

Predicting Career Indecision: A Self-Determination Theory Perspective

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The purpose of this study was to propose and test a model of career indecision based on self-determination theory (E. L. Deci & R. M. Ryan, 1985). This model posits that peer and parental styles predicted career indecision through perceived self-efficacy and autonomy. Participants were 834 college students (236 men, 581 women, 17 without gender identification). Results from structural equation modeling provided support for the proposed model and showed that the model was invariant across gender. Discussion centers on the theoretical and practical implications of the results.

Career indecision has been a focus of vocational research over the last few decades. It is defined as an inability to make a decision about the vocation one wishes to pursue. Career indecision has been related empirically to various intraindividual constructs. For example, personality traits such as perfectionism, self-consciousness, fear of commitment (Leong & Chervinko, 1996), and anxiety (Fuqua, Newman, & Seaworth, 1988) were positively associated with career indecision. In contrast, rational decision-making style (Mau, 1995), self-efficacy beliefs (Betz & Luzzo, 1996), and level of ego identity (Cohen, Chartrand, & Jowdy, 1995) were negatively related to career indecision. Moreover, research has drawn attention to the interpersonal factors related to career indecision. For instance, positive family and peer interactions (e.g., Felsman & Blustein, 1999; Guerra & Braungart-Rieker, 1999) have been negatively related to career indecision. However, little is known about how intraindividual and interpersonal factors interact to produce career indecision. That is, how do contextual factors such as parents and peers affect career indecision? What psychological processes are involved? A potentially useful theoretical framework for understanding these critical questions in career indecision research is self-determination theory (SDT; Deci & Ryan, 1985; Ryan & Deci, 2000). Specifically, SDT focuses on the social-contextual conditions that facilitate the natural processes of self-motivation and healthy psychological functioning.

The purpose of this study was to propose and test a model of career indecision based on SDT. This model posits that interactions with parents and peers predict career indecision through perceived competence and autonomy.

The model proposed and tested in this study contributes to the existing vocational literature in three important ways. First, although some research has provided support for the relation between family environment and career indecision, little is known about the processes that may mediate this relation. Second, to the best of our knowledge, few studies have assessed the role of peers in the prediction of career indecision. Testing such a relation is important because some work reveals that peers have an important impact on psychosocial adjustment (Harter, 1999; Hartup & Stevens, 1997; Mounts & Steinberg, 1995). Third, some studies focusing on career indecision are not based on a theoretical framework. In contrast to some of these studies, the proposed model is based on a well-known theoretical framework, which has been the object of considerable research (see Deci & Ryan, 1985; Ryan & Deci, 2000; Vallerand, 1997, for literature reviews). We present a brief overview of SDT and evidence in support of the proposed model.

Self-Determination Theory

SDT is an approach to human motivation that highlights the importance of three fundamental psychological needs—autonomy, competence, and relatedness—to understand optimal functioning (Ryan & Deci, 2000). These three basic needs must be satisfied in order to experience a sense of well-being. In the present study, we focused only on the needs for competence and autonomy, because previous findings indicated that relatedness (i.e., need to have positive and significant relationships) is weakly related to career indecision (Guay, 2000).

The need for competence implies that individuals seek to be effective in their interactions with the environment. Specifically, individuals need to experience perceptions of competence when performing an activity. For example, students who feel competent when they perform activities related to career decision are fulfilling their need for competence. According to SDT, perceptions of competence will not enhance optimal functioning unless accompanied by a sense of autonomy. The need for autonomy implies that individuals strive to experience choice in the initiation, maintenance, and regulation of human behavior. For example, students who are doing career decision activities out of choice and pleasure are satisfying their need for autonomy. Most research using this theoretical framework has measured the satisfaction of these psychological needs by the degree to which individuals perceived

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themselves as competent and autonomous in various activities. Consequently, for the remainder of this article we will use the terms *perceived competence* and *perceived autonomy* to refer to the fulfillment of these psychological needs.

Perceived autonomy has typically been operationalized through motivational processes or self-regulatory styles (Connell & Wellborn, 1991; Deci & Ryan, 1985, 1991; Ryan & Connell, 1989). Deci and Ryan (1985) have thus proposed that there are different types of motivation, reflecting different levels of autonomy. *Intrinsic motivation* reflects the highest degree of autonomy. It refers to engaging in an activity for its own sake and to experience the pleasure and satisfaction derived from participation (e.g., Deci, 1975; Lepper, Greene, & Nisbett, 1973). *Extrinsic motivation* refers to engaging in an activity as a means to an end rather than for its intrinsic qualities (Deci, 1975). According to SDT, different types of extrinsic motivation exist, some of which may represent relatively high levels of autonomy (see Deci & Ryan, 1985; Ryan & Connell, 1989). From low to high levels of autonomy, the different types of extrinsic motivation are *external regulation*, *introjected regulation*, and *identified regulation*. External regulation refers to behaviors that are regulated through external means such as rewards and constraints. Introjected regulation refers to behaviors that are in part internalized by the person. However, this form of internalization is still not self-determined because it is limited to the internalization of external control sources. For example, individuals can act in order to rid themselves of their guilt, to lessen their anxiety, or to maintain a positive image of themselves. Identified regulation refers to behaviors that are performed by choice because the individual judges them as important. For example, a student may not like college but decided to go to college because he or she feels that a college diploma is important in order to enter the job market in a field that he or she likes. According to SDT, individuals who are acting for intrinsic motivation and identified regulation are satisfying their need for autonomy. In contrast, individual who are performing activities for introjected or external regulations are not satisfying their need for autonomy. In the present study, these motivational concept are used to compute an index of perceived autonomy (Ryan & Connell, 1989). Specifically, those who have high levels of perceived autonomy are characterized by intrinsic motivation and identified regulation, whereas those who have low levels of perceptions of autonomy are regulated by external or introjected regulations.

Much research over the past 25 years has revealed that perceived autonomy can explain and predict human behaviors, including school achievement, persistence, and creativity (see Ryan & Deci, 2000; Vallerand, 1997, for literature reviews). Specifically, individuals who experience higher levels of autonomy experience higher psychological functioning (e.g., persistence, creativity), whereas those who have low perceptions of autonomy experience negative outcomes (e.g., depression, dropping-out behavior, procrastination in job-seeking).

According to cognitive evaluation theory, a subtheory of SDT, the social and environmental factors may either foster or impede perceived competence and autonomy. That is, the environment should offer the conditions in which people can perceived themselves as competent and autonomous. Therefore, autonomy supportive techniques that are used by significant others, such as considering the other's perspective, acknowledging the other's feelings and perceptions, providing the other with information and

choice, and minimizing the use of pressure and control, afford people the possibility of perceiving themselves as competent and autonomous. Conversely, controlling techniques such as deadlines for a task, rewards contingent on performance, and imposed goals for a given activity thwart perceived competence and autonomy. In sum, SDT proposes that autonomy supportive contexts foster perceptions of competence and autonomy (see Ryan & Deci, 2000; Vallerand, 1997, for literature reviews). In turn, these perceptions of competence and autonomy give rise to optimal functioning. Therefore, SDT postulates the following sequence: autonomy supportive context → perceptions of autonomy/competence → positive outcomes.

The Proposed Model and Supportive Evidence

Our model (see Figure 1), based on SDT, holds that self-efficacy (i.e., competence) and autonomy toward career decision making exert an important direct effect on career indecision. We used the self-efficacy construct to capture the perceptions of competence in the present study for two reasons. First, the two constructs are theoretically related. Specifically, self-efficacy is defined as one's confidence level in the ability to organize and execute a given course of action to solve a problem or accomplish a task (Bandura, 1986), which is similar to our definition of perceived competence. Second, the most widely used scale to assess self-efficacy beliefs toward career decision making is the Career Decision-Making Self-Efficacy Scale (CDMSE; Taylor & Betz, 1983). Thus, in order to avoid proliferation of scales that assess similar constructs, we decided to use this scale to assess perceived competence.

Our model postulates that people experience a high degree of indecision about their career options when they perceive themselves as less self-efficacious and autonomous as regards career decision activities. Conversely, people are likely to have a lower degree of career indecision when they perceive themselves as self-efficacious and autonomous as regards career decision activities. Our model also posits that parental and peer autonomy support promote career decision-making self-efficacy and autonomy. That is, students' self-efficacy and autonomy perceptions would be supported by a positive interpersonal climate in which parents and peers provide choices, feedback, and involvement. In contrast, self-efficacy and autonomy perceptions would be hampered by a climate in which punitive techniques and negative feedback are used. Recent research in motivation and career indecision has provided support for some elements of the proposed model. Below, we consider some of this work.

Autonomy, Competence, and Career Indecision

Career self-efficacy beliefs (i.e., competence beliefs) have been measured in relation to various constructs including occupational self-efficacy, self-efficacy with respect to Holland's themes, and career indecision. As noted earlier, the most widely used scale to assess self-efficacy toward career decision making is the CDMSE (Taylor & Betz, 1983). Studies using the CDMSE have consistently found a negative relation between self-efficacy in career decision making and career indecision (see Betz & Luzzo, 1996; Betz & Voyten, 1997). More precisely, students who have strong self-efficacy expectations about their career choice process have lower degrees of career indecision.

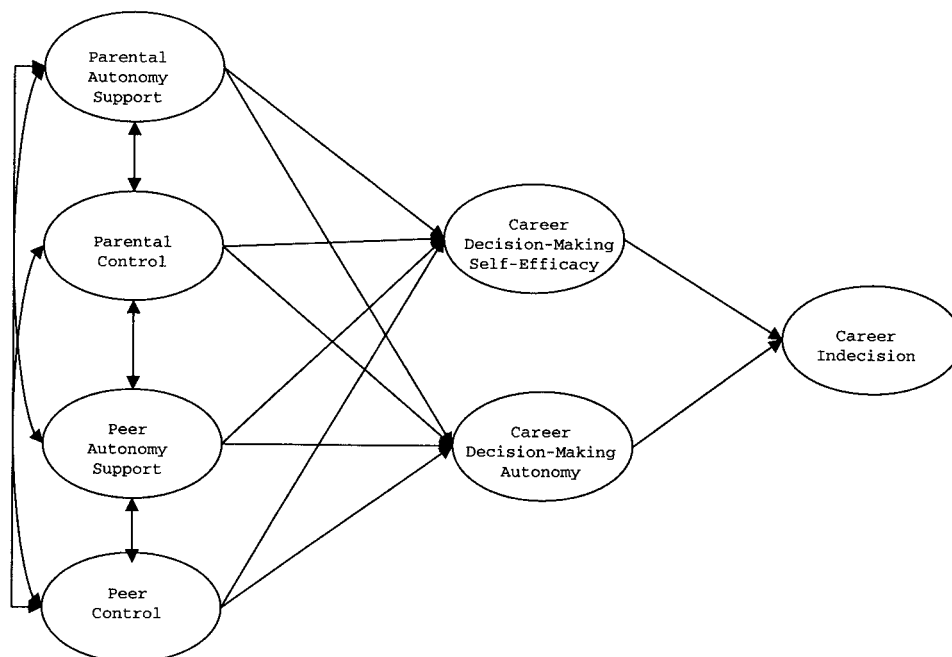


Figure 1. The proposed model.

Less attention has been devoted to the role of autonomy (i.e., as conceptualized by SDT) in career development. According to Jordaan's (1963) conceptual framework, some aspects of career exploration activity can be enhanced by intrinsic sources of motivation or elicited by extrinsic influences. In this vein, Blustein (1988) examined the relation between autonomy (intrinsic motivation) and control (extrinsic motivation) processes, and dimensions of career exploration (i.e., exploratory activity and beliefs about the utility of exploration). Blustein's results suggest that both autonomy and control orientations were positively related to self-exploration and beliefs about the instrumentality of career decision-making exploration. These results are partially in line with Deci and Ryan's (1985) theory because control processes (or extrinsic motivation) were positively associated with both dimensions of career exploration. However, the control dimension was more weakly related to some dimensions of career exploration than the autonomy dimension.

Parental Role

Recent studies have focused on how parents interact with their children to better understand the development of the children's optimal functioning (Fletcher, Steinberg, & Sellers, 1999; Gray & Steinberg, 1999; Grolnick & Ryan, 1989; Lamborn, Mounts, Steinberg, & Dornbusch, 1991; Maccoby & Martin, 1983; Steinberg, 2001; Steinberg, Lamborn, Darling, Mounts, & Dornbusch, 1994). For example, studies conducted by Lamborn et al. (1991) and Steinberg et al. (1994) revealed that authoritative parenting style (i.e., parental acceptance-involvement or warmth, psychological autonomy granting or democracy, and behavioral supervision and strictness) is associated positively with psychosocial competence but negatively with psychological and behavioral dysfunctions. In addition, several authors have demonstrated that

authoritative parenting style leads to better school performance (Dornbusch, Ritter, Leiderman, Roberts, & Fraleigh, 1987; Lamborn et al., 1991; Steinberg, Elmen, & Mounts, 1989; Steinberg, Lamborn, Dornbusch, & Darling, 1992; Steinberg, Mounts, Lamborn, & Dornbusch, 1991). Similarly, some studies have found that parental autonomy support, a concept similar to authoritative parenting, is an important dimension for understanding the optimal functioning of children and teenagers at school. For instance, Guay and Vallerand (1997) showed that autonomy support from parents was positively related to perceptions of competence and autonomy, which in turn were related to an increase in scholastic achievement.

The career development literature also acknowledges the fundamental influence of parents on the career development of adolescents and young adults (Osipow, 1983; Roe, 1957; Super, 1957). Using attachment theory, Lopez and Andrews (1987) suggested that career indecision stems from an inadequate psychological separation of adolescent from their parents. Consequently, the presence of parent-young-adult overinvolvement and other dysfunctional family patterns may contribute to low psychological separation, which, in turn, may lead to career indecision. We have identified seven studies relevant to Lopez and Andrews's (1987) predictions. Below, we present briefly results of these seven studies.

Lopez (1989) found that levels of vocational identity are affected negatively by marital conflict but positively by levels of psychological separation. Similarly, Blustein, Walbridge, Friedlander, and Palladino (1991) revealed that adolescents who are closely attached to their parents and are more conflictually independent from them, are less likely to *foreclose*, and have made more progress in committing to their career choices. However, Blustein et al.'s results indicated no significant relationship be-

tween psychological separation from parents and career indecision and career decision-making self-efficacy. Penick and Jepsen (1992) observed that perceptions of family functioning predict vocational identity and career planning involvement. Specifically, students' vocational identity was negatively associated with students' perceptions of family conflicts and family external locus of control. In addition, students' career planning involvement was negatively related to family external locus of control but positively related to democratic family style and enmeshment. Whiston (1996) found that only women's career indecision was negatively related to the degree of control and organization within the family (i.e., this relation was nonsignificant for men) and that both women's and men's career decision-making self-efficacy is positively related to the degree to which families encourage and support independence and participation in a variety of activities. However, Eigen, Hartman, and Hartman (1987) found no differences in family interaction patterns among participants classified as decided, undecided, and chronically undecided. Guerra and Braungart-Rieker (1999) revealed that students' perceptions of the parental relationships are related to career indecision over and above their year in school and identity formation. Specifically, students whose mothers were more encouraging of their independence in childhood experienced less career indecision than those who found their mothers overprotective. Finally, Santos and Coimbra (2000) found no significant relationship between psychological separation and either developmental career indecision or generalized indecision.

Although previous developmental and career development studies have used different concepts (i.e., authoritativeness, autonomy support, psychological separation and attachment) to capture the interplay between parenting style and children's adjustment, most of these studies acknowledge that warmth, democracy, and involvement are essential characteristics that foster children's adjustment. However, among the career development studies reviewed, only two studies have reported a significant relationship between family variables and degree of career indecision. Nevertheless, it is important to keep in mind that this lack of significant effects in past studies does not necessarily stem from a true absence of relationships. In fact, the number of participants involved in the studies, the magnitude of the effect size, and the variance heterogeneity may explain this absence of significant effects. On the other hand, the weak magnitude of the relation between family factors and career indecision may suggest that mediating factors operate (Baron & Kenny, 1986), as suggested in the present study.

The Role of Peers

Developmental psychologists recognize that peers and friends have a strong influence on individuals' development and social adjustment (Harter, 1999; Hartup & Stevens, 1997; Hymel, Comfort, Schonert, & McDougall, 1996; Rubin, Bukowski, & Parker, 1998). For example, Epstein (1983) found that high-achieving peers have positive effects on adolescents' satisfaction with school, educational expectations, report-card grades, and standardized achievement test scores.

However, far less empirical evidence is available on the link between peer relations and career development. This is indeed unfortunate because many researchers and practitioners alike argue

that during adolescence, children are more inclined to share their personal thoughts with close friends than with their parents (Harter, 1999). Indeed, teenagers spend 29% of their waking hours with their friends (see Hartup & Stevens, 1997). Consequently, they may be more prone to talk about their career options with their close friends than with their parents. The context of friendships may therefore offer some support in coping with anxiety-provoking developmental challenges, such as career decisions, that confront students (Berndt, 1996).

We have identified one study testing the role of peers in career indecision. Felsman and Blustein (1999) revealed that adolescents who report greater attachment to peers were more likely to explore their career environment and to make greater progress in committing themselves in making career choices. Felsman and Blustein explained these relations through two processes: Close relationships help individuals to learn more about themselves, and close relationships provide security and psychological support that facilitate commitment to a career plan. In the present study, we extend their work by hypothesizing that autonomy support from friends fosters career decisions through self-efficacy beliefs and perceptions of autonomy, whereas controlling behaviors from friends thwarts autonomy and self-efficacy in the decision-making process and thus leads to career indecision.

The Present Study

The purpose of the present study was to test the model presented above. Note that the hypothesized relations among the variables would be estimated by controlling for students' levels of neuroticism. We decided to use neuroticism as a control variable in the present model for two reasons: (a) Some studies have found that neuroticism is a determinant of career indecision (i.e., Chartrand, Rose, Elliott, Marmarosh, & Caldwell, 1993), and (b) recent studies suggest that neuroticism reflects an intrapersonal cognitive process that leads people to perceive themselves and the world negatively (Larose, Guay, & Boivin, 2002; Levin & Stokes, 1986). According to the cognitive bias view, people who are neurotic evaluate themselves and their social context negatively on self-report scales. Because we used self-report scales in the present study, we felt that it was important to control for neuroticism as an important confounding variable. Specifically, if the cognitive bias phenomenon is at play in this study, one should observe negligible or no relations among social-contextual variables and intraindividual variables while controlling for neuroticism.

In addition, we looked for potential gender differences at the mean and process levels. At the mean level, we tested whether scores on parental and peers experiences, decision-making self-efficacy and autonomy, and career indecision are different for men and women, while controlling for neuroticism. Research on gender differences has typically shown that women present higher levels of autonomy than do men (Vallerand, 1997; Vallerand, Fortier, & Guay, 1997). However, the research does not usually report gender differences on career decision-making self-efficacy and career indecision (e.g., Betz & Voyten, 1997; Sweeney & Schill, 1998). At the process level, we tested whether the relations among the model's variables vary across gender. This would be achieved by an analysis of invariance. Typically, research on autonomy and perceived competence revealed no sex differences at the process level (Senécal, Vallerand, & Guay, 2001; Vallerand et al., 1997).

Method

Participants

The sample was composed of 834 French-Canadian college students (236 men, 581 women, and 17 without gender identification). Participants' mean age was 17.7 years, and 97% were born in the Canadian province of Quebec. A total of 29% of the participants' parents were divorced. The mean family income was between \$30,000 CD and \$40,000 CD (Canadian dollars).

Procedure

A total of 2,300 students were contacted in their college classrooms and asked to complete a questionnaire at home. It was not possible to administer the questionnaire during school time because the questionnaire takes approximately 60 min to complete. A research assistant explained that the purpose of the study was to gain knowledge about college students' experiences. The questionnaire was distributed along with a prestamped envelope addressed to the university. In addition, participants completed a form on which they indicated their names and telephone numbers. They then returned this form to the research assistant. This form was used to call students who had not sent back their questionnaire and ask them to do so. A total of 834 participants sent back their questionnaire, giving a response rate of 36%. This response rate is similar to that found in previous studies (e.g., Guay, Vallerand, & Blanchard, 2000).

Measures

The Career Decision Scale. The Career Decision Scale (CDS; Osipow, 1987) assesses the extent and nature of career indecision. It is composed of 18 items that assess certainty (Items 1 and 2) and indecision (Items 3–18). Responses are made on a 4-point continuum ranging from *like me* (1) to *not like me* (4). Higher scores on the first 2 items indicate career certainty, whereas higher scores on the remaining 16 items indicate degrees of career indecision. In the present study, we used the Indecision subscale. Cronbach's alpha for this scale was .90.

The Career Decision Making Self-Efficacy Scale-Short Form. In the present study we used the short form of the CDMSE (CDMSE-SF; Betz, Klein, & Taylor, 1996). The short form consists of 25 items that measure an individual's degree of belief that he or she can successfully complete the tasks necessary to make career decisions. These 25 items assessed the five career-choice competencies postulated by Crites (1978); accurate self-appraisal, gathering occupational information, goal selection, making plans for the future, and problem solving. Items were rated on a 5-point confidence continuum, ranging from *no confidence at all* (1) to *complete confidence* (5). Higher scores on items indicate higher levels of career decision-making self-efficacy. Cronbach's alpha for this scale was .93.

Career Decision-Making Autonomous Scale. The Career Decision-Making Autonomous Scale (CDMAS; Guay, 2001) was developed to assess motivational constructs posited by SDT (Deci & Ryan, 1985). The CDMAS format is based on a previous instrument designed to assess self-regulatory goals orientation (see Sheldon & Elliot, 1998). It consists of eight activities related to career decision making: (a) seeking information on careers, (b) seeking information on school programs, (c) identifying options for a school program or a career, (d) working hard to attain a career goal, (e) identifying career options in line with a career goal, (f) identifying steps to follow in order to complete a school program, (g) identifying what one values the most in a career option, and (h) identifying a career option that is congruent with one's interest and personality. For each activity, the participant indicates, on four items, the reason why he or she is participating in the activity or why he or she would participate in the activity. Specifically, we assessed motivations underlying actual behaviors and behavioral intentions. This procedure is similar to the one used with CDMSE-SF (Betz et al., 1996). One item assesses intrinsic motivation (i.e.,

for the pleasure of doing it), whereas the other three items assess three types of extrinsic motivation: identified (i.e., because I believe that this activity is important), introjected (i.e., because I would feel guilty and anxious if I do not perform this activity), and external regulation (i.e., because somebody else wants me to do it or because I would get something from somebody if I do it—rewards, praise, approval). Items were rated on a 7-point Likert scale *does not correspond at all* (1) to *corresponds completely* (7). Cronbach's alpha values for these four subscales ranged between .91 and .94. Results from a confirmatory factor analysis (CFA) provided good support for the four motivational dimensions of the scale, $\chi^2(735, 421) = 1972.066$, comparative fit index (CFI) = .922, non-normed fit index (NNFI) = .908, root mean square error of approximation (RMSEA) = .07. In addition, all factor loadings were above .70. Results of this analysis are presented in Appendix A

We computed the perceived autonomy indexes by integrating scores on each subscale under a single score. Following the procedure commonly used in the SDT literature (e.g., Blais, Sabourin, Boucher, & Vallerand, 1990; Fortier, Vallerand, & Guay, 1995; Grolnick & Ryan, 1989; Senécal et al., 2001; Vallerand et al., 1997), items of the four subscales were used to compute the autonomy indexes. This was done using the following formula: (intrinsic motivation + identified regulation) - (introjected regulation + external regulation). Using this formula, we computed eight self-determination indexes (one index per activity). Thus, the eight indexes were used to construct four indicators by averaging the responses of the first two indexes to form the first indicator, the second two indexes to form the second indicator, and so forth. This procedure reduces the number of indexes and results in more valid and reliable indicators (see Marsh & Yeung, 1997, for more details). Positive scores on these indicators suggest that students are acting for intrinsic and identified reasons, whereas negative scores indicate that students are acting for introjected or external reasons.

Parental Control and Autonomy Support Scale. The Parental Control and Autonomy Support Scale was adapted from the Perceived Interpersonal Style Scale (PISS; Pelletier, 1992) and assesses students' perceptions of their parents' attitudes toward career decision. It is made up of 29 items divided into five subscales that assess incompetence feedback (4 items), autonomy supportive behaviors (6 items), controlling behaviors (7 items), involvement (6 items), and informational feedback (6 items). Items were rated on a 7-point Likert scale ranging from *does not correspond at all* (1) to *corresponds completely* (7). Students had to rate each of the 29 items with respect to behaviors of their mother and father. Cronbach's alpha values for these subscales ranged between .76 and .91.

Preliminary analyses revealed strong correlations between items assessing maternal and paternal behaviors. Furthermore, there was a strong relation among Autonomy Supportive Behaviors, Informational Feedback, and Involvement subscales (e.g., $r = .76$, $r = .82$, and $r = .80$, respectively). In addition, Incompetence Feedback and Controlling Behaviors subscales were substantively correlated (e.g., $r = .75$). In light of these results, we decided to assess the parental autonomy support construct (aggregating answers from father and mother) by using the following three subscales: Autonomy Supportive Behaviors, Informational Feedback, and Involvement. The parental controlling construct was assessed by the Incompetence Feedback and the Controlling subscales.

Peer Control and Autonomy Support Scale. The Peer Control and Autonomy Support Scale is also adapted from the PISS (Pelletier, 1992) and assesses students' perceptions of their peers' attitudes toward career decision. This scale is made up of 22 items divided in four subscales that assess incompetence feedback (4 items), controlling behaviors (4 items), involvement (9 items), and informational feedback (5 items). In contrast with the parental scale, we did not ask participants to complete the Autonomy Supportive Behaviors subscale because items on the original scale (Pelletier, 1992) were not relevant to peers' behaviors. Items were rated on a 7-point Likert scale ranging from *does not correspond at all* (1)

to *corresponds completely* (7). Cronbach's alpha values for these four subscales ranged between .64 and .89.

Preliminary analyses on the peers' scale revealed strong correlations between Informational Feedback and Involvement subscales (e.g., $r = .83$). In addition, Incompetence Feedback and Controlling Behaviors subscales were substantively correlated (e.g., $r = .70$). As with the parental scale, we decided to assess peer experiences by two constructs. First, the autonomy support construct was obtained by using the Informational Feedback and Involvement subscales. Second, the peer controlling construct was obtained by using the Incompetence Feedback and the Controlling subscales.

Neuroticism. Neuroticism was measured by a scale that assesses four indicators of mental health, namely depression, anxiety, irritability, and paranoid ideations. Each item assesses the frequency of a psychological symptom on a 4-point Likert scale ranging from *not at all* (1) to *often* (4). The Depression, Anxiety, and Irritability subscales are abridged versions of the Psychiatric Symptoms Index subscales (Ilfeld, 1976). These subscales were adapted and validated in French by Villeneuve, Valois, Frenette, and Sévigny (1996) for the Santé-Québec Survey on Mental Health. The first subscale assesses anxiety (6 items, $\alpha = .73$), whereas the second subscale assesses irritability (4 items, $\alpha = .77$). The third subscale assesses depression (10 items, $\alpha = .81$). The fourth subscale is an abridged version of the Paranoid Ideations subscale from the Symptom Checklist-90 (Derogatis & Melisaratos, 1983; 6 items, $\alpha = .66$). Correlation among subscales ranged between .47 and .65. In a recent study conducted by Guay, Larose, Boivin, and Sabourin (2001), a correlation of .71 was found between this mental health measure (i.e., involving the four subscales) and the Neuroticism subscale of the Revised NEO Personality Inventory (Costa & McCrea, 1992), indicating that this measure of mental health assesses conceptual properties of the neuroticism construct.

Statistical Analyses

To test the proposed model, we used structural equation modeling (SEM) analyses (see Byrne, 1995, for more details on this statistical technique). All SEM analyses were performed on covariance matrices using the maximum likelihood estimation procedure (EQS Version 5.1; Bentler, 1993).

Goodness of fit. To ascertain the model fit, we used the CFI, the NNFI (also known as the Tucker-Lewis Index), the RMSEA, as well as the chi-square test statistic. The NNFI and CFI vary along a 0-to-1 continuum (although the NNFI could be greater than 1, this is rarely the case in practice), where values greater than .90 are typically taken to reflect an acceptable fit (Schumacker & Lomax, 1996). Browne and Cudeck (1993; see also Jöreskog & Sörbom, 1993) suggested that RMSEAs less than .05 are indicative of a close fit and that values up to .08 represent reasonable errors of approximation.

The statistical model to be estimated. The eight latent constructs were measured by different sets of indicators (see Appendix B). The parental autonomy latent construct was measured by the following three subscales from the Parental Control and Autonomy Support Scale: Parental Autonomy, Involvement, and Informational Feedback. The parental control latent construct was measured by the following two subscales: Negative Feedback and Control. The peers' autonomy support latent construct was measured by the following two subscales from the Peers Control and Autonomy Support Scale: Involvement and Information Feedback. The peers' control latent construct was measured by the following two subscales: Negative Feedback and Controlling Behaviors. The career decision-making autonomy latent construct was measured by the four autonomy indexes outlined in the Measures section. The career decision-making self-efficacy latent construct was measured by the five subscales of the CDMSE-SF. The career indecision latent construct was measured by three indicators that were obtained from the 16 items of the Indecision scale. Because, the CDS has been found to be a unidimensional measure (Martin, Sabourin, Laplante, & Coallier, 1991), we have computed the three indi-

cators by averaging the responses of the first 5 items to form the first indicator, the following 5 items to form the second indicator, and the remaining 6 items to form the third indicator. According to Marsh and Yeung (1997), this procedure reduces the number of indicators involved in the analyses and results in more valid and reliable indicators. Finally, the neuroticism latent construct was measured by the following four subscales: Depression, Anxiety, Paranoid Ideations, and Irritability.

Correlations between uniquenesses of the career decision-making autonomous latent construct were estimated. In most applications of SEM and CFA analyses, a priori models assume that the residual variance (i.e., uniqueness) associated with each measured variable is independent of residual variances associated with other measured variables. However, because in the present study the CDMAS implies that the same items measuring intrinsic motivation, identified regulation, introjected regulation, and external regulation were completed for eight activities, it is likely that the uniquenesses associated with the matching measured variables are correlated (a method halo effect). If there were substantial correlated uniquenesses that are not included in the model, then the model fit indexes would be attenuated. In the present study, CFA and SEM analyses that estimated these correlated uniquenesses offer better fit indexes than analyses that did not. For this reason we focus our discussion on analyses that include these correlated uniquenesses.

Tests of invariance across gender. To evaluate gender differences in the model, we computed separate covariance matrices for men and women. When there are parallel data from more than one group, it is possible to test the invariance of the solution by requiring any one, any set, or all parameter estimates to be the same in the two groups. The minimal condition of factorial invariance is the invariance of the factor loadings. Separate tests were conducted to test the invariance of the factor loadings, factor variances, factor correlations, and path coefficients. However, uniquenesses were not constrained to equality, because this test is considered to be excessively stringent (Byrne, 1995). Model comparison was facilitated by positing a nested ordering of models in which the parameter estimates for a more restrictive model are a proper subset of those in a more general model (Bentler, 1990). Under appropriate assumptions, the difference in chi-squares between two nested models has a chi-square distribution and so can be tested for statistical significance.

Results

We conducted three sets of analyses to verify the proposed model. First, we performed a CFA analysis to verify the psychometric quality of the measurement model and the magnitude of the relations between latent variables. Second, we performed an SEM analysis to verify the proposed model. Third, we conducted a multivariate analysis of variance (MANOVA) and a set of invariance analyses to verify if there were mean differences between men and women on the model variables and if the proposed model was invariant across gender.

CFA analysis. In the CFA analysis, we estimated covariances between all latent constructs. Thus, all measures were evaluated simultaneously. The fit of the measurement model was good, $\chi^2(241) = 821.23$; NNFI = .942, CFI = .953, RMSEA = .057; the factor solution was fully proper; and the factors were well defined (e.g., all factor loadings were substantial; see Appendix B). Correlations between all latent constructs are presented in Table 1. All correlations were in the expected direction. In addition, most of these correlations were moderate, thereby indicating that the constructs were relatively independent.

SEM. We tested our a priori structural model (Figure 1) and found that the fit of this model was good, $\chi^2(246) = 940.21$; NNFI = .932, CFI = .944, RMSEA = .062. In addition, most of

Table 1
Confirmatory Factor Analysis: Correlations Between All Latent Constructs

Construct	1	2	3	4	5	6	7	8
1. Neuroticism	—							
2. Parental autonomy support	-.25	—						
3. Parental control	.33	-.63	—					
4. Peer autonomy support	-.11	.31	-.25	—				
5. Peer control	.17	-.25	.54	-.41	—			
6. Career decision making autonomy	-.24	.35	-.38	.33	-.39	—		
7. Career decision-making self-efficacy	-.33	.33	-.25	.39	-.26	.51	—	
8. Career indecision	.36	-.18	.30	-.24	.41	-.37	-.59	—

Note. All coefficients are significant at $p < .05$.

the paths were significant and in the expected direction. Exceptions were the two paths connecting parental control to career decision-making self-efficacy and career decision-making autonomy. Paths are depicted in Figure 2. Results indicated that parental autonomy support was positively associated with career decision-making autonomy ($\beta = .22$) and career decision-making self-efficacy ($\beta = .21$). In addition, peers' autonomy support was positively related to career decision-making self-efficacy ($\beta = .26$) and to career decision-making autonomy ($\beta = .19$). Conversely,

peers' control was negatively associated with career decision-making self-efficacy ($\beta = -.14$) and career decision-making autonomy ($\beta = -.59$). Finally, career decision-making self-efficacy ($\beta = -.45$) and autonomy ($\beta = -.24$) were negatively related to career indecision.

Gender differences. A MANOVA was performed to verify if there were gender differences on the model variables, using neuroticism as a covariate. A multivariate significant effect was obtained, $F(7, 718) = 13.64, p < .05, \eta^2 = .11$. Means and effect

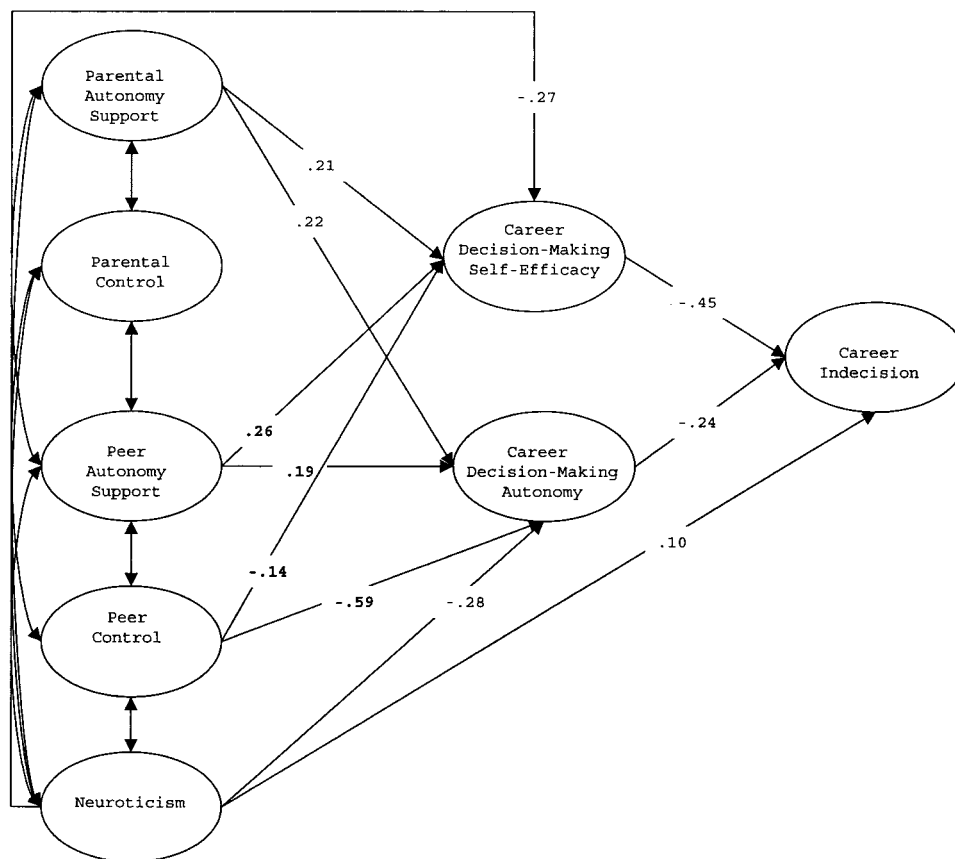


Figure 2. Results of the structural model. All coefficients are significant at $p < .05$.

size are presented in Table 2. Cohen (1977) characterized $\eta^2 = .01$ as small, $\eta^2 = .06$ as medium, and $\eta^2 = .14$ as large effect size. Univariate *F* tests revealed that women perceived their parents and peers as more autonomy supportive and less controlling than did men. In addition, women perceived greater autonomy and self-efficacy but less career indecision than did men. However, note that effect size on career decision-making self-efficacy, career indecision, parental autonomy, and parental control were quite low.

Invariance analyses were then conducted to verify whether the model was invariant across gender. Following Marsh, Craven, and Debus (1998), we evaluated the invariance of different sets of parameters (factor loadings, factor variances, factor covariances, and path coefficients). The minimum condition of factorial invariance is the invariance of factor loadings. In the present investigation, however, our main concern was with the invariance of path coefficients.

In the least restrictive model, no parameters were constrained to be equal across gender, and this model provided a good fit to the data (see Model 1 in Table 3). In Model 2, the factor loadings were constrained to be invariant across gender, and the fit of this model did not differ significantly from Model 1 (i.e., the chi-square difference test was nonsignificant). Hence, the factor loadings did not differ significantly across gender. In Model 3, factor loadings and factor variances were constrained to be invariant. Model 3 was statistically different from Model 2, indicating that factor variances did differ significantly across gender. In Model 4, factor loadings, factor variances, and covariances were constrained to be invariant. The fit of Model 4 was not significantly different from that of Model 3. In Model 5, factor loadings, factor variances, factor covariances, and path coefficients were invariant, and this model did not differ significantly from Model 4.

On the basis of results obtained under Models 1–5, we concluded that factor variances were not completely invariant across gender. Consequently, we specified Model 6 in which these con-

straints were relaxed. This model offered a good fit to the data (see Table 3) in that the chi-square was not significantly different from that in Model 1 and the fit indexes were as good or better for Model 6 than for any of the other models. Despite the fact that factor variances were noninvariant, results showed results similar to those obtained with the overall sample. These results, thus, provided some support for the invariance of the model across gender.

Complementary analyses. Although results provided support for SDT, they did not offer the possibility of verifying whether the negative relation between self-efficacy (e.g., competence) and career indecision is stronger under conditions of high perceived autonomy than under conditions of low perceived autonomy, as suggested by SDT. To test this possibility, we performed a regression analysis in which autonomy moderated the relation between self-efficacy and career indecision. Results revealed that the interaction term involving perceived autonomy and perceived self-efficacy was nonsignificant ($\beta = .01, ns$). The fact that perceptions of autonomy and competence have only independent effects and do not interact is consistent with results of past research (see Vallerand, 1997, for a review).

Discussion

The purpose of this study was to propose and test a model of career indecision among college students. This model posits that peers and parental experiences predict career indecision through self-efficacy beliefs and autonomous regulation. Specifically, the less autonomy supportive and the more controlling are parents and peers, the less positive are students' perceptions of self-efficacy and autonomy toward career decision-making activities. In turn, the less positive students' perceptions are, the higher their levels of career indecision. Results from SEM provided support for all proposed paths among the model variables except for the paths connecting parental control to self-efficacy and autonomy. In addition, all of the proposed relations were independent of the neuroticism dimension and were invariant across gender. The present findings have implications for career indecision research and gender differences. These issues are discussed below.

Career Indecision Research

Findings from this study have a number of implications for career indecision research. First, as we pointed out in the beginning of the article, many studies have linked career indecision to interpersonal and intrapersonal processes without paying attention to how interpersonal and intrapersonal factors are related to career indecision. The present study contributes to the existing literature by showing that experiences with peers and parents (i.e., control and autonomy support) predict career indecision through perceived self-efficacy and autonomy. Specifically, peers and parents who are autonomy supportive (i.e., providing choice, information, and/or involvement) foster the development of students' levels of confidence with regard to career decision-making activities. In addition, these autonomy supportive behaviors foster the development of perceived autonomy. These findings are in line with recent motivational studies (Guay & Vallerand, 1997; Vallerand et al., 1997), which showed that perceptions of autonomy and competence mediated the relation between autonomy supportive behav-

Table 2
Mean, Standard Error, Effect Size, and *F* Test for Men and Women on All Model Variables

Variable	Men		Women		η^2	<i>F</i>
	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>		
Parental autonomy support	5.11	0.08	5.44	0.05	.02	12.81*
Parental control	2.24	0.06	1.93	0.04	.02	17.42*
Peer autonomy support	4.24	0.08	4.88	0.05	.07	50.04*
Peer control	2.21	0.06	1.78	0.03	.05	40.74*
Career decision-making autonomy	4.14	0.23	6.02	0.14	.06	46.73*
Career self-efficacy decision making	3.52	0.04	3.67	0.03	.01	10.09*
Career indecision	1.95	0.04	1.81	0.03	.01	8.54*

Note. Means are corrected as a function of the neuroticism factor (covariate). Mean on career indecision is based on a 4-point Likert-type scale. Means on the scale measuring career decision-making autonomy ranged between 12 and -12 . Mean on the career self-efficacy decision-making variable is based on a 5-point continuum. All other variable means are based on a 7-point Likert-type scale.

* $p < .001$.

Table 3
Fit Indexes for Structural Equation Modeling and Multiple Group Analyses

Model description	χ^2	RMSEA	CFI	NNFI	df	Df_{diff}	χ^2_{diff}
Total group models							
CFA analysis	821.23	.057	.953	.942	241	—	—
SEM analysis	940.121	.062	.944	.932	246	—	—
Multiple group models							
No invariance constraints (M1)	1,146.835	.043	.946	.935	492		
FL inv. (M2)	1,177.094	.043	.945	.935	509	17	30.25
FL + F variance invariant (M3)	1,206.475	.043	.943	.934	516	7	29.38*
FL + F variance + Cov Inv. (M4)	1,228.824	.043	.942	.934	525	9	22.34
FL + F Variance + Cov + Path Inv. (M5)	1,251.002	.043	.942	.935	538	13	22.17
Selected parameters inv. (M6)	1,220.378	.042	.944	.936	531	39	73.54

Note. In all invariance analyses the disturbance term of the career decision-making autonomy latent construct was constrained at lower bound; Multiple group models: M1 = no invariance constraints were imposed, M2 = factor loadings were invariant (inv.), M3 = factor loadings and variances were inv., M4 = factor loadings, variances, and factor covariances were inv., M5 = factor loadings, variances, factor covariances (cov), and path coefficients were inv., M6 = with selected parameters inv. For tests of invariance, each model is tested against another model that is nested under it (e.g., M3 vs. M4 is a comparison between M3 and M4). Tests of statistical significance are based in the χ^2_{diff} in relation to the df_{diff} . RMSEA = root mean square error of approximation; CFI = comparative fit index; NNFI = nonnormed fit index; CFA = confirmatory factor analysis; SEM = structural equation modeling. * $p < .001$.

iors and school outcomes such as scholastic performance and dropping out of school. Furthermore, results indicate that peers' controlling behaviors are associated with low levels of self-efficacy and autonomy perceptions. In contrast, parental controlling behaviors were not significantly associated with these perceptions. We believe that these nonsignificant findings stem from the large negative correlation between autonomy supportive and controlling behaviors of parents ($r = -.63$). Specifically, given the high correlation between these parental experiences, it was not surprising that in the two processes, parental control could not explain a percentage of variance that was not explained by parental autonomy support. In addition, results of the present study are in line with Steinberg and colleagues' work that suggests that parental authoritativeness (i.e., parental acceptance-involvement or warmth, psychological autonomy granting or democracy, and behavioral supervision and strictness) is associated with a number of important developmental outcomes, including academic achievement (Steinberg et al., 1989, 1992), prosocial behavior (Lamborn et al., 1991; Steinberg et al., 1994), positive mental health (Lamborn et al., 1991; Steinberg et al., 1994), and academically supportive peer relations (Mounts & Steinberg, 1995).

Second, although some research on career indecision has focused on the role of parents, little is known about how peers affect career indecision. However, as mentioned in the beginning of the article, developmental psychologists recognize that peers and friends have a strong influence on individuals' development and social adjustment (e.g., Hartup & Stevens, 1997) and that during the adolescent period, children are more inclined to share their personal thoughts with close friends than with their parents (Harter, 1999). The present study contributes to the existing literature by showing that peers' autonomy support is linked positively to self-efficacy and autonomy in career decision activities over and above parental experiences. However, results also indicate that controlling behaviors from peers are negatively associated with self-efficacy and autonomy. The friendship context can thus offer some useful support or can be harmful for students coping with anxiety-provoking developmental challenges such as career decision making (Berndt, 1996). Future research is needed, therefore,

to more fully understand elements of the social context that foster or impede career indecision. Multiple contexts, such as family and peers, may work together to predict career indecision through intraindividual factors. In order to consider how experiences in one context affect experiences in another context, further research is needed. In this vein, the role of teachers also deserves scientific scrutiny, inasmuch as previous research has revealed that teachers' autonomy supportive behaviors are associated with perceived autonomy and competence (Guay, Boggiano, & Vallerand, 2001).

A third implication concerns the relation among career decision-making self-efficacy, autonomy, and career indecision. According to self-efficacy theory (Bandura, 1997), perceptions of self-efficacy are more fundamental to understanding outcomes such as career indecision than to perceptions of autonomy. In contrast, SDT postulates that autonomy is more fundamental to the explanation of optimal functioning than are perceptions of one's capabilities. The present results indicate that career decision-making self-efficacy ($\beta = -.45$) is more strongly associated with career indecision than career decision-making autonomy ($\beta = -.24$). In order to verify more rigorously whether self-efficacy perceptions are more strongly related to career indecision than autonomy, we performed a SEM analysis where these paths were constrained to equality. Results of this analysis revealed that the model in which these paths were constrained offered a worse fit to the data than did the model in which these constraints are relaxed. This analysis therefore indicates that self-efficacy is more strongly associated with career indecision than autonomy, thereby providing some support for Bandura's (1997) contention. However, from a developmental perspective (i.e., Erikson's Model), it is possible that self-efficacy immediately precedes career decidedness, whereas autonomy falls much earlier in the development and, consequently, autonomy would have a weaker or more indirect relation on career indecision for college students than for younger adolescents or children.

In addition, it is possible that the strength of the relation between these perceptions and career outcomes depends on the nature of the outcome. For instance, it is possible that autonomy perceptions may be more closely related to affective outcomes than cognitive ones such as career indecision. That is, one may find a higher relation

between autonomy and career interest than between self-efficacy and career interest. Additional research is needed to test these hypotheses.

SDT also suggests that individuals with high self-efficacy perceptions toward a specific activity may experience less optimal outcomes if they pursue this activity with a weak sense of autonomy. Complementary regression analyses indicate that the negative relation between self-efficacy (e.g., competence) and career indecision is not stronger under conditions of high autonomy, as suggested by SDT. However, the fact that perceptions of autonomy and competence have only independent effects and do not interact seems consistent with results of past research (see Vallerand, 1997, for a review).

A fourth and final implication deals with the fact that we controlled for neuroticism to estimate the hypothesized relations. Results indicate that neuroticism is significantly and positively related to all variables of the model (see Table 1), indicating that cognitive bias may be somewhat at play in the present study. However, results from SEM analysis indicate that all of the hypothesized relations are significant (except the paths connecting parental control to the two perceptions). Thus, the present results could not be interpreted simply in light of a cognitive bias view in which people have a negative perception of their social context and of themselves. Specifically, if the cognitive bias was the only factor that explained the relations under study, we would not have obtained significant relations between contextual variables and intraindividual ones, but rather only significant relations between the neuroticism dimension and all of the other variables. In contrast, results indicate that among students who have the same level of neuroticism, those who feel that their parents and peers are autonomy supportive experience higher levels of self-efficacy and autonomy. Thus, it appears that students' perceptions of their social context are not only rooted in negative personality dimensions but, to some extent, also represent an objective reality (Larose et al., 2002).

Gender Differences

Another purpose of the study was to test for potential gender differences. That is, do women experience the same levels of autonomy support, control, career decision-making self-efficacy and autonomy, and career indecision as men? Are women and men influenced to the same extent by the processes outlined in the proposed model? Results from a MANOVA reveal that women perceived their parents and peers as more autonomy supportive and less controlling than did men. In addition, women perceived greater autonomy and self-efficacy but less career indecision than did men. Overall, these results are in line with previous motivational research (Vallerand, 1997; Vallerand et al., 1997) but are different from results obtained in the vocational literature. Specifically, the research does not usually report gender differences on career decision-making self-efficacy and career indecision (e.g., Betz & Vuyten, 1997; Sweeney & Schill, 1998). However, it is important to keep in mind that we used neuroticism as a covariate in our analyses, whereas previous studies did not. Because previous research repeatedly indicated that women are more neurotic than men (see Costa & McCrea, 1992), it was important to control for this variable in the present study. However, this interpretation of the results should be qualified, in light of the fact that some effect sizes are quite low. In sum, further research is needed to better understand the interplay between neuroticism and gender to explain career indecision.

Analyses of invariance revealed that path coefficients are not different for men and women. These results suggest therefore that the same psychological processes are at play for men and women. That is, women's self-efficacy and autonomy perceptions are not related to social contextual variables or career indecision, or both (i.e., parents and peers), to a greater or a lesser extent than are men's. Again, these results are in line with recent motivational studies (e.g., Senécal et al., 2001; Vallerand et al., 1997).

Limitations of the Study and Future Research

Although the present results provided some support for the model, at least four limitations should be taken into consideration when interpreting these findings. First, the measures used were self-report scales. It would be preferable in further tests of the model to use multiple sources of evaluations (parent and peers) to avoid the common problem of shared method variance. Second, the data collected were cross sectional. It is therefore difficult to conclude about any direction of causality among the variables. For instance, an alternative explanation that may be viable is that students who are undecided about their career options elicited less autonomy supportive and more controlling behaviors from their parents and peers. Further longitudinal research is thus needed to test these alternative hypotheses on the causal ordering among the model variables. In addition, without a longitudinal design, it is not possible to distinguish between students who are momentarily undecided and those who are chronically undecided. Using such a typology may provide a stringent test of the model and more information on the developmental processes involved in career indecision. Third, we have investigated a limited number of variables to understand career indecision. Other variables should definitely be included in further tests of the model to better understand career indecision such as decision-making styles and ego identity. Fourth, the proposed model is limited to the understanding of career indecision. However, we believe that extensions of this model are possible to understand other career outcomes such as interest (Blustein & Flum, 1999) and performance. Indeed, numerous studies in various life contexts have provided support for SDT in the prediction of interest and performance (Ryan & Deci, 2000; Vallerand, 1997, for literature reviews).

Conclusion

In conclusion, we began by arguing that little research has verified how contextual and intraindividual factors interact to produce career indecision. To answer this question, we proposed a model based on STD. Results of the present study provide good support for the proposed model. It is important to emphasize that the present results also have important practical implications. First, counselors should be aware that parents' and peers' behaviors have an important influence on career indecision. That is, counselors should look not only at decision-making skills, but also at how students' career choices are affected by significant others. Second, to reduce career indecision, the model suggests working on perceptions of self-efficacy and autonomy. Counselors should therefore use interventions that promote self-efficacy and autonomy perceptions toward decision-making activities. To this end, acting in autonomy supportive ways may help students develop their autonomy and self-efficacy.

References

- Bandura, A. (1986). *Social foundations of thought and actions: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W. H. Freeman.
- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*, 1173–1182.
- Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, *107*, 238–246.
- Bentler, P. M. (1993). *EQS: Structural equation program manual*. Los Angeles: BMDP Statistical Software.
- Berndt, T. J. (1996). Transitions in friendship and friends' influence. In J. A. Graber & J. Brooks-Gunn (Eds.), *Transitions through adolescence: Interpersonal domains and context* (pp. 57–84). Hillsdale, NJ: Erlbaum.
- Betz, N. E., Klein, K. L., & Taylor, K. M. (1996). Evaluation of a short form of the Career Decision-Making Self-Efficacy Scale. *Journal of Career Assessment*, *4*, 47–57.
- Betz, N. E., & Luzzo, D. A. (1996). Career assessment and the Career Decision-Making Self-Efficacy Scale. *Journal of Career Assessment*, *4*, 413–428.
- Betz, N. E., & Voyten, K. K. (1997). Efficacy and outcome expectations influence career exploration and decidedness. *Career Development Quarterly*, *46*, 179–189.
- Blais, M. R., Sabourin, S., Boucher, C., & Vallerand, R. J. (1990). Toward a motivational model of couple happiness. *Journal of Personality and Social Psychology*, *59*, 1021–1031.
- Blustein, D. L. (1988). The relationship between motivational processes and career exploration. *Journal of Vocational Behavior*, *32*, 345–357.
- Blustein, D., & Flum, H. (1999). A self-determination perspective of interests and exploration in career development. In M. Savickas & A. Spokane (Eds.), *Vocational interests: Meaning, measurement, and counseling use* (pp. 345–368). Palo Alto, CA: Consulting Psychologists Press.
- Blustein, D. L., Walbridge, M. M., Friedlander, M. L., & Palladino, D. E. (1991). Contributions of psychological separation and parental attachment to the career development process. *Journal of Counseling Psychology*, *38*, 39–50.
- Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. Bollen & R. Stine (Eds.), *Testing structural equation models* (pp. 136–162). Newbury Park, CA: Sage.
- Byrne, B. M. (1995). *Structural equation modeling with EQS and EQS/Windows: Basic concepts, applications, and programming*. Thousand Oaks, CA: Sage.
- Chartrand, J. M., Rose, M. L., Elliott, T. R., Marmarosh, C. & Caldwell (1993). Peeling back the onion: Personality, problem solving and career decision-making style correlates of career indecision. *Journal of Career Assessment*, *1*, 66–82.
- Cohen, J. (1977). *Statistical power analysis for the behavioral sciences*. New York: Academic Press.
- Cohen, C. R., Chartrand, J. M., & Jowdy, D. P. (1995). Relationships between career indecision subtypes and ego identity development. *Journal of Counseling Psychology*, *42*, 440–447.
- Connell, J. P., & Wellborn, J. G. (1991). Competence, autonomy, and relatedness: A motivational analysis of self-system processes. In M. R. Gunnar & L. A. Sroufe (Eds.), *Self processes in development: Minnesota Symposium on Child Psychology* (Vol. 23, pp. 43–77). Hillsdale, NJ: Erlbaum.
- Costa, P. T., & McCrae, R. R. (1992). *Revised NEO personality inventory (NEO-PI-R) and NEO five factor inventory (NEO-FFI) professional manual*. Odessa, FL: Psychological Assessment Resources.
- Crites, J. O. (1978). *Career maturity inventory*. Monterey, CA: McGraw-Hill.
- Deci, E. L. (1975). *Intrinsic motivation*. New York: Plenum Press.
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum Press.
- Deci, E. L., & Ryan, R. M. (1991). A motivational approach to self: Integration in personality. In R. Dienstbier (Ed.), *Nebraska Symposium on Motivation: Vol. 38. Perspectives on motivation* (pp. 237–288). Lincoln: University of Nebraska Press.
- Derogatis, L. R., & Melisaratos, N. (1983). The brief symptom inventory: An introductory report. *Psychological Medicine*, *13*, 595–605.
- Dornbusch, S., Ritter, P., Leiderman, P., Roberts, D., & Fraleigh, M. (1987). The relation of parenting style to adolescent school performance. *Child Development*, *58*, 1244–1257.
- Eigen, C.A., Hartman, B. W., & Hartman, P. T. (1987). Relations between family interaction patterns and career indecision. *Psychological Reports*, *60*, 87–94.
- Epstein, J. L. (1983). The influence of friends on achievement and affective outcomes. In J.L. Epstein & N. Karweit (Eds.), *Friends in school* (pp. 177–200). New York: Academic Press.
- Felsman, D. E., & Blustein, D. L. (1999). The role of peer relatedness in late adolescent career development. *Journal of Vocational Behavior*, *54*, 279–295.
- Fletcher, A. C., Steinberg, L., & Sellers, E. B. (1999). Adolescents' well-being as a function of perceived interparental consistency. *Journal of Marriage and the Family*, *61*, 599–610.
- Fortier, M. S., Vallerand, R. J., & Guay, F. (1995). A motivational analysis of academic achievement. *Contemporary Educational Psychology*, *20*, 257–274.
- Fuqua, D. R., Newman, J. L., & Seaworth, T. B. (1988). Relation of state and trait anxiety to different components of career indecision. *Journal of Counseling Psychology*, *35*, 154–158.
- Gray, R. M., & Steinberg, L. (1999). Unpacking authoritative parenting: Reassessing a multidimensional construct. *Journal of Marriage and the Family*, *61*, 574–587.
- Grolnick, W. S., & Ryan, R. M. (1989). Parent styles associated with children's self-regulation and competence in school. *Journal of Educational Psychology*, *81*, 143–154.
- Guay, F. (2000). *Career indecision*. Unpublished manuscript, Laval University, Quebec, Canada.
- Guay, F. (2001). *The Career Decision-Making Autonomy Scale*. Unpublished manuscript, Laval University, Quebec, Canada.
- Guay, F., Boggiano, A. K., & Vallerand, R. J. (2001). Autonomy support, intrinsic motivation, and perceived competence: Conceptual and empirical linkages. *Personality and Social Psychology Bulletin*, *27*, 643–650.
- Guay, F., Larose, S., Boivin, M., & Sabourin, S. (2001). *A 10-year longitudinal study on children's adjustment*. Unpublished manuscript, Laval University, Quebec, Canada.
- Guay, F., & Vallerand, R. J. (1997). Social context, students' motivation, and academic achievement: Toward a process model. *Social Psychology of Education*, *1*, 211–233.
- Guay, F., Vallerand, R. J., & Blanchard, C. (2000). On the assessment of situational intrinsic and extrinsic motivation: The Situational Motivation Scale (SIMS). *Motivation and Emotion*, *24*, 175–213.
- Guerra, A. L., & Braungart-Rieker, J. M. (1999). Predicting career indecision in college students: The roles of identity formation and parental relationship factors. *The Career Development Quarterly*, *47*, 255–266.
- Harter, S. (1999). *The construction of the self: A developmental perspective*. New York: Guilford Press.
- Hartup, W. W., & Stevens, N. (1997). Friendships and adaptations in the life course. *Psychological Bulletin*, *121*, 355–370.
- Hymel, S., Comfort, C., Schonert, R. K., & McDougall, P. (1996). Academic failure and school dropout: The influence of peers. In J. Juvonen & K. R. Wentzel (Eds.), *Social motivation: Understanding children's school adjustment. Cambridge studies in social and emotional development* (pp. 313–345). New York: Cambridge University Press.

- Ifield, F. W. (1976). Further validation of a psychiatric symptom index in a normal population. *Psychological Reports, 39*, 1215–1228.
- Jordaan, J. P. (1963). Exploratory behavior: The formation of self and occupational concepts. In D. E. Super (Ed.), *Career development: Self-concept theory* (pp. 42–78). New York: College Entrance Examination Board.
- Jöreskog, K. G., & Sörbom, D. (1993). *LISREL 8: Structural equation modeling with the SIMPLIS command language*. Chicago: Scientific Software International.
- Lamborn, S. D., Mounts, N. S., Steinberg, L., & Dornbusch, S. M. (1991). Patterns of competence and adjustment among adolescents from authoritative, authoritarian, indulgent, and neglectful families. *Child Development, 62*, 1049–1065.
- Larose, S., Guay, F., & Boivin, M. (2002). Personality, loneliness, and social support: A test of two competing models. *Personality and Social Psychology Bulletin, 5*, 684–693.
- Leong, F. T. L., & Chervinko, S. (1996). Construct validity of career indecision: Negative personality traits as predictors of career indecision. *Journal of Career Assessment, 4*, 315–329.
- Lepper, M. R., Greene, D., & Nisbett, R. E. (1973). Undermining children's intrinsic interest with extrinsic reward: A test of the overjustification hypothesis. *Journal of Personality and Social Psychology, 28*, 129–137.
- Levin, I., & Stokes, J. P. (1986). An examination of the relation of individual difference variables to loneliness. *Journal of Personality, 54*, 717–733.
- Lopez, F. G. (1989). Current family dynamics, trait anxiety, and academic adjustment: Test of a family-based model of vocational identity. *Journal of Vocational Behavior, 35*, 76–87.
- Lopez, F. G., & Andrews, S. (1987). Career indecision: A family systems perspective. *Journal of Counseling and Development, 65*, 304–307.
- Maccoby, E., & Martin, J. (1983). Socialization in the context of the family: Parent-child interaction. In E. M. Hetherington & P. H. Mussen (Eds.), *Handbook of child psychology: Vol. 4 Socialization, personality, and social development* (pp. 1–101). New York: Wiley.
- Marsh, H. W., Craven, R., & Debus, R. (1998). Structure, stability, and development of young children's self-concepts: A multicohort-mutioccasion study. *Child Development, 69*, 1030–1053.
- Marsh, H., & Yeung, A. S. (1997). Organization of children's academic self-perceptions: Reanalysis and counterinterpretations of confirmatory factor analysis results. *Journal of Educational Psychology, 89*, 752–759.
- Martin, F., Sabourin, S., Laplante, B., & Coallier, J.-C. (1991). Diffusion, support, approach, and external barriers as distinct theoretical dimensions of the Career Decision Scale: Disconfirming evidence? *Journal of Vocational Behavior, 38*, 187–197.
- Mau, W. C. (1995). Decision-making style as a predictor of career decision-making status and treatment gains. *Journal of Career Assessment, 3*, 89–99.
- Mounts, N. S., & Steinberg, L. (1995). An ecological analysis of peer influence on adolescent grade point average and drug abuse. *Developmental Psychology, 31*, 915–922.
- Osipow, S. H. (1983). *Theories of career development, (3rd ed.)*. Englewood Cliffs, NJ: Prentice-Hall.
- Osipow, S. H. (1987). *Manual for the Career Decision Scale*. Odessa, FL: Psychological Assessment Resources.
- Pelletier, L. G. (1992). *Construction et validation de l'Échelle des Perceptions du Style Interpersonnel. [Construction and validation of the perceptions of the Interpersonal Style Scale]*. Unpublished manuscript, University of Ottawa, Ontario, Canada.
- Penick, N. I., & Jepsen, D. A. (1992). Family functioning and adolescent career development. *Career Development Quarterly, 40*, 208–222.
- Roe, A. (1957). Early determinants of vocational choice. *Journal of Counseling Psychology, 4*, 212–217.
- Rubin, K.H., Bukowski, W., Parker, J.G. (1998). Peer interactions, relationships, and groups. In W. Damon & N. Eisenberg (Eds.), *Handbook of child psychology. Social emotional, and personality development* (Vol. 3, pp. 619–700). New York: Wiley.
- Ryan, R. M., & Connell, J. P. (1989). Perceived locus of causality and internalization: Examining reasons for acting in two domains. *Journal of Personality and Social Psychology, 57*, 749–761.
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*, 68–78.
- Santos, P. J., & Coimbra, J. L. (2000). Psychological separation and dimension of career indecision in secondary school students. *Journal of Vocational Behavior, 56*, 346–362.
- Schumacker, R. E., & Lomax, R. G. (1996). *A beginner's guide to structural equation modeling*. Hillsdale, NJ: Erlbaum.
- Senécal, C., Vallerand, R. J., & Guay, F. (2001). Antecedents and outcomes of work-family conflict: Toward a motivational model. *Personality and Social Psychology Bulletin, 27*, 176–186.
- Sheldon, K.M., & Elliot, A. (1998). Not all personal goals are personal: Comparing autonomous and controlled reasons for goals as predictors of effort and attainment. *Personality and Social Psychology Bulletin, 24*, 546–557.
- Steinberg, L. (2001). We know something: Parent-adolescent relationships in retrospect and prospect. *Journal of Research on Adolescence, 11*, 1–19.
- Steinberg, L., Elmen, J. D., & Mounts, N. S. (1989). Authoritative parenting, psychosocial maturity, and academic success among adolescents. *Child Development, 60*, 1424–1436.
- Steinberg, L., Lamborn, S. D., Darling, N., Mounts, N. S., & Dornbusch, S. M. (1994). Over-time changes in adjustment and competence among adolescents from authoritative, authoritarian, indulgent, and neglectful families. *Child Development, 65*, 754–770.
- Steinberg, L., Lamborn, S. D., Dornbusch, S. M., & Darling, N. (1992). Impact of parenting practices on adolescent achievement: Authoritative parenting, school involvement, and encouragement to succeed. *Child Development, 63*, 1266–1281.
- Steinberg, L., Mounts, N., Lamborn, S., & Dornbusch, S. (1991). Authoritative parenting and adolescent adjustment across various ecological niches. *Journal of Research on Adolescence, 1*, 19–36.
- Super, D. E. (1957). *The psychology of careers: An introduction to vocational development*. New York: Harper & Row.
- Sweeney, M. L., & Schill, T. R. (1998). The association between self-defeating personality characteristics, career indecision, and vocational identity. *Journal of Career Assessment, 6*, 69–81.
- Taylor, K. M., & Betz, N. E. (1983). Applications of self-efficacy theory to the understanding and treatment of career indecision. *Journal of Vocational Behavior, 22*, 63–81.
- Vallerand, R. J. (1997). Toward a hierarchical model of intrinsic and extrinsic motivation. *Advances in Experimental Social Psychology, 29*, 271–361.
- Vallerand, R. J., Fortier, M. S., & Guay, F. (1997). Self-determination and persistence in a real-life setting: Toward a motivational model of high school dropout. *Journal of Personality and Social Psychology, 72*, 1161–1176.
- Villeneuve, P., Valois, P., Frenette, E., & Sévigny, S. (1996). [Analyses d'items non-paramétriques du questionnaire de détresse psychologique de l'enquête Santé Québec]. Non-parametric analyses of the psychological distress questionnaire of Santé-Québec. Paper presented at the 19th Annual Meeting of the SQR. University of Quebec at Three Rivers, Quebec, Canada.
- Whiston, S. C. (1996). The relationship among family interaction patterns and career indecision and career indecision-making self-efficacy. *Journal of Career Development, 23*, 137–149.

Appendix A

CFA Analysis: Factor Loadings, Uniquenesses, and Correlations for the Career Autonomy Decision Scale

Measure	Factor loading	Uniqueness		
Intrinsic motivation (IM)				
Im1	.726	.688		
Im2	.777	.630		
Im3	.768	.640		
Im4	.732	.681		
Im5	.847	.531		
Im6	.872	.489		
Im7	.787	.617		
Im8	.755	.656		
Identified regulation (Iden)				
Iden1	.789	.614		
Iden2	.729	.685		
Iden3	.735	.678		
Iden4	.712	.703		
Iden5	.795	.607		
Iden6	.814	.580		
Iden7	.776	.631		
Iden8	.727	.687		
External regulation (Ext)				
Ext1	.742	.671		
Ext2	.726	.688		
Ext3	.773	.634		
Ext4	.792	.610		
Ext5	.824	.566		
Ext6	.889	.458		
Ext7	.872	.490		
Ext8	.783	.622		
Introjected regulation (Int)				
Int1	.717	.697		
Int2	.725	.689		
Int3	.760	.650		
Int4	.783	.622		
Int5	.846	.534		
Int6	.883	.470		
Int7	.838	.545		
Int8	.764	.645		
Correlations between factors	1	2	3	4
1. Intrinsic motivation	—			
2. Identified regulation	.54	—		
3. Introjected regulation	-.16	-.07 <i>ns</i>	—	
4. External regulation	-.25	-.40	.52	—

Note. All coefficients are significant at $p < .05$. Factor loadings are based on significant correlations among uniquenesses of the same latent construct. For instance, some correlated uniquenesses between items assessing introjected regulation were estimated. However, correlated uniquenesses between latent constructs were not estimated. CFA = confirmatory factor analysis.

Appendix B

CFA Analysis: Factor Loadings, Uniquenesses, for Each Latent Construct

Construct	Factor loading	Uniqueness
Neuroticism		
Depression	.833	.554
Anxiety	.770	.637
Paranoid ideations	.637	.771
Irritability	.721	.693
Parental autonomy		
Autonomy support	.891	.454
Involvement	.861	.509
Information	.914	.404
Parental control		
Negative feedback	.875	.484
Control	.845	.535
Peer autonomy		
Involvement	.951	.309
Information	.865	.502
Peer control		
Negative feedback	.900	.436
Control	.771	.636
Career autonomy decision making		
Index1	.826	.563
Index2	.900	.436
Index3	.899	.438
Index4	.840	.543
Career self-efficacy decision making		
Accurate self-appraisal	.878	.478
Gathering occupational information	.702	.712
Goal selection	.795	.607
Making plans for the future	.786	.618
Problem solving	.704	.711
Career indecision (Ci)		
Ci1	.830	.558
Ci2	.890	.456
Ci3	.867	.499

Note. All coefficients are significant at $p < .05$. CFA = confirmatory factor analysis.

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