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**Thriving in the Academic Domain : The Role of Career Development on Academic Self-Determined
Motivation**

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Thriving in the Academic Domain:
The Role of Career Development on Academic Self-Determined Motivation

Danielle A. Patry

A Thesis Submitted to the Faculty of Graduate and Postdoctoral Studies of the University of
Ottawa as Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy

School of Psychology
Faculty of Social Sciences
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This thesis is dedicated to my husband Dan Smetana, my children Kevin and
Chelsea Smetana, and to my parents Jean-Pierre and Rose Patry

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Abstract

The central purpose of the present research project was to examine the role of career development on academic motivation among adolescents. Based on self-determination theory (SDT; Deci & Ryan, 1985a) and future-oriented frameworks, it was hypothesized that two career development indices, namely career decision-making need satisfaction (i.e., competence, autonomy, and relatedness) and career decision progress would be associated with enhanced academic self-determined motivation. Second, perceived usefulness of school activities was expected to mediate the relationship between career decision progress and academic self-determined motivation. Third, the two career development indices were anticipated to contribute to perceived usefulness and academic self-determined motivation over and above the effect of academic need satisfaction. Four studies, using various methodologies and multiple age groups were conducted to test these hypotheses. Study 1 ($n = 60$) and Study 2 ($n = 207$) examined the role of career decision-making need satisfaction (i.e., competence exclusively) and career decision progress in the prediction of academic self-determined motivation. Using a two-wave longitudinal design, Study 1 showed that the career development indices contributed to variance in academic self-determined motivation over and above gender and baseline academic self-determined motivation. Using a pre-experimental design, Study 2 (i.e., pre-post career development course) demonstrated that an increase in the career development indices was associated with an increase in perceived usefulness and in academic self-determined motivation. Moreover, perceived usefulness mediated the relationship between career decision progress and academic self-determined motivation. Study 3a ($n = 637$) and Study 3b ($n = 243$) included satisfaction of all three needs postulated by SDT. Using a cross-sectional design (Study 3a) and a two-wave prospective design (Study 3b), findings showed that academic need satisfaction was

associated with academic self-determined motivation, and that perceived usefulness partially mediated this relationship. Furthermore, Study 3b found that career decision-making need satisfaction and career decision progress contributed to variance in perceived usefulness and academic self-determined motivation, even after statistically controlling for academic need satisfaction. Together, these studies suggest that need satisfaction in both life domains and career decision progress enhance academic self-determined motivation. Future research pertaining to the role of career development on motivation is discussed.

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CHAPTER 1

Introduction

Throughout life, individuals set out to explore the world around them, and along the way, they learn about themselves and the opportunities that life has to offer. This active exploration promotes growth and gives rise to hopes and dreams for the future. Still, the task of forging a successful future for oneself represents a significant challenge for the individual. For most, many of the important decisions that affect the course of an individual's life are set in motion during adolescence. One of the key challenges of this period revolves around making career decisions (Super, 1957, 1990; Erikson, 1968).

Previous research has shown that successfully accomplishing the developmental task of making a career decision appears to have important implications for the individual. In fact, research has shown that certainty about career direction is associated with a number of positive outcomes such as organizational commitment (Earl & Bright, 2007), good adjustment (Skorikov, 2007), life satisfaction (Lounsbury, Tatum, Chambers, Owens, & Gibson, 1999; Perna, Ahlgreen, & Zaichowsky, 1999), and psychological well-being (Arnold, 1989). Conversely, pervasive career indecision has been linked to negative outcomes such as distress (Lucas & Epperson, 1990), depression (Smith & Betz, 2002), and negative work attitude (Callanan & Greenhaus, 1990).

In the last two decades, school reforms in Canada and the U.S. have emphasized the need to provide students with more career guidance by implementing a number of different programs, such as the School to Work Opportunities Act (1994), and the integration of career development courses in school curricula (e.g., Ministry of Education, 2006). Despite these initiatives, career indecision remains relatively high among adolescent students and young adults. For instance, results from a 3-year longitudinal study suggest that approximately

25% of high school students remain undecided about their career choice across time (Vondracek, Hostetler, Schulenberg, & Shimizu, 1990). Guay, Ratelle, Senécal, Larose, and Deschêne (2006) found that approximately 50% of late adolescents were undecided about their career choice, and among those, half were classified as chronically undecided. Similarly, Cohen, Chartrand, and Jowdy (1995) observed among undergraduate university students that only 38% of them were ready to decide on career choices, with the remaining students experiencing various types of career decision-making barriers, such as career choice anxiety, generalized indecisiveness, as well as the need for career information and self-knowledge.

These numbers are alarming given that career choices often guide an individual's educational path. In fact, some scholars argue that a lack of career direction may be partly responsible for low levels of academic motivation and soaring high school dropout rates (e.g., Dupont, 1992; Gingras & Chagnon, 1997; Lapan, 2004). Although this assumption is intuitively compelling, it has received limited attention in research. Thus, the central purpose of this thesis will be to examine the role of specific career development indices on academic motivation using a theoretically-driven approach.

Indirect evidence supporting the link between career development indices and educational processes or outcomes has emerged in studies evaluating the effects of career development interventions (e.g., career guidance, counselling, and courses) on student outcomes. The research in this area has typically found that career development interventions are effective at improving a number of career development indices, such as career exploration, decision-making skills, and career decidedness among students and other populations (see Whiston, Sexton, & Lasoff, 1998, for a meta-analysis). In addition, some research suggests that comprehensive career development interventions may have positive

effects on educational outcomes, such as grades and perception of school climate (Lapan, Gysbers, & Petroski, 2001; Lapan, Gysbers, & Sun, 1997). However, at this time, there is little evidence to suggest that growth in career development per se can enhance adaptive educational outcomes.

Therefore, research is needed to more closely examine if and how different career development indices can contribute to students' educational experience. In order to test this, it would be important to assess career development variables in direct connection with educational processes or outcomes. A review on the topic identified a few studies that examined these links more directly. For instance, a cross-sectional study among undergraduate university students showed that commitment to work-related goals was associated with a higher GPA, greater persistence in school, and greater educational self-efficacy (Hull-Blanks et al., 2005). Moreover, Lounsbury, Saudargas, and Gibson (2004) found a low, but significant negative correlation between career decidedness and the intention to drop out among first year university students. Lastly, a study conducted by Kenny, Blustein, Haase, Jackson, and Perry (2006) showed that career development indices (i.e., high levels of career planfulness and positive expectations regarding one's career success) led to school engagement (i.e., feelings of valuing and belongingness in school). Overall, these research findings provide some empirical evidence that career development may be beneficial to students' educational experience.

Ideally, research investigating this link should be grounded in theory. A potentially useful framework for understanding this relationship is self-determination theory (SDT; Deci & Ryan, 1985a, 1991; Ryan & Deci, 2002, 2003). SDT has been extensively applied to the school setting to understand motivation and self-regulation (Deci, Vallerand, Pelletier, & Ryan, 1991). More recently, SDT has been used in the vocational domain to better

understand career indecision (Guay et al., 2006; Guay, Senécal, Gauthier, & Fernet, 2003). In addition, the work on future-oriented motivation (e.g., Markus & Nurius, 1986; Nuttin, 1985) complements SDT by providing further insight on key processes that connect future goals to current tasks.

Thus, using SDT and key concepts of future-oriented approaches, the central purpose of the present thesis will be to examine the role of career development on academic self-determined motivation. This thesis will also examine the role of perceived usefulness of school activities as an important process variable likely to partly explain how career development indices may enhance academic motivation.

Four studies will be presented to test this research question. More precisely, the first goal will be to examine the role of career decision-making need satisfaction and career decision progress in the prediction of academic self-determined motivation (Studies 1, 2, and 3b). The second goal will be to test the mediating role of perceived usefulness of school activities in the relationship between career decision progress and academic self-determined motivation (Studies 2 and 3b), as well as between academic need satisfaction and academic self-determined motivation (Studies 3a and 3b). The final goal will be to examine the role of the two career development indices on perceived usefulness and academic self-determined motivation, above and beyond the effects of academic need satisfaction (Study 3b). To further understand the associations among these variables, a model linking the career development indices to the educational variables will be tested (Study 3b).

The general introduction is organized in four sections. First, a literature review on career decision-making and a conceptualization of career decision progress is presented. Second, an overview of SDT is introduced with an emphasis on the theory's definition of motivation, as well as the role of basic psychological needs on academic self-determined

motivation and career decision progress. Third, the concept of perceived usefulness as postulated by SDT and future-oriented approaches is described. Lastly, perceived usefulness of school activities is proposed as a possible mediator in the relationship between career decision progress and academic self-determined motivation.

Career Decision Progress

Adolescence represents a crucial period in identity development (Erikson, 1968). In particular, the career¹ domain is recognized as being a key preoccupation for adolescents (Erikson, 1968; Super, 1990; Vondracek, 1994), and has been shown to be the first identity domain to be clearly achieved compared to the ideological, religious, lifestyle, and political identity domains (Skorikov & Vondracek, 1998). Deciding on a career choice (i.e., career direction) involves an important career decision-making process. Broadly, this process entails acquiring information about the self and the world of work, generating potential career options, and deciding on a career choice (Gottfredson, 1981; Harren, 1979; Super, 1957).

According to Super's (1957) approach to career development, individuals move through different developmental stages during the course of their life (i.e., birth, growth, exploration, establishment, maintenance, decline, and death). Super contends that adolescents begin to make career decisions during the exploration stage. During this stage, individuals seek out self and work-related information through exploration activities to progress in their career decision-making and eventually enter into a chosen field (Blustein, 1989; Stumpf, Colarelli, & Hartman, 1983). As individuals evolve through the exploration stage, their career choices become increasingly crystallized. The degree to which an individual has a clear idea about the career he/she would like to pursue after leaving school is typically operationalized as *career decidedness* or *career certainty* (e.g., Gordon, 1998;

Slaney, 1988). According to some scholars, it is also possible to progress beyond decidedness, to the extent that an individual becomes *committed* to his or her career choice (Blustein, Ellis, & Devenis, 1989; Harren, 1979; Super, 1957).

Thus, throughout the exploration stage, different levels of exploration and decidedness can be observed. The early phases of the exploration stage are more typically characterized by lower levels of decidedness and greater need for information about the self and the world of work (Harren, 1979; Super, 1957). As individuals develop, and obtain information through exploration, they become progressively more decided about their career choices. Thus, progress in career decision-making can be conceptualized on a continuum that ranges from undecided to highly committed with respect to career choices (Blustein et al., 1989). The research on career decision-making has typically focused on three broad positions of this continuum, notably, indecision, decidedness, and commitment.

Research on career decision-making. First, research on career indecision has devoted much attention to the understanding of antecedents, barriers, and difficulties associated with career decision-making (Gordon, 1998). This line of research has shown that people encounter a variety of internal or external obstacles, such as low self-efficacy expectations, need for more information about the world of work, and lack of social support that prevent them from making a decision about their career choices (Chartrand, Rose, Elliott, Marmarosh, & Caldwell, 1993; McWhirter, Torres, & Rasheed, 1998; Swanson, Daniels, & Tokar, 1996). Career indecision generally declines with increasing age (Feldman, 2003). In adulthood, career indecision has been associated with negative consequences, such as depression (Smith & Betz, 2002), extensive life stress, and negative work attitude (Callanan & Greenhaus, 1990). However, career indecision during adolescence does not necessarily

lead to long-term negative outcomes because it is considered to be a normal temporary developmental stage (Sharf, 1992; Super, 1957, 1990).

Thus, to identify and classify adaptive from less adaptive subgroups of career indecision, researchers have used multiple sets of variables (Gordon, 1998). One key distinction that has been proposed in the literature, which is particularly relevant to adolescents and young adults, differentiates *developmental career indecision* from *chronic career indecision*. While developmental career indecision declines over time, chronic career indecision tends to remain relatively high over time, and reflects negative personality characteristics such as general negative affectivity (Multon, Heppner, & Lapan, 1995), fear of commitment, or socially prescribed perfectionism (Leong & Chervinko, 1996). Studies suggest that unlike the chronically undecided adolescents, the ones who are developmentally undecided appear to be moving into the exploration stage, as they report having identified some potential career options (Rojewski, 1994), and they appear to engage in broad career and self-exploration activities (Savickas & Jarjoura, 1991). In sum, career indecision as a single marker of progress in career decision-making fails to distinguish adaptive from less adaptive forms of indecision, particularly for adolescents.

Second, in contrast with research findings on career indecision, career decidedness has been linked to adaptive personality traits and adjustment indices. For example, Lounsbury et al. (1999) showed that career decidedness was positively related to conscientiousness and agreeableness, and was negatively related to neuroticism among college students. Lounsbury, Hutchens, and Loveland (2005) observed that career decidedness was related to conscientiousness among students from middle to late high school, and was related to agreeableness among seventh and twelfth graders. A recent study also showed that career decidedness (along with career planning and career confidence) was

associated with a number of well-being indices such as self-actualization, life satisfaction, self-esteem, generalized self-efficacy, emotional stability, and social adaptation (Skorikov, 2007). Moreover, using a 12-month longitudinal design, Earl and Bright (2007) observed that decidedness predicted organizational commitment among newly appointed graduates. As illustrated from these studies, the career decidedness construct has been used across a wide range of age groups because it can capture varying degrees of certainty about the career choice.

Third, research examining the effects of career commitment has received less attention. Further, unlike the career decidedness construct, career commitment may not be an appropriate measure of career development in adolescents, because as scholars recognize, few adolescents ever progress beyond the decidedness level (Blustein et al., 1989). As such, strong commitment to a career choice during adolescence may represent a tendency to foreclose (Blustein et al., 1989). Foreclosure refers to the tendency to commit to a career choice prematurely without having first adequately self-appraised and considered alternative options (Marcia, 1983). Thus, although progress in career decision-making is a desirable outcome, foreclosure as it pertains to career choice may not truly reflect an individual's skills, interests, or values.

Operationalization of career decision progress. To capture the full continuum of progress in career decision-making, some researchers have proposed using instruments that assess both exploration and commitment components. For example, dating back to the 1960s, Marcia's (1966) classic work on identity statuses clearly illustrated the dynamic interplay between exploration and commitment. Using Erikson's (1968) psychosocial conceptualization of identity, Marcia (1966) operationalized identity formation in several life domains (i.e., occupational choice, religion, and political ideology) by proposing that

successful resolution of the identity crisis requires two key elements: (1) acknowledgement of crisis, reflected through active exploration of possible alternatives, and (2) commitment to choices. According to Marcia (1966, 1983), these two dimensions can be combined to form four different identity statuses, namely, achievement, moratorium, foreclosure, and diffusion.

Identity achievement is characterized by an active period of exploration and high commitment to choices. Moratorium is reflected by an active search, but lack of commitment to choices. Foreclosure represents high commitment to choices without first having explored alternatives. Lastly, diffusion refers to low commitment to choices and a lack of engagement in the decision-making process. Accordingly, identity achievement is considered to be the most advanced identity status. Identity achievement, collapsed across several life domains (including vocational identity), has been associated with a number of positive constructs, such as an internal locus of control, lower levels of trait anxiety (Balistreri, Busch-Rossnagel, & Geisinger, 1995), psychological need satisfaction, academic self-determined motivation (Faye & Sharpe, 2008), academic competence, and self-reported grades (Good & Adams, 2008).

In the vocational domain, Blustein et al. (1989) drew from the literature on identity development to conceptualize a two-dimensional model of the *commitment to career choices process*. The two proposed dimensions were the following: (1) *vocational exploration and commitment*, which refers to an individual's progress in committing to career choices, and (2) *the tendency to foreclose*, which refers to the manner in which an individual commits to a career choice. Research using this instrument has linked high vocational exploration and commitment to ego identity achievement, career decidedness (Blustein et al., 1989), quality and quantity of career exploration (Blustein, Pauling, DeMania, & Faye, 1994), stable vocational identity, a need for career information, and the perception of fewer barriers

impeding one's career goals (Ladany, Melincoff, Constantine, & Love, 1997). Conversely, tendency to foreclose has been associated with career choice crystallization among college students (Blustein et al., 1989) and adherence to career myths among at-risk high school students (Ladany et al., 1997).

These results provide evidence that decidedness, along with exploration, yields a more accurate measure of adaptive progress in career decision-making. The inclusion of exploration as part of a career decidedness assessment is further justified given that exploration is viewed as a life-long process (Phillips, 1982; Super, 1990). Although self-concepts become increasingly stable as people mature, contexts and people change over time, resulting in a continuous cycle of re-exploration and re-establishment of career goals (Super, 1990). In an updated version of his theory of career development, Super (1990) explained that growth tends to elicit exploratory behaviours, which leads to the establishment and maintenance of career goals. However, personal experiences or a change in the context can destabilize a person's career goals and trigger a new exploration – establishment cycle.

In the last few decades, there has been considerable research demonstrating the benefits of career exploration at different phases of the career decision-making process. For example, career exploration has been associated with the development and crystallization of vocational interests (e.g., Savickas, 1990; Taylor, 1985), and commitment to career plans (Blustein, 1989). It has also been shown to foster job search and placement (Stumpf & Hartman, 1984), job interview readiness and performance (Stumpf, Austin, & Hartman, 1984), attainment of high initial salary (Werbel, 2000), and reemployment quality (Zikic & Klehe, 2006).

Given that this research targeted a population of adolescents and young adults who were still attending school, the construct of *career decidedness* appeared more fitting than

commitment to career choices. In addition, in line with the literature reviewed in this section, *career decision progress* was conceptualized as a two-dimensional construct including a career decidedness dimension and a career exploration dimension. Consistent with the vocational literature, *career decidedness* was defined as the degree to which an individual is decided about his/her career choice. *Career exploration* was defined as environmental and self-exploration activities that pertain to career decision-making. Using this two-dimensional approach avoided the risk of misinterpreting low decidedness as a lack of engagement in career decision-making, and high decidedness as foreclosure.

Career decision progress thus takes into account not only people's degree of certainty about their career choices, but also, the extent to which they actively participate in the career decision-making process. In addition, this two-dimensional approach enabled the use of similar measures across all age groups, with engagement in exploration activities presumably being more prevalent in early adolescents, and career decidedness becoming increasingly prevalent and stable with increasing age (i.e., grade level).

In this paper, it is argued that investment in career decision-making through exploratory behaviour reflects an individual's orientation toward personal growth and development, and captures the essence of career development as it relates to emerging career choices. Such initiatives towards personal growth represent intrinsic goals or values (Deci & Ryan, 2000; Kasser & Ryan, 1996). Research has shown that pursuing intrinsic goals (e.g., community contribution, personal growth, and health) promotes psychological well-being (Sheldon, Ryan, Deci, & Kasser, 2004). Moreover, Vansteenkiste, Simons, Lens, Sheldon, and Deci (2004) demonstrated that intrinsic goal framing in school facilitated academic adjustment, as evidenced by enhanced autonomous motivation, deep-level learning, performance, and persistence. These findings suggest that students who pursue activities that

facilitate their personal development should benefit from greater academic adjustment.

Thus, in the present research, it is argued that involvement and engagement to ones career decision progress through exploration activities should enhance academic motivation.

To gain a better understanding of the relationship between career decision progress and academic motivation, these constructs were studied using a well-founded motivational framework, notably, self-determination theory (SDT; Deci & Ryan, 1985a; Ryan & Deci 2002).

SDT and Self-Determined Motivation

SDT describes human motivation as a multidimensional construct. This approach focuses on the quality of motivation, which serves as a good predictor of self-regulation in several domains. According to SDT, activities that are not inherently interesting can nevertheless be regulated autonomously if the individual endorses them or the value they represent. Deci and Ryan (2000) argue that external regulations are transformed into internal regulations through a process called *internalization*. Internalization is an important adaptive process, which allows people to take in external goals and adopt them as their own. In doing so, individuals endorse the importance or value of many activities that may not in themselves be intrinsically motivated but are necessary for the achievement of personal goals and well-being.

To represent varying degrees of internalization, SDT has proposed different types of motivation. Each type of motivation corresponds to a different form of regulation that fits along a self-determination continuum. Accordingly, the different types of regulation, in order from the lowest to the highest in terms of self-determination, are as follows: non-regulation, external regulation, introjected regulation, identified regulation, integrated regulation, and intrinsic regulation (Ryan & Deci, 2002).

Non-regulation (i.e., amotivation) represents an absence of motivation and is reflected by a state of apathy, often brought on by an individual's perceived lack of contingency between his behaviour and a desired outcome. External regulation represents the second lowest form of motivation. It typically occurs when an individual is motivated by external sources, either to obtain material or social rewards, or to avoid punishment. Along the continuum, the first internally driven form of regulation is introjection. Despite its internalization, introjected regulation is still considered to be a relatively controlled form of regulation because it is characterized by self-pressures, such as avoiding feelings of guilt or pursuing feelings of pride.

The next two forms of extrinsic regulation on the continuum are considered to be self-determined because they are more internalized and are experienced as more autonomous. With identified regulation, activities are perceived as valued and chosen by the individual, because engagement in these activities facilitates achievement of personally meaningful goals. When identified regulation is in line with one's other values and needs, and an activity is fully endorsed by the self, the regulation of this activity becomes integrated. The last form of regulation on the continuum is intrinsic regulation. This type of regulation is evidenced when people choose to engage in activities that provide them with feelings of great pleasure and satisfaction. No incentive is necessary to engage in the intrinsically motivated activity, as the activity provides enjoyment in and of itself.

In sum, the self-determination continuum, which differentiates among six forms of self-regulation, corresponds to the different reasons that motivate people to engage in various activities. While intrinsic regulation represents the hallmark of autonomous functioning, two forms of extrinsic regulation, namely identified and integrated, are also considered to be self-

determined because they are internalized in the individual's sense of self and are perceived to be more autonomous (i.e., less controlling) than their less self-determined counterparts.

Operationalization of academic self-determined motivation and its consequences. To tap the degree to which an individual's motivation is more or less self-determined, researchers have used instruments that represent the different types of regulation described in the self-determination continuum (e.g., Grolnick & Ryan, 1987). Considering a range of different motives for each individual is important because recent research in the academic field shows that students may endorse both autonomous and controlled reasons for pursuing their studies (Ratelle, Guay, Vallerand, Larose, & Senécal, 2007). The scores reported by participants for the different reasons are then weighted based on their placement on the self-determination continuum, and a single score, typically called the Relative Autonomy Index (e.g., Grolnick & Ryan, 1987) or the Self-Determined Motivation Index (e.g., Vallerand, Fortier, & Guay, 1997), can be generated to represent an individual's level of self-determined motivation.

In the academic context, two different approaches have been used to assess academic self-determined motivation. Whereas the first approach assesses the extent to which students attend school for more or less self-determined reasons (e.g., Vallerand, Blais, Brière, & Pelletier, 1989; Vallerand et al., 1997), the other approach assesses the extent to which students engage in various activities for more or less self-determined reasons (e.g., Grolnick & Ryan, 1987; Ryan & Connell, 1989). To better capture students' academic motivation, both these approaches were used in the present research. This multidimensional approach to motivation has provided a valuable framework for understanding educational functioning and outcomes. According to SDT, actions performed for self-determined reasons are postulated to lead to positive outcomes because they reflect personal endorsement and

volition. In contrast, actions performed for non self-determined reasons are postulated to lead to less desirable outcomes because they are emitted out of internal or external pressure.

Past research has consistently demonstrated that compared to motivation that is less self-determined, self-determined motivation is associated with various positive consequences such as greater deep-level learning (Andriessen, Phalet, & Lens, 2006; Simons, Dewitte, & Lens, 2004), better performance (Simons et al., 2004), more interest/enjoyment (Black & Deci, 2000; Simons et al., 2004), greater creativity (Amabile, 1983), greater positive affect and effort in the classroom (Reeve, Jang, Hardre, & Omura, 2002; Vallerand, 1997), less anxiety (Black & Deci, 2000; Ryan & Connell, 1989), and lower probability of dropping out of a class or school (Black & Deci, 2000; Vallerand et al., 1997). Overall, findings show that academic self-determined motivation is associated with school engagement, as well as with favourable cognitive and affective learning experiences.

Basic need satisfaction: Antecedent of academic self-determined motivation. SDT postulates that self-determined motivation and personality integration develop on the basis of people's natural growth tendencies and innate psychological need satisfaction. According to SDT, human beings must satisfy the three basic psychological needs of autonomy, competence, and relatedness to develop and function optimally. Within this theoretical framework, *autonomy* refers to feelings of agency or perception that one's actions are chosen and self-endorsed. For example, students are likely to experience autonomy when they can freely express their ideas or freely choose to engage in school-related activities. *Competence* refers to feelings of effectiveness and environmental mastery. For example, students would typically experience feelings of competence if they understood difficult material taught in class. *Relatedness* refers to feelings of connectedness, belongingness, and warmth with others. For example, students are likely to feel a sense of relatedness if their teacher exhibits

an empathetic attitude toward them or a concern for their well-being. Need satisfaction is reflected by people's subjective experience of autonomy, competence, and relatedness, and as such, researchers studying need satisfaction using this framework have usually measured it by assessing people's *perception* of need satisfaction (Grolnick, Ryan, & Deci, 1991; Guay et al., 2003; Guay & Vallerand, 1997).

Research in the educational setting has supported the assumption postulated by SDT that need satisfaction is associated with greater self-determined motivation and other positive educational outcomes. For example, perceived autonomy by students has been linked to students' self-report of task interest-enjoyment, and to observers' ratings of student task engagement and performance (Reeve & Jang, 2006). Other studies have demonstrated that self-determined motivation mediates the relationship between need satisfaction and educational outcomes. For instance, research has shown that perceived autonomy and competence by students was associated with academic self-determined motivation, and in turn, to better academic achievement (Fortier, Vallerand, & Guay, 1995; Guay & Vallerand, 1997). Similarly, Ntoumanis (2005) found that perceived autonomy, competence, and relatedness in school physical education was associated with greater physical education self-determined motivation, and in turn, with greater behavioural engagement.

Basic need satisfaction: Antecedent of career decision progress. Existing research shows that career development is influenced by social and contextual factors (e.g., Arbona, 2000; Stumpf et al., 1983). In line with SDT, conditions that foster need satisfaction of competence, relatedness, and autonomy have been shown to promote healthy development (Ryan & Deci, 2000). Additionally, considerable evidence in the vocational literature suggests that satisfaction of these three basic needs facilitates the career decision-making process.

First, in the vocational literature, self-efficacy has been commonly used to represent an individual's level of confidence in achieving a desired outcome (Bandura, 1986). This concept is theoretically related to perceived competence as conceptualized by SDT (Deci & Ryan, 1985a). Specifically, both constructs share the notion of sense of mastery with respect to a given context or a task. In fact, previous vocational research framed in SDT has used the concepts of self-efficacy and perceived competence interchangeably (e.g., Guay et al., 2006; Guay et al., 2003). According to the social cognitive career theory (Lent, Brown, Hackett, 1994), career decision-making self-efficacy (CDMSE) is vital to the career decision-making process. It refers to an individual's level of confidence in his/her ability to successfully accomplish the tasks necessary to make career decisions (Taylor & Betz, 1983). Previous research has shown that CDMSE is positively related to career exploration and vocational identity (Gushue, Scanlan, Pantzer, & Clarke, 2006), while being negatively related to career indecision (Bartley & Robitschek, 2000; Betz & Luzzo, 1996; Guay et al., 2003; Taylor & Betz, 1983). CDMSE has also been shown to be an important correlate of career maturity, particularly the attitudinal portion of career maturity, which taps aspects of career planning and exploration (Anderson & Brown, 1997; Creed & Patton, 2003).

Second, a large body of research suggests that relatedness with significant others such as parents, teachers, and peers also plays an important role in career development. Drawing from attachment theory (Bowlby, 1982), research has shown that individuals who have secure and supportive family relationships tend to actively engage in exploratory activities (Blustein, Prezioso, & Schultheiss, 1995; Felsman & Blustein, 1999; Ketterson & Blustein, 1997; Kracke, 1997; Ryan, Solberg, & Brown, 1996; Schmitt-Rodermund & Vondracek, 1999). Secure parental attachment has also been shown to positively influence career decidedness (see Whiston & Keller, 2004 for a review). Moreover, Felsman and Blustein

(1999) observed that close relationship with peers in late adolescence was associated with environmental and self-exploration, as well as with commitment to career choices.

Similarly, research grounded in social learning theory suggests that vicarious reinforcement and modelling promote career exploration (e.g., Motsch, 1980), and that the quality of the relationship with a role model significantly contributes to the prediction of career decidedness (Perrone, Zanardelli, Worthington, & Chartrand, 2002).

Lastly, there has been limited research investigating the role of perceived autonomy on career development indices. However, in partial support of this link, Faye and Sharpe (2008) recently found that general perceived autonomy was positively related to overall identity achievement among undergraduate university students. More direct evidence has emerged in a few studies framed in SDT. Findings of these studies showed that career decision-making autonomy was negatively related to career indecision (Guay et al., 2006; Guay et al., 2003). In sum, perceived competence (i.e., self-efficacy), relatedness, and autonomy toward career decision-making appear to contribute to the career decision progress.

In the present research, satisfaction of the three career decision-making needs was considered as a determinant of career decision progress, as well as an important indicator of career development. In keeping with the vocational research, the first two studies focused exclusively on CDMSE (i.e., perceived competence) to represent the career decision-making need satisfaction variable. Essentially, in these studies, CDMSE was used as a measure of perceived competence toward career decision-making. In the last two studies, all three psychological needs (perceived competence, relatedness, and autonomy) were considered.

Perceived Usefulness of School Activities

Within SDT, *perceived usefulness* refers to the perception that a task or activity is personally valuable or useful (Deci, Eghrari, Patrick, & Leone, 1994). According to SDT, people are naturally inclined to internalize the behavioural regulation of activities they perceive as useful to the achievement of their goals (Deci & Ryan, 1985a). The general premise is that when people feel that an activity is useful or worthwhile doing, they are more likely to endorse its value and regulate it autonomously. Thus, conditions that increase perceived usefulness should promote self-determined regulation through the internalization process.

One key study framed in SDT included this construct as part of the research design. In their experimental study, Deci et al. (1994) demonstrated that autonomy supportive practices (i.e., providing a meaningful rationale, acknowledging the participants' perspective, and conveying choice) promoted perceived usefulness, perceived choice, and interest/enjoyment of a boring task. Correlational analyses revealed that perceived usefulness was strongly positively related to interest/enjoyment of the task, suggesting that it may not only facilitate internalization, but also intrinsic motivation. Interestingly, perceived usefulness of the boring task was more strongly related to task interest/enjoyment ($r = .73, p < .0001$) than was perceived autonomy ($r = .27, p < .001$). Results also found that conditions in which choice was conveyed, and in which the individual's perspective was acknowledged, had a positive effect on perceived usefulness. Together, these findings implicitly support the notion that need satisfaction enhances interest/intrinsic motivation through perceived usefulness.

Other studies investigating the role of perceived usefulness on academic outcomes have been grounded in future-oriented frameworks. Specifically, the concept of perceived

usefulness has been studied under the label “utility value” in Expectancy-value theories (Eccles et al., 1983; Eccles & Wigfield, 2002). It refers to an individual’s perceived usefulness of an activity for current or future goals. Similarly, studies using future time perspective frameworks (e.g., De Volder & Lens, 1982) have studied this construct using the label “instrumental value,” which has been defined as the ability to grasp the long-term consequences of current behaviours (Van Calster, Lens, & Nuttin, 1987). These constructs have been linked to greater persistence in studying and better academic achievement (De Volder & Lens, 1982; Eccles & Wigfield, 2002; Hullman, Durik, Schweigert, & Harackiewicz, 2008; Van Calster, Lens, & Nuttin, 1987), greater effort and persistence in a high school sport (Cox & Whaley, 2004), greater interest in the learning material (Creten, Lens, & Simons, 2001; Hullman et al., 2008; Miller, DeBacker, & Greene, 1999), and to the perception that school tasks are less difficult (Eccles & Wigfield, 1995). These results indirectly support the role of perceived usefulness as an important player in the internalization process.

Overall, theorists using future-oriented frameworks assert that instrumental value of current tasks can be enhanced when they are tied to personally relevant future goals. In short, present actions (e.g., going to school) acquire a higher utility value and are perceived to be more useful/instrumental when they facilitate achievement of valued goals (e.g., career goals). Miller and Brickman (2004) maintain that personally relevant future goals should benefit cognitive engagement because they provide meaning to current tasks and enable the development of subgoals. Consequently, in these theories, personally relevant distant goals are postulated to have a crucial influence on present motivation and learning (Husman & Lens, 1999; Markus & Nurius, 1986) because they help guide behaviour, as well as contribute to the meaning and the instrumental value of current tasks. This general

assumption is further expanded by SDT's contention that valued personal goals influence not only the quantity, but also the quality of motivation. In sum, valued personal goals should have an impact on motivation through perceived usefulness. Simply stated, perceived usefulness is hypothesized to mediate the relationship between career decision progress and academic self-determined motivation.

Career decision progress, perceived usefulness of school activities, and academic self-determined motivation.

Personal distant goals can span several life domains, but career-related goals seem particularly relevant to the understanding of educational outcomes among adolescents. Two reasons justify this assumption. First, the work and school domains are highly connected to one another. In fact, in many cultures, schooling is instrumental to the attainment of future educational and career goals (Phalet, Andriessen, & Lens, 2004; Lens, 2001). Second, given adolescents' impending transition to adulthood, preoccupations with future career goals gain prominence during this period (e.g., Shepard & Marshall, 1999; Henderson-King & Smith, 2006), and they are achieved through engagement in the school domain.

Thus, in line with SDT, adaptive career decision progress, consisting of exploration and career decidedness, should promote perceived usefulness of school learning. The general premise is that developing a clearer picture of the career one wants to pursue, based on adequate exploration, should help students better understand how their present school learning relates to their future. Perceived usefulness of school learning should in turn promote academic self-determined motivation. For instance, high school students who perceive their education as a means to enter into a desired career field, and who see how their school activities relate to their future, are likely to endorse the value of their education and regulate their school activities autonomously. In contrast, students who have not yet

formulated career goals should find it more difficult to view their school activities as personally meaningful, and may be less likely to internalize the values associated with school activities. In light of theoretical propositions and research evidence, it is argued that perceived usefulness might serve as an important mediator in the relationship between career decision progress and academic self-determined motivation. To date, no study has investigated these hypothesized links. Investigations using well-grounded theoretical framework are needed to better understand the relationship between career development indices and key educational processes/outcomes across different age groups.

Overview of the Present Research Project

Objectives

The central purpose of the present research project will be to examine the role of career development on academic self-determined motivation using SDT (Deci & Ryan, 1985) and future-oriented frameworks (e.g., Markus & Nurius, 1986; Nuttin, 1985). To achieve this objective, three sub-goals will be addressed. First, the role of two career development indices (i.e., career decision-making need satisfaction and career decision progress) on academic self-determined motivation will be examined. Second, the mediating role of perceived usefulness of school activities will be tested in the relationships between: (1) career decision progress and academic self-determined motivation, and (2) academic need satisfaction and academic self-determined motivation. The final goal will be to examine the role of career development indices on academic self-determined motivation, above and beyond the effect of academic need satisfaction. To further examine the associations among these variables, a model linking the career development indices to the educational variables will be tested.

Overview of the Studies

The goal of Study 1 was to examine the role of career decision-making need satisfaction and career decision progress in the prediction of academic self-determined motivation among late adolescents. A longitudinal design was used to assess these links. Figure 1 presents these hypothesized links. Study 2 was designed to further test the associations between the two career development variables (i.e., CDMSE and career decision progress), perceived usefulness of school activities, and academic self-determined motivation, by examining these links in the context of a career development intervention. Thus, using a pre-experimental design, this study examined whether growth in the two career development variables, following a career development intervention, was associated with an increase in perceived usefulness and in academic self-determined motivation. Study 2 also sought to test the mediating role of perceived usefulness in the career decision progress – academic self-determined motivation relationship. Figure 2 depicts the hypothesized mediation model.

In line with the vocational literature, Studies 1 and 2 focused exclusively on CDMSE as the key component of career decision-making need satisfaction. Still, research has also shown that in addition to CDMSE (i.e., perceived competence), perceived relatedness and autonomy could also influence career development. Moreover, research has demonstrated that perceived competence, relatedness, and autonomy in the academic domain promote academic self-determined motivation. Thus, Studies 3a and 3b were designed to integrate more comprehensively the role of psychological need satisfaction as part of a more complete model linking career development variables to academic self-determined motivation. In these two studies need satisfaction included the assessment of all three needs.

More precisely, Study 3a was designed to test, using a cross-sectional design, the relationship among the three educational variables, and to test the mediating role of perceived usefulness in the relationship between academic need satisfaction and academic self-determined motivation. Previous research has shown that autonomy supportive practices can promote perceived usefulness, and that perceived usefulness is linked to indicators of internalization (e.g., Deci et al., 1994; Reeve et al., 2002). However, the mediating role of perceived usefulness in the relationship between perceived academic need satisfaction and academic self-determined motivation has never been formally tested. Thus, based on SDT and previous research, perceived usefulness of school activities was anticipated to mediate this relationship. Figure 3 depicts these hypothesized links.

In Study 3b, a two-wave prospective design was used to more closely examine the role of career development variables on perceived usefulness and academic self-determined motivation, while considering the role of academic need satisfaction, a well-established antecedent of academic self-determined motivation. In addition, a model linking variables from the career development domain to variables in the academic domain was tested. An overview of the proposed model of Study 3b is presented in Figure 4. To ensure consistency in measurement across both domains, need satisfaction (i.e., competence, relatedness, and autonomy) was assessed in each domain using a similar format. Accordingly, a measure of competence toward career decision-making replaced the measure of CDMSE used in Studies 1 and 2. Study 3b also sought to verify the mediating role of perceived usefulness in the relationship between career decision progress and academic self-determined motivation, as well as between academic need satisfaction and academic self-determined motivation.

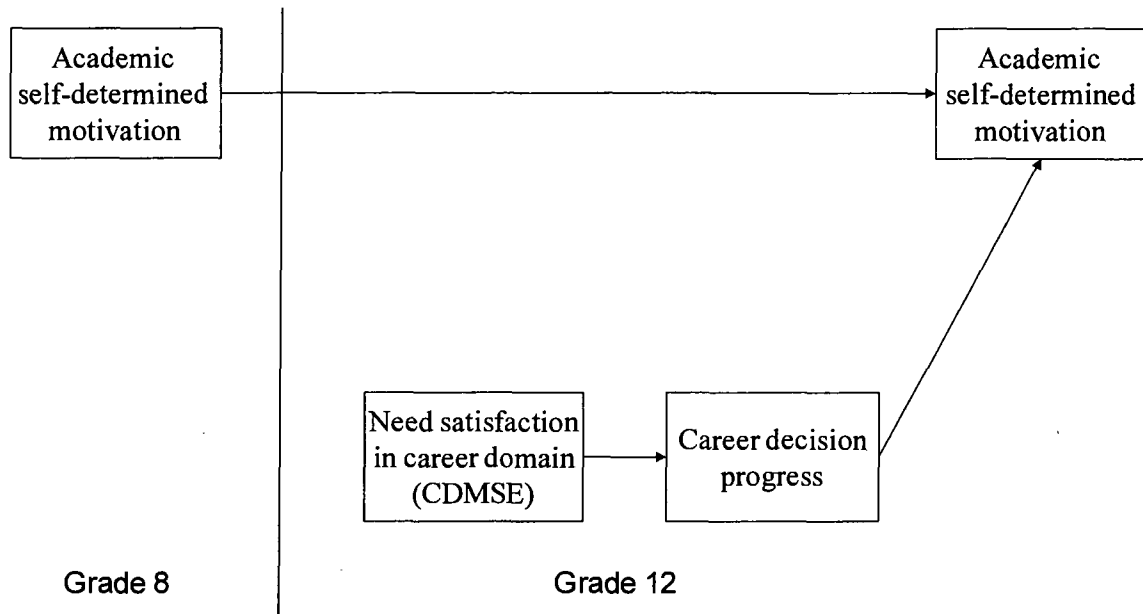


Figure 1. Overview of the hypothesized links (Study 1)

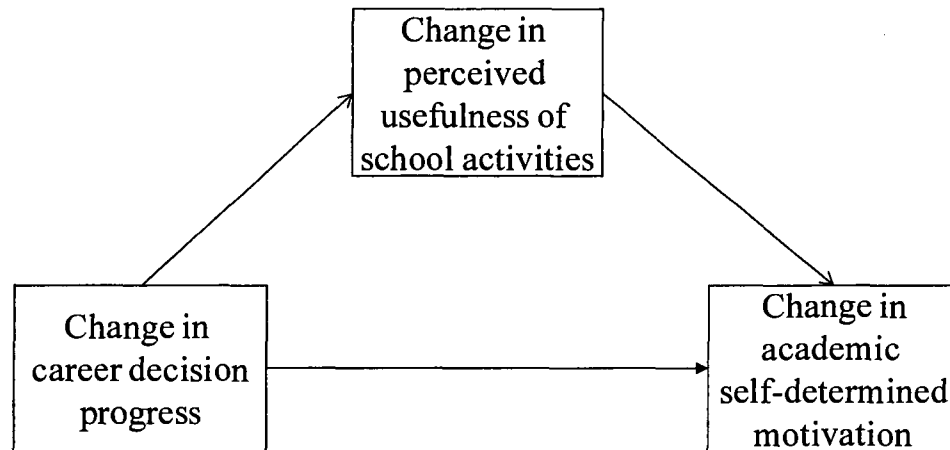


Figure 2. Overview of the hypothesized mediation model (Study 2)

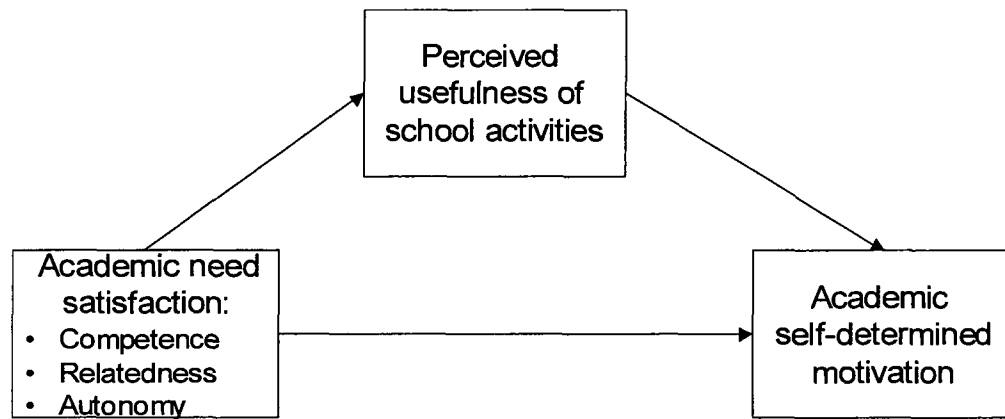


Figure 3. Overview of the hypothesized links (Study 3a)

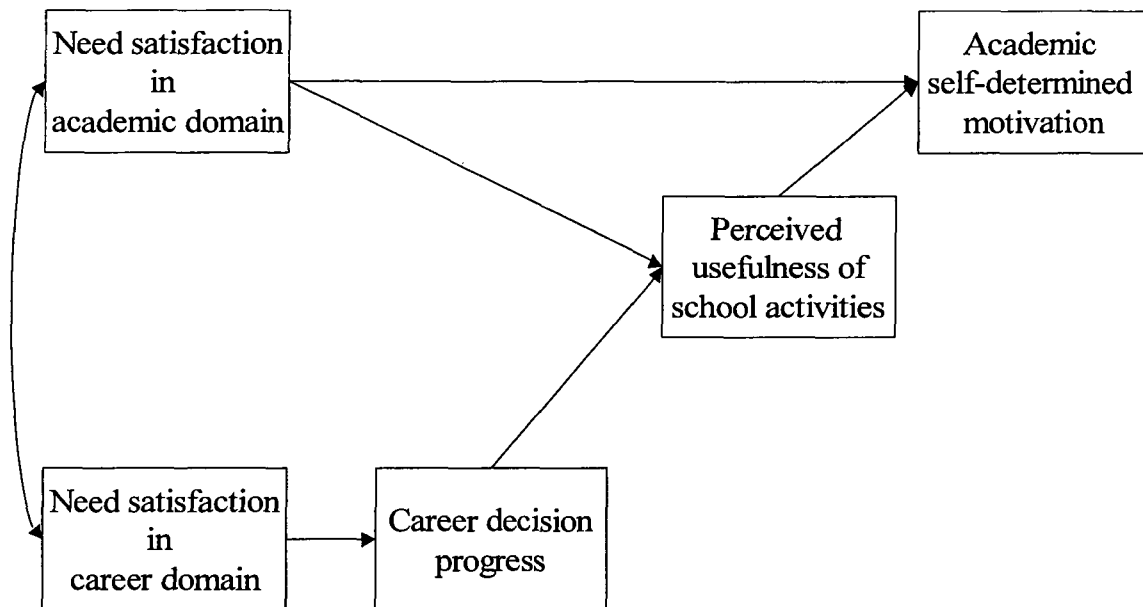


Figure 4. Overview of the hypothesized model (Study 3b).

CHAPTER 2

Study 1

The goals of the present longitudinal study were threefold. The first goal was to examine the relations between career decision-making self-efficacy (CDMSE), career decision progress, and academic self-determined motivation in late high school. Based on SDT and previous research in the career development literature, positive correlations among all the variables were expected.

The second goal was to investigate the role of CDMSE and career decision progress in the prediction of academic self-determined motivation. To more accurately assess the predictive role of the career development variables on academic motivation, a measure of baseline academic motivation assessed in early high school was used as a statistical control variable. The role of gender was also taken into account because previous research has shown that women typically report higher levels of autonomous functioning than men (e.g., Vallerand, 1997; Vallerand et al., 1997). However, gender differences in career development variables such as CDMSE and career decidedness are typically not found (e.g., Gushue et al., 2006; Holland, Johnston, & Asama, 1993), or simply not reported (e.g., Arnold, Auburn, & Ley, 1995; Betz & Voyten, 1997). Based on SDT, CDMSE and career decision progress were expected to contribute to variance in academic self-determined motivation above and beyond the effects of baseline academic self-determined motivation and gender.

The third goal was to further test the associations among the variables by performing path analyses. On the basis of previous research in the career development literature (e.g., Bartley & Robitschek, 2000; Betz & Luzzo, 1996; Guay et al., 2003; Lent et al., 1994), Time 2 CDMSE was expected to be positively associated with Time 2 career decision progress.

Career decision progress was also expected to be positively related to academic self-determined motivation.

Method

Participants and Procedure

High school students in 8th grade from one high school were invited to complete an electronic questionnaire. The questionnaire was administered as part of a larger investigation². The assessment of academic self-determined motivation in this questionnaire was used in the present study as a baseline measure of academic self-determined motivation in early high school. The questionnaire was completed during class time in a computer laboratory. Four years later, the same cohort of students in the same high school completed a paper-and-pencil questionnaire, which assessed career decision-making self-efficacy (CDMSE), career decision progress, and academic self-determined motivation. All 12th grade students who were present on that day completed the questionnaire during class time. Three of the missing 16 students who were absent on that day completed a questionnaire and sent it by mail in a pre-addressed and pre-paid envelope. To ensure confidentiality, personal numerical codes were created and used in the data file instead of names.

At Time 1, the sample included 159 students (70 male, 87 females, 2 undisclosed) with a mean age of 13.2 years ($SD = .45$). At Time 2, the sample included 85 students (38 male, 46 female, 1 undisclosed) with a mean age of 17.4 years ($SD = .55$). However, 24 students who completed the Time 2 questionnaire had not participated at Time 1. Thus, the sample of students who participated at both Time 1 and Time 2 included 61 participants, yielding a retention rate of 38%. One case was identified as a univariate outlier and was thus excluded from the analyses (data preparation and cleaning is discussed in greater detail in the

result section). This final sample included 60 participants (24 males, 36 females) with a mean age of 17.4 years ($SD = .48$).

Measures

In the present study, academic self-determined motivation was assessed at Time 1 and used as a statistical control measure. Time 2 included a measure of CDMSE, career decision progress, and academic self-determined motivation.

Career decision-making self-efficacy. Items from the short form of the Career Decision-Making Self-Efficacy Scale (Betz, Klein, & Taylor, 1996) were used to assess the extent to which participants felt confident that they could successfully accomplish the tasks necessary to make career decisions. In the present study, three of the five career-choice competencies proposed by Crites (1978) were assessed, namely, accurate self-appraisal, gathering occupational information, and goal selection. This abridged version was chosen to limit the number of items on the questionnaire, and because items from the two other subscales (i.e., make plans for the future and problem solving) did not seem as relevant to high school students (e.g., “Persistently work at your major or career goal even when you get frustrated”). Participants rated the items on a 5-point scale, ranging from 1 (*no confidence at all*) to 5 (*complete confidence*). Sample items are: “evaluate your skills with precision,” “find information at the library on occupations that interest you,” and “determine what your ideal job would be.” Items were averaged to form a composite score of career decision-making self-efficacy. The French version of the items was used in the present study (Guay et al., 2003). Guay et al. (2003) reported a total scale Cronbach alpha of .93. In this study, internal consistency of the abridged version of this scale was .75.

Career decision progress. Participants’ career decision progress was assessed using two scales that represented the two important components of adaptive career decision-

making (e.g., Blustein et al., 1989), namely, exploration and decidedness. To assess exploration behaviours, six items from the Career Preparation Scale (Gingras & Chagnon, 1997) were adapted in collaboration with two teachers and a school principal. Participants were asked to rate the extent to which they had participated in exploration activities since the beginning of the semester, using a 5-point scale ranging from 1 (*not at all*) to 5 (*a great deal*). Sample items are: “I searched for information on different careers” and “Through my courses, I tried to discover my interests, my strengths, and my weaknesses.” Items were averaged to form an exploration score. Internal consistency of this scale was adequate ($\alpha = .76$). To assess the career decidedness dimension, a 3-item scale was used. These items measured the extent to which participants had a clear picture of their professional goals (Gingras & Chagnon, 1997). Participants were asked to indicate the degree to which they were in agreement with the items and responded using a 5-point scale ranging from 1 (*not at all*) to 5 (*completely*). The items were: “I have professional goals that really interest me,” “My professional goals are clear,” and “I have a clear idea about the career I would like to pursue.” Items were averaged to create a decidedness score. Internal consistency of this scale was satisfactory ($\alpha = .87$). The correlation between exploration and career decidedness was highly significant ($r = .59, p < .001$). The career decision progress score was calculated by averaging the exploration and career decidedness scores. Cronbach alpha of the nine items combined was .84.

Academic self-determined motivation. At Time 1, self-determined motivation was assessed using the French high school version of the Academic Motivation Scale (ÉME-C28; Vallerand et al., 1989). This scale is composed of seven subscales, which represent five different regulatory styles described in Ryan and Deci’s (2002) self-determination continuum. Three of the 4-item subscales represent intrinsic regulation, whereas each of the

other scales represents one of four regulation styles (i.e., identified, introjected, external, and non-regulation). In line with other educational studies, (Otis, Grouzet, & Pelletier, 2005; Ratelle et al., 2007), only one of the intrinsic motivation subscales was used (i.e., intrinsic motivation toward knowledge). Participants were presented with the statement “Why do you go to school...” and were asked to indicate, using a 5-point scale ranging from 1 (*not at all*) to 5 (*exactly*), the extent to which the items corresponded to the reasons they go to school. The 5-point likert scale has been previously used with high school students (e.g., Otis et al., 2005). Research has supported the factorial validity of this 20-item version of the scale using a 5-point likert scale (Grouzet, Otis, & Pelletier, 2006). The following are examples from each of the five motivation subscales, from the highest to the lowest level of self-determination: (1) “because I get pleasure and satisfaction from learning new things” (intrinsic; $\alpha = .84$); (2) “because it will allow me to work in a field that I really like” (identified; $\alpha = .79$); (3) “to prove to myself that I’m an intelligent person” (introjected; $\alpha = .87$); (4) “to have a better salary later on” (external; $\alpha = .69$); (5) “I don’t know why I go to school” (amotivation; $\alpha = .81$).

In order to attribute a self-determination score to each participant, an academic self-determined motivation index was computed by assigning each subscale a weight that corresponds to each motivational construct’s place on the self-determination continuum. Because this version of the scale had an uneven number of self-determined and non self-determined types of motivation, two adjacent non self-determined motivational constructs on the continuum (i.e., introjected regulation and external regulation; $r = .53^{***}$) were averaged and given the appropriate weight (e.g., Levesque, Blais, & Hess, 2004). More specifically, in this study, intrinsic motivation, identified motivation, both introjected and external motivation combined, and amotivation were assigned weights of +2, +1, -1, and -2

respectively, and thus, the formula used to calculate the academic self-determined motivation index was the following: $(\text{intrinsic motivation} * 2) + (\text{identified} * 1) - (\text{mean of introjected and external} * 1) - (\text{amotivation} * 2)$. Based on this formula, the self-determined motivation scores range from -5.00 to 10.50 .

To assess Time 2 academic self-determined motivation, participants responded to an adapted version of the Self-Regulation Questionnaire-Academic (SRQ-A; Ryan, & Connell, 1989). The original scale is comprised of 26 items and assesses students' styles of self-regulation in the academic domain (intrinsic, identified, introjected, and external regulation). Participants are asked to indicate on a 4-point scale the extent to which the reasons for performing different school activities (e.g., doing homework, participating in class, and answering hard questions in class) are true for him or her. An adapted version of this scale was used in the present study. Participants were presented with three stem questions: (1) "Why do you go to class?" (2) "Why do you do your homework?" and (3) "Why do you pay attention and participate in class?" Each stem question was followed by five reasons, which represent five different regulation styles proposed by SDT (i.e., intrinsic, identified, introjected, external, and non-regulation). Participants were asked to rate the extent to which each item corresponded to the reasons they perform the activities on a 5-point scale ranging from 1 (*not at all*) to 5 (*exactly*). The academic self-determined motivation index was calculated using the same formula used at Time 1. Time 2 academic self-determined motivation index ranged from -6.5 to 10.00 . Previous research using the full 26-item scale reported Cronbach alphas for the different subscales ranging from .61 to .85 (e.g., Patrick, Skinner, & Connell, 1993). In addition, factorial validity of the different scales has been demonstrated by Ryan and Connell (1989). Internal consistency of the subscales at Time 2 of this study was generally low: Intrinsic ($\alpha = .73$), Identified ($\alpha = .68$), Introjected

($\alpha = .43$), External ($\alpha = .43$), Amotivation ($\alpha = .57$). Low internal consistency is likely attributed to the fact that the subscales assessed three different academic behaviours (i.e., three different stem questions) and were limited to 3 items per subscale. It should be noted that researchers using this measure do not always report Cronbach alphas for the different subscales (e.g., Ryan, Stiller, & Lynch, 1994; Vansteenkiste et al., 2004). In line with Vansteenkiste et al. (2004), the pattern of correlation between the subscales was examined (i.e., simplex pattern) to assess the construct validity of the measure. Based on SDT's continuum (Ryan & Deci, 2002), adjacent motivational constructs should be more strongly positively (less negatively) related to one another, and should become more negatively (less positively) related to one another as they get further apart. In the present study, the subscales of this measure formed a reasonably clear simplex pattern consistent with the theorized self-determination continuum.

Results

Data Cleaning and Preparation

Prior to analysis, the variables were inspected for accuracy of data entry, missing values, and fit between distributions and assumptions of multivariate analysis (Tabachnick & Fidell, 2001). Three missing values on the Academic Motivation Scale were replaced with the participant's own mean on the respective motivation subscale. As mentioned earlier, one case was identified as a univariate outlier with a z-score lower than -3.29 on Time 1 academic motivation, and was therefore deleted. After deleting this univariate outlier, no multivariate outlier was found based on Mahalanobis distance criteria for 4 variables ($\chi^2(4) = 18.47, p < .001$). Analyses were thus performed on the remaining 60 participants. Skewness statistics ranged from -1.02 to $-.05$ and kurtosis statistics ranged from $-.05$ to 2.05 .

In addition, no multicollinearity was found, as the Condition Index was below 30, and correlations between the variables were all below .80.

Given the high level of attrition from Time 1 to Time 2 ($n = 159$ at Time 1; $n = 85$ at Time 2; $n = 61$ for both Time 1 and Time 2), analyses were performed to determine if the attrition was due to a random or systematic occurrence. First, an independent-samples t -test was performed to compare participants who completed both measurement times from participants who only completed the Time 1 questionnaire on the Time 1 measure. Results showed that Time 1 academic motivation (8th grade) was significantly lower for participants who only completed the Time 1 questionnaire ($M = 3.8$) than for those who completed both Time 1 and Time 2 questionnaires ($M = 4.9$, $t(1, 157) = -2.11$, $p < .05$). However, these participants did not differ in terms of age ($t(1, 157) = .51$, $p > .05$) or gender ($t(1, 157) = -1.05$, $p > .05$). Second, independent-samples t -tests were performed to compare students who participated at Time 2 from those who participated at both measurement points on Time 2 measures (i.e., CDMSE, career decision progress, and academic motivation). No significant difference was found between these groups on any of the Time 2 measures. Similarly, no significant difference was found between these two groups on age or gender.

Preliminary Analyses

Descriptive statistics and correlations among the variables. Table 1 presents descriptive statistics of the main variables used in the present study and correlations between these variables. The means show that academic motivation was lower at Time 2 than at Time 1. A paired t -test showed that this difference was significant $t(1, 59) = 3.73$, $p < .001$. These results are consistent with research showing a declining trend in academic motivation from middle to senior high school (e.g., Otis et al., 2005). However, this result must be interpreted with caution because academic motivation was assessed at the two measurement

points with different scales. As shown in Table 1, the two career development variables were significantly positively related to academic self-determined motivation at Time 1 and Time 2.

Table 1

Descriptive Statistics and Correlations between the Main Variables (Study 1)

	<i>M</i>	<i>SD</i>	2.	3.	4.
1. T1 Academic motivation	5.12	2.83	.41**	.39**	.44***
2. T2 CDMSE	3.78	.50	—	.66***	.46***
3. T2 Career decision progress	3.70	.71	—	—	.58***
4. T2 Academic motivation	3.66	3.66	—	—	—

Note. * $p < .05$. ** $p < .01$. *** $p < .001$. *M* = Mean; *SD* = Standard deviation.

Main Analyses

Testing the role of career development on academic motivation. To test the role of career development on academic self-determined motivation, a four-step hierarchical regression analysis was performed, in which Time 2 career development variables (CDMSE and career decision progress) predicted Time 2 academic self-determined motivation, after statistically controlling for gender and baseline academic self-determined motivation. In this regression, Time 2 academic self-determined motivation served as the dependent variable. To assess the incremental effect of the two career development variables on academic self-determined motivation, these variables were entered separately in an order that respected

their hypothesized sequence. Accordingly, the independent variables were entered in four steps: gender was entered in the first step, followed by Time 1 academic motivation in step 2, Time 2 CDMSE in step 3, and Time 2 career decision progress in step 4.

Results of this regression analysis are displayed in Table 2. As shown, step 1 revealed that gender was significantly related to Time 2 academic self-determined motivation ($\beta = .29, p < .05$), such that being female was positively associated with academic self-determined motivation in late high school. Gender accounted for 8% of the variance in Time 2 academic self-determined motivation. The second step indicated that Time 1 academic self-determined motivation significantly predicted Time 2 academic self-determined motivation ($\beta = .39, p < .01$) and explained an additional 15% of the variance beyond what had been accounted for by gender. The third step showed that Time 2 CDMSE was positively associated with Time 2 academic self-determined motivation ($\beta = .34, p < .01$) and explained an additional 9% of the variance above and beyond the effect of gender and Time 1 academic self-determined motivation. Finally, step 4 showed that Time 2 career decision progress was positively related to Time 2 academic self-determined motivation ($\beta = .44, p < .01$) and contributed an additional 12% of the variance. Together, the Time 2 career development variables accounted for 21% of the variance in Time 2 academic self-determined motivation after statistically controlling for gender and baseline academic self-determined motivation.

In sum, results of this hierarchical regression analysis suggest that both career development variables contribute to residual change in academic self-determined motivation from early to late high school. In addition, gender was positively associated with academic self-determined motivation in late high school. In light of this result, means of all the variables were compared as a function of gender. There was no difference between boys and

girls on Time 1 academic self-determined motivation, Time 2 CDMSE, and Time 2 career decision progress. However, girls reported significantly higher levels of academic self-determined motivation at Time 2 ($M = 4.25$) than boys ($M = 2.11$, $t(58) = -2.28$, $p < .05$). This result is consistent with research showing that compared to boys, girls often report higher levels of self-determined motivation (Vallerand, 1997; Vallerand et al., 1997).

Table 2

Results of Hierarchical Regression Analysis Predicting T2 Academic Motivation (Study 1)

Step	Variable	R^2	ΔR^2	F	B
1	Gender	.08*	.08*	5.19	.29*
2	T1 academic motivation	.23**	.15**	8.53	.39**
3	T2 CDMSE	.32***	.09**	8.97	.34**
4	T2 career decision progress	.44***	.12**	10.82	.46**

Note. * = $p < .05$. ** = $p < .01$. *** $p < .001$. T1 = Time 1; T2 = Time 2.

Testing the relations among the variables with path analyses. To further test the relations among the variables, path analyses were conducted using the theory-trimming procedure recommended by Pedhazur (1982). With this technique, all predictor variables are entered into the equation to predict a given criterion. Multiple regressions on the same criterion are then repeated without the non-significant predictors (see Pedhazur, 1982).

Results of the path analyses are presented in Figure 5.

As anticipated, Time 2 CDMSE was significantly related to Time 2 career decision progress, and in turn, was associated with Time 2 academic self-determined motivation.

Moreover, Time 1 academic motivation predicted Time 2 CDMSE but did not predict Time 2 academic self-determined motivation. Instead, gender emerged as a significant correlate of Time 2 academic self-determined motivation.

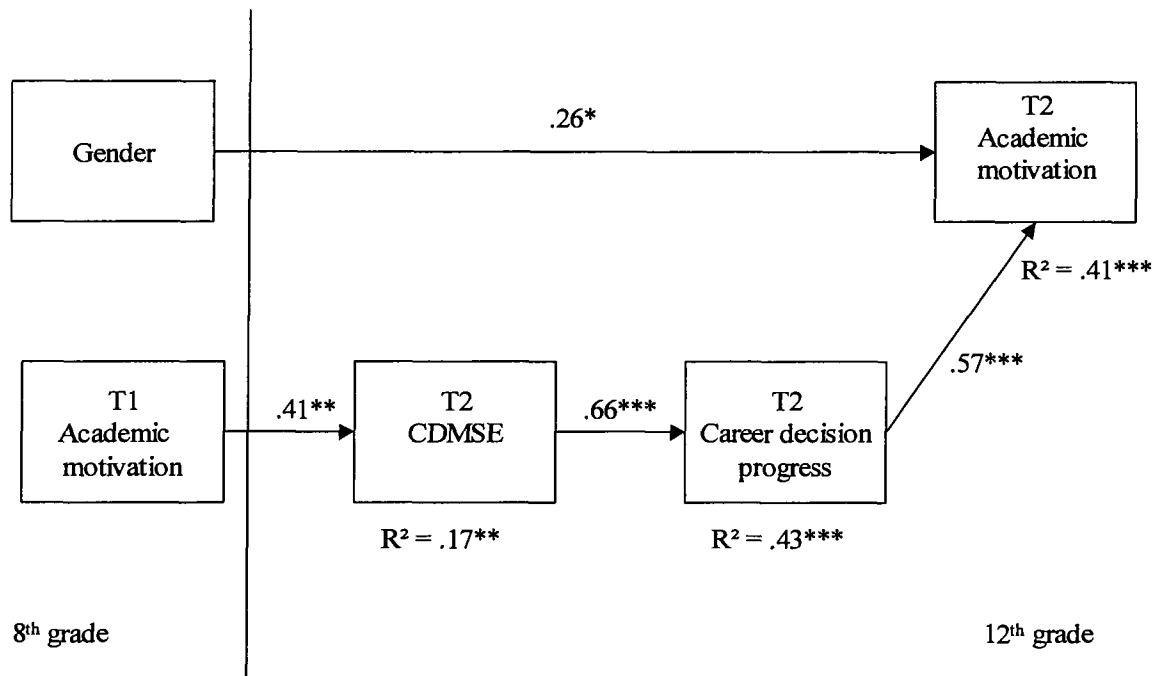


Figure 5. Results of path analyses linking career development indices to academic self-determined motivation (Study 1).

Note. $* p < .05$. $** p < .01$. $*** p < .001$. T1 = Time 1; T2 = Time 2; CDMSE = Career decision-making self-efficacy.

Chapter Summary and Discussion

The main purpose of the present study was to examine the role of career development on academic self-determined motivation. To test the hypotheses, a two-wave longitudinal approach was used. This approach enabled the statistical control of baseline academic self-determined motivation, and thus, evaluated the impact of the career development indices on residual change in academic self-determined motivation from early to late high school.

First, correlations revealed that both indicators of career development were significantly related to academic self-determined motivation. Second, the hierarchical regression analyses showed that, after controlling for gender, the career development variables significantly contributed to residual change in academic self-determined motivation. Thus, results provided some evidence that growth in career development may promote academic self-determined motivation in adolescents.

The relations between the variables were further tested using path analyses. As demonstrated in previous research, CDMSE was positively associated with career decision progress (e.g., Gushue et al., 2006; Lent et al., 1994), and in turn, with academic self-determined motivation. Results also showed that gender was significantly related to academic self-determined motivation in late high school. Indeed, significant mean differences were found on Time 2 academic self-determined motivation (assessed in 12th grade), such that girls reported greater levels of academic self-determined motivation than boys. These results are consistent with Vallerand et al.'s (1989) findings in a sample of first year college students (mean age of 17.6 years), which generally showed that girls had a more self-determined profile than boys.

Finally, although the primary goal was to examine the role of career development on academic self-determined motivation, the baseline assessment of academic self-determined

motivation provided an opportunity to examine how baseline academic motivation predicted subsequent career development. Results showed that baseline academic self-determined motivation significantly predicted Time 2 CDMSE, suggesting a possible reciprocal relationship between academic self-determined motivation and career development. In other words, this finding suggests that students who display greater levels of academic self-determined motivation may be more likely to develop feelings of self-efficacy about career decision-making skills and engage in the career decision process through exploratory behaviours. This finding is consistent with previous SDT research linking general autonomous functioning to adaptation, ego-development, and personality integration (Deci & Ryan, 1985b, 2000; Sheldon & Kasser, 1995).

Despite the use of a longitudinal design, this study has four important limitations that are worth noting. First, there was a high level of attrition from Time 1 to Time 2 and this loss of participants led to a relatively small sample. In addition, as noted in the data cleaning section, a significant difference was found in baseline academic self-determined motivation between participants who only completed the questionnaire at Time 1 compared to those who completed both measurement times. Nevertheless, while overall attrition was relatively high, only 71 students could have been matched from Time 1 to Time 2. Thus, the sample used to conduct the analyses ($n = 60$) was likely representative of the cohort in this school. The attrition may have resulted from students moving to different schools. Alternatively, as indicated from the lower levels of academic self-determined motivation in participants who only completed Time 1, it may suggest high school dropout.

Second, the Time 1 measure of academic self-determined motivation differed from the one used at Time 2. Nonetheless, both scales used to assess academic self-determined motivation were designed to tap the same motivational constructs (i.e., intrinsic, identified,

introjected, external, and amotivation), and the academic self-determined motivation index was calculated using the same formula. The correlation between the Time 1 and the Time 2 measures was also relatively high ($r = .44, p < .001$), suggesting that both the instruments assessed similar motivational constructs.

Third, the motivation subscales used to assess Time 2 academic self-determined motivation yielded very low alphas. It should be noted however that the subscales formed a reasonable clear simplex pattern consistent with the self-determination continuum postulated by SDT (Ryan & Deci, 2002). Nonetheless, considering these two latter limitations, the finding that overall academic self-determined motivation declined from Time 1 to Time 2 has to be interpreted with caution. Similarly, these two limitations could also affect the results obtained with the regression analyses because those analyses were based on residual change in academic self-determined motivation from Time 1 to Time 2. Finally, the use of correlational data prevented the establishment of causality among the variables. Nonetheless, the research design was strengthened by the statistical control of baseline academic self-determined motivation.

In sum, the results of this study support the link between career development and academic self-determined motivation. Further, the results suggest that CDMSE and career decision progress may promote academic self-determined motivation.

CHAPTER 3

Study 2

Study 1 provided support for the assumption that career development may promote academic self-determined motivation. However, one of the limitations of Study 1 was that it used different motivation scales from Time 1 to Time 2. A second limitation of Study 1 was its small sample size. Thus, Study 2 was designed to address these two limits by examining the relationship between career development variables and academic self-determined motivation in the context of a career development course using the same measure of academic self-determined motivation at both measurement points (i.e., pre and post intervention) with a larger sample of students. The main purpose of Study 2 was to provide further evidence that career development could foster academic self-determined motivation. The second goal was to explore the role of perceived usefulness of school activities as a mediator in this relationship.

To accomplish these goals, a pre-experimental design was used to examine how changes in CDMSE and career decision progress, resulting from a career development intervention, would affect perceived usefulness of school activities and academic self-determined motivation. Overall, growth in career development (i.e., CDMSE and career decision progress) was expected to be associated with positive changes in perceived usefulness of school activities and academic self-determined motivation. Perceived usefulness was also anticipated to mediate the relationship between career decision progress and academic self-determined motivation.

Method

Participants

Students in 10th grade from three French high schools in the Ottawa area were invited to participate in this study. Details on the rate of participation at both measurement times are presented as part of the data screening in the result section. The final sample included 207 participants (103 males, 104 females) with a mean age of 15.5 years. The sample was distributed relatively evenly across the three schools (school 1, $n = 64$; school 2, $n = 69$; school 3, $n = 71$). More than half of the students spoke French at home (61%), with some participants speaking English (14%), both French and English (24%), or another language (1%).

Procedure

Study 2 was conducted using a pre-experimental design. High school students were invited to complete an anonymous questionnaire in class within a week of starting a mandatory eight-week course named *Career Studies* (GLC20) in grade 10 (Ministry of Education, 2006). A second questionnaire was completed in the days that followed the end of the course. The Career Studies Course is part of the Ontario curriculum and is designed to help students set and achieve personal educational and work goals by teaching them to develop self-knowledge, knowledge about the world of work, personal management skills, and exploration skills using a variety of resources.

Participation in this study was voluntary. However, given its relevance to the schools, principals supported the study by allowing research assistants to distribute the questionnaires in classrooms during class time. To further encourage participation, the questionnaire was shortened by using abridged versions of the scales. In addition, no parent objected to their child's participation in the study, and consequently, all students in the

classrooms on testing days completed the questionnaires. Personal codes instead of names were used to match participants' responses from Time 1 to Time 2.

Measures

The first and second questionnaire included a measure of CDMSE, career decision progress, perceived usefulness of school activities, and academic self-determined motivation.

Career decision-making self-efficacy. As in Study 1, 9 items from three subscales of the short form of the career decision-making self-efficacy scale were used (Betz et al., 1996) to assess the extent to which participants felt confident that they could successfully accomplish the tasks necessary to make career decisions (i.e., accurate self-appraisal, gathering occupational information, and setting goals). As in Study 1, the French version of the items was used (Guay et al., 2003). Participants rated the 9 items on a 5-point scale, ranging from 1 (*no confidence at all*) to 5 (*complete confidence*). Items were combined to form a composite score of self-efficacy. Cronbach alpha of the scale was .78 at Time 1 and .83 at Time 2.

Career decision progress. As in Study 1, career decision progress was measured using items assessing both exploration and career decidedness. To assess exploration behaviours, 8 items adapted from the Career Preparation Scale were used (Gingras & Chagnon, 1997). Participants were asked to rate the extent to which they had participated in exploration activities since the beginning of the semester, using a 5-point scale ranging from 1 (*not at all*) to 5 (*a great deal*). Sample items are: "I used the internet to find information on careers" and "Through my courses, I tried to discover my interests, my strengths, and my weaknesses." Internal consistency of this scale was adequate at Time 1 ($\alpha = .75$) and at Time 2 ($\alpha = .79$). As in Study 1, a 3-item scale was used to assess career decidedness. This scale assessed the extent to which participants had a clear picture of their professional goals

(Gingras & Chagnon, 1997). Participants were asked to indicate the degree to which they were in agreement with the items and responded using a 5-point scale ranging from 1 (*not at all*) to 5 (*completely*). The items were: “I have professional goals that really interest me,” “My professional goals are clear,” and “I have a clear idea about the career I would like to pursue.” Internal consistency of this scale was satisfactory at both Time 1 ($\alpha = .84$) and Time 2 ($\alpha = .80$). The correlation between exploration and career decidedness was .56 ($p < .001$) at Time 1 and .45 ($p < .001$) at Time 2. Cronbach alpha of the exploration and career decidedness items combined was .83 at Time 1 and .82 at Time 2.

Perceived usefulness of school activities. To assess perceived usefulness of school activities, items were adapted from the “relevance of science” subscale of the ROSE questionnaire (Jenkins & Nelson, 2004). Participants were asked to rate the extent to which they were in agreement with the items, using a 5-point scale ranging from 1 (*not at all*) to 5 (*completely*). The four items were: “What I learn in school will be useful to my everyday life,” “The skills and knowledge I learn in school will be useful to my future career,” “I make the connection between what I learn in school and my life in general,” “I am aware of the relevance of my schoolwork.” Cronbach alpha was .81 at Time 1 and .77 at Time 2.

Academic self-determined motivation. As in Time 1 of Study 1, participants responded to items from the French high school version of the Academic Motivation Scale (ÉME; Vallerand et al., 1989) using a 5-point scale ranging from 1 (*Not at all*) to 5 (*Exactly*). In the present study, an abridged version of the scale was used. Subscales included three items each. Other SDT researchers have used variations of original academic motivation scales to assess academic self-determined motivation. For instance, Niemiec et al. (2006) calculated an academic relative autonomy index using 3-item subscales and a 5-point likert scale. Similarly, Soenens and Vansteenkiste (2005) calculated an academic relative

autonomy index using the same formula that was used in the present study, while using a single item to represent each subscale. In the present study, the academic self-determined motivation index was calculated using the same formula as in Study 1. The index ranged from -.43 to 10.33 at Time 1 and from -3.83 to 10.00 at Time 2. At Time 1, the internal consistency of the subscales was satisfactory for three of the subscales (intrinsic $\alpha = .78$; identified $\alpha = .72$; amotivation $\alpha = .79$) and somewhat low for the other two (introjected $\alpha = .66$; external $\alpha = .52$). At Time 2, internal consistency was overall satisfactory (intrinsic $\alpha = .82$; identified $\alpha = .71$; introjected $\alpha = .82$; external $\alpha = .76$; amotivation $\alpha = .71$).

Overview of Analyses Performed in Study 2

Study 2 included preliminary and main analyses. The preliminary analyses were comprised of data screening, descriptive statistics, and correlations among the variables. The main analyses were divided into four steps³. First, the pattern of change among the variables was investigated on the basis of residual change scores from baseline to post-intervention measures. Second, hierarchical regression analysis were performed to examine whether changes in career development could predict increases in perceived usefulness. Third, another hierarchical regression analysis was carried out to examine whether changes in the career development indices and perceived usefulness could predict increases in academic self-determined motivation. Lastly, the mediating role of perceived usefulness in the career decision progress – academic self-determined motivation relationship was tested. The mediation analyses were performed using regression analyses (Baron & Kenny, 1986) and a more formal mediation test (i.e., Sobel test).

Results

Data Screening

Prior to performing the analyses, Study 2 data were screened for missing values and outliers. At Time 1, 265 participants completed the questionnaire and 264 participants completed the Time 2 questionnaire. A total of 216 participants completed both questionnaires. Within this sample, five participants had over 15% missing values and were therefore deleted from the sample. Missing data, in cases with less than 4% missing values, were replaced with the participants' own mean on the variables. Among the 211 participants left, three univariate outliers were identified with z -scores below -3.29 on Time 1 academic motivation, Time 1 CDMSE, and Time 2 CDMSE. In addition, one multivariate outlier was identified using the Mahalanobis distance criteria $\chi^2(8) = 26.13$. These four outliers were thus excluded from the analyses. Variables were distributed normally (skewness ranged from $-.63$ to $.05$; kurtosis ranged from $-.56$ to $-.04$). The final sample included 207 participants (103 males, 104 females) with a mean age of 15.5 years.

Independent samples t -tests were performed to examine mean differences in Time 1 measures between participants who only completed Time 1 questionnaire and those who completed the questionnaire at both measurement times. Results revealed that participants who completed only the Time 1 questionnaire reported significantly greater career decision progress at Time 1 ($M = 3.46$) than those who completed both the Time 1 and Time 2 questionnaire ($M = 3.21$, $t(1, 263) = 2.09$, $p < .05$). Although these groups did not differ on gender, they differed in terms of age, such that participants who completed only the Time 1 questionnaire reported being significantly older ($M = 15.45$) than participants who completed both measurement points ($M = 15.05$, $t(1, 263) = 3.34$, $p < .01$). Independent samples t -tests were also performed to examine mean differences in Time 2 measures between participants

who only completed the Time 2 questionnaire and those who completed both Time 1 and Time 2. No difference was found between these two groups in Time 2 measures or gender, however, these groups differed in terms of age, such that participants who completed only the Time 2 questionnaire reported being significantly older ($M = 15.60$) than participants who completed both measurement points ($M = 15.05$, $t(1, 263) = 5.29$, $p < .001$).

Preliminary Analyses

Descriptive statistics and correlations among the variables. Descriptive statistics of the variables used at both Time 1 and Time 2 are displayed in Table 3. In light of findings in Study 1, t -tests were performed to examine possible gender differences on all the variables assessed at both measurement points. Results showed that girls reported significantly higher levels of Time 1 CDMSE ($M = 3.89$) than boys ($M = 3.69$, $t(205) = -2.68$, $p < .01$), higher levels of Time 1 academic self-determined motivation ($M = 5.04$) than boys ($M = 3.55$, $t(205) = -3.62$, $p < .001$), and higher levels of Time 2 CDMSE ($M = 3.88$) than boys ($M = 3.70$, $t(205) = -2.10$, $p < .05$). Interestingly, no significant gender difference was found on Time 2 academic self-determined motivation.

Correlations between the variables are displayed in Table 4. As shown in this table, all variables were significantly correlated to one another, clearly demonstrating the strong relationship between the career development variables and academic self-determined motivation. In addition, perceived usefulness of school activities was highly correlated to academic self-determined motivation ($r = .60$ at Time 1; $r = .65$ at Time 2).

Table 3

Descriptive Statistics of Variables at Time 1 and Time 2 (Study 2)

	<i>M</i>	<i>SD</i>	<i>SK</i>	<i>KU</i>
T1 CDMSE	3.79	.54	-.39	.36
T1 Career decision progress	3.22	.76	-.25	-.20
T1 Perceived usefulness	3.55	.75	-.29	-.37
T1 Academic motivation	4.30	3.05	-.63	-.18
T2 CDMSE	3.80	.62	-.22	-.33
T2 Career decision progress	3.53	.70	-.31	-.06
T2 Perceived usefulness	3.47	.70	.05	-.48
T2 Academic motivation	4.18	2.86	-.33	-.53

Note. *M* = Mean; *SD* = Standard deviation; *SK* = Skewness; *KU* = Kurtosis; T1 = Time 1; T2 = Time 2. All scales were assessed using a 5-point scale ranging from 1 to 5. The academic self-determined motivation index ranged from -.43 to 10.33 at Time 1 and from -3.83 to 10.00 at Time 2.

Table 4

Correlations among Variables at Time 1 and Time 2 (Study 2)

	1.	2.	3.	4.	5.	6.	7.	8.
1. T1 CDMSE	—	.64***	.44***	.40***	.55***	.52***	.33***	.31***
2. T1 Career decision progress		—	.34***	.29***	.40***	.59***	.22**	.18*
3. T1 Perceived usefulness			—	.60***	.40***	.34***	.56***	.52***
4. T1 Academic motivation				—	.41***	.28***	.41***	.61***
5. T2 CDMSE					—	.59***	.46***	.46***
6. T2 Career decision progress						—	.39***	.35***
7. T2 Perceived usefulness							—	.65***
8. T2 Academic motivation								—

Note. * $p < .05$. ** $p < .01$. *** $p < .001$. T1 = Time 1; T2 = Time 2.

Main Analyses

Testing the pattern of change with residual change from Time 1 to Time 2. First, overall mean differences from Time 1 to Time 2 were examined. Paired-sample *t*-tests showed that career decision progress was the only variable that differed between the two measurement times ($t(206) = -6.62, p < .001$), such that it was significantly higher at Time 2 ($M = 3.52$) than at Time 1 ($M = 3.22$). This result suggests that the Career Studies course was effective at increasing overall career decision progress, but failed to have an overall effect on CDMSE, perceived usefulness, and self-determined academic motivation. Although an overall increase in perceived usefulness and academic self-determined motivation were expected to result from an overall increase in career decision progress, the main goal was not to examine mean-level change, but rather, it was to investigate the pattern of individual-level change in the context of the career development course. As shown in previous research (e.g., Louvet, Gaudreau, Menaut, Genty, & Deneuve, 2009), the lack of overall mean-level change across occasions of measurement does not necessarily suggest an absence of individual-level change (Steyer, Partchev, & Shanahan, 2000). For example, within a sample, some students may experience a decline in academic self-determined motivation, while others may show an increase in this variable, such that scores cancel each other out. Thus, despite the presence of meaningful individual-level change, such a scenario can result in a lack of overall mean-level change (Steyer et al., 2000).

To test this hypothesis, a technique used by Sheldon and Krieger (2004) was adopted. First, a residual change score for each of the four variables was created by subtracting the Time 1 score from its corresponding Time 2 score. The correlations between change scores were then examined. Descriptive statistics of the residual change scores are presented in Table 5. To verify that the change scores represented true change scores rather than

fluctuations of measurement error, retest correlations were examined for each of the four variables. According to Steyer et al. (2000), true change is evidenced when the retest correlation for a given variable is smaller than its reliability estimate. In the present study, all retest correlations were considerably smaller than the reliability estimates for all variables. More specifically, the retest correlations for CDMSE, career decision progress, perceived usefulness, and academic self-determined motivation were .55, .59, .56, and .61 respectively. In comparison, reliability estimates (i.e., average of Time 1 and Time 2) were .81 for CDMSE, .83 for career decision progress, .79 for perceived usefulness, and .73 for academic self-determined motivation (i.e., average of all the Cronbach alphas of all motivational subscales at both Time 1 and Time 2). These results provide evidence that the change scores represented true individual-level change.

To provide further support for the presence of individual-level change, and to examine the distribution of true individual-level change from Time 1 to Time 2, a Reliable Change Index (Christensen & Mendoza, 1986; Jacobson & Truax, 1991) was calculated for each variable. This technique accounts for the unreliability of the measures and the standard error of the difference scores, and thus provides a range of scores for each variable that would be probable if no actual change had occurred. Scores that are one standard deviation above or below the criterion are considered to represent true change, because such change would be unlikely to occur randomly. The distribution of the true change scores, classified as having decreased, increased, or remained the same, is presented in Table 6.

As shown in Table 6, change occurred from Time 1 to Time 2 in all variables. The distribution for each variable shows that the majority of participants did not experience change. However, for each variable, decreases and increases were also evidenced. More specifically, with respect to the career development variables, 6.8% of participants

experienced gains in CDMSE, while 10.1% experienced a decrease on this variable. In addition, 15.5% experienced gains in career decision progress, whereas 3.4% reported a decrease. The distribution for the educational variables indicated that 7.2% of the participants increased on perceived usefulness, whereas 11.6% decreased on this variable. Moreover, 3.9% of the participants reported an increase on academic self-determined motivation, while 2.4% reported a decrease. Thus, despite the lack of overall mean-level change, the results suggest that intra-individual change occurred from Time 1 to Time 2. These results are further considered in the discussion section.

Correlations between residual change scores are presented in Table 7. As shown, increases in CDMSE and in career decision progress were significantly associated with increases in perceived usefulness and academic self-determined motivation. In addition, in line with Study 1, increases in CDMSE were associated with increases in career decision progress. Also worth noting is the relatively strong correlation between changes in perceived usefulness and changes in academic self-determined motivation ($r = .39, p < .001$).

Table 5

Descriptive Statistics of the Residual Change Scores (Study 2)

	<i>M</i>	<i>SD</i>	<i>Range</i>
1. Changes in CDMSE	.01	.55	-1.89 / 1.56
2. Changes in career decision progress	.31	.66	-1.81 / 2.54
3. Changes in perceived usefulness	-.08	.68	-2.00 / 2.00
4. Changes in academic motivation	-.15	2.61	-6.96 / 9.50

Note. Change scores were created by subtracting the Time 1 score from the corresponding Time 2 score.

Table 6

Distribution of True Intra-Individual Change in Variables from Time 1 to Time 2 (Study 2)

Variables	RCI	Decreased (%)	Unchanged (%)	Increased (%)
CDMSE	.702	10.1	83.1	6.8
Career decision progress	.869	3.4	81.1	15.5
Perceived usefulness	.906	11.6	81.2	7.2
Academic motivation	4.707	2.4	93.7	3.9

Note. RCI = Reliability Change Index. Percentages for decreased, unchanged, and increased were based on the reliable change index (i.e., change greater than one standard deviation above or below the reliable change index is considered reliable change).

Table 7

Correlations between Residual Change Scores (Study 2)

	1.	2.	3.	4.
1. Increases in CDMSE	—	.37***	.19**	.16*
2. Increases in career decision progress		—	.20**	.23**
3. Increases in perceived usefulness			—	.39***
4. Increases in academic motivation				—

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

Testing the role of career development on perceived usefulness. To further test the role of career development on perceived usefulness of school activities, a 4-step hierarchical regression analysis was performed. The two-wave pre-experimental design allowed for the statistical control of Time 1 measures (pre-intervention), and as such, the hierarchical regression analysis assessed the effect of residual change in career development on residual changes in perceived usefulness. It was hypothesized that changes in CDMSE and career decision progress from Time 1 to Time 2 would influence changes in perceived usefulness.

In this hierarchical regression analysis, Time 2 perceived usefulness was regressed onto gender in the first step, followed by the Time 1 measures (i.e., CDMSE, career decision progress, and perceived usefulness) in step 2. In the next two steps the two career development variables were entered separately in the order that respected their proposed sequence (see Figure 1). Thus, Time 2 CDMSE was entered in step 3, followed by Time 2 career decision progress in step 4. Results of this hierarchical regression analysis are

presented in Table 8. The first step of the analysis revealed that gender was not significantly associated with Time 2 perceived usefulness. As expected, all other steps were significant. More specifically, at step 2, Time 1 perceived usefulness was significant and accounted for 33% of the variance in Time 2 perceived usefulness. Step 3 revealed that Time 2 CDMSE was a significant predictor of Time 2 perceived usefulness ($\beta = .31, p < .001$) above and beyond gender and Time 1 measures, and accounted for an additional 6% of the variance. Step 4 indicated that Time 2 career decision progress was significant ($\beta = .18, p < .05$) and contributed an additional 2% of the variance in Time 2 perceived usefulness. In sum, results suggest that changes in CDMSE and career decision progress enhance perceived usefulness of school activities.

Table 8

Results of the Hierarchical Regression Analysis Predicting Time 2 Perceived Usefulness (Study 2)

Step	Variable	R^2	ΔR^2	F	β
1	Gender	.00	.00	.00	.00
2	Time 1 variables	.33***	.33***	24.66***	
	T1 CDMSE				.13
	T1 Career decision progress				-.04
	T1 Perceived usefulness				.52***
3	T2 CDMSE	.39***	.06***	25.82***	.31***
4	T2 Career decision progress	.41***	.02*	22.95***	.18*

Note. * = $p < .05$. ** = $p < .01$. *** $p < .001$. T1 = Time 1; T2 = Time 2.

Testing the role of career development and perceived usefulness on academic self-determined motivation. To assess the effect of changes in career development indices, as well as changes in perceived usefulness on enhancement of academic self-determined motivation, Time 2 academic self-determined motivation was regressed onto gender in the first step, followed by the Time 1 measures (i.e., CDMSE, career decision progress, perceived usefulness, and academic self-determined motivation) in step 2, followed by Time 2 CDMSE in step 3, Time 2 career decision progress in step 4, and Time 2 perceived usefulness in step 5.

Results of the hierarchical regression analysis are presented in Table 9. The first step of the analysis revealed that gender was not significantly associated with Time 2 academic motivation. As anticipated, all other steps were significant. More precisely, at step 2, Time 1 perceived usefulness and Time 1 academic self-determined motivation were significant and accounted for 41% of the variance in Time 2 academic motivation. Step 3 revealed that Time 2 CDMSE was a significant predictor ($\beta = .27, p < .001$) above and beyond gender and Time 1 measures, and accounted for an additional 5% of the variance in academic self-determined motivation. Step 4 indicated that Time 2 career decision progress was significant ($\beta = .16, p < .05$) and contributed an additional 1% of the variance in Time 2 academic motivation. Finally, at step 5, Time 2 perceived usefulness was significant ($\beta = .42, p < .001$) and contributed an additional 10% of the variance. In sum, results suggest that, together, residual change in the career development variables accounted for 6% of the residual change in academic self-determined motivation. In addition, results suggest that residual change in perceived usefulness accounted for 10% of residual change in academic self-determined motivation, above and beyond the changes in the career development indices.

Table 9

Results of the Hierarchical Regression Analysis Predicting Time 2 Academic Motivation (Study 2)

Step	Variable	R^2	ΔR^2	F	β
1	Gender	.01	.01	1.59	.09
2	Time 1 variables	.42***	.41***	28.89***	
	T1 CDMSE				.08
	T1 Career decision progress				-.09
	T1 Perceived usefulness				.23**
	T1 Academic motivation				.49***
3	T2 CDMSE	.47***	.05***	28.80***	.27***
4	T2 Career decision progress	.48***	.01*	25.82***	.16*
5	T2 Perceived usefulness	.58***	.10***	34.15***	.42***

Note. * = $p < .05$. ** = $p < .01$. *** $p < .001$. T1 = Time 1; T2 = Time 2.

Testing the mediating role of perceived usefulness in the relationship between career decision progress and academic motivation. The general model hypothesizes that career decision progress enhances academic self-determined motivation by helping students perceive greater usefulness of their school activities. To test this hypothesis, the mediating role of perceived usefulness in the relationship between career decision progress and academic self-determined motivation was examined using both measurement times. As demonstrated from the correlations between change scores, increases in career decision

progress was associated with increases in academic self-determined motivation. Thus, these analyses examined whether changes in perceived usefulness could explain this relationship.

To test the mediation hypothesis, the four-step procedure recommended by Baron and Kenny (1986) was used, and then, it was followed-up with the Sobel test (Sobel, 1982). According to MacKinnon, Warsi, and Dwyer (1995), the Sobel test is considered to be a very conservative test of mediation. Figure 6 displays an overview of the results of the regression analyses designed to test the mediation using Baron and Kenny's (1986) procedure.

In the first regression analysis, Time 2 academic self-determined motivation was regressed onto Time 1 measures (career decision progress, perceived usefulness and academic self-determined motivation) in step 1 to control for baseline scores, and Time 2 career decision progress was entered in step 2 to ensure that there was an effect to be mediated ($\beta = .25, p < .001$). Next, Time 2 perceived usefulness (the mediator) was regressed onto the Time 1 measures (career decision progress, perceived usefulness and academic self-determined motivation) in step 1 to control for baseline scores, and Time 2 career decision progress in step 2 to ensure that the mediator was significantly related to the independent variable ($\beta = .29, p < .001$). Finally, Time 2 academic self-determined motivation was regressed onto the Time 1 measures (career decision progress, perceived usefulness, and academic self-determined motivation) in step 1 to control for baseline scores, as well as Time 2 career decision progress ($\beta = .12, p < .05$) and Time 2 perceived usefulness ($\beta = .44, p < .001$) in step 2. Results showed that, after controlling for Time 1 measures, when both Time 2 career decision progress and Time 2 perceived usefulness were entered into the equation, the beta coefficient between Time 2 career decision progress and academic self-determined motivation dropped from $.25 (p < .001)$ to $.12 (p < .05)$.

These findings were also replicated with the Sobel test (Sobel statistic = 4.18, $p < .001$), which further supported the role of perceived usefulness as a significant mediator in the relationship between career decision progress and academic self-determined motivation.

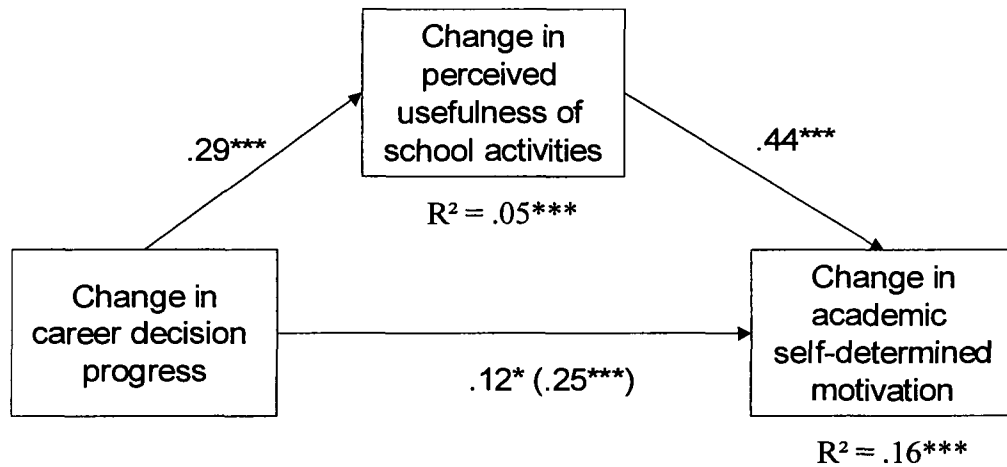


Figure 6. Results of regression analyses testing the mediation hypothesis (Study 2).

Note. * = $p < .05$. ** = $p < .01$. *** $p < .001$. The beta coefficient in parentheses refers to the total effect in the relationship between change in career decision progress and change in academic self-determined motivation.

Chapter Summary and Discussion

Study 2 was designed to further examine the role of career development in facilitating academic self-determined motivation by addressing two limitations of Study 1. The main contribution of Study 2 lies in the methodology employed to investigate the relationship among the variables. The use of a pre-experimental design provided a more rigorous means of assessing the role of career development indices on educational processes (i.e., perceived usefulness of school activities and academic self-determined motivation). In short, the present study examined how residual change in the career development variables, following a career development course, was associated with improvements in perceived usefulness and academic self-determined motivation. Additionally, the role of perceived usefulness in the prediction of academic self-determined motivation was explored, and its role as a mediator in the relationship between career decision progress and academic self-determined motivation was tested.

The main analyses of Study 2 were comprised of four steps. First, the pattern of residual change in the variables from baseline to post-intervention scores was examined. Results examining overall mean differences revealed that career decision progress was the only variable to significantly increase from Time 1 to Time 2. Although results did not reveal an overall mean-level increase in CDMSE, perceived usefulness, and academic self-determined motivation from Time 1 to Time 2, results provided evidence that intra-individual change had occurred.

Based on results obtained with the reliable change index, findings suggested that not all participants benefited from the career development intervention. For instance, 10.1% of the students reported experiencing a decrease in CDMSE, and 3.4% of the students decreased in career decision progress. A possible explanation may be that the course brought to light

certain career decision-making skills that students would not have otherwise been aware of. In addition, career development interventions may create anxiety for students who display a chronic indecision profile (Multon et al., 1995). A few recent reports have also highlighted some important shortcomings of this course, such as a lack of structure in the way that the course is delivered, as well as a lack of resources and domain-specific training for teachers (Gazzola & Samson, 2003; Samson & Gazzola, 2007). These issues can create a high level of variability across different classes in the way that the course is delivered and in its effectiveness at reaching the curriculum's objectives. Nonetheless, some students experienced an increase in the career development indices. Results of the true change distributions indicate that 6.8% of the participants reported an increase in CDMSE, and 15.5% increased in career decision progress. Similarly, some students experienced an increase in the educational variables (7.2% for perceived usefulness, and 3.9% for academic self-determined motivation).

By examining changes at the intra-individual level, it was possible to determine whether growth in career development indices was associated with positive changes in perceived usefulness and in academic self-determined motivation. Correlations among residual change scores showed that students who experienced growth in CDMSE or in career decision progress reported positive changes in perceived usefulness and in academic self-determined motivation. These analyses also showed that an increase in perceived usefulness of school activities was associated with an increase in academic self-determined motivation.

Second, results from the first hierarchical regression analysis revealed that changes in CDMSE and career decision progress predicted improvements in perceived usefulness of school activities. Third, results from the second hierarchical regression analysis revealed that growth in career development (i.e., CDMSE and career decision progress) predicted

enhancement in academic self-determined motivation. Moreover, results from this hierarchical regression analysis demonstrated that improvement in perceived usefulness of school activities contributed to positive changes in academic self-determined motivation above and beyond the effects accounted for by growth in the career development indices. Lastly, results of the mediation tests suggest that perceived usefulness is an important process variable that accounts for the impact of career decision progress on academic self-determined motivation.

In line with the results of Study 1, gender differences were found on academic self-determined motivation before the course, such that girls reported higher levels of academic self-determined motivation than boys. Girls also reported higher levels of CDMSE at both measurement points. These findings are in line with research showing that girls often display a more self-determined profile than boys (e.g., Vallerand et al., 1989), and they are more likely than boys to endorse educational goals (e.g., Nurmi, Poole, & Seginer, 1995; Yowell, 2000). However, unlike results of Study 1, gender was not significantly related to Time 2 academic self-determined motivation in the present study. This may suggest that career development interventions are more effective at promoting academic self-determined motivation for boys.

Although results of the present study lend support to the hypotheses, a few limitations are worth noting. First, despite having pre and post intervention measures for all the variables, the design did not include a control group. Given that career development naturally unfolds across time, it is possible that gains in career decision progress would have occurred without the career development intervention. As such, direction of causality among variables is not assured. Another limitation concerns the low alpha obtained on some of the academic motivation subscales. This may be due to the selection of items in the abridged

version. In addition, the attrition of participants from Time 1 to Time 2 may represent another limitation. The attrition analyses revealed that participants who only completed the Time 1 questionnaire reported greater levels of career decision progress than those who completed both measures. In addition, students who only completed the Time 1 or the Time 2 questionnaire were significantly older than those who completed both measurement times. This suggests that the sample may not be completely representative of the entire group. Nonetheless, as mentioned earlier, overall participation was high as demonstrated with the 82% retention rate from Time 1 to Time 2.

A final limitation worth mentioning is the fact that the study did not control for other variables that might influence academic self-determined motivation. As demonstrated in previous research, need satisfaction in the school setting promotes academic self-determined motivation (e.g., Fortier et al., 1995; Guay & Vallerand, 1997; Vallerand et al., 1997). Thus, it is possible that students' academic need satisfaction was predominantly responsible for their level of academic self-determined motivation, irrespective of their career development.

Despite these limitations, results of this pre-experimental study were consistent with key findings of Study 1, in that both CDMSE and career decision progress predicted academic self-determined motivation. In addition, the present study showed that the career development variables predicted perceived usefulness of school activities, which in turn, further contributed to academic self-determined motivation.

CHAPTER 4

According to SDT (Ryan & Deci, 2002), satisfaction of basic psychological needs for competence, relatedness, and autonomy is necessary for optimal development and functioning. In the academic setting, research has shown that academic need satisfaction is an important antecedent of academic self-determined motivation (e.g., Fortier et al., 1995; Guay & Vallerand, 1997). Research also suggests that satisfaction of basic psychological needs in the career domain promotes career development. For instance, consistent with the results of Studies 1 and 2, vocational research has demonstrated that perceived competence regarding career decision-making (i.e., measured with the CDMSE construct) is positively related to a number of career development indices (e.g., Bartley & Robitschek, 2000; Gushue et al., 2006). However, in addition to CDMSE, research has shown that perceived career decision-making autonomy (e.g., Guay et al., 2006; Guay et al., 2003) and feelings of relatedness (see Whiston & Keller, 2004 for a review) could also influence career development.

Thus Studies 3a and 3b were designed to integrate the role of the three psychological needs as part of more comprehensive model linking career development to academic self-determined motivation. An overview of the hypothesized model is depicted in Figure 4. Integrating the needs as part of the research design addressed some limitations brought forth in Study 2. First, it provided an opportunity to assess the independent role of career development indices on perceived usefulness of school activities and on academic self-determined motivation after considering the effects of academic need satisfaction. Second, it considered more comprehensively the role of need satisfaction in the career domain by measuring satisfaction of the three basic psychological needs pertaining to career decision-making, rather than focusing exclusively on competence (i.e., self-efficacy).

The model was tested in two stages. First, given that the relationship between academic need satisfaction, perceived usefulness, and academic self-determined motivation had never been formally tested, these links were explored in Study 3a. Study 3b then integrated these results into the more comprehensive model, which linked variables from the two life domains.

Study 3a

The purpose of Study 3a was to examine the relationship between academic need satisfaction, perceived usefulness of school activities, and academic self-determined motivation. In addition, this study aimed to test the mediating role of perceived usefulness of school activities in the relationship between academic need satisfaction and academic self-determined motivation.

In the school setting, social-contextual factors that promote satisfaction of basic psychological needs are generally experienced as informational. In particular, autonomy supportive practices involve different behaviours by social agents (e.g., teachers) that support and enhance students' basic psychological needs for autonomy, competence, and relatedness (Reeve, Bolt, & Cai, 1999; Reeve & Jang, 2006). For instance, practices such as spending time listening and presenting school activities in a low controlling fashion likely have a positive effect on students' sense of relatedness. Other behaviours such as encouraging students' efforts and providing positive feedback are apt to enhance students' feeling of competence. Similarly, practices that revolve around offering choices and allowing students to work independently are likely to enhance students' feelings of autonomy.

Autonomy supportive practices, which support basic psychological needs, have also been shown to enhance perceived usefulness. For example, the work of Deci et al. (1994) showed that providing a meaningful rationale to engage in an activity predicted changes in perceived usefulness and enjoyment of a boring task. Results of this study also found that environments where two autonomy supportive practices were employed (i.e., conveying choice and low controllingness) enhanced perceived usefulness. Consistent with this finding, Reeve et al. (2002) showed that providing a rationale in an autonomy supportive way enhanced participants' personal endorsement and valuing of an uninteresting activity. Thus,

it was hypothesized that academic need satisfaction would be positively associated with perceived usefulness of school activities and academic self-determined motivation. In addition, it was anticipated that perceived usefulness of school activities would mediate the relationship between academic need satisfaction and academic self-determined motivation.

Method

Participants and Procedure

In Study 3a, 647 grade 7 students attending one of 17 French schools in the Ottawa region were asked to complete a short electronic questionnaire during class time as part of a school board initiative concerned with identifying students who were at risk of dropping out. Of these participants, seven were identified as univariate outliers with a z-scores $> |3.29|$ on the academic needs variable and three were identified as multivariate outliers using the Mahalanobis distance criteria $\chi^2(3) = 16.27$. The final sample included 637 participants (294 boy and 343 girls) with a mean age of 12.6 years. No significant gender difference emerged on the variables used in this study.

Measures

Academic need satisfaction. To assess academic need satisfaction, items were created by motivational researchers in collaboration with members of a local school board. These items were designed to tap into SDT's three postulated basic psychological needs. A 6-item scale was used to assess autonomy, competence, and relatedness in the school context (two items per need). Students were asked to indicate the extent to which they agreed with the items on a scale ranging from 1 (*not at all*) to 5 (*totally*). A sample item representing autonomy was, "I have a lot of freedom in school" ($\alpha = .36$). A sample item representing competence was, "I'm at least as intelligent as the other students" ($\alpha = .48$). A sample item

representing relatedness was, “I have good friends at school” ($\alpha = .62$). Cronbach alpha for the six items combined was low ($\alpha = .55$).

Perceived usefulness of school activities. Three items of the scale used in Study 2 were used to assess perceived usefulness of school activities. Students were asked to rate the degree to which they were in agreement with the items on a 5-point scale ranging from 1 (*not at all*) to 5 (*completely*). The three items were: “What I learn in school will be useful to my everyday life,” “The skills I learn in class will be useful to my future career,” and “I make the connection between what I learn in school and my life in general.” Cronbach alpha was satisfactory ($\alpha = .77$).

Academic self-determined motivation. Academic self-determined motivation was assessed using an adapted version of the Self-Regulation Scale (Ryan & Connell, 1989). Participants were presented with three stem questions: (1) “Why do you go to class?” (2) “Why do you do your homework?” and (3) “Why do you pay attention and participate in class?” Each stem question was followed by four reasons, which represented four different regulation styles proposed by SDT (i.e., intrinsic, identified, external, and amotivation). Other validated motivation scales have used four motivation subscales to represent the self-determination continuum (e.g., Guay, Vallerand, & Blanchard, 2000). Participants were asked to rate the extent to which each item corresponded to the reasons they performed the activities on a 5-point scale ranging from 1 (*not at all*) to 5 (*totally*). The academic self-determined motivation index was calculated using the following formula: (intrinsic motivation * 2) + (identified motivation * 1) – (external motivation * 1) – (amotivation * 2). Using this formula, the academic motivation index ranged from –9.33 to 12.00. Internal consistency of the subscales was adequate for three of the subscales and lower for

amotivation (i.e., $\alpha = .73, .76, .77, .66$, for intrinsic, identified, external, and amotivation respectively).

Results

Table 10 presents descriptive statistics and correlations between the variables. As shown, all variables were significantly related to one another.

Table 10

Descriptive Statistics and Correlations between the Variables (Study 3a)

	M	SD	1.	2.	3.
1. Academic need satisfaction	3.87	.58	—	.37***	.49***
2. Perceived usefulness	3.87	.83		—	.61***
3. Academic motivation	4.68	4.26			—

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

To test the mediation hypothesis, Baron and Kenny's (1986) procedure and the Sobel test were employed. Results of the regression analyses designed to test the mediation are presented in Figure 7. First, academic motivation was regressed onto academic needs ($\beta = .49, p < .001$), indicating that there was an effect to be mediated. Then perceived usefulness was regressed onto academic need satisfaction to ensure that the mediator was significantly related to the independent variable ($\beta = .37, p < .001$). Finally, academic motivation was regressed onto both academic need satisfaction ($\beta = .30, p < .001$) and perceived usefulness ($\beta = .49, p < .001$). Results showed that when both need satisfaction and perceived

usefulness were entered into the equation, the beta coefficient between academic need satisfaction and academic motivation dropped from .49 ($p < .001$) to .30 ($p < .001$), providing initial evidence of a partial mediation effect. More precisely, while there was a drop in this beta coefficient with the introduction of the mediator, the direct link between academic need satisfaction and academic self-determined motivation remained significant. The mediation effect was further assessed using the Sobel test. The Sobel test statistic was significant (Sobel statistic = 2.76, $p < .01$). Taken together, results of the regression analyses and the Sobel test suggest that perceived usefulness is a partial mediator in the relationship between academic need satisfaction and academic self-determined motivation.

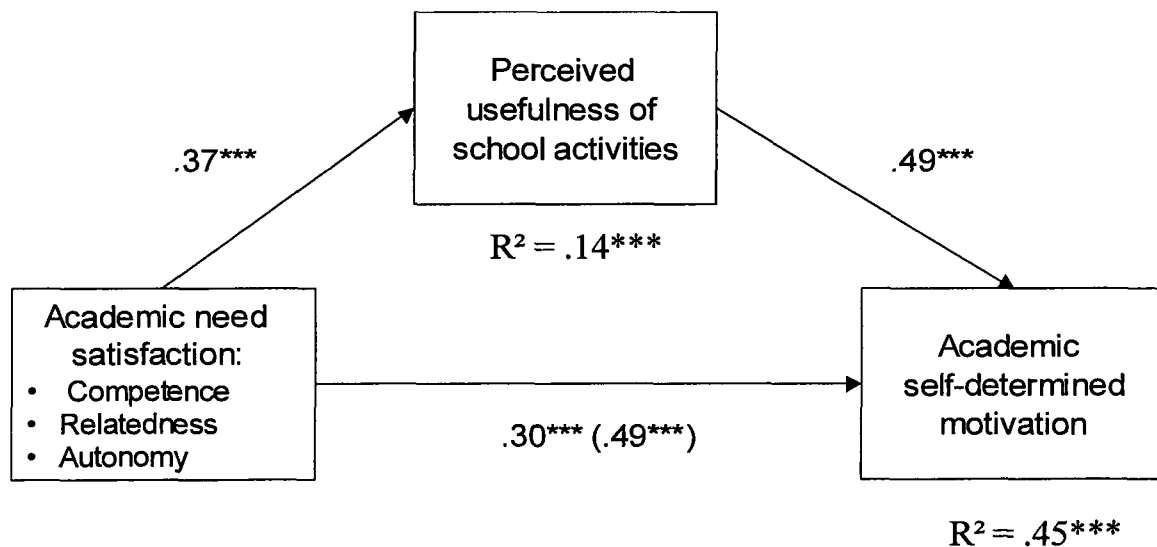


Figure 7. Results of regression analyses testing the mediation hypothesis (Study 3a).

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

Results of Study 3a suggest that academic need satisfaction promotes academic self-determined motivation, in part by helping students perceive greater usefulness of their school activities. Study 3b sought to integrate these findings in the final proposed model.

Study 3b

The first goal of Study 3b was to examine the role of the career development variables on perceived usefulness of school activities after statistically controlling for academic need satisfaction. It was expected that career decision-making need satisfaction (i.e., competence, relatedness, and autonomy) and career decision progress would contribute to the prediction of perceived usefulness beyond the effect of academic need satisfaction.

The second goal was to examine the role of the career development variables and perceived usefulness on academic self-determined motivation after accounting for academic need satisfaction. It was anticipated that career decision-making need satisfaction, career decision progress, and perceived usefulness would add to the prediction of academic self-determined motivation after accounting for academic need satisfaction.

The third goal of Study 3b was to test a more comprehensive model linking variables from the career development domain to variables from the academic domain (see Figure 4). More specifically, as demonstrated in Study 3a, it was anticipated that academic need satisfaction would relate directly to perceived usefulness of school activities and academic self-determined motivation. Second, in line with Guay et al.'s (2003) findings, career decision-making need satisfaction was expected to be positively associated with career decision progress. Although academic need satisfaction was expected to be positively correlated to career decision progress, it was hypothesized that need satisfaction specific to the career domain would account for this variance and contribute additional variance in career decision progress. Thus, when considering needs in both domains, it was hypothesized that academic need satisfaction would not be directly associated with career decision progress. Third, consistent with Study 2, career decision progress was hypothesized

to be associated with perceived usefulness, and in turn, with academic self-determined motivation.

Finally, the fourth goal of this study was to test the mediating role of perceived usefulness in two relationships. As shown in Study 2, perceived usefulness was anticipated to mediate the relationship between career decision progress and academic self-determined motivation, and as shown in Study 3a, it was anticipated to partly mediate the relationship between academic need satisfaction and academic self-determined motivation.

Method

Participants and Procedure

First year undergraduate students were recruited from a local university participant pool. The choice of first year undergraduate students as a sample in a study on career development and academic motivation seemed relevant because many students enter university in late adolescence. In addition, research shows that career indecision remains relatively high in college and university samples (e.g., Cohen et al., 1995; Guay et al., 2006). Participants were invited to complete a 2-part online questionnaire. Time 1 questionnaire was completed within the first half of the semester and Time 2 questionnaire was completed in the second half of the semester. Time 1 was designed to assess participants' academic need satisfaction and career decision-making need satisfaction. Time 2 assessed career decision progress, perceived usefulness of school activities, and academic self-determined motivation. Participants who completed both measurement times were retained for the analyses. Details of the complete samples are described as part of the data screening in the results section.

The final sample included 243 participants (males = 63, females = 180) with a mean age of 20.2 years. Among these participants, 186 participants were enrolled in an English

program, while the other 57 were enrolled in a French program. The majority reported Canada to be their country of origin (70%), while the others reported varied countries of origin. The majority of students had attended high school in the previous year (62%), others had attended university (24%), while the remaining sample responded to “other” (14%).

Measures

Academic need satisfaction. Need satisfaction in the academic domain was assessed using an adapted version of a measure of need satisfaction at work (Ilardi et al., 1993). This scale was comprised of 12 items and described the degree to which participants felt that their autonomy, competence, and relatedness needs were satisfied in the academic context. Each of the three needs was assessed with a 4-item subscale. Participants were asked to think about how each item related to their experience in university, and then were asked to indicate the extent to which it was true for them using a 7-point scale ranging from 1 (*not at all true*) to 7 (*very true*). The items were preceded with the stem statement, “In general, in university” followed by the items. Sample items included: “I feel like I can pretty much be myself in my daily situations” (autonomy), “I do not get much of a chance to show how capable I am” (competence, reversed scored), “I get along with people I come into contact with” (relatedness). A total scale score was derived by calculating the mean of the 12 items. The full 21-item scale designed to assess basic need satisfaction in the workplace has been successfully used in previous studies (e.g., Vansteenkiste et al., 2007). Vansteenkiste et al. (2007) reported an internal consistency of .84 for the total scale. Cronbach alphas for the subscales and total scale were: autonomy ($\alpha = .64$), competence ($\alpha = .67$), relatedness ($\alpha = .79$), and total scale ($\alpha = .82$).

Career decision-making need satisfaction. Career decision-making need satisfaction was assessed using an adapted version of a measure of need satisfaction at work (Ilardi, et

al., 1993). This scale was comprised of 12 items and described the degree to which participants felt that their autonomy, competence, and relatedness needs were satisfied as it pertained to their career decision-making. Each of the three needs was assessed with a 4-item subscale. Participants were asked to think about how each item related to their career choice or the exploration of career choices and then were asked to indicate the extent to which each of the items were true for them using a 7-point scale ranging from 1 (*not at all true*) to 7 (*very true*). Sample items included: “I feel like I am free to decide for myself what career to choose” (autonomy), “I have been able to learn interesting new skills while exploring career choices” (competence), “I feel able to share my career concerns with the people I interact with” (relatedness). Means of the 4-item scales were calculated to derive a score representing each need. The mean of the 12 items was also calculated to derive a total score. Cronbach alphas for each subscale and for the total scale were as follows: autonomy ($\alpha = .70$), competence ($\alpha = .62$), relatedness ($\alpha = .58$), and total scale ($\alpha = .79$).

Career decision progress. Two dimensions of career decision progress were assessed: exploration and career decidedness. To assess exploration, three subscales of the Career Exploration Survey (CES; Stumpf et al., 1983) were used, namely the Intended-Systematic Exploration (3 items), the Self-Exploration (5 items), and the Environmental Exploration (6 items) subscales. The items of these scales assess the extent to which participants have engaged in various exploration behaviours during the previous three months on a 5-point rating scale. To retain consistency across measurement scales in this study, a 7-point scale ranging from 1 (*A little*) to 7 (*A great deal*) was used. Moreover, the 3-month exploration period, as formulated in the original scale, was extended to 6 months. Sample items were: “Experimented with different career activities” (Intended-Systematic Exploration, $\alpha = .86$), “Focused my thoughts on me as a person” (Self-Exploration, $\alpha = .87$),

and “Obtained information on specific jobs or companies” (Environmental Exploration, $\alpha = .89$). The mean of the 14 items was computed to form a total exploration score. Content and construct validity of the CES scales have been demonstrated by Stumpf et al. (1983). Additionally, the scales have been shown to correlate to predicted outcomes (e.g., Blustein, 1989; Blustein et al., 1989). In the present study, the internal consistency of the 14 items combined was .91.

To assess the career decidedness dimension of career decision progress, a 7-item scale was used. This measure consisted of the same 3 items used in Studies 1 and 2 (Gingras & Chagnon, 1997), two new items that were created for the purpose of this study, and two items from the Focus subscale of the Career Exploration Survey (Stumpf et al., 1983). The items assessed the degree to which respondents were certain about their career direction. Participants were asked to rate how true the items were for them on a 7-point scale ranging from 1 (*Not at all true of me*) to 7 (*Very true of me*). Sample items were: “My career goals are clear,” and “I know the type of job that is best for me.” The mean of the seven items was computed to form a total career decidedness score. Cronbach alpha for the 7 items combined was .91.

The correlation between exploration and career decidedness was .40 ($p < .001$). The composite score of career decision progress was derived by calculating the mean of the total scale score of exploration and career decidedness. Cronbach alpha with all items (14 exploration items and 7 career decidedness items) was .91.

Perceived usefulness of academic activities. Perceived usefulness of school activities was assessed using a 6-item scale. The scale included the same four items taken from Study 2, and two additional items were added. Items of this scale were adapted from the “relevance of science” subscale of the ROSE questionnaire (Jenkins & Nelson, 2004).

Participants were asked to rate the extent to which the items were true for them using a 7-point scale ranging from 1 (*not at all*) to 7 (*completely*). The 5-point rating scale used in Study 2 was changed to a 7-point scale in order to standardize the response scales across measures of this study. Sample items included: “What I learn in school will be useful to my everyday life” and “I make the connection between what I learn in school and my life in general.” Cronbach alpha was satisfactory ($\alpha = .80$).

Academic self-determined motivation. To assess academic self-determined motivation, participants responded to an adapted version of the Self-Regulation Scale (Ryan & Connell, 1989). In this version, the integrated scale was added to represent all six types of regulation postulated by Ryan and Deci (2002). Unlike younger participants who are not developmentally advanced enough to display this type of regulation (Deci, Ryan, & Williams, 1996), university students were deemed mature enough to warrant the use of this subscale (Vallerand, 1997). Participants were asked to indicate on a 7-point scale the extent to which the reasons stated for performing different school activities were true for him or her. Participants were presented with three stem questions: (1) “Why do you go to university?” (2) “Why do you read academic related material?” and (3) “Why do you study for exams?” Each stem question was followed by six reasons, which represent the six different regulation styles postulated by SDT (i.e., intrinsic, integrated, identified, introjected, external, and non-regulation). Participants were asked to rate the extent to which each item corresponded to the reasons they perform the activities on a 7-point scale ranging from 1 (*not at all*) to 7 (*exactly*). The academic self-determined motivation index was calculated using the following formula: (intrinsic * 3) + (integrated * 2) + (identified * 1) – (introjected * 1) – (external * 2) – (amotivation * 3). The internal consistency of the

subscales was satisfactory: intrinsic ($\alpha = .73$), integrated ($\alpha = .70$), identified ($\alpha = .71$), introjected ($\alpha = .76$), external ($\alpha = .74$), and amotivation ($\alpha = .83$).

Overview of the Analyses

Analyses of Study 3b included data screening, preliminary analyses (i.e., descriptive statistics and correlations), and main analyses. The main analyses were comprised of four sections. First, a hierarchical regression was performed to assess the role of the career development variables on perceived usefulness, while statistically controlling for academic need satisfaction. Second, another hierarchical regression was performed to assess the role of the career development variables and perceived usefulness on academic self-determined motivation, after statistically controlling for academic need satisfaction. Third, the hypothesized model depicted in Figure 4 was tested using EQS. Lastly, the mediating role of perceived usefulness was examined in two relationships, namely between: (1) career decision progress and academic self-determined motivation, and (2) academic need satisfaction and academic self-determined motivation.

Results

Data Screening

In this study, 459 participants completed the first questionnaire and 245 participants completed both Time 1 and Time 2 questionnaires. Although attrition was high from Time 1 to Time 2 (retention rate = 53%), those who only completed the questionnaire at Time 1 did not differ on Time 1 measures from those who completed both parts of the study. Similarly, these participants did not differ on age or gender. Of the 245 participants who completed both parts, one participant was identified as a univariate outlier with a z-score below -3.29 on Time 2 academic motivation. In addition, one multivariate outlier was identified using the Mahalanobis distance criteria $\chi^2(5) = 20.52$. These two outliers were thus excluded from

the sample, and thus, the final sample included 243 participants (males = 63, females = 180). Variables were distributed normally (skewness ranged from -.76 to -.19; kurtosis ranged from -.72 to .14).

Preliminary Analyses

Table 11 presents descriptive statistics of the variables in this study. Table 12 presents correlations between the variables. Independent samples *t*-tests revealed a significant gender difference on career decision-making need satisfaction, such that females reported higher satisfaction of those needs ($M = 5.46$) than males ($M = 5.16$, $t(241) = -2.87$, $p < .01$). However, gender did not emerge as a significant variable in the regression analyses or in the hypothesized model, so it was not included in subsequent analyses.

Table 11

Descriptive Statistics of Main Variables (Study 3b)

	Mean	SD	SK	KU
T1 Academic need satisfaction	5.15	.82	-.27	-.36
T1 Career D-M need satisfaction	5.37	.84	-.32	-.44
T2 Career decision progress	4.72	.99	-.35	.38
T2 Perceived usefulness	5.60	.94	-.45	-.46
T2 Academic motivation	8.96	10.41	-.19	.23

Note. T1 = Time 1; T2 = Time 2; SD = Standard Deviation; SK = Skewness; KU = Kurtosis; D-M = decision-making.

Table 12

Correlations between the Main Variables (Study 3b).

	1.	2.	3.	4.	5.
1. T1 Academic need satisfaction	—	.66***	.40***	.42***	.44***
2. T1 Career D-M need satisfaction		—	.58***	.46***	.42***
3. T2 Career decision progress			—	.49***	.39***
4. T2 Perceived usefulness				—	.54***
5. T2 Academic motivation					—

Note. *** $p < .001$. D-M = decision-making; T1 = Time 1; T2 = Time 2.

Main Analyses

Testing the unique contribution of the career development variables on perceived usefulness. To examine whether the career development variables contributed to perceived usefulness above and beyond academic need satisfaction, a three-step hierarchical regression analysis was performed, in which Time 2 perceived usefulness served as the criterion variable. Time 1 academic need satisfaction was entered in Step 1, followed by Time 1 career decision-making need satisfaction in Step 2, and Time 2 career decision progress in Step 3. Results of this hierarchical regression analysis are presented in Table 13.

Results revealed that Time 1 academic need satisfaction was significant ($\beta = .42, p < .001$) and contributed 17% of the variance in Time 2 perceived usefulness. Step 2 showed that Time 1 career decision-making need satisfaction significantly predicted Time 2 perceived usefulness ($\beta = .32, p < .001$), and contributed an additional 6% of the variance above and beyond Time 1 academic need satisfaction. Step 3 showed that Time 2 career

decision progress was also significantly related to Time 2 perceived usefulness ($\beta = .30, p < .001$), and contributed an additional 7% of the variance above and beyond variance accounted for by Time 1 academic need satisfaction and Time 1 career decision-making need satisfaction. Together, the career development indices contributed 13% of the variance in Time 2 perceived usefulness.

Table 13

Results of the Hierarchical Regression Analysis Predicting T2 Perceived Usefulness (Study 3b)

Step	Variable	R^2	ΔR^2	F	β
1	T1 academic need satisfaction	.17***	.17***	50.1	.42***
2	T1 career D-M need satisfaction	.23***	.06***	35.8	.32***
3	T2 career decision progress	.30***	.07***	34.6	.33***

Note. *** $p < .001$. T1 = Time 1; T2 = Time 2; D-M = decision-making.

Testing the unique contribution of the career development variables and perceived usefulness on academic motivation. To examine the role of the career development variables and perceived usefulness on academic self-determined motivation, above and beyond academic need satisfaction, a 4-step hierarchical regression analysis was performed, in which academic self-determined motivation served as the criterion variable. The independent variables were entered in the following order: Time 1 academic need satisfaction was entered in Step 1, followed by Time 1 career decision-making need satisfaction in Step 2, Time 2 career decision progress in Step 3, and Time 2 perceived usefulness in Step 4.

Results of this hierarchical regression analysis are presented in Table 14. At step 1, Time 1 academic need satisfaction was significant ($\beta = .44, p < .001$) and contributed 19% of the variance. At step 2, Time 1 career decision-making need satisfaction was significant ($\beta = .23, p < .01$) and contributed an additional 3% of the variance beyond what had been accounted for by Time 1 academic need satisfaction. The third step showed that Time 2 career decision progress was also significant ($\beta = .22, p < .01$) and explained an additional 3% of the variance. Together, the career development indices contributed 6% of the variance in Time 2 academic self-determined motivation, over and above Time 1 academic need satisfaction. Finally, at step 4, Time 2 perceived usefulness was significant ($\beta = .39, p < .001$), and contributed an additional 10% of the variance in Time 2 academic motivation above and beyond the effects of Time 1 need satisfaction in both domains and Time 2 career decision progress.

Table 14

Results of the Hierarchical Regression Analysis Predicting T2 Academic Motivation (Study 3b)

Step	Variable	R^2	ΔR^2	F	β
1	T1 academic need satisfaction	.19***	.19***	56.7	.44***
2	T1 career D-M need satisfaction	.22***	.03**	33.8	.23**
3	T2 career decision progress	.25***	.03**	26.7	.22**
4	T2 perceived usefulness	.35***	.10***	32.7	.39***

Note. ** = $p < .01$. *** $p < .001$. T1 = Time 1; T2 = Time 2; D-M = decision-making.

Testing the hypothesized model. To test the proposed model, a path analysis with manifest variables was conducted using EQS (Bentler, 2003). As recommended by Kline (1998), four indices were used to evaluate the fit of the proposed model. First, the χ^2 statistic is a test of significance between the proposed model and a saturated version of that same model. A low non-significant chi-square value thus indicates that the difference between these two models is not significantly different from one another, indicative of a good fitting model (Kline, 1998). Second, the CFI describes the overall proportion of explained variance by comparing the hypothesized model with the null model estimated with the same data. To evaluate goodness of fit using the CFI, Hu and Bentler (1999) recommend using a stringent criteria of .95 or greater. Third, the non-normed fit index (NNFI; Tucker & Lewis, 1973) includes an adjustment of the proportion of explained variance for model complexity. An adequate fit with this index is reflected with a value greater than .90 (Kline, 1998). Finally, the Standardized Root Mean Square Residual (SRMSR) analyses average standardized discrepancies between the predicted covariance of the specified model and the actual observed covariance. Values of .06 or lower indicate that the model adequately fits the data (Hu & Bentler, 1999).

Overall, the results showed that the hypothesized path analysis provided adequate fit to the data: $\chi^2(4, 243) = 6.27, p = .18$, CFI = .995, NNFI = .987, and SRMR = .032. In addition, all proposed regression coefficients were significant ($p < .01$). Results of the model are presented in Figure 8. Consistent with results obtained in Study 3a, Time 1 academic need satisfaction was directly associated with Time 2 perceived usefulness and Time 2 academic self-determined motivation. In addition, the covariance between Time 1 academic need satisfaction and Time 1 career decision-making need satisfaction was significant.

Consistent with Guay et al.'s (2003) results, Time 1 career decision-making need satisfaction was positively related to Time 2 career decision progress. As in Study 2, Time 2 career decision progress was associated with greater Time 2 perceived usefulness, and in turn, with greater Time 2 academic self-determined motivation.

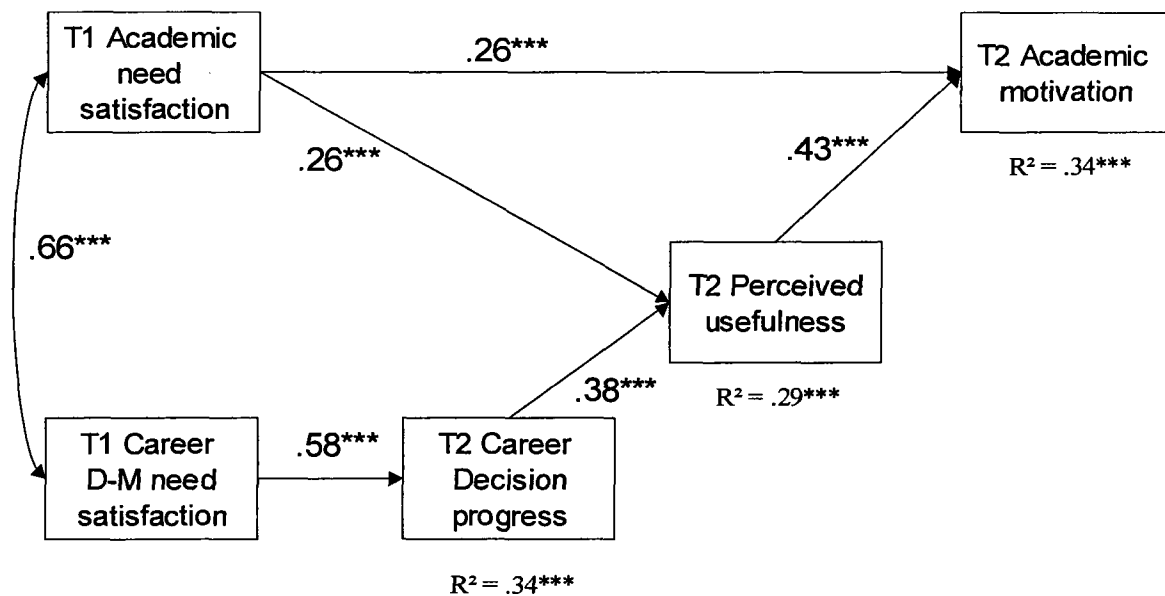


Figure 8. Results of the EQS path analyses testing the hypothesized model (Study 3b).

Note. $*** = p < .001$. T1 = Time 1; T2 = Time 2; D-M = decision-making.

Testing the mediation hypotheses. As demonstrated in Figure 8, Time 2 perceived usefulness was hypothesized to significantly mediate the relationship between Time 2 career decision progress and Time 2 academic motivation, as well as partially mediate the relationship between Time 1 academic need satisfaction and Time 2 academic motivation. The EQS program was used to test these mediation hypotheses. This technique allows for simultaneous computation and testing of the significance level of total, direct, and indirect effects, while controlling for the relationships between the other variables in the model (James, Mulaik, & Brett, 2006). The total effect of an independent variable on a dependent variable can be decomposed into a direct and an indirect effect. A direct effect represents the direct relationship between these two variables. In contrast, the indirect effect refers to the degree to which a mediating variable reduces the effect of the independent variable on the dependent variable (Kenny, 2008). When both the indirect and the direct effects are significant, the mediation is considered only partial. Conversely, a significant indirect effect, along with a non-significant direct effect, is indicative of a full mediation.

Table 15 presents the total, direct, and indirect effects in the two relationships hypothesized to be mediated by perceived usefulness. Results show that Time 2 perceived usefulness mediated the relationship between Time 2 career decision progress and Time 2 academic self-determined motivation (indirect effect, $\beta = .15, p < .001$) and accounted for 58% of the variance in this relationship. Time 2 perceived usefulness also mediated the relationship between Time 1 academic need satisfaction and Time 2 academic self-determined motivation (indirect effect, $\beta = .10, p < .001$) and accounted for 30% of the variance in this relationship. However, this mediation was only partial because the direct effect in this relationship was significant (direct effect, $\beta = .23, p < .001$).

Table 15

Total, Direct, and Indirect Effects of Parameter Estimates (Study 3b)

Parameter	Total effect B	Direct effect β	Indirect effect β
Time 1 academic need satisfaction → Time 2 academic self-determined motivation	.33***	.23***	.10***
Time 2 career decision progress → Time 2 academic self-determined motivation	.26***	.11	.15***

Note. *** $p < .001$.

Chapter Summary and Discussion

The main purpose of Studies 3a and 3b was to integrate more comprehensively the role of psychological need satisfaction in explaining the relationship between career development and academic self-determined motivation. Incorporating psychological need satisfaction to this investigation served three important functions. First, it addressed one of the limitations of Study 2 by evaluating the contribution of career development variables (i.e., career decision-making need satisfaction and career decision progress) on perceived usefulness and academic self-determined motivation, after controlling for academic need satisfaction. Second, it provided a more complete assessment of need satisfaction in the career domain by considering not just CDMSE (i.e., competence), but also perceived autonomy and relatedness as they pertain to career decision-making. Third, it enabled the testing of a model inspired by SDT, which integrated variables from two related life domains (i.e., career and educational).

The results generally supported the hypotheses. Study 3a provided preliminary evidence that academic need satisfaction was positively associated with both perceived usefulness of school activities and academic self-determined motivation. In addition, findings indicated that perceived usefulness partially mediated the relationship between academic need satisfaction and academic self-determined motivation.

Results of Study 3b showed that career decision-making need satisfaction (i.e., composite score of career decision-making competence, autonomy, and relatedness) and career decision progress contributed to the prediction of perceived usefulness of school activities after statistically controlling for academic need satisfaction. In addition, results showed that career decision-making need satisfaction, career decision progress, and

perceived usefulness contributed to the prediction of academic self-determined motivation above and beyond the effects of academic need satisfaction.

To further support the associations among the variables, a model linking career development indices to key educational outcomes was tested. First, the model replicated findings of Study 3a, in which academic need satisfaction was associated with perceived usefulness and academic self-determined motivation. As illustrated in Figure 8, and as evidenced from the direct and indirect effects, perceived usefulness partially mediated the relationship between academic need satisfaction and academic self-determined motivation.

Results of the model also showed that career decision-making need satisfaction was associated with career decision progress. While Studies 1 and 2 focused exclusively on the role of CDMSE (i.e., competence in making career decisions) as a key antecedent of career decision progress, Study 3b also considered the role of career decision-making autonomy and career decision-making relatedness. Despite the inclusion of these two needs in Study 3b, the correlation between career decision-making need satisfaction and career decision progress was not stronger in this study than the ones found between CDMSE and career decision progress in Studies 1 and 2. More precisely, in Study 3b, the correlation between these two variables was .58, and ranged from .59 to .66 in Studies 1 and 2. This finding may reflect the predominant role of career decision-making competence in helping students to progress in their career decision-making. Another possible explanation for this finding is that career decision-making need satisfaction and career decision progress were measured at two different measurement points in Study 3b. Moreover, the scale used to assess the competence/self-efficacy component of career decision-making need satisfaction differed from the one used in Studies 1 and 2. For the purpose of this study, it was important to use a

measure of career decision-making need satisfaction that was comparable to the academic need satisfaction measure.

Results of the model also showed that career decision progress was positively related to perceived usefulness of school activities, and in turn, to academic self-determined motivation. As shown in Figure 8, and as evidenced from the indirect effects, perceived usefulness mediated the relationship between career decision progress and academic self-determined motivation. In short, these results suggest that students who are more advanced in their career decision-making show greater academic self-determined motivation because they have a greater understanding of how school learning relates to their future success.

Studies 3a and 3b have a few limitations worth noting. First, some subscales had low internal consistency, particularly the need satisfaction subscales in both domains. Nonetheless, the studies focused on total scales rather than on subscales, and as results showed, Cronbach alphas for the total scales were generally satisfactory for Study 3b. This was unfortunately not the case for Study 3a, in which the internal consistency remained low, even when the academic need satisfaction items were considered as a total scale. Moreover, although the sample was large in Study 3a, the participants were quite a bit younger than participants used in the other studies in this project, and more particularly in Study 3b. Another limitation of these studies is that results were obtained using correlational data. As such, it is not possible to infer causality between the variables.

Despite these limitations, results of Study 3a were replicated in Study 3b using two distinct samples, providing evidence for the associations among academic need satisfaction, perceived usefulness of school activities, and academic self-determined motivation. Furthermore, findings of Study 3b supported key results found in Studies 1 and 2, suggesting that career decision-making need satisfaction and career decision progress enhance academic

self-determined motivation. Study 3b extended findings of Studies 1 and 2 by showing that career development variables contributed to the prediction of perceived usefulness of school activities and academic self-determined motivation, even after controlling for academic need satisfaction.

CHAPTER 5

General Discussion

Main Research Findings

The central purpose of the present research project was to examine the role of career development on academic motivation using SDT (Deci & Ryan, 1985a) and future-oriented frameworks (e.g., Markus & Nurius, 1986; Nuttin, 1985). More precisely, it was first hypothesized that two career development indices (i.e., career decision-making need satisfaction and career decision progress) would be positively associated with academic self-determined motivation. Second, perceived usefulness of school activities was expected to mediate the relationship between career decision progress and academic self-determined motivation, as well as between academic need satisfaction and academic self-determined motivation. Lastly, career development indices were anticipated to contribute to variance in perceived usefulness and academic self-determined motivation above and beyond the effect of academic need satisfaction. A model linking these variables was also proposed.

Four studies, using various methodologies and multiple age groups were conducted to test these hypotheses. Taken together, the findings provided support for the central goal of this thesis by showing that career development indices were positively associated with an important adaptive educational process. The key link between career decision progress and academic self-determined motivation was investigated in three of the four studies using various research designs and different age groups. The results provide converging evidence to support the assumption that career decision progress facilitates academic self-determined motivation. This suggests that promoting career exploration and career decision-making may be a good strategy for developing and sustaining student engagement in school.

This research program also showed that perceived usefulness was an important mediator in the relationship between career decision progress and academic self-determined motivation (see Studies 2 and 3b). These findings are consistent with the assumption advanced by future goal theorists that developing personally relevant future goals should enhance motivation by giving meaning to current learning tasks (e.g., Eccles et al., 1983; Markus & Nurius, 1986). These results are also in line with the notion that perceived usefulness should lead to a better quality of motivation. Indeed, Deci and Ryan (1985a) maintain that understanding the usefulness of an activity is important to the internalization process, and thus, should promote self-determined forms of motivation. Essentially, results suggest that developing valued career goals helps students perceive their school learning as more useful, and as such, promotes self-determined regulation both in terms of attending school and engaging in school activities.

In addition, similar to previous findings (see Deci & Ryan, 2000 for a review), this research provides evidence that need satisfaction is important for healthy development and functioning. First, Studies 1 and 2 found that greater CDMSE (i.e., perceived competence) was significantly related to career decision progress. Second, Study 3b showed that, based on SDT, satisfaction of all three career decision-making needs (i.e., perceived competence, relatedness, and autonomy) was associated with greater career decision progress. Third, Studies 3a and 3b found that academic need satisfaction was associated with greater perceived usefulness of school activities and academic self-determined motivation.

Overall, the results shed light on a research question that is highly relevant and discussed in the realm of education, but that has not received very much attention in research. Indeed, findings in this research suggest that helping students prepare for their future career may not only help them in their transition to adulthood, but should also help

enhance their educational experience. Moreover, the research proposes perceived usefulness as a variable likely to explain how career decision progress might facilitate academic self-determined motivation. The findings suggest that perceived usefulness may be enhanced not just as a result of career decision progress, but also with need satisfaction in both the academic and career development domains. Finally, findings indicate that feelings of competence (i.e., self-efficacy), relatedness, and autonomy with respect to career decision-making promote career decision progress. In short, results suggest that when needs in both the academic and career development domains are met, they appear to promote progress in career decision-making. Such progress promotes perceived usefulness of school learning, and in turn, enhances academic self-determined motivation.

Gender Differences

Although this research project did not set out to focus on the role of gender, the gender differences that emerged are worth mentioning. First, in Study 1, no gender difference was found on academic self-determined motivation in 8th grade. However, when these students reached 12th grade, girls scored significantly higher on academic self-determined motivation than did boys. This result is consistent with previous research findings among students in this age group (e.g., Vallerand et al., 1989), which show that girls often display a more self-determined motivational profile than boys. Further, this gender effect remained significant in the path analyses. This finding suggests that regardless of students' academic self-determined motivation in early high school, or of their level of CDMSE and career decision progress in late high school, girls tend to report higher levels of academic self-determined motivation in late high school. However, these results should be interpreted with caution because the sample in this study was small, and this gender effect was not consistent across studies.

In Study 2, a gender difference was found on academic self-determined motivation before the career development course, such that girls reported higher levels of academic self-determined motivation than boys. However, the gender difference was no longer present after the career development course. A gender difference also emerged on CDMSE (i.e., a key career decision-making need) at both measurement points. Although research has typically not found gender differences on this variable among middle to late adolescents (e.g., Bergeron & Romano, 1994; Betz et al., 1996; Chung, 2002; Gushue et al., 2006; Keller & Whiston, 2008), consistent with the present results, Gianakos (2001) found that girls reported stronger levels of CDMSE than boys. Essentially, this finding suggests that compared to the boys in this sample, the girls felt greater confidence in their ability to accomplish career decision-making tasks. Similarly, in Study 3b, girls reported higher levels of overall career decision-making need satisfaction (i.e., composite index of the three psychological needs). No other significant gender difference was found among the university students.

The samples in this research project included students in grades 7, 8, 10, 12, and first year of university. Overall, results on gender differences suggest that boys generally score lower than girls on academic self-determined motivation from 10th to 12th grade, but that career development interventions may reduce the gender gap on this variable. As previous research has shown, girls tend to endorse educational goals to a greater extent than boys (e.g., Nurmi et al., 1995; Yowell, 2000). These results also parallel dropout statistics across all Canadian provinces, which show that boys are more likely to drop out of high school than girls (Bowlby, 2005). Moreover, results of this study suggest that girls may tend to score higher on career decision-making need satisfaction. The gender disparity found on perceived career decision-making need satisfaction could be attributable to socio-demographic factors

that were specific to these samples, such as ethnicity, socio-economic status, or bilingualism. Previous research has found that ethnic factors, such as ethnic background or ethnic identity, have an effect on CDMSE (Chung, 2002; Gushue, 2006), and thus, it is possible that gender interacts with such factors. Future research should consider controlling for a greater number of socio-demographic variables to better understand the role of gender on this variable.

Theoretical Implications

The results of this project led to a number of theoretical implications. Below, implications for vocational theory and SDT are discussed. First, the potential application of this research project's conceptualization of career decision progress is considered. Second, it is argued that SDT may be a useful framework for career development research. Third, the relevance of perceived usefulness to SDT is discussed. Finally, it is proposed that assessing need satisfaction in more than one domain may provide valuable information.

Vocational literature and the operationalization of career decision progress. There is general consensus in the career development literature that career indecision in adolescence represents a normal temporary developmental stage (Gottfredson, 2005; Sharf, 1992; Super, 1957, 1990). To assess career decision progress in the present research, a two-dimensional measure including both exploration and career decidedness was used. This approach provided a means of capturing the full continuum of progress in career decision-making from the initial stage (when individuals have not yet made a decision about their career and are not involved in career exploration) to an advanced stage (when individuals are involved in exploratory activities and are more decided about their career choice). This conceptualization of career decision progress was inspired by Blustein et al.'s (1989) measure of vocational exploration and commitment. In the present project, the focus was on career decidedness rather than commitment because the main targeted population was

adolescents and young adults, and as researchers have noted, few adolescents ever progress beyond the decidedness stage (Blustein et al., 1989).

This measure was particularly valuable to this program of research because it adapted well to students from early high school to early university, and as such, enabled the differentiation of adaptive from less adaptive career indecision. For instance, using this approach, differentiating a proactive student from a disaffected student, who both score low on career decidedness, could be achieved on the basis of their score on the exploration dimension. Similarly, using this approach could prevent misconstruing adaptive career decidedness with foreclosure (Marcia, 1966, 1983). From a developmental perspective, some researchers argue that premature career decisions, without first exploring options, could lead to less than optimal career choices (Blustein et al., 1989).

Research has demonstrated that each of the two dimensions separately (i.e., exploration and decidedness) relate to desirable constructs (e.g., Skorikov, 2007; Savickas, 1990). Consistent with Blustein et al.'s (1989) research, the two dimensions were used together as a composite index. Assessing an individual's adaptive progress in career decision-making with a continuous variable was helpful because it made it possible to examine its relationship with hypothesized antecedents and outcomes. Results of the three studies in which career decision progress was assessed yielded consistent results. More specifically, the three studies found support for the assumption that career decision progress enhances academic self-determined motivation. Moreover, across these studies, career decision progress was strongly positively related to career decision-making need satisfaction. These converging results support the use of this measure as a valuable means of assessing career decision progress.

Future research could examine how the two dimensions of career decision progress as conceptualized in this study (i.e., career decidedness and exploration) change with time, and whether one dimension is more predictive of positive educational processes and outcomes than the other. Such studies could use latent growth models to assess more systematically the patterns of change between career decidedness, exploration, and academic self-determined motivation.

SDT and career theory. A central goal of this research was to investigate the role of career development indices on academic self-determined motivation using SDT, a well-grounded theory of personality development and human motivation. While SDT has been extensively used in the educational setting (e.g., Fortier et al., 1995; Grolnick et al., 1991; Guay & Vallerand, 1997; Reeve & Jang, 2006; Vallerand et al., 1997), only a few studies conducted by Guay and his colleagues (Guay et al., 2006; Guay et al., 2003) have used SDT as a framework to study career decision-making. These latter studies demonstrated that perceived self-efficacy (i.e., competence) and autonomy toward career decision-making activities were associated with less career indecision. Results of the present project generally supported those finding by showing that career decision-making need satisfaction was associated with greater career decision progress. Whereas Studies 1 and 2 focused exclusively on the competence component of career decision-making need satisfaction (i.e., CDMSE), Study 3b assessed all three needs, namely, competence (i.e., self-efficacy), relatedness, and autonomy.

Together, these findings support SDT's contention that need satisfaction is important to healthy development (Deci & Ryan, 2000), and suggests that SDT is a useful framework that can be applied to the study of career development. While the concept of self-efficacy beliefs has been widely used in career development theory as an indicator of career

development (e.g., Guay et al., 2006; Taylor & Betz, 1983) and as an antecedent of other career-related variables (e.g., Bartley & Robitschek, 2000; Gushue et al., 2006), career development theory may also benefit from considering the role of career decision-making relatedness and autonomy in their models.

Of particular interest is the role of relatedness in career development. Future research could investigate more extensively the role of relatedness on career decision-making. As noted, Guay et al. (2003) did not include relatedness as part of their study linking perceived career decision-making need satisfaction to career indecision because some of their previous findings had shown that relatedness was not significantly related to career indecision. Yet, career development research suggests that feelings of attachment with significant others is associated with engagement in career exploration (e.g., Blustein et al., 1995; Ketterson & Blustein, 1997) and commitment to career choices (Felsman & Blustein, 1999). The discrepancy in these findings may be attributable to the measures used in the different studies. Another possible explanation may be that relatedness moderates the relationship between need satisfaction (i.e., competence and autonomy) and career indecision. Although the satisfaction of relatedness toward career decision-making was assessed in Study 3b, satisfaction for the three needs in this domain, including competence, relatedness, and autonomy, was treated as a single variable (i.e., composite index). Future studies could consider how relatedness toward career decision-making is associated with different career-related variables. The results obtained herein suggest that SDT may be a valuable framework to investigate these links.

One of the great advantages of SDT is that it provides clearly defined antecedents in the form of basic psychological needs. These needs can either be assessed directly from individuals' perceptions or can be assessed by observing the effects of different

environments that are hypothesized to support or thwart the basic psychological needs (Deci & Ryan, 2000). Moreover, on the basis of need satisfaction, it is possible to predict the quality of an individual's functioning, which in turn can predict a number of other consequences.

Accordingly, in the present research, academic self-determined motivation was used as a consequence, but as shown in previous SDT research, this type of motivation is an important process variable that has been associated with a host of positive consequences such as deep-level learning (Andriessen et al., 2006; Simons et al., 2004), positive affect and effort in the classroom (Reeve et al, 2002; Vallerand, 1997), and persistence (Black & Deci, 2000; Vallerand et al., 1997). Thus, because career decision-making need satisfaction and career decision progress were shown to relate to academic self-determined motivation, it would then be possible to infer that these two career development variables would likely relate to a number of positive educational outcomes. In short, results of the present research support and extend previous work conducted in the career development domain and suggest that SDT may be a valuable framework for career development research.

SDT and perceived usefulness. SDT posits that perceived usefulness facilitates autonomous functioning (Deci & Ryan, 1985a). Results of the present research project further support the role of perceived usefulness as an important component of the internalization process. Perceived usefulness of school activities was assessed in Studies 2, 3a, and 3b. In these three studies, it was highly correlated to academic self-determined motivation (correlations ranged from .54 to .65). Study 2 also showed using a pre-experimental design that an increase in perceived usefulness was significantly positively related to an increase in academic self-determined motivation. The present findings extend

results of previous research by linking perceived usefulness to a measure of self-determined motivation.

Although few studies framed in SDT have actually used a measure of perceived usefulness in their studies, research may have implicitly captured this construct with other measures that tap into the perceived value or importance of an activity (e.g., Reeve et al., 2000). One could even argue that perceived usefulness of an activity is virtually synonymous with identified motivation. In fact, some studies investigating the role of “utility value” on educational outcomes have used measures that capture underlying motives rather than beliefs (e.g., Mac Iver, Stipek, & Daniels, 1991). Although the concept of perceived usefulness bears similarities with identified motivation, in the present research, the two variables were assessed as distinct conceptual constructs. More precisely, perceived usefulness was designed to measure a belief, whereas identified motivation was worded to capture a motive (i.e., reasons for engaging in activities). This conceptual distinction was further supported with secondary analyses (see footnote 3), which showed that the items assessing perceived usefulness and those assessing the different motivation subscales loaded on distinct factors.

The present research also shed light on possible antecedents of perceived usefulness. First, results of this research project indicated that need satisfaction in both the academic and career development domains were positively associated with perceived usefulness of school activities. These findings are consistent with previous research that shows that supporting need satisfaction leads to enhanced valuing of activities (e.g., Deci et al., 1994; Reeve et al., 1999; Reeve et al., 2002). Second, results also suggest that developing valued career goals promotes perceived usefulness. The development of career goals appears to play an important role in the internalization process, in that it helps to frame the meaning of school

activities as something that is more personally relevant. In short, these results support SDT's contention that perceived usefulness can be enhanced with need satisfaction and development of personally meaningful career goals, and that it is an important process variable to the enhancement of autonomous functioning.

Need satisfaction in both life domains. The last study of this investigation examined the role of need satisfaction in the academic and career development domains on career decision progress and academic self-determined motivation. Results of the model in Study 3b showed that need satisfaction in these two related life domains were highly correlated. More specifically, students who experienced perceived competence (i.e., self-efficacy), relatedness, and autonomy in the academic domain, were also more likely to experience perceived competence, relatedness, and autonomy in the career development domain. In line with this result, Paulsen and Betz (2004) found that feelings of self-efficacy regarding academic skills significantly predicted feelings of efficacy regarding career decision-making. Therefore, developing feelings of competence in one domain may transfer to other related domains. This effect may be a reflection of an individual's environmental or dispositional influences. More precisely, it is possible that environments that support need satisfaction in one domain naturally tend to support needs in related domains. It is also possible that individual characteristics such as trait optimism (Scheier & Carver, 1985) or general motivational orientation (Deci & Ryan, 1985b) influence an individual's tendency to appraise social and physical aspects of their environment in a relatively consistent manner.

In the same vein, need satisfaction in one domain may facilitate goal setting and pursuit in another related domain. Correlational analyses of Study 3b support this notion by indicating that academic need satisfaction was positively associated with career decision progress, which suggests that students with high levels of perceived academic competence,

relatedness, and autonomy may find greater ease in exploring and deciding on a career path. This result is consistent with Larose, Ratelle, Guay, Senécal, and Harvey's (2006) findings, which showed that students with increasing or high stable perceived competence in science class over time were more likely to report high levels of career decidedness about pursuing a career in the science field than students whose level of perceived competence in science decreased over time.

Despite the strong relationship between career and academic need satisfaction, results of the model in Study 3b suggest that when pitted against each other, career decision-making need satisfaction is a better predictor of career decision progress than academic need satisfaction. Thus, the assessment of needs in two related domains is not redundant because each of the two variables contributes to career decision progress and academic variables differently. From a theoretical standpoint, these results are interesting because they demonstrate that need satisfaction in one domain can affect functioning in another related life domain. Indeed, results of this project extend Guay et al.'s (2003) findings by showing that need satisfaction in the career development domain not only helps students with their career decision-making, but also ultimately enhances academic self-determined motivation.

Practical Implications

Some scholars have theorized that lack of career preparation may result in poor student motivation and high dropout rates (e.g., Dupont, 1992; Gingras & Chagnon, 1997; Lapan, 2004). Yet, few studies have actually examined the relationship between career development indices and important educational processes or outcomes. Based on the results obtained, practical applications concerning school reforms can be proposed. More specifically, career development interventions that seek to enhance educational processes and

outcomes could be advised to focus on programs that promote career decision-making and perceived usefulness of school activities.

Overall, results indicated that career decision progress was positively associated with perceived usefulness of school activities, and in turn, with academic self-determined motivation. In addition, results of Study 2 showed that an increase in career decision progress was associated with an increase in perceived usefulness and in academic self-determined motivation. These results suggest that interventions designed to help students to progress in their career decision-making should facilitate self-determined forms of academic motivation. In the same vein, given that academic self-determined motivation has been associated with numerous beneficial educational outcomes such as deep-level learning (e.g., Andriessen et al., 2006), performance (Simons et al., 2004), interest (Black & Deci, 2000), and persistence (Vallerand et al., 1997), it is possible to infer that interventions that promote career decision progress would likely be related to such positive educational outcomes.

Given the two-dimensional conceptualization of career decision progress, results also suggest that interventions should attempt to foster career decidedness through exploratory behaviours. As previously noted, some scholars argue that strong career decidedness in early adolescence may not be adaptive because it may reflect a tendency to foreclose (e.g., Blustein et al., 1989). This point is particularly relevant in the context of today's rapidly changing world. Thus, on a practical level, it is important to consider exploration as part of an adaptive approach to career decision-making. As such, counsellors should encourage students' active involvement and engagement in the decision-making process. Essentially, individuals likely make sounder decisions by exploring because they increase the likelihood of gaining valuable self-knowledge and knowledge about the world of work. In fact, according to Savickas (1997), career exploration is one the key elements of career

adaptability. Such an active engagement in one's career development seems particularly important at the present time because the rapid technological advances and globalization is quickly transforming the job market.

Furthermore, interventions that seek to enhance students' educational experience should attempt to foster perceived usefulness of school activities. As noted, perceived usefulness may naturally result from progress in career decision-making. Results also show that need satisfaction for competence, relatedness, and autonomy in the academic and career development domains are associated with greater perceived usefulness. Thus, supporting basic psychological needs of competence, relatedness, and autonomy in the two domains in regular classes or as part of career development programs should likely facilitate students' understanding of the value of their school learning. As demonstrated in previous research, certain teaching practices have been shown to exert positive effects on educational outcomes. For instance, providing a rationale for learning activities is an effective autonomy supportive strategy that promotes student cognitive and behavioural engagement (Assor, Kaplan, & Roth, 2002), and is especially effective when the rationale emphasizes the long-term intrinsic values of the learning activities, such as community contribution, personal growth, and interpersonal relationships (Vansteenkiste et al., 2004). Other practices that have been shown to support need satisfaction include behaviours such as spending more time listening, offering students time to work independently, and encouraging students' effort (Reeve et al., 1999; Reeve & Jang, 2006).

Understanding how to promote perceived usefulness is particularly important in light of research showing that many students fail to make the connection between school learning and their future (Johnson, 2000). In addition, according to Dupont (2001), a good number of students finish their high school education without any real preparation to make informed

educational or professional choices. This is particularly troublesome given that career decision progress and perceived usefulness of school activities appear to be significant antecedents of academic self-determined motivation. Overall, the results of the present research suggest that interventions administered in social environments that afford need satisfaction and promote career decision progress should help students more effectively internalize the value of their school learning, and enhance academic self-determined motivation. Such information could be valuable to educational advocates and policy makers who seek to build more effective intervention programs in the school context.

Limitations of the Present Research

Although the studies in this research project were designed using a well-grounded theory, and that the results supported most of the proposed hypotheses, several important psychometric and methodological limitations deserve mentioning.

Psychometric limitations. The data in this research project relied solely on students' self-reported measures. This represents an important limitation because this type of measure depends on students' candour and recall. In addition, the use of self-report data can inflate shared method variance. It would appear most beneficial to this line of research to rely on more rigorous assessment of the variables, for instance, by using behavioural measures or different sources of evaluation (e.g., parents, teachers). However, since many of the variables in this study revolved around students' perceptions (e.g., perception of academic need satisfaction, perception of career decision-making need satisfaction, and perceived usefulness), it would have been difficult to directly represent these variables with other measures.

Additionally, some of the scales used in the present research suffered from very low internal consistency. This was particularly problematic with the assessment of need

satisfaction and academic self-determined motivation. For instance, at Time 2 of Study 1, the alphas of three of the subscales of the Self-Regulation Questionnaire used to assess academic self-determined motivation were well below the recommended cut-off criteria of .70 (Nunnally, 1978). Similarly, the Cronbach alphas of two of the subscales of the Academic Motivation Scale assessed at Time 1 of Study 2 were also below .70. However, in both these cases, the motivation subscales formed a reasonably clear simplex pattern consistent with SDT's (Ryan & Deci, 2002) postulated self-determination continuum.

Weak internal consistency was also found for the composite index including the six items measuring need satisfaction in Study 3a. Finally, in Study 3b, the academic need satisfaction subscales and the career decision-making need satisfaction subscales also yielded relatively low alphas. Nevertheless, for these two latter measures, internal consistency of the total scale was satisfactory.

This psychometric issue represents an important limitation, particularly in light of the fact that academic self-determined motivation was a central variable in this research. The motivational assessment that yielded the weakest psychometric properties was the measure of academic self-determined motivation at Time 2 of Study 1. The low alphas obtained for the subscales were presumably caused by the minimal sample size ($n = 60$) and the assessment of academic self-determined motivation as it related to three different academic activities (i.e., going to class, doing homework, and participating in class). Clearly, creating composite indices of motivational items assessing different academic activities should be expected to yield lower internal consistency. Essentially, the measure assessing motivation towards different activities was chosen primarily to get a more comprehensive picture of students' academic motivation. Unlike this measure, the Academic Motivation Scale (Vallerand et al., 1989) only assesses students' reasons for attending school. Although both

measures tap into students' motivational processes, and they both form a reasonably clear simplex patterns, they may not be entirely equivalent.

Nonetheless, among university students (Study 3b), this approach yielded adequate Cronbach alphas, which suggests the presence of greater motivational congruence across the different academic activities. Simply stated, a student who would have reported studying for exams for identified reasons would have also likely responded to reading academic-related material and going to class for identified reasons. This may reflect the fact that students generally have greater freedom in choosing to attend university than high school, and thus are more likely to internalize the value of their academic-related activities. This result is consistent with recent findings that showed that a true self-determined motivational profile, characterized by high ratings on self-determined types of motivation and low ratings on non self-determined types of motivation, emerged for college students but not for high school students (Ratelle et al., 2007).

Another limitation concerns the use of abridged versions of scales among the middle and high school level students. Reducing the number of items in the scales could affect the validity of the measures, but this decision was weighted against the risk of inducing a *fatigue effect*. More precisely, participants may grow increasingly tired of responding to long questionnaires, which can in turn decrease the accuracy of their responses (Edwards, Thomas, Rosenfeld, & Bopoth-Kewley, 1997). The goal was to strike a balance between the validity of students' responses and the reliability of the measures. Overall, despite the psychometric limitations of these studies, the results were generally consistent across studies using different research designs and age groups.

Methodological limitations. Although the present research project used different research designs to test the hypotheses, the data were correlational. The pre-experimental

design of Study 2 provided a more rigorous approach and greater ability to infer directionality, but it did not include a control group. Therefore, with these data, it was not possible to draw definite conclusions about direction of causality among the variables. For Study 2, a control group would have provided valuable information about naturally occurring overall increasing and declining trends for that particular cohort. Simply stated, given that career decision-making is a developmental task that tends to increase with age (Feldman, 2003), and that previous research has shown that academic self-determined motivation tends to decline from middle to senior high school (Otis et al., 2005), it is not clear whether the career development intervention was actually responsible for the increase in career decision progress and whether academic motivation would have declined in the absence of a career development course.

Results of Study 2 indicated that the career development course increased overall mean-level career decision progress but failed to increase overall perceived usefulness and academic self-determined motivation. This suggests that this particular type of intervention may not be effective at promoting adaptive educational processes for all students. As previously noted, some scholars suggest that important changes could be implemented to improve the delivery and the content of this course (Samson & Gazzola, 2003; Gazzola & Samson, 2007). Nonetheless, this research did not focus on the evaluation of the course, but rather, on the relationship between career decision progress and academic self-determined motivation in the context of the career development intervention. Consistent with the predictions, results of Study 2 showed that students who experienced an increase in career decision progress also experienced an increase in perceived usefulness and in academic self-determined motivation.

Moreover, three of the four studies in this research project involved two measurement points, and as such, involved varying levels of attrition. First, in Study 1, participants who only completed the Time 1 questionnaire had significantly lower scores on Time 1 academic self-determined motivation than those who completed both Time 1 and Time 2. The high rate of attrition was mostly due to a significant drop in students who pursued their education in that school from 8th to 12th grade. The lower levels of academic self-determined motivation may partly explain why students left the school, either to attend another school or to drop out altogether before completing their grade 12. This suggests that interventions designed to improve academic self-determined motivation should begin as early as middle schools. In line with this assumption, research has demonstrated that career development interventions are most effective when they target middle school students (Oliver & Spokane, 1988; Whiston et al., 1998).

Attrition analyses also showed that participants in Study 2 who only completed the Time 1 measure scored significantly higher on career decision progress than those who completed both measurement times. Although a significant difference was found between the two groups, it is likely that the difference was random because all students who were present on testing days completed the questionnaire. Lastly, attrition did not pose a problem in Study 3b, as no significant difference was found between students who completed only the first questionnaire compared to those who completed both questionnaires. In the present research program, three of the four studies conducted involved more than one measurement point. While such research designs offer several strengths not permitted with cross-sectional designs (e.g., examining change), they often suffer from high attrition rates (Ribisl et al., 1996). In turn, loss of participants from one measurement point to another can have important implications to the internal and external validity. Future research should attempt

to limit attrition when possible using effective retention and tracking strategies (Ribisl et al., 1996).

Directions for Future Research

Despite the aforementioned limitations, the present thesis provided some valuable insight concerning the role of career decision progress on an important adaptive educational process. Future research should consider whether different career-related variables, such as vocational identity and comfort about career progress, could foster adaptive educational processes (e.g., academic self-determined motivation) and outcomes (e.g., performance, persistence, interest, and quality of learning). Similarly, research could examine more closely how career-related variables specifically relate to the different types of motivation (i.e., subscales of motivation). Such studies could compare the effect of different career-related variables on different educational outcomes as a function of age, gender, and other general characteristics of the individual (e.g., school performance, work experience, motivational orientation) to determine how to tailor optimal interventions to different groups of individuals.

In the same vein, future research could investigate the possible reciprocal nature of the relationship between career development indices and academic self-determined motivation. Indeed, there is reason to believe that academic self-determined motivation may promote progress in career decision-making. This assumption has been indirectly supported with research examining the effects of dispositional or general motivational orientation. For instance, previous SDT research has demonstrated that an autonomy orientation (i.e., general self-determination) was associated with adaptation, ego-development, and personality integration (Deci & Ryan, 1985b, 2000; Sheldon & Kasser, 1995). In addition, Soenens, Berzonsky, Vansteenkiste, Beyers, and Goossens (2005) showed that an autonomy

orientation was associated with the use of an informational identity style, suggesting that autonomous functioning tends to promote active exploration and processing of identity relevant information. More recently, research using a variation on SDT's framework showed that general (i.e. global) self-determination among students with intellectual and developmental disabilities was associated with knowledge and skills concerning the transition planning process (Wehmeyer, Palmer, Soukup, Garner, & Lawrence, 2007).

In sum, general autonomous functioning appears to elicit a desire to seek out and integrate self-relevant information. Based on Vallerand's (1997) hierarchical model of intrinsic and extrinsic motivation, motivation at the general (i.e., dispositional) level is postulated to influence motivation at the contextual level (e.g., education) through top-down processes. Given that the autonomy orientation is associated with healthy identity and personality development, it would seem likely that at the contextual level, academic self-determined motivation could also promote career development. Thus, students who are initially motivated for self-determined reasons may be more apt to progress in their career decision-making. In turn, career decision progress may help students internalize the value of their schoolwork, which in turn, would further enhance academic self-determined motivation. Results of the present research provide preliminary evidence for the reciprocal relationship between indices of career development and academic self-determined motivation. More precisely, as shown in Study 1, baseline academic self-determined motivation predicted Time 2 CDMSE.

It should be noted however that some research does not fully support this assumption. For instance, Blustein (1988) showed that both the autonomy orientation and the control orientation (i.e., general non self-determined motivation) were associated with self-exploration and beliefs concerning the utility of self-exploration. In addition, results of a

study using a two-wave cross-lagged design suggest that career planning and positive expectations about career success lead to feelings of valuing and belongingness in school (Kenny et al., 2006). Results of this study did not support the reciprocal hypothesis between career development indices and educational variables. Clearly, future studies will be needed to replicate and clarify those results. Understanding the nature of the relationship between variables in the vocational and educational fields could be helpful in adopting the best approach to intervene in the fight against the declining motivational trend in adolescence.

Another interesting direction for future research concerns the role of career choice content on educational processes and outcomes. Although the active involvement in the development of clear career goals may be viewed as intrinsic because it is oriented toward growth, what people aspire to may contribute to students' educational experience. Indeed, research on goal content has demonstrated that intrinsic goal content (relative to extrinsic goal content) is associated with greater autonomous functioning and well-being (Deci & Ryan, 2000; Kasser & Ryan, 1996; Sheldon & Kasser, 1995; Sheldon et al., 2004).

Essentially, the goals that people pursue have been distinguished in terms of their functional significance. Intrinsic goals hold values that are central to people's growth tendencies, such as meaningful relationships, personal growth, community contribution, and health. By contrast, extrinsic goals hold values that highlight external signs of self-worth, such as wealth, image, status, and fame. Thus, it would be interesting to examine if students who aspire to pursue a career that characterizes an intrinsic content (e.g., educator or health practitioner) would report higher levels of academic self-determined motivation or engagement in school than those who aspire to pursue a career that characterizes an extrinsic content (e.g., stock broker or runway model).

A final research avenue worth exploring concerns the comparison of different programs in fostering adaptive educational processes and outcomes. For instance, it might be interesting to examine whether adding academic and personal/social development components to career development interventions produce synergistic effects. There is evidence to suggest that comprehensive programs that involve those components produce better overall effects than the less fully implemented career development programs (e.g., Lapan et al., 2001; Lapan et al., 1997). Such holistic programs likely satisfy students' psychological needs to a greater extent, and likely promote perceived usefulness of school activities by enhancing transparency among different life domains.

Moreover, further studies could examine the long-term effect of different interventions on both career development and educational outcomes. As shown in Study 2, despite its overall effect on career decision progress, the career development course did not have an overall effect on academic motivation. Thus, it is possible that the newly acquired skills and insight regarding career choices would take some time to be well integrated into the sense of self. Alternatively, career development gains may only be temporary. It also should be noted that career development courses such as the one offered in Study 2 (Ministry of Education, 2006) represent a short-term approach to career guidance. By contrast, some schools have adopted a curriculum that promotes career orientation opportunities by infusing career activities as part of the learning activities in all classrooms (Ministère de l'Éducation du Québec, 2002). It would be interesting to evaluate how students attending schools using this approach compare to students attending traditional schools on a number of different career and educational variables.

Conclusion

The present thesis examined the role of career decision progress on academic self-determined motivation. The results of this research project suggest that career decision progress may facilitate academic self-determined motivation by helping students better understand how their school learning relates to their future. In addition, findings suggest that need satisfaction in both the academic and career development domains are important to promote healthy development and adaptive educational processes.

This line of questioning is important in light of the fact that academic intrinsic and self-determined motivation tend to decline over the years, and in particular, as students move from elementary to secondary school (Anderman & Maehr, 1994; Gottfried, Fleming, & Gottfried, 2001; Harter & Jackson, 1992; Otis et al., 2005). The findings in this research support the assumption advanced by educational scholars, which argues that a lack of career orientation and preparation may be partly responsible for the low levels of motivation observed in schools (Dupont, 1992; Gingras & Chagnon, 1997; Lapan, 2004). Developing interventions that facilitate academic self-determined motivation may ultimately reduce dropout rates. As statistics show, keeping students in schools improves the likelihood that they will secure respectable employment (Bowlby, 2005; Mansoer & Oei, 1999), and reduces the likelihood that they will depend on social assistance, engage in criminal behaviour, and experience health problems, all of which have enormous economic implications for societies (Hankivsky, 2008).

In sum, it is hoped that this research would serve to guide and inform educational advocates on pathways to effectively promote career decision progress and improve students' educational experience. Although it may seem like a daunting task to choose a career direction in a rapidly changing world, Super (1990) argues that it represents an important

step in the transition to adulthood and the world of work. Progressing in career decision-making is important because it influences future decisions, actions, and performance, and it provides greater meaning to present actions (Lent, Brown, & Hackett, 1996). Ultimately, growth in career development provides students with direction by shaping their educational (Hamilton, 1994) and career choices (Mau & Bikos, 2000; Schoon & Parsons, 2002). In closing, the results obtained in this research validate the merits of promoting career decision-making through exploration, not just to better prepare adolescents for a more successful school-to-work transition (Pinguart, Juang, & Silbereisen, 2003), but also to foster adaptive educational processes such as academic self-determined motivation.

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Footnotes

¹ In this paper, the term *career* refers specifically to the domain of work (i.e., profession, occupation, vocation, or job). Current career development literature sometimes uses the term *career* to refer to a number of different life roles and domains (e.g., student, worker, or parent).

² I am grateful to Dr. Luc G. Pelletier for sharing with me the Time 1 data of Study 1.

³ Given the high correlations obtained between perceived usefulness and academic self-determined motivation, a set of exploratory factor analyses were carried out with Time 1 measures to ensure that items used to measure these two constructs represented two conceptually different entities. In all, five exploratory factor analyses were performed to test that items on each of the five motivation subscales were distinct from those measuring perceived usefulness. Exploratory factor analyses were performed using the maximum likelihood (ML) method of extraction with a direct oblimin rotation. Two distinct factors emerged in all five exploratory factor analyses as evidenced from eigenvalues greater than 1. In addition, all but one item (i.e., an item on the external motivation subscale) in all five exploratory factor analyses loaded on their intended factor, and no cross-loadings greater than .30 were found. Similar analyses were performed with data from Study 3a. Consistent with results of Study 2, the analyses showed that items loaded on their intended factor and no cross-loading greater than .30 emerged. Overall, results provided reasonable evidence that the items used to assess perceived usefulness and academic self-determined motivation represented distinct factors, which justified proceeding with analyses using both these variables as independent constructs.

APPENDIX A

Questionnaires Used in Study 1

Appendix A.1: Time 1 Questionnaire Completed on a Computer in 8th Grade**Nom de l'élève :** _____

Ce questionnaire a pour objectif de mieux comprendre la réalité des élèves qui fréquentent cette école et améliorer leur qualité de vie à l'école. Les réponses du présent questionnaire sont confidentielles.

(Academic Motivation) POURQUOI VAS-TU À L'ÉCOLE?

En te servant des choix de réponses ci-dessous, indique combien chacune des phrases correspond aux raisons pour lesquelles tu vas à l'école.

1	2	3	4	5
Pas du tout	Un peu	Moyennement	Beaucoup	Exactement

Pourquoi vas-tu à l'école?

- _____ 1. Parce que j'ai du plaisir et de la satisfaction à apprendre de nouvelles choses.
- _____ 2. Parce que, selon moi, mes études vont m'aider à mieux me préparer au travail ou au métier que j'ai choisi.
- _____ 3. Parce qu'avec juste les études que j'ai, je ne pourrais pas me trouver un emploi assez payant.
- _____ 4. Pour me prouver que je suis une personne intelligente.
- _____ 5. Je ne sais pas pourquoi je vais à l'école.
- _____ 6. Parce que mes études me permettent de continuer à en apprendre sur des choses qui m'intéressent.
- _____ 7. Parce que je crois que mes études vont faire de moi un meilleur travailleur ou une meilleure travailleuse.
- _____ 8. Pour avoir un emploi plus important plus tard.
- _____ 9. Parce que le fait de réussir à l'école me fait sentir important à mes propres yeux.
- _____ 10. Franchement, je me fous pas mal de l'école.
- _____ 11. Pour le plaisir que j'ai à découvrir de nouvelles choses jamais vues auparavant.
- _____ 12. Parce qu'un jour cela va me permettre de travailler dans un domaine que j'aime.
- _____ 13. Parce que je veux pouvoir faire «la belle vie» plus tard.
- _____ 14. Honnêtement, j'ai vraiment l'impression de perdre mon temps à l'école.
- _____ 15. Pour le plaisir d'en savoir plus long sur les matières qui m'intéressent.
- _____ 16. Parce que je veux me prouver à moi-même que je suis capable de réussir dans les études.
- _____ 17. Parce que cela va me permettre de choisir un meilleur emploi plus tard.
- _____ 18. Pour avoir un meilleur salaire plus tard.
- _____ 19. J'ai déjà eu de bonnes raisons d'aller à l'école, mais maintenant je me demande si je devrais continuer à y aller.
- _____ 20. Pour me prouver à moi-même que je suis capable d'aller plus loin dans les études.

Appendix A.2: Time 2 Questionnaire in 12th Grade**LA VIE AU SECONDAIRE**

Je t'invite à répondre aux questions pour nous aider à mieux connaître les opinions et les attitudes des élèves du secondaire concernant leurs études et leur développement de carrière.



Nom : _____

Questionnaire # : _____

INFORMATIONS GÉNÉRALES

Sexe : Masculin _____ Féminin _____	
Age _____	
Quelle langue parles-tu à la maison?	
Français _____	Anglais _____ Autre _____

Questionnaire # : _____

(Academic Motivation)

POURQUOI FAIS-TU LES ACTIVITÉS SCOLAIRES SUIVANTES ?

Indique combien chacun des énoncés correspond aux raisons pour lesquelles tu fais les activités suivantes.

1	2	3	4	5
Pas du tout	Un peu	Moyennement	Beaucoup	Tout à fait

Pourquoi vas-tu en classe ?

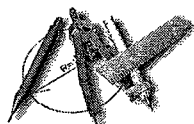
1. Parce que j'apprends des choses intéressantes.	1	2	3	4	5
2. Parce que c'est important pour moi d'aller en classe.	1	2	3	4	5
3. Parce que je me sentrais mal si je n'y allais pas.	1	2	3	4	5
4. Parce que je n'ai pas le choix.	1	2	3	4	5
5. Je vais en classe, mais je ne sais pas si cela en vaut vraiment la peine.	1	2	3	4	5

Pourquoi fais-tu tes devoirs ?

1. Parce que je trouve cela satisfaisant d'apprendre en faisant mes devoirs.	1	2	3	4	5
2. Parce que c'est important pour moi de faire mes devoirs.	1	2	3	4	5
3. Parce que je me sens obligé de les faire.	1	2	3	4	5
4. Pour faire plaisir aux autres (ex., parents ou enseignants).	1	2	3	4	5
5. Je ne sais pas; je trouve que faire des devoirs est une perte de temps.	1	2	3	4	5

Pourquoi participes-tu en classe (ex., observer les règlements, écouter, répondre aux questions, etc.) ?

1. Parce que j'aime bien participer en classe.	1	2	3	4	5
2. Parce que je crois qu'il est important de participer en classe.	1	2	3	4	5
3. Parce que je me sens obligé de participer en classe.	1	2	3	4	5
4. Pour impressionner les autres (ex., élèves ou enseignants).	1	2	3	4	5
5. Je ne sais pas; je trouve que participer en classe est une perte de temps.	1	2	3	4	5



(CDMSE)
PRÉPARATION À LA CARRIÈRE FUTURE

Indique à quel point **tu es confiant(e) d'être capable** de compléter avec succès chacune des tâches suivantes en utilisant cette échelle.

1	2	3	4	5
Aucune confiance	Un peu de confiance	Confiance moyenne	Beaucoup de confiance	Enormément de confiance

1. Trouver de l'information à la bibliothèque sur les professions qui t'intéressent.	1	2	3	4	5
2. Évaluer avec précision tes habiletés.	1	2	3	4	5
3. Déterminer quel serait ton emploi idéal.	1	2	3	4	5
4. Choisir une carrière qui va correspondre à ton style de vie préféré.	1	2	3	4	5
5. Te questionner sur ce que tu es prêt(e) à sacrifier ou non pour atteindre tes buts de carrière.	1	2	3	4	5
6. Parler à une personne qui travaille déjà dans le domaine qui t'intéresse.	1	2	3	4	5
7. Choisir un programme d'étude ou une carrière qui correspond à tes intérêts.	1	2	3	4	5
8. Définir le style de vie que tu voudrais adopter.	1	2	3	4	5
9. Trouver de l'information au sujet des collèges ou des universités.	1	2	3	4	5

(Exploration)
ACTIVITÉS D'EXPLORATION

Indique à quel point tu as participé à ces activités depuis le début du semestre.

1	2	3	4	5
Pas du tout	Un peu	Moyennement	Beaucoup	Enormément

1. J'ai cherché à découvrir mes goûts, mes forces et mes faiblesses à travers mes cours.	1	2	3	4	5
2. J'ai participé à différentes activités pour apprendre à mieux me connaître.	1	2	3	4	5
3. J'ai parlé à un conseiller en orientation concernant les choix de programmes d'études collégiales ou universitaires.	1	2	3	4	5
4. J'ai discuté de mes plans futurs avec les gens dans mon entourage (ex., parents, amis, enseignants, ou conseillers en orientation).	1	2	3	4	5
5. J'ai passé du temps à réfléchir à mes intérêts de carrière.	1	2	3	4	5
6. J'ai cherché de l'information sur différents domaines de travail.	1	2	3	4	5

(Career Decidedness)

TA CARRIÈRE FUTURE

En considérant ton **avenir professionnel**, indique la réponse qui correspond le plus à ton opinion pour chacun des énoncés suivants :

1	2	3	4	5
Pas du tout	Un peu	Moyennement	Beaucoup	Tout à fait

1. J'ai des buts professionnels qui m'intéressent beaucoup.	1	2	3	4	5
2. Mes buts professionnels sont clairs.	1	2	3	4	5
3. J'ai une vision précise de ce que je désire comme carrière.	1	2	3	4	5

Merci d'avoir répondu à ce questionnaire!

APPENDIX B

Questionnaire Used in Study 2 (Time 1 and Time 2)

Appendix B : Time 1 and Time 2 Questionnaire (Pre and Post Measures)

LA VIE AU SECONDAIRE

Je t'invite à répondre aux questions pour mieux connaître les opinions et les attitudes des élèves du secondaire concernant leurs études et leur développement de carrière.

**Code personnel :**

Première lettre du prénom de ta mère : ____

Première lettre du prénom de ton père : ____

Deux derniers chiffres de ton numéro de téléphone à la maison : ____

INFORMATIONS GÉNÉRALES

- Sexe : Masculin ____ Féminin ____
- Âge : ____
- École : ____
- En quelle année es-tu? 9^e ____ 10^e ____ 11^e ____ 12^e ____
- Quelle langue parles-tu à la maison? Français ____ Anglais ____ Autre ____

(Academic Motivation)
POURQUOI VAS-TU À L'ÉCOLE?

Indique combien chacun des énoncés correspond aux raisons pour lesquelles tu vas à l'école.

1	2	3	4	5
Pas du tout	Un peu	Moyennement	Beaucoup	Exactement

Pourquoi vas-tu à l'école?

1. Parce que, selon moi, mes études vont m'aider à mieux me préparer au travail ou au métier que j'ai choisi.	1	2	3	4	5
2. Pour me prouver que je suis une personne intelligente.	1	2	3	4	5
3. Je ne sais pas pourquoi je vais à l'école.	1	2	3	4	5
4. Parce que mes études me permettent de continuer à en apprendre sur des choses qui m'intéressent.	1	2	3	4	5
5. Parce que je crois que mes études vont faire de moi un meilleur travailleur ou une meilleure travailleuse.	1	2	3	4	5
6. Pour avoir un emploi plus important plus tard.	1	2	3	4	5
7. Parce que le fait de réussir à l'école me fait sentir important à mes propres yeux.	1	2	3	4	5
8. Franchement, je me fous pas mal de l'école.	1	2	3	4	5
9. Pour le plaisir que j'ai à découvrir de nouvelles choses jamais vues auparavant.	1	2	3	4	5
10. Parce qu'un jour cela va me permettre de travailler dans un domaine que j'aime.	1	2	3	4	5
11. Parce que je veux pouvoir faire «la belle vie» plus tard.	1	2	3	4	5
12. Honnêtement, j'ai vraiment l'impression de perdre mon temps à l'école.	1	2	3	4	5
13. Pour le plaisir d'en savoir plus long sur les matières qui m'intéressent.	1	2	3	4	5
14. Parce que je veux me prouver à moi-même que je suis capable de réussir dans les études.	1	2	3	4	5
15. Pour avoir un meilleur salaire plus tard.	1	2	3	4	5

(Perceived Usefulness of School Activities)

EST-CE QUE TES COURS SONT UTILES?

Indique à quel point tu es en accord avec chacune des phrases suivantes :

1	2	3	4	5
Pas du tout	Un peu	Moyennement	Beaucoup	Tout à fait

1. Ce que j'apprends à l'école me sera utile dans la vie de tous les jours.	1	2	3	4	5
2. Les habiletés et les connaissances que j'apprends dans mes cours seront utiles à ma carrière future.	1	2	3	4	5
3. Je fais le lien entre ce que j'apprends à l'école et ma vie en général.	1	2	3	4	5
4. Je suis conscient(e) de la pertinence de mes cours.	1	2	3	4	5

(CDMSE)

PRÉPARATION À LA CARRIÈRE FUTUREIndique à quel point **tu es confiant(e) d'être capable** de compléter avec succès chacune des tâches suivantes en utilisant cette échelle.

1	2	3	4	5
Aucune confiance	Un peu de confiance	Confiance moyenne	Beaucoup de confiance	Enormément de confiance

1. Trouver de l'information à la bibliothèque sur les professions qui t'intéressent.	1	2	3	4	5
2. Évaluer avec précision tes habiletés.	1	2	3	4	5
3. Déterminer quel serait ton emploi idéal.	1	2	3	4	5
4. Choisir une carrière qui va correspondre à ton style de vie préféré.	1	2	3	4	5
5. Te questionner sur ce que tu es prêt(e) à sacrifier ou non pour atteindre tes buts de carrière.	1	2	3	4	5
6. Parler à une personne qui travaille déjà dans le domaine qui t'intéresse.	1	2	3	4	5
7. Choisir un programme d'étude ou une carrière qui correspond à tes intérêts.	1	2	3	4	5
8. Définir le style de vie que tu voudrais adopter.	1	2	3	4	5
9. Trouver de l'information au sujet des collèges ou des universités.	1	2	3	4	5

(Career Decidedness)

TA CARRIÈRE FUTURE

En considérant ton **avenir professionnel**, indique la réponse qui correspond le plus à ton opinion pour chacun des énoncés suivants :

1	2	3	4	5
Pas du tout	Un peu	Moyennement	Beaucoup	Tout à fait

1. J'ai des buts professionnels qui m'intéressent beaucoup.	1	2	3	4	5
2. Mes buts professionnels sont clairs.	1	2	3	4	5
3. J'ai une vision précise de ce que je désire comme carrière.	1	2	3	4	5

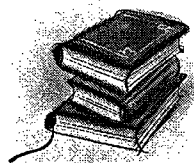
(Exploration)

ACTIVITÉS D'EXPLORATION

Indique à quel point tu as participé à ces activités depuis le début du semestre.

1	2	3	4	5
Pas du tout	Un peu	Moyennement	Beaucoup	Énormément

1. J'ai cherché à découvrir mes goûts, mes forces et mes faiblesses à travers mes cours.	1	2	3	4	5
2. J'ai participé à différentes activités pour apprendre à mieux me connaître.	1	2	3	4	5
3. J'ai parlé à un conseiller en orientation concernant mes choix de cours.	1	2	3	4	5
4. J'ai parlé à un professeur de mon futur.	1	2	3	4	5
5. J'ai parlé à un ami de mon futur.	1	2	3	4	5
6. J'ai pensé à mes plans futurs.	1	2	3	4	5
7. J'ai utilisé l'internet pour chercher de l'information sur les carrières.	1	2	3	4	5
8. J'ai passé du temps à réfléchir à mes intérêts de carrière.	1	2	3	4	5



APPENDIX C

Questionnaire Used in Study 3a

Appendix C: Questionnaire Used in Study 3a

Questionnaire sur les études

Renseignements personnels :

Ton prénom : _____ Ton nom : _____

Ton sexe : Masculin ____ Féminin ____

Âge :

Nom de ton école :

(Academic Motivation)

Indique à quel point tu es en accord avec les raisons pour lesquelles tu fais ces activités.

Pourquoi vas-tu en classe ?

Parce que j'apprends des choses intéressantes.				
1 Pas du tout	2 Un peu	3 Moyennement	4 Beaucoup	5 Tout à fait

Parce que c'est important pour moi d'aller en classe.				
1 Pas du tout	2 Un peu	3 Moyennement	4 Beaucoup	5 Tout à fait

Parce que je n'ai pas le choix.				
1 Pas du tout	2 Un peu	3 Moyennement	4 Beaucoup	5 Tout à fait

Je vais en classe, mais je ne sais pas si cela en vaut vraiment la peine.				
1 Pas du tout	2 Un peu	3 Moyennement	4 Beaucoup	5 Tout à fait

(Academic Motivation)

Pourquoi fais-tu tes devoirs ?

Parce que je trouve cela satisfaisant d'apprendre en faisant mes devoirs.				
1 Pas du tout	2 Un peu	3 Moyennement	4 Beaucoup	5 Tout à fait

Parce que c'est important pour moi de faire mes devoirs.				
1 Pas du tout	2 Un peu	3 Moyennement	4 Beaucoup	5 Tout à fait

Parce que je me sens obligé de les faire.				
1 Pas du tout	2 Un peu	3 Moyennement	4 Beaucoup	5 Tout à fait

Je ne sais pas; je trouve que faire des devoirs est une perte de temps.				
1 Pas du tout	2 Un peu	3 Moyennement	4 Beaucoup	5 Tout à fait

(Academic Motivation)

Pourquoi participes-tu en classe (p. ex., observer les règlements, écouter, répondre aux questions, etc.) ?

Parce que j'aime bien participer en classe.				
1 Pas du tout	2 Un peu	3 Moyennement	4 Beaucoup	5 Tout à fait

Parce que je crois qu'il est important de participer en classe.				
1 Pas du tout	2 Un peu	3 Moyennement	4 Beaucoup	5 Tout à fait

Parce que je me sens obligé de participer en classe.				
1 Pas du tout	2 Un peu	3 Moyennement	4 Beaucoup	5 Tout à fait

Je ne sais pas, je trouve que participer en classe est une perte de temps.				
1 Pas du tout	2 Un peu	3 Moyennement	4 Beaucoup	5 Tout à fait

(Academic Need Satisfaction)

ATTITUDES VIS-À-VIS TES ÉTUDES**Indique à quel point tu es en accord avec chacune des phrases suivantes.**

En général, j'ai de la difficulté à faire mes travaux et mes devoirs.				
1 Pas du tout	2 Un peu	3 Moyennement	4 Beaucoup	5 Tout à fait

J'ai beaucoup de liberté d'action à l'école.				
1 Pas du tout	2 Un peu	3 Moyennement	4 Beaucoup	5 Tout à fait

On me contrôle trop à l'école.				
1 Pas du tout	2 Un peu	3 Moyennement	4 Beaucoup	5 Tout à fait

Je suis au moins aussi intelligent(e) que les autres élèves.				
1 Pas du tout	2 Un peu	3 Moyennement	4 Beaucoup	5 Tout à fait

Je m'entends bien avec les personnes à l'école.				
1 Pas du tout	2 Un peu	3 Moyennement	4 Beaucoup	5 Tout à fait

J'ai de bon(ne)s ami(e)s à l'école.				
1 Pas du tout	2 Un peu	3 Moyennement	4 Beaucoup	5 Tout à fait

(Perceived Usefulness of School Activities)

L'UTILITÉ DE L'ÉCOLE ET TON AVENIR**Indique à quel point tu es en accord avec chacune des phrases suivantes.**

Ce que j'apprends à l'école m'est utile dans la vie de tous les jours.				
1 Pas du tout	2 Un peu	3 Moyennement	4 Beaucoup	5 Tout à fait

Les habiletés que j'apprends en classe seront utiles à ma carrière future.				
1 Pas du tout	2 Un peu	3 Moyennement	4 Beaucoup	5 Tout à fait

Je fais le lien entre ce que j'apprends à l'école et ma vie en générale.				
1 Pas du tout	2 Un peu	3 Moyennement	4 Beaucoup	5 Tout à fait

APPENDIX D

Questionnaires Used in Study 3b

Appendix D.1: Time 1 Questionnaire (Study 3b)**ID CODE:**

Please enter in the spaces provided below, the last 4 numbers of your home telephone number, followed by the last 3 numbers of your student number (e.g., If your phone number is 997-1324 and your student number is 1234567, your ID code would be: **1324567**).

***** ID CODE: _____ *****

Sex: Female _____ Male _____

Age: _____

Mother tongue: _____ Country of birth: _____

Language of Program you are enrolled in: English _____ French _____

Information on your previous status (i.e. your status before you enrolled for the fall term):

High school student: ____ CEGEP student (Québec): ____ Other (please specify): _____

(Career Decision-Making Need Satisfaction)

Feelings I have about my Career Choice

Please read each of the following items carefully, thinking about how it relates to your career choice (or exploration of career choice), and then indicate how true it is for you. Use the following scale to respond:

Not at all true				Somewhat true				Very true
1	2	3	4	5	6	7		

- | | | | | | | | | |
|-----|---|---|---|---|---|---|---|---|
| 1. | I feel like I am free to decide for myself what career to choose..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. | I have been able to learn interesting new skills while exploring career choices. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. | I feel able to share my career concerns with the people I interact with..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. | I do not feel very competent about making a career choice..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5. | I feel pressured to choose among certain careers..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6. | I feel that my friends and family care about my future plans..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7. | People I care about support my career choice..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8. | I feel a sense of accomplishment when I explore different career options..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9. | There is not much opportunity for me to decide for myself what career to choose | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10. | I feel that people I interact with accept me regardless of my career choice..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 11. | People I know tell me that I am good at career planning..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 12. | In general, I feel that people are not very interested in my career plans..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

(Academic Need Satisfaction)

Feelings I have about my University Education

Please read each of the following items carefully, thinking about how it relates to your experience in university, and then indicate how true it is for you. Use the following scale to respond:

Not at all true			Somewhat true			Very true		
1	2	3	4	5	6	7		

In general, in university...

- | | | | | | | | | |
|-----|---|---|---|---|---|---|---|---|
| 1. | I really like the people I interact with..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. | Often, I do not feel very competent | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. | I feel pressured | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. | I get along with people I come into contact with..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5. | I generally feel free to express my ideas and opinions..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6. | I consider the people I regularly interact with to be my friends..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7. | I frequently have to do what I am told..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8. | Most days I feel a sense of accomplishment from what I do | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9. | I do not get much of a chance to show how capable I am..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10. | I feel like I can pretty much be myself in my daily situations..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 11. | I often do not feel very capable | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 12. | People are generally pretty friendly towards me..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Thank you for participating in this study!

GOING TO UNIVERSITY**Appendix D.2 : Time 2 Questionnaire (Study 3b)****ID CODE:**

Please enter in the spaces provided below, the last 4 numbers of your home telephone number, followed by the last 3 numbers of your student number (e.g., If your phone number is 997-**1324** and your student number is **1234567**, your ID code would be: **1324567**).

***** ID CODE: _ _ _ _ _ *****

(Exploration)

Engagement in Activities

To what extent have you done the following in the last 6 months?

	A Little			A moderate amount				A great deal
	1	2	3	4	5	6	7	
1. Experimented with different career activities.....	1	2	3	4	5	6	7	
2. Sought opportunities to demonstrate skills.....	1	2	3	4	5	6	7	
3. Tried specific work roles just to see if I liked them.....	1	2	3	4	5	6	7	
4. Investigated career possibilities.....	1	2	3	4	5	6	7	
5. Went to various career orientation programs.....	1	2	3	4	5	6	7	
6. Obtained information on specific jobs or companies.....	1	2	3	4	5	6	7	
7. Initiated conversations with knowledgeable individuals in my career area....	1	2	3	4	5	6	7	
8. Obtained information on the labor market and general job opportunities in my career area.....	1	2	3	4	5	6	7	
9. Sought information on specific areas of career interest.....	1	2	3	4	5	6	7	
10. Reflected on how my past integrates with my future career.....	1	2	3	4	5	6	7	
11. Focused my thoughts on me as a person.....	1	2	3	4	5	6	7	
12. Contemplated my past.....	1	2	3	4	5	6	7	
13. Been retrospective in thinking about my career.....	1	2	3	4	5	6	7	
14. Understood a new relevance of past behaviour for my future career.....	1	2	3	4	5	6	7	

(Career Decidedness)

My Future Career

Please read each of the following items carefully, thinking about how it relates to your life, and then indicate how true it is for you. Use the following scale to respond:

	Not at all true of me				Somewhat true of me					Very true of me
	1	2	3	4	5	6	7			
1.	I have career goals that really interest me.....	1	2	3	4	5	6	7		
2.	My career goals are clear.....	1	2	3	4	5	6	7		
3.	I have a clear idea about the career I would like to pursue.....	1	2	3	4	5	6	7		
4.	I know the type of job that is best for me.....	1	2	3	4	5	6	7		
5.	I know the type of organization I want to work for.....	1	2	3	4	5	6	7		
6.	I have a clear idea about the role I would like to play in society.....	1	2	3	4	5	6	7		
7.	I know what I would like to contribute to society in my adult life.....	1	2	3	4	5	6	7		

(Perceived Usefulness of School Activities)

Usefulness of University

Please read each of the following items carefully, thinking about how it relates to you, and then indicate how true it is for you. Use the following scale to respond:

	Not at all true for me				Somewhat true for me					Very true for me
	1	2	3	4	5	6	7			
1.	What I learn in university is useful to my everyday life.....	1	2	3	4	5	6	7		
2.	The skills and knowledge I gain in school will be useful to my future career..	1	2	3	4	5	6	7		
3.	I make the connection between what I learn in school and my life in general.	1	2	3	4	5	6	7		
4.	I am aware of the relevance of my education in reaching my career goals.....	1	2	3	4	5	6	7		
5.	Some things I learn in class have opened my eyes to new and exciting jobs..	1	2	3	4	5	6	7		
6.	I think that going to university will improve my career chances.....	1	2	3	4	5	6	7		

(Academic Motivation) **GOING TO UNIVERSITY**

For each of the following questions, select the number that best corresponds to your reasons for doing the following activities.

Does not correspond at all	Corresponds very little	Corresponds a little	Corresponds moderately	Corresponds well	Corresponds very well	Corresponds completely
1	2	3	4	5	6	7

A. Why do you go to University?

- | | | | | | | | | |
|----|--|---|---|---|---|---|---|---|
| 1. | Because it provides me with pleasure and satisfaction..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. | Because it is important to me..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. | Because I would feel guilty or anxious if I didn't go..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. | Because attending university is what I really want to do | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5. | Because it is expected of me..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6. | Honestly I don't know; I truly have the impression that I'm wasting my time..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

B. Why do you read academic-related material?

- | | | | | | | | | |
|----|--|---|---|---|---|---|---|---|
| 1. | Because it provides me with pleasure and satisfaction..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. | Because it is important to me..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. | Because I would feel guilty or anxious if I didn't | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. | Because it is what I really want to do | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5. | Because it is expected of me..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6. | Honestly I don't know; I truly have the impression that I'm wasting my time..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

C. Why do you study for exams?

- | | | | | | | | | |
|----|--|---|---|---|---|---|---|---|
| 1. | Because it provides me with pleasure and satisfaction..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. | Because it is important to me..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. | Because I would feel guilty or anxious if I didn't | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. | Because it is what I really want to do | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5. | Because it is expected of me..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6. | Honestly I don't know; I truly have the impression that I'm wasting my time..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Thank you for participating in this study!