullivan (1997) and the AAUW (1999b), females are optimistic about obtaining advanced level post-secondary degrees, but females continue to gravitate towards a limited spectrum of traditionally female-oriented occupations (e.g., health care, office technology, and education). Identifying the stability of desired educational and occupational domains may also provide some indication of decisiveness, which
in turn may enhance understanding of how the development of aspirations influence developmental trajectories.

Similarly, the qualitative items in the present study were useful in providing a general sense of the supports and challenges participants experienced in mid adolescence and early adulthood. However, the scope of these questions was narrow, and therefore, the personal impact or personal meaning of such supports and challenges as they relate to realized or unrealized aspirations is unknown. Furthermore, similar events may be experienced in different ways, thus contributing differentially to the pursuit of diverse developmental trajectories or pathways. Hence, interpretation of qualitative responses must be made with caution. Ultimately, as suggested by Eccles (1994), the goal is to attend to personal experiences that encourage individuals to pursue certain pathways in order to enhance understanding of the dynamics that influence achievement-related choices. Therefore, the greater the understanding of personal interpretations of experiences, the greater the understanding of subsequent choices.

As indicated by the review of relevant research discussed earlier, parental expectations have a significant impact on educational aspirations in adolescence (e.g., Wilson & Wilson, 1992) and eventual attainment. Parental expectations, as measured by level of parental education in the present study, was not a significant predictor of educational pathway or aspirations in early adulthood. It may be that the level of parental education was restricted in the current sample as all participants were from the same middle-class community. Thus, it may
have been valuable to specifically ask at different developmental stages what participants' perceptions were of their parents' expectations for post-secondary education. In addition to identifying participants' perspectives of parental expectations, actual feedback from parents regarding their actual expectations for their children's education would have been useful. A clearer understanding of parental expectations, a factor identified in the literature as influential, may have added further to understanding why individuals pursue diverse educational pathways.

**Implications for Future Research**

As indicated in the introduction, the first two years after high school graduation is a very unstable time (Pascarella & Terenzini, 1991). Furthermore, many adolescents pursue post-secondary education without clear occupational aspirations, with hopes of clarifying occupational opportunities over time (Csikszentmihalyi & Schneider, 2000). Thus, following this sample further, over a more extended period of time would be valuable to see how stable or consistent developmental pathways are through emerging stages of adulthood. For example, individuals in the high school group may decide after a few years of experience in the work force (being exposed to limited and low paying jobs) to pursue a post-secondary education, thus pursuing an alternative educational pathway. Similarly, individuals who are currently attending university may chose to terminate their education to pursue other things such as working full time or family formation, hence pursuing an alternate educational pathway. In reality, not all individuals who begin attending university successfully graduate with an
undergraduate degree. In addition, young adults have relatively limited work related experience; therefore, it seems reasonable to anticipate changes in occupational expectations with the accumulation of work and school experiences (Csikszentmihalyi & Schneider, 2000), as well as increased insight into one’s interest and skills (Rindfuss et al, 1999).

Furthermore, finding out more about the supports and challenges individuals have experienced and their own perspective of how and why they are on their current pathway may help clarify the impact of factors influencing developmental trajectories. In-depth interviews before and after transitions may help to clarify some of these issues. It would be of further use and interest to explore if self-reported educational and occupational aspirations in adolescence are perceived by individuals as obtainable, or if aspirations are reflections of unrealistic ideals. That is, it is important to gain a better understanding of how well aspirations and educational behaviours/preparations are matched in order to optimize one’s achievement and to avoid disillusionment. Future research must consider the degree to which individuals feel they have or have not realized their full potential in early adulthood and what impact this has on subsequent choices. Focused group discussions or individual interviews to complement quantitative data is recommended.

The sample in the present study is a relatively homogeneous group of relatively high functioning and successful adolescents. Future research needs to further explore factors that affect the developmental pathways of more vulnerable adolescents (e.g., those who do not graduate from high school), who
may have fewer resources and supports (e.g., lower academic achievement, lower self-perceived competence, lower parental education) in order to facilitate appropriate interventions.

As discussed above, certainty or stability of educational and occupational aspirations seems to be a protective factor. More research is needed to explore the contribution decisiveness makes in optimizing educational and occupational attainment. Clarification on the role of decisiveness in optimizing achievement will perhaps facilitate intervention programs designed to identify and promote domains of skill and interest. In addition, an understanding of which students choose to access career development supports (e.g., career counseling or support from a guidance counselor) and the influence that such interventions have on the development of educational and occupational aspirations can potentially provide valuable information.

Implications for Practice

The results from the present study suggest that individuals with well developed academic skills and high educational and occupational aspirations at the beginning of high school tend to stay on track and pursue university level post-secondary education. These are also the students who are most likely to get the most reinforcing support from school personnel (AAUW, 1999b). This may in fact be a reciprocal and reinforcing relationship, such that students remain successful because of the support.

However, it appears from this study that the students who begin high school with less well developed academic skills and high educational and
occupational aspirations (i.e., the high school group) are the most vulnerable, and perhaps do not receive similar support from school personnel. Yet these are perhaps the students who need more support from school personnel in the area of career planning.

It appears that the greatest risk factor experienced by the high school group (the group with the lowest socioeconomic potential) was a misalignment between educational aspirations and academic skill, suggesting that educational and occupational aspirations may have been unrealistically high, or that adequate support to pursue ambitious goals was not available early enough in students' school careers. There are several obvious complications of this misalignment: first, individuals may potentially become disillusioned; second, individuals will not be sufficiently prepared to pursue more realistic and more obtainable post-secondary options; or third, students may not understand that the level of additional support and effort they will need to move toward goals that may be hard for them to achieve. Moreover, the high school group did not become notably different from the other more productive educational pathways until after high school graduation. Therefore, it is difficult to easily identify those at risk of not pursuing a post-secondary education, which leaves individuals less productive and skilled in a society that is constantly become more complex and demanding of skills. This group of unskilled individuals will find it very difficult to compete in a technically demanding work force.

This suggests that early intervention is necessary to align aspirations and educational skill development in order to help individuals establish realistic
aspirations (reduce risk of disillusionment) and ultimately realize their full potential. Essentially, the key issue does not appear to be raising students’ educational and occupational aspirations, but matching aspirations to the resources necessary to achieve realistic aspirations (Paul, 1997), including potential interventions to enhance academic performance. As suggested by Csikszentmihalyi and Schneider (2000), the mismatch between inflated educational/occupational aspirations and reality (e.g., lower aptitude) may be better resolved by separating one's career knowledge into two domains: cognition and motivation. More specifically, within a cognitive context, one would be given information about what desired jobs entail, and information about skills that are required to prepare for such jobs. Within a motivational context, one would be encouraged to pursue educational and occupational aspirations to the highest level possible within one's means (i.e., aptitude or ability to meet educational/occupational demands). This approach may avoid or reduce uninformed enthusiasm, thus reducing underachievement resulting from disillusionment.

Perhaps this type of intervention may be most effective if implemented prior to entry into high school. As suggested by Rojewski and Yang (1997), occupational aspirations established in early adolescence (i.e., grade 8) remain stable throughout adolescence (i.e., end of high school). Furthermore, students have a relatively short period of time in high school to make decisions and choices related to course selection and preparation for beyond high school. Therefore, if students enter high school with realistic expectations and an
accurate indication of their own skills, they may be better equipped to focus preparation for appropriate post-secondary training in order to optimize personal developmental trajectories.

Participants in the present study successfully completed advanced level classes and were awarded either a general level or advanced level high school diploma. Therefore, among these individuals, being placed in a challenging, advanced level academic stream allowed flexibility to chose post-secondary education at either the college or university level. However, as indicated above, academic achievement among these participants was higher than that of the larger sample from which they were drawn. Therefore, among a more diverse population, a skills assessment may indicate that students with more limited aptitude may be best served if placed in either work or college preparation academic streams at high school entry (a process known as tracking or streaming). Streaming or tracking may be the best way to help some students with more limited skills to clarify realistic educational and occupational trajectories as early as possible, with the hopes of optimizing job opportunities without creating disillusionment. However, there is a risk that students will be prematurely restrained or restricted in a particular program or academic stream (Mau & Bikos, 2000).

Achievement is not limited to obtaining post-secondary degrees, and career socioeconomic status, but includes personal and interpersonal or relational achievements. Ultimately, advanced educational or occupational training is only one domain of one's life. Achieving fulfilling and emotionally
satisfying relationships is equally important in obtaining overall quality of life. Moreover, Csikszentmihalyi and Schneider (2000) discovered that one year after high school graduation, educational expectations (i.e., enrollment in a four year American college) and academic achievement were negatively related to self-reported overall life satisfaction. Thus, Csikszentmihalyi and Schneider (2000) suggest that early academic success and interrelated ambition may result in establishing expectations that are too high, resulting in dissatisfaction. However, it may also be that at this stage in development one has not yet achieved one’s educational aspirations, thus resulting in feelings of discontent.

Ultimately, such feelings of discontent or lack of satisfaction will affect individuals differently, resulting in diverse choices and subsequent achievement. For example, some university students may become frustrated about delaying gratification (e.g., constant studying and limited income while working towards graduation), and subsequently withdraw from post secondary education in pursuit of more short-term satisfaction (e.g., getting a full-time job). Conversely, some individuals may become motivated to continue to perform at school in pursuit of obtaining their educational goal, with the assumption that a feeling of satisfaction will result. Thus, personal reactions may be one explanation for how individuals who appear to be relatively homogeneous pursue diverse developmental trajectories. More qualitative research is needed to determine the validity of this hypothesis.
References


Appendixes

Appendix A: Additional Information about Participants

Appendix B: Description of Recruitment Procedure at Time 3

Appendix C: Self-Perception Profile for College Students (Neeman & Harter, 1986)

Appendix D: Goals in Life (Ford, 1982)

Appendix E: Socioeconomic Classification of Occupations (Pineo, Porter, & Roberts, 1997)

Appendix F: Anticipated or Experienced Challenges to Educational Attainment (Coding Scheme)

Appendix G: Experienced Supports to Educational Attainment (Coding Scheme)
Appendix A

Additional Information About Participants

The subsample of participants in the present study who were in grade 11 at Time 1 (G11T1) may be somewhat biased compared to the younger subsamples independent of academic achievement at the beginning of high school. More specifically, biases may become relevant further into one's high school career. Completion of Ontario Academic Credits (usually completed in grade 13) is mandatory for entry into Ontario universities; therefore, participation in grade 13 course work is a very strong indication of one's intentions to pursue an undergraduate level post-secondary education (either directly after high school graduation or some time in the future). Although participants in the younger grades (G9T1 and G10T1) may have similar intentions for post-secondary education (and comparable academic achievement at the beginning of high school), some may choose to terminate their education after grade 12, and pursue a trade certificate or college diploma.

It is important to note that 23 (11%) of the 210 participants in the present study left high school after graduating with a general level diploma, choosing not to pursue an advanced level degree, thereby restricting their entry into Ontario universities. The majority of these participants went on to obtain post-secondary education by either participating in a college level program (n= 15, 65%) or obtaining vocational training (n= 4; 17%) at Time 3; approximately one fifth (n=5, 22%) did not pursue post secondary education or training. All 23 participants were in grade 9 or 10 at Time 1. Therefore, the sample in the present study is composed of individuals who participated in advanced level, university preparation courses, and graduated from high school (with either a general or advanced level diploma). Thus, this sample is not representative of students who have not successfully completed high school (i.e., high school dropouts).
Appendix B

Description of Recruitment Procedure at Time 3

Several attempts were made by telephone in the spring of 1998 to locate all 420 individuals who expressed interest in participating in additional stages of the study. Research officers were able to successfully locate 344 or 82% of the interested sample by telephone. After the nature of the current study and insurance of confidentiality were explained over the telephone, individuals were asked if they were still interested in participating in the study, which would require filling out a questionnaire. All but one person (n=343) verbally consented to participation, thereby consenting to receiving a Time 3 questionnaire through the mail. Participants were instructed to complete and mail back the Time 3 questionnaire with a signed consent form in the envelope provided with pre-paid postage. Participants were also given the option to complete the questionnaire on the Internet via a password protected website. Approximately one quarter of participants (n=55 or 26%) opted to complete the questionnaire on-line. Final response rate of individuals who completed a useable questionnaire by mail or on-line was 210, 61% of the 343 individuals who received a Time 3 questionnaire.

As incentive, participants were informed on the telephone at the time of initial contact that they would become eligible to win a cash prize of $200 by mailing back a completed questionnaire and consent form or completing the questionnaire on-line. When data collection was complete, monetary prizes were awarded to ten participants chosen at random. No monetary incentive or reward was provided for participation at Time 1 or Time 2.
Appendix C

Self-Perception Profile for College Students

(Neemann & Harter, 1986)
The following are statements which allow people to describe themselves. There are no right or wrong answers since people differ markedly. Please read the entire sentence across. First decide which one of the two parts of each statement best describes you; then go to the side of the statement and check whether that is just sort of true for you or really true for you. Check just ONE of the four boxes for each statement.

Skip over any questions below that may not apply to your current situation.

<table>
<thead>
<tr>
<th>Really True for Me</th>
<th>Sort of True for Me</th>
<th>But</th>
<th>Really True for Me</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Some people like the kind of person they are</td>
<td>BUT</td>
<td>Other people wish that they were different.</td>
</tr>
<tr>
<td>2.</td>
<td>Some people are not very proud of the work they do on their job</td>
<td>BUT</td>
<td>Other people are very proud of the work they do on their job.</td>
</tr>
<tr>
<td>3.</td>
<td>Some people feel confident that they are mastering their coursework</td>
<td>BUT</td>
<td>Other people do not feel so confident.</td>
</tr>
<tr>
<td>4.</td>
<td>Some people are not satisfied with their social skills</td>
<td>BUT</td>
<td>Other people think their social skills are just fine.</td>
</tr>
<tr>
<td>5.</td>
<td>Some people are not happy with the way they look</td>
<td>BUT</td>
<td>Other people are happy with the way they look.</td>
</tr>
<tr>
<td>6.</td>
<td>Some people like the way they act around their parents</td>
<td>BUT</td>
<td>Other people wish they acted differently around their parents.</td>
</tr>
<tr>
<td>7.</td>
<td>Some people get kind of lonely because they don't really have a close friend to share things with</td>
<td>BUT</td>
<td>Other people don't usually get too lonely because they do have a close friend to share things with.</td>
</tr>
<tr>
<td>8.</td>
<td>Some people feel like they are just as smart or smarter than other people</td>
<td>BUT</td>
<td>Other people wonder if they are as smart.</td>
</tr>
<tr>
<td></td>
<td>Really True for Me</td>
<td>Sort of True for Me</td>
<td></td>
</tr>
<tr>
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</tr>
<tr>
<td>9.</td>
<td>Some people often question the morality of their behaviour</td>
<td>BUT</td>
<td>Other people feel their behavior is usually moral.</td>
</tr>
<tr>
<td>10.</td>
<td>Some people feel that people they like romantically will be attracted to them</td>
<td>BUT</td>
<td>Other people worry about whether people they like romantically will be attracted to them.</td>
</tr>
<tr>
<td>11.</td>
<td>When some people do something sort of stupid that later appears very funny, they find it hard to laugh at themselves</td>
<td>BUT</td>
<td>When other people do something sort of stupid that later appears very funny, they can easily laugh at themselves.</td>
</tr>
<tr>
<td>12.</td>
<td>Some people feel they are just as creative or even more so than other people</td>
<td>BUT</td>
<td>Other people wonder if they are as creative.</td>
</tr>
<tr>
<td>13.</td>
<td>Some people feel they could do well at just about any new athletic activity they haven’t tried before</td>
<td>BUT</td>
<td>Other people are afraid they might not do well at athletic activities they haven’t ever tried.</td>
</tr>
<tr>
<td>14.</td>
<td>Some people are often disappointed with themselves</td>
<td>BUT</td>
<td>Other people are usually quite pleased with themselves.</td>
</tr>
<tr>
<td>15.</td>
<td>Some people feel that they are very good at their job</td>
<td>BUT</td>
<td>Other people worry about whether they can do their job.</td>
</tr>
<tr>
<td>16.</td>
<td>Some people do well at their studies</td>
<td>BUT</td>
<td>Other people don’t do very well at their studies.</td>
</tr>
<tr>
<td>17.</td>
<td>Some people find it hard to make new friends</td>
<td>BUT</td>
<td>Other people are able to make new friends easily.</td>
</tr>
<tr>
<td>18.</td>
<td>Some people are happy with their height and weight</td>
<td>BUT</td>
<td>Other people wish their height or weight was different.</td>
</tr>
<tr>
<td>19.</td>
<td>Some people find it hard to act naturally when they are around their parents</td>
<td>BUT</td>
<td>Other people find it easy to act naturally around their parents.</td>
</tr>
<tr>
<td>20.</td>
<td>Some people are able to make close friends they can really trust</td>
<td>BUT</td>
<td>Other people find it hard to make close friends they can really trust.</td>
</tr>
<tr>
<td></td>
<td>Really True for Me</td>
<td>Sort of True for Me</td>
<td></td>
</tr>
<tr>
<td>-----</td>
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</tr>
<tr>
<td>21.</td>
<td>Some people do not feel they are very mentally able</td>
<td>BUT</td>
<td>Other people feel that they are very mentally able.</td>
</tr>
<tr>
<td>22.</td>
<td>Some people usually do what is morally right</td>
<td>BUT</td>
<td>Other people sometimes don't do what they know is morally right.</td>
</tr>
<tr>
<td>23.</td>
<td>Some people find it hard to establish romantic relationships</td>
<td>BUT</td>
<td>Other people don't have difficulty establishing romantic relationships.</td>
</tr>
<tr>
<td>24.</td>
<td>Some people don't mind being kidded by their friends</td>
<td>BUT</td>
<td>Other people are bothered when friends kid them.</td>
</tr>
<tr>
<td>25.</td>
<td>Some people worry that they are not as creative or inventive as other people</td>
<td>BUT</td>
<td>Other people feel they are very creative and inventive.</td>
</tr>
<tr>
<td>26.</td>
<td>Some people don't feel they are very athletic</td>
<td>BUT</td>
<td>Other people do feel they are athletic.</td>
</tr>
<tr>
<td>27.</td>
<td>Some people usually like themselves as a person</td>
<td>BUT</td>
<td>Other people often don't like themselves as a person.</td>
</tr>
<tr>
<td>28.</td>
<td>Some people feel confident about their ability to do a new job</td>
<td>BUT</td>
<td>Other people worry about whether they can do a new job they haven't tried before.</td>
</tr>
<tr>
<td>29.</td>
<td>Some people have trouble figuring out homework assignments</td>
<td>BUT</td>
<td>Other people rarely have trouble with their homework assignments.</td>
</tr>
<tr>
<td>30.</td>
<td>Some people like the way that they interact with other people</td>
<td>BUT</td>
<td>Other people wish their interactions with other people were different.</td>
</tr>
<tr>
<td>31.</td>
<td>Some people wish their body was different</td>
<td>BUT</td>
<td>Other people like their body the way it is.</td>
</tr>
<tr>
<td>32.</td>
<td>Some people feel comfortable being themselves around their parents</td>
<td>BUT</td>
<td>Other people have difficulty being themselves around their parents.</td>
</tr>
<tr>
<td>33.</td>
<td>Some people don't have a close friend they can share their personal thoughts and feelings with</td>
<td>BUT</td>
<td>Other people do have a friend who is close enough for them to share thoughts that are really personal.</td>
</tr>
<tr>
<td></td>
<td>Really True for Me</td>
<td>Sort of True for Me</td>
<td>BUT</td>
</tr>
<tr>
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<td>-----</td>
</tr>
<tr>
<td>34.</td>
<td>Some people feel they are just as bright or brighter than most people</td>
<td>Other people wonder if they are as bright.</td>
<td></td>
</tr>
<tr>
<td>35.</td>
<td>Some people would like to be a better person morally</td>
<td>Other people think they are quite moral.</td>
<td></td>
</tr>
<tr>
<td>36.</td>
<td>Some people have the ability to develop romantic relationships</td>
<td>Other people do not find it easy to develop romantic relationships.</td>
<td>BUT</td>
</tr>
<tr>
<td>37.</td>
<td>Some people have a hard time laughing at the ridiculous or silly things they do</td>
<td>Other people find it easy to laugh at themselves.</td>
<td>BUT</td>
</tr>
<tr>
<td>38.</td>
<td>Some people do not feel that they are very inventive</td>
<td>Other people feel that they are very inventive.</td>
<td>BUT</td>
</tr>
<tr>
<td>39.</td>
<td>Some people feel they are better than others at sports</td>
<td>Other people don’t feel they can play sports as well.</td>
<td>BUT</td>
</tr>
<tr>
<td>40.</td>
<td>Some people really like the way they are leading their lives</td>
<td>Other people often don’t like the way they are leading their lives.</td>
<td>BUT</td>
</tr>
<tr>
<td>41.</td>
<td>Some people are not satisfied with the way they do their job</td>
<td>Other people are quite satisfied with the way they do their job.</td>
<td>BUT</td>
</tr>
<tr>
<td>42.</td>
<td>Some people sometimes do not feel intellectually competent at their studies</td>
<td>Other people usually do feel intellectually competent at their studies.</td>
<td>BUT</td>
</tr>
<tr>
<td>43.</td>
<td>Some people feel that they are socially accepted by many people</td>
<td>Other people wish more people accepted them.</td>
<td>BUT</td>
</tr>
<tr>
<td>44.</td>
<td>Some people like their physical appearance the way it is</td>
<td>Other people do not like their physical appearance.</td>
<td>BUT</td>
</tr>
<tr>
<td>45.</td>
<td>Some people find that they are unable to get along with their parents</td>
<td>Other people get along with their parents quite well.</td>
<td>BUT</td>
</tr>
<tr>
<td>46.</td>
<td>Some people are able to make really close friends</td>
<td>Other people find it hard to make really close friends.</td>
<td>BUT</td>
</tr>
<tr>
<td>Source of True for Me</td>
<td>Sort of True for Me</td>
<td>Really True for Me</td>
<td></td>
</tr>
<tr>
<td>----------------------</td>
<td>---------------------</td>
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<td></td>
</tr>
<tr>
<td>47. Some people would really rather be different</td>
<td>BUT Other people are very happy being the way they are.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>48. Some people question whether they are very intelligent</td>
<td>BUT Other people feel they are intelligent.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>49. Some people live up to their own moral standards</td>
<td>BUT Other people have trouble living up to their own moral standards.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50. Some people worry that when they like someone romantically, that person won't like them back</td>
<td>BUT Other people feel that when they are romantically interested in someone, that person will like them back.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>51. Some people can really laugh at certain things they do</td>
<td>BUT Other people have a hard time laughing at themselves.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>52. Some people feel they have a lot of original ideas</td>
<td>BUT Other people question whether their ideas are very original.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>53. Some people do not do well at activities requiring physical skill</td>
<td>BUT Other people are good at activities requiring physical skill.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>54. Some people are often dissatisfied with themselves</td>
<td>BUT Other people are usually satisfied with themselves.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Appendix D**

**GOALS IN LIFE**

Listed below are twelve possible goals which individuals may have. Please read through the entire list. Then select the goal which is most important to you personally from the list below; place the number “1” next to that goal. Then select the most important goal from among the remaining items; place the number “2” next to that goal. Proceed in this manner until all goals are rank ordered, with “1” as the most important goal and “12” as the least. Note that a number 12, for example, does not mean the goal isn’t important to you at all, but rather that it is less important than the ones you chose before it.

<table>
<thead>
<tr>
<th>GOAL</th>
<th>RANK</th>
</tr>
</thead>
<tbody>
<tr>
<td>*A. Having or getting a fulfilling career.</td>
<td></td>
</tr>
<tr>
<td>**B. Having or getting a fulfilling family life.</td>
<td></td>
</tr>
<tr>
<td>**C. Interacting with other people in activities outside school or work.</td>
<td></td>
</tr>
<tr>
<td>*D. Having or getting a well-paid position in my career.</td>
<td></td>
</tr>
<tr>
<td>**E. Having a number of close friends.</td>
<td></td>
</tr>
<tr>
<td>*F. Learning new skills and knowledge.</td>
<td></td>
</tr>
<tr>
<td>**G. Gaining a better understanding of how other people think and feel.</td>
<td></td>
</tr>
<tr>
<td>*H. Having plenty of time to pursue my own interests.</td>
<td></td>
</tr>
<tr>
<td>**I. Helping other people with their problems.</td>
<td></td>
</tr>
<tr>
<td>*J. Becoming highly competent in the tasks relevant to my career interests.</td>
<td></td>
</tr>
<tr>
<td>**K. Becoming involved in an emotionally satisfying relationship with someone.</td>
<td></td>
</tr>
<tr>
<td>*L. Successfully completing advanced training for my career/Getting good grades in university</td>
<td></td>
</tr>
</tbody>
</table>

* Career/Academic Goals
** Social/Affiliative Goals

Taken from Ford, 1982.
Appendix E

Socioeconomic Classification of Occupations

1. Low Socioeconomic Status
   - Farming, Forest, and Fishing Occupations
   - Precision Production, Craft, and Repair Occupations (Skilled Manual Labour)
   - Operators, Fabricators, and Labourers (Semi or Unskilled Manual Labour)

2. Middle Socioeconomic Status (skilled occupations)
   - Service Occupations

3. High Socioeconomic Status
   - Managerial and Professional Specialty Occupations
   - Technical, Sales, and Administrative Support Occupations (Intermediate)

Taken from Pineo, Porter, & McRoberts, 1977
Appendix F

Anticipated or Experienced Challenges to Educational Attainment

1. financial restraints

2. lack of support from family, peers, or school personnel

3. self-perceived intrapersonal limitations (e.g., lack of self-discipline, lack of motivation, lack of confidence, lack required skills)

4. indecisive about, or lack of commitment to, future goals

5. economic climate or environmental constraints (e.g., course not available, job market limited)

6. other
Appendix G

**Experienced Supports to Educational Attainment**

1. sufficient financial resources
2. support from family, peers, and/or school personnel
3. self-perceived intrapersonal skill development (e.g., self-discipline, motivation, confidence, effective work/study skills)
4. decisive about, and committed to, future goals
5. environmental supports (e.g., course availability, exposure to opportunities)
6. other