

Distinguishing Developmental From Chronic Career Indecision: Self-Efficacy, Autonomy, and Social Support

Frédéric Guay
Catherine F. Ratelle
Caroline Senécal
Simon Larose
Andrée Deschênes
Université Laval, Québec

Career indecision can be divided into two categories: developmental and chronic indecision. The former is generally viewed as a developmentally normal problem resulting from a lack of information on the self and on the world of work, whereas the latter is defined as a pervasive inability to make a decision about one's career. The goals of the present study were to test the validity of this typology of career indecision and to explain these types of indecision as a function of self-efficacy, autonomy, and support from parents and friends. Based on a 3-year longitudinal design with college students ($N = 325$), results provided validity for this typology by revealing the presence of two indecision groups (chronically undecided and developmentally undecided) and a group of students who are decided. In addition, results indicated that self-efficacy and autonomy are important dimensions that make it possible to distinguish between these three groups.

Keywords: self-determination, career indecision, motivation, self-efficacy

Choosing a career is an important step that affects the life course of students (Gati & Asher, 2001). Students' career choices may fulfill their needs, values, and interests and hence influence their quality of life. However, some students are unable to make a decision about the career they wish to pursue, a state that is referred to as *career indecision*. Importantly, not all undecided students experience the same kind of career indecision. Some students need information about themselves and the world of work, whereas for others, such information would

This longitudinal study was supported by grants from the Fonds pour la Formation des Chercheurs et l'Aide à la Recherche (FCAR-Québec) and grants from the Social Sciences and Humanities Research Council of Canada (SSHRC). We thank Valérie Bernier and Isabelle Chabot for their significant contribution to this research project. Correspondence concerning this article should be addressed to Frédéric Guay, Département des fondements et pratiques en éducation, Faculté des sciences de l'éducation, Université Laval, Ste-Foy, Québec, Canada G1K 7P4; e-mail: Frederic.Guay@fse.ulaval.ca.

JOURNAL OF CAREER ASSESSMENT, Vol. 14 No. 2, May 2006 235–251
DOI: 10.1177/1069072705283975
© 2006 Sage Publications

not be helpful because they are too anxious about their career choices. Dysinger (1950) labeled these types of career indecision *developmental* indecision and *chronic* indecision, respectively. Students characterized by developmental indecision should thus experience a decrease in career indecision over time as they gather information on themselves and the world of work, whereas students who are chronically undecided should remain stably undecided over time. Unfortunately, the methodology used to classify students in this typology of career indecision presents some important limitations, raising doubts about the validity of these indecision types. The present study attempts to more rigorously test the validity of these types of career indecision and to identify factors associated with each type of indecision using the conceptual lenses of self-determination theory (SDT; Deci & Ryan, 1985).

Several approaches have been used to study types of career indecision. Some studies used cluster analyses to isolate groups of individuals representing chronic and developmental types of career indecision on the basis of certain psychological characteristics. For instance, Cohen, Chartrand, and Jowdy (1995) used the four following psychological characteristics to identify groups of individuals representing these types: career choice anxiety, generalized indecisiveness, need for career information, and need for self-knowledge. Results revealed a four-group typology that included chronically undecided (high levels of career choice anxiety, high generalized indecisiveness, high need for career information, and high need for self-knowledge) and developmentally undecided individuals (moderate levels of career choice anxiety, low levels of generalized indecisiveness, high need for career information, and moderate need for self-knowledge). In addition, results of this study indicated that individuals in the chronically undecided group had higher levels of identity confusion and feelings of inferiority than individuals who were in the developmentally undecided group (see also Chartrand, Martin, Robbins, & McAuliffe, 1994; Fuqua, Blum, & Hartman, 1988; Larson, Heppner, Ham, & Dugan, 1988).

Unlike studies that have grouped individuals according to psychological characteristics to identify their type of career indecision, some studies (Hartman, Fuqua, & Hartman, 1983) used the four dimensions (diffusion, support, approach, and external barriers) of the Career Decision Scale (CDS) to investigate correlates of chronic indecision. Hartman and colleagues (1983) distinguished *chronic indecision* from *certainty* by examining frequency of changes in career choice after high school graduation. Individuals who had not changed their decision 3 years after graduation were classified as decided, whereas those who were still undecided were classified as chronically undecided. Results of Hartman et al. indicated that individuals classified as chronically undecided had higher scores on the Diffusion subscale, which assesses lack of confidence and structure during the career decision-making process. Similarly, Vondracek, Hostetler, Schulenberg, and Shimizu (1990) found that individuals who were classified as chronically undecided using a longitudinal design had higher scores on the Diffusion subscale.

Previous studies thus tried to differentiate both types of indecision by using psychological correlates and longitudinal design. However, these studies have important shortcomings. First, clustering techniques and scales used to assess chronic career indecision do not evaluate the continuity of indecision over time. This is an important limitation because chronic indecision implies that individuals have a long-term inability to make a career decision. Second, longitudinal studies that used the CDS subscales as predictors of indecision status are inherently biased. Specifically, because the CDS is designed to measure indecision, it is not surprising that the CDS subscales (e.g., Diffusion) make the distinction between individuals who are chronically undecided and those who are decided or developmentally undecided. In addition, it is quite problematic to use the CDS as a multidimensional measure because some studies showed that it is unidimensional (Martin, Sabourin, Laplante, & Coallier, 1991). A more rigorous and unbiased approach would thus be to use predictors of career indecision that are clearly *independent* from the measure of chronic indecision. Finally, few of these studies are theoretically grounded. Indeed, career indecision is a construct in need of theoretical conceptualization. A useful theoretical framework for understanding correlates of types of career indecision is SDT.

SDT is an approach to human motivation that highlights the importance of three fundamental psychological needs, namely autonomy, competence, and relatedness, to understand optimal functioning (Deci & Ryan, 1991). These three basic needs must be satisfied to experience a sense of well-being. Most studies using this theoretical framework have measured the satisfaction of these psychological needs by the degree to which individuals perceived themselves as competent, related, and autonomous. Consequently, for the remainder of the text we use the terms *perceived competence*, *perceived relatedness*, and *perceived autonomy* to refer to the fulfillment of these psychological needs. Perceived relatedness implies the degree to which individuals feel connected to significant others. Perceived competence implies that individuals feel effective when they perform a given activity. Finally, perceived autonomy implies that individuals experience choice in the initiation, maintenance, and regulation of their behaviors. According to SDT, social and environmental factors can foster or impede perceived competence, relatedness, and autonomy. Thus, autonomy-supportive behaviors displayed by significant others, such as considering individuals' perspectives, acknowledging their feelings and perceptions, providing them with information and choice, and minimizing the use of pressure and control, can give individuals the chance to perceive themselves as competent and autonomous. Conversely, controllingness evidenced in behaviors such as imposing deadlines for a task and rewarding contingently on one's performance level thwart individuals' perceived competence, relatedness, and autonomy. In sum, according to SDT, autonomy-supportive environments foster perceptions of competence, autonomy, and relatedness. In turn, these perceptions promote optimal functioning. In the present study, we focused only on perceived 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).

SDT adds to our understanding of career indecision for three reasons. First, SDT may help us to better understand the interplay among contextual and personal determinants of career indecision. Indeed, career indecision has been related to various personal constructs such as self-efficacy (Betz, Klein, & Taylor, 1996) as well as to some contextual factors such as the quality of the relationships with parents and peers (e.g., Felsman & Blustein, 1999), but unfortunately little is known about how the combination of contextual and personal factors affects career indecision. SDT proposes that the effect of the contextual factors on outcomes occurs not only via self-efficacy beliefs (or competence) but also via perceptions of autonomy. For example, drawing on SDT, Guay, Senécal, Gauthier, and Fernet (2003) showed that perceiving little autonomy support and high control from parents and friends predicts low efficacy and autonomy in career decision-making activities. In turn, undermined efficacy and autonomy in relation to career decision-making predicted high levels of career indecision. In addition, results of Guay et al. add to the previous work by showing that both self-efficacy (see Betz et al., 1996) and autonomy are important direct predictors of career indecision.

Second, SDT allows us to better identify college students who are at risk of being chronically undecided. Indeed, some students at the beginning of their college degree may have equivalent levels of career indecision. Based on SDT, we argue that those who are at risk of being chronically undecided are (a) those who experience low levels of autonomy support from parents and peers and (b) those who have low levels of perceived autonomy and self-efficacy. Indeed, chronic career indecision may develop in environments characterized by low autonomy support, thereby leading students to feel that they have to live up to some external standards (e.g., parental and peer pressure) that do not satisfy their need for autonomy. In contrast, those who are developmentally undecided may experience autonomy-supportive environments and high perceived autonomy and self-efficacy that facilitate the implementation of a career goal. In other words, when asked to complete the CDS in their first year of college, chronically and developmentally undecided students may have high and equivalent scores on this scale. Herein lies a problem for professionals who rely solely on the CDS as a diagnostic tool, because they will intervene in the same manner with both categories of undecided students, although the chronically undecided need a different intervention than those who are developmentally undecided. Thus, it could be useful to use not only the CDS but also the psychometric scales derived from the stance of SDT to distinguish those who are chronically undecided from those who are developmentally undecided.

Third, because SDT focuses on the contextual variables that promote successful adaptation, it is possible to design specific interventions that aim to help students facing chronic indecision. For example, a school counselor acting in an autonomy-supportive way with a client facing this problem would help him or her

to be more self-responsible with regard to career decision tasks that he or she has to carry out. That is, the school counselor should help the chronically undecided by assisting them to find values, interests, and goals for themselves that are not contingent on other standards or goals.

In light of the above, the goals of the present study were to test the validity of types of career indecision over time and to investigate correlates of these types of indecision through the conceptual lenses of SDT. To test the validity of this typology, we used a statistical method that can identify groups of participants displaying distinct levels of career indecision over time. In line with the literature reviewed above, we expected to identify three groups. The first group would be characterized by constant, moderate to high levels of career indecision over time (the “chronically undecided” group). The second group would be characterized by high levels of career indecision at Time 1, which would decline over time (the “developmentally undecided” group). Finally, the third group would report constant and low levels of career indecision over time (the “decided” group).

In addition, in line with the literature on career indecision and on SDT, we hypothesized the following pattern of means for self-efficacy, perceived autonomy, and perceived autonomy support from friends and parents: *decided* > *developmentally undecided* > *chronically undecided*. In contrast, we expected the following pattern of means for perceived control from parents and friends: *decided* < *developmentally undecided* < *chronically undecided*. In addition, because we posited changes in career indecision from Time 1 (T1) to Time 3 (T3) for the developmentally undecided group, we expected to find corresponding changes across time on some variables for this group.

METHOD

Participants and Procedure

In September 2000 (T1), a total of 2,300 participants were contacted in college classrooms and asked to complete a questionnaire at home. In Quebec, students must attend college before entering university. The questionnaire was handed out along with a prestamped envelope addressed to the university. A total of 834 participants sent back their questionnaire, yielding a response rate of 36%. Of the 834 participants, there were 236 males and 581 females (17 participants did not specify their gender). Participants' mean age was 17.7 years, and 97% of them were born in the province of Quebec. Twenty-nine percent of the participants had divorced parents. The average family income was between C\$30,000 and C\$40,000. In September 2001 (Time 2, or T2), a questionnaire was sent to the same 834 participants. A total of 380 participants sent back their questionnaire, yielding a 46% response rate. In September 2002 (T3), the same questionnaire was once again sent to the 834 participants. A total of 325 participants sent back

their questionnaire, for a response rate of 39% across the three measurement times. However, it is important to acknowledge that 243 of the 325 participants at T3 were among the 380 participants at T2. In the Results section, we present statistics on attrition to verify the impact that these dropouts have on the data.

Measures

Career indecision. The CDS (Osipow, 1987) was used to assess the extent and nature of career indecision. This scale comprises 18 items that assess certainty (Items 1 and 2) and indecision (Items 3-18). Responses are scored on a 4-point continuum ranging from 1 (*like me*) to 4 (*not like me*). Higher scores on the first two items indicate career certainty, whereas higher scores on the remaining 16 items indicate career indecision. The CDS has an adequate temporal stability and validity (Osipow, Carney, & Barak, 1976). In addition, Sabourin and Coallier (1991) reported alpha coefficients of .79 and .86 for the Certainty scale and the Indecision scale, respectively. In addition, construct validity was supported by a .33 correlation between psychological distress and career indecision (Sabourin & Coallier, 1991). In the present study, we used the Indecision subscale of the CDS. The Cronbach's alphas for this subscale were .90 (T1), .91 (T2), and .92 (T3).

Self-efficacy. The shortened form of the Career Decision-Making Self-Efficacy Scale was used (Betz et al., 1996) to assess perceived competence. This 25-item scale measures individuals' beliefs that they can successfully complete the tasks necessary to make career decisions (e.g., accurate self-appraisal, gathering occupational information). Items were rated on a five-level confidence continuum, ranging from 1 (*no confidence at all*) to 5 (*complete confidence*). Higher scores on items indicate higher levels of self-efficacy for career decision making. Betz et al. (1996) reported a total scale internal consistency value of .94 as well as an adequate concurrent validity by showing negative correlations with the CDS but positive ones with My Vocational Situation Identity scale. In the present study, the Cronbach's alphas for this scale were .92 (T1), .94 (T2), and .93 (T3).

Perceived autonomy. The Career Decision-Making Autonomy Scale (Guay, 2005) was used to assess perceived autonomy. This scale surveys eight activities related to career decision-making (e.g., seeking information on careers, identifying a career option that is congruent with one's interests and personality). For each activity, participants indicated the extent to which their participation was based on intrinsic motivation (i.e., for the pleasure of doing it), identified regulation (i.e., because I believe that this activity is important), introjected regulation (i.e., because I would feel guilty and anxious if I did 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 from it).

Items were rated on a 7-point Likert-type scale (1 = *does not correspond at all*; 7 = *corresponds completely*). We computed a Perceived Autonomy Index (PAI) for each measurement time by integrating scores for each subscale under a single score (e.g., Vallerand, Fortier, & Guay, 1997) using the following formula: (intrinsic motivation + identified regulation) – (introjected regulation + external regulation). We thus computed eight autonomy indices (one per activity), which were averaged to create a global PAI for each measurement time. Higher scores on the PAI suggest that students are behaving for more intrinsic and identified reasons than for introjected and external reasons. Guay (2005) showed that the factor structure of the scale was adequate and that internal consistency values for the four subscales were greater than .90. In addition, the construct validity of the scale was supported by a multitrait multimethod approach as well as by correlations among the subscales and various psychological variables related to the career decision process. In the present study, Cronbach's alphas for the four subscales ranged between .91 and .95 across measurement times.

Parental control and autonomy support. This scale was adapted from the Perceived Interpersonal Style Scale (Otis & Pelletier, 2004) and assesses students' perceptions of their parents' behaviors toward their career decision (for both mother and father separately). We adapted this instrument in the following way: Instead of asking students to report how their parents behave with them in general, we asked participants to report their perceptions on how their parents behave with them in situations regarding their career decisions. This scale includes 29 items divided into five subscales that assess (a) incompetence feedback (four items), (b) autonomy-supportive behaviors (six items), (c) controlling behaviors (seven items), (d) involvement (six items), and (e) informational feedback (six items). Items were rated on a 7-point Likert-type scale (1 = *does not correspond at all*; 7 = *corresponds completely*). Cronbach's alphas for these subscales ranged between .74 and .94 across measurement times. We assessed parental autonomy support (aggregating answers from father and mother) with the following subscales: autonomy-supportive behaviors, informational feedback, and involvement. Parental control (also aggregating answers from mothers and fathers) was assessed with measures of incompetence feedback and controlling behaviors. Previous studies (e.g., Guay et al., 2003) indicate that this scale presents adequate internal consistency values. In addition, construct validity was supported by a correlation between this scale and career indecision (Guay et al., 2003).

Peer control and autonomy support. This scale is also adapted from the Perceived Interpersonal Style Scale (Otis & Pelletier, 2004) and assesses students' perceptions of their peers' behaviors toward their career decision. We adapted this instrument in the following way: Instead of asking students to report how their peers behave with them in general, we asked participants to report their perceptions of how their peers behave with them in situations regarding their career decisions. This scale is composed of 22 items divided into four subscales that assess (a)

Table 1
Means and Standard Deviations

	T1		T2		T3	
	M	SD	M	SD	M	SD
Perceived control, peers	1.93	0.85	1.83	0.80	1.68	0.62
Perceived autonomy support, peers	4.60	0.99	4.75	1.13	4.82	1.00
Perceived control, parents	2.05	0.95	1.97	0.97	1.73	0.82
Perceived autonomy support, parents	5.32	1.13	5.31	1.12	5.48	1.11
Autonomy	5.50	3.43	5.51	3.47	6.21	3.34
Self-efficacy	3.62	0.59	3.66	0.66	3.82	0.59
Career indecision	1.86	0.60	1.77	0.62	1.62	0.57

Note. Scores on the parental and peers' variables range between 1 and 7. Scores on the autonomy variable range between -12 and +12. Scores on the self-efficacy variable range between 1 and 5. Scores on the career indecision variable range between 1 and 4.

incompetence feedback (four items), (b) controlling behaviors (four items), (c) involvement (nine items), and (d) informational feedback (five items). In contrast to the parental scale, we did not ask participants to complete the autonomy-supportive subscale because items on the original scale were not relevant to peer behaviors. Items were rated on a 7-point Likert-type scale (1 = *does not correspond at all*; 7 = *corresponds completely*). Cronbach's alphas for these subscales ranged between .64 and .90 across measurement times (with the exception of one subscale with a .48 alpha). We assessed peer autonomy-support using the informational feedback and involvement subscales and peer control with incompetence feedback and controlling subscales.

RESULTS

First, analyses were conducted to verify if individuals who participated in all three data waves ($n = 243$) were representative of other participants who did not complete all three waves ($n = 591$) on T1 variables. Results of a multivariate analysis of variance, $F(7, 711) = 1.38, p = .21$, did not reveal significant differences between these two groups of individuals on the basis of T1 variables. We thus feel confident that results obtained with the smaller sample can be generalized to the initial larger sample.

Second, we generated some descriptive statistics for each measurement time. Means and standard deviations are presented in Table 1. In addition, analyses of temporal stability, presented in Table 2, indicated that all variables were relatively stable across measurement times. Furthermore, correlational analyses (see Table 3) revealed that self-efficacy, followed by autonomy, generate the strongest correlations with career indecision for the three waves. That is, the more college stu-

Table 2
Temporal Stability of Study Variables

	T1-T2	T2-T3	T1-T3
Perceived control, peers	.45	.46	.38
Perceived autonomy support, peers	.57	.55	.50
Perceived control, parents	.61	.63	.56
Perceived autonomy support, parents	.66	.72	.67
Autonomy	.50	.53	.47
Self-efficacy	.54	.69	.49
Career indecision	.54	.61	.38

Note. T1 = Time 1; T2 = Time 2; T3 = Time 3. All coefficients are significant at $p < .001$.

Table 3
**Correlations Between the Model's Variables and
 Career Indecision Within Each Measurement Time**

	CDS—Career Indecision		
	T1	T2	T3
Perceived control, peers	.36	.30	.27
Perceived autonomy support, peers	-.22	-.21	-.25
Perceived control, parents	.27	.25	.23
Perceived autonomy support, parents	-.17	-.14	-.22
Autonomy	-.33	-.42	-.36
Self-efficacy	-.51	-.57	-.59

Note. CDS = Career Decision Scale; T1 = Time 1; T2 = Time 2; T3 = Time 3. All coefficients are significant at $p < .001$.

dents felt undecided with respect to their career choice, the lower were their perceptions of autonomy and self-efficacy in relation to decision-making activities.

Third, trajectories of career indecision were modeled using the T1, T2, and T3 measures of the CDS. A semiparametric mixture model for career indecision was estimated using the SAS TRAJ procedure (Jones, Nagin, & Roeder, 2001). With this clusterlike method, it is possible to identify the number of groups of students displaying distinct career indecision trajectories, describe the variations of these trajectories for each subgroup, and estimate the proportion of students in each trajectory group. The identification of the optimal number of groups is obtained by estimating models with two, three, and four groups. The shape of each trajectory group is determined by estimating models with stable and linear trajectories. Deciding which model best fits the data was done on the basis of the Bayesian information criterion (BIC), calculated as follows:

$$\text{BIC} = -2\log(L) + \log(n)*k$$

where L is the model's maximized likelihood, n is the sample size, and k is the number of parameters in the model (Nagin, 1999). Although there are no clear guidelines for interpreting the magnitude of the BIC, the optimal model was deemed to be the one with the maximum BIC value. Because BIC is always negative, the maximum value is the least negative one.

For every participant, the procedure calculates the probability of belonging to each group (Nagin, 1999). Hence, students belonging to a particular trajectory group should have a high mean probability (maximum of 1) of being assigned to the group to which they belong on the basis of the maximum probability rule and a low mean probability (minimum 0) of being assigned to other groups. A good fit would be reflected by probabilities of approximately .70/.80 or higher. Finally, because this statistical procedure accommodates missing data, it was possible to use participants for which two of the three questionnaires were completed (see Nagin, 1999). Thus, the sample size for group-based developmental trajectories was sometimes higher than 243.

The BIC-based model selection procedure suggested that the three-group model best fit the data ($\text{BIC} = -1,026.37$). Figure 1 illustrates trajectories of career indecision. The first group constitutes 48% of the sample and is identified as the "decided" group because these individuals report steady and low levels of career indecision over time. The second group, representing 27% of the sample, is identified as the "developmentally undecided" group. These students, who started out at moderate levels of indecision, experience a significant decrease in career indecision over time. Finally, a third group (25% of the sample) is identified as the "chronically undecided" group, reporting steady, moderate levels of career indecision over time. For both decided and developmentally undecided groups, we found that the linear parameters were statistically significant ($p < .001$), which suggests that for these two groups of individuals, the decrease in career indecision is constant over time. Interestingly, at T1, individuals who are chronically and developmentally undecided report equivalent levels of career indecision. Finally, membership probabilities varied from .41 to .99, although the majority was around .70 or .80, suggesting appropriate model fit.

Once career decision types were identified, we wanted to determine whether these groups could be distinguished on the basis of social and personal correlates, assessed at the three measurement times. Using group membership as an independent variable, we performed six repeated-measures analyses on the following measures: self-efficacy beliefs, perceived autonomy, perceived parental autonomy support, perceived parental control, perceived peer autonomy support, and perceived peer control. The decision to use this analytical strategy, instead of using a fully multivariate analysis of variance, derives from insufficient statistical power. For each analysis, the Time \times Group interaction effect was estimated. The Roy's largest root criterion was used to evaluate statistical significance. Results are presented in Table 4.

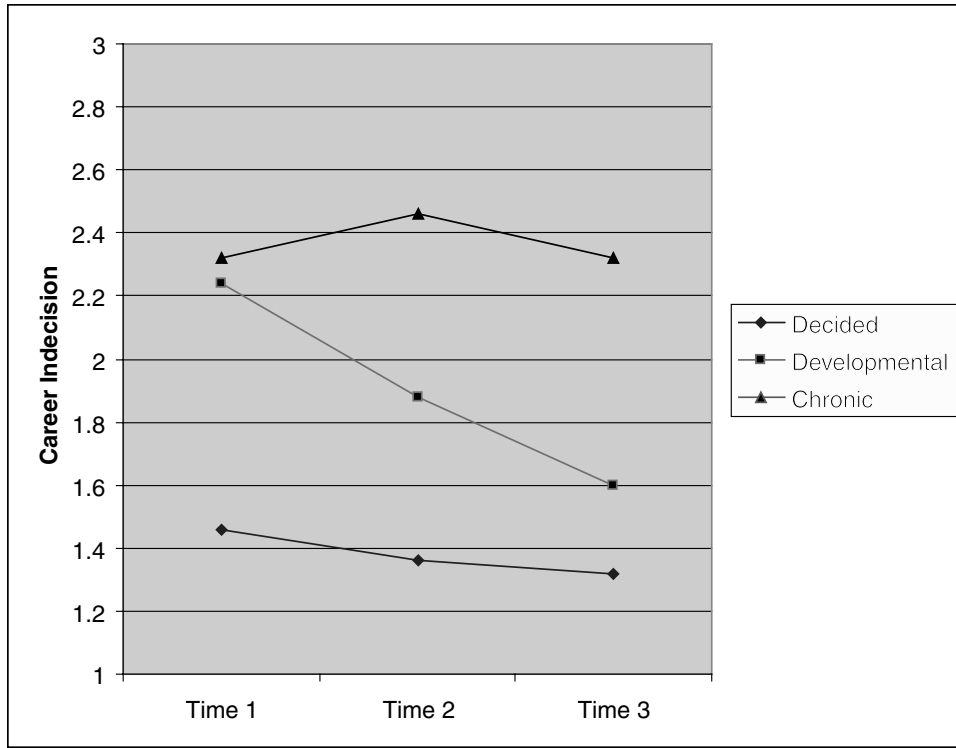


Figure 1. Results of a group-based approach to career decision types.

Table 4
Results of Repeated Measures Analyses
as a Function of Trajectory Group Membership

	Main Effects		
	Time	Group	Interaction
Control from peers	$F(2, 231) = 6.36^{**}$	$F(2, 232) = 9.62^{**}$	$F(2, 232) = 0.43$
Autonomy support from peers	$F(2, 228) = 7.40^{**}$	$F(2, 229) = 5.58^{**}$	$F(2, 229) = 1.60$
Control from parents	$F(2, 236) = 10.73^{**}$	$F(2, 237) = 5.18^{**}$	$F(2, 237) = 0.49$
Autonomy support from parents	$F(2, 237) = 1.61$	$F(2, 238) = 1.39$	$F(2, 238) = 4.67^*$
Autonomy	$F(2, 213) = 7.01^{**}$	$F(2, 214) = 12.47^{**}$	$F(2, 214) = 1.03$
Self-efficacy	$F(2, 229) = 19.53^{**}$	$F(2, 230) = 50.62^{**}$	$F(2, 230) = 3.73^*$

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

First, a significant interaction effect was obtained on self-efficacy. Simple effects were evaluated using one-way analysis of variance (i.e., differences among groups for each measure) and paired-samples *t* tests (i.e., differences among

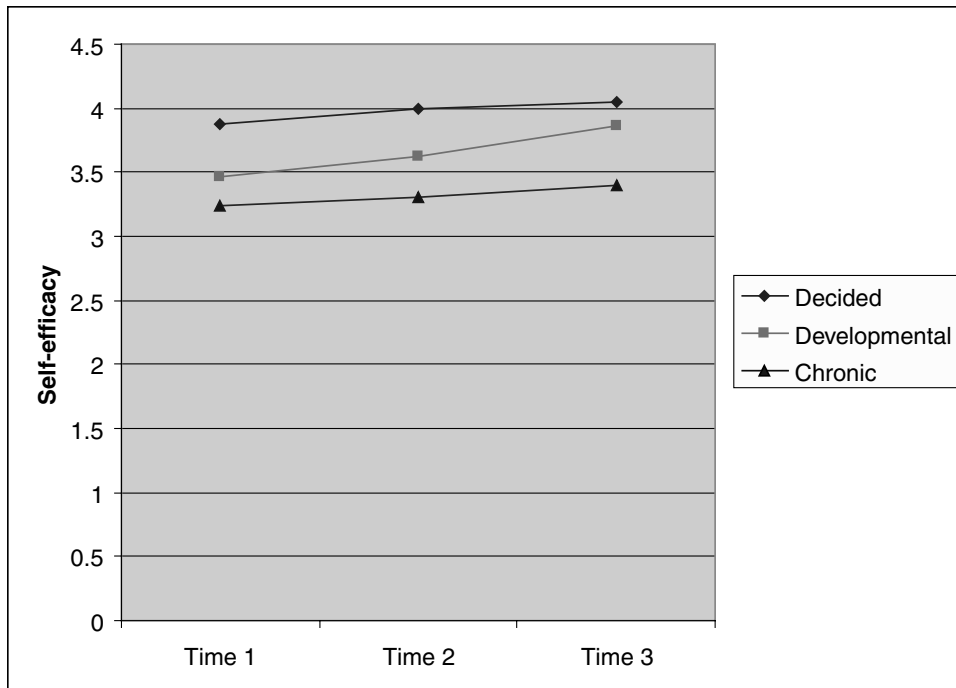


Figure 2. Results of a repeated-measures multivariate analysis of variance on self-efficacy as a function of group and time.

repeated measures for each group). Because 18 statistical tests were performed to interpret these interaction effects, a Bonferroni correction was applied leaving a corrected alpha value of .003. One-way analyses of variance indicate the following pattern of results: (a) At T1, individuals in the decided group had stronger self-efficacy beliefs ($M = 3.9$) than those in both developmentally undecided ($M = 3.5$) and chronically undecided groups ($M = 3.2$); (b) at T2, the three groups differed significantly from each other, where mean of self-efficacy was highest for the decided group ($M = 4.0$), followed by the developmentally undecided ($M = 3.6$) and the chronically undecided groups ($M = 3.3$); (c) at T3, decided ($M = 4.10$) and developmentally undecided groups ($M = 3.9$) had equivalent levels of self-efficacy, which were higher than that of the chronically undecided group ($M = 3.4$; see Figure 2). In addition, paired-samples t tests indicated that for decided students there was only one significant difference: They had higher levels of self-efficacy at T3 ($M = 3.9$) than at T1 ($M = 4.1$). For the developmentally undecided, all comparisons were significant (T1 $M = 3.4$, T2 $M = 3.6$, T3 $M = 3.9$), whereas for the chronically undecided no significant effects were observed. In sum, results suggest that changes in career indecision for the developmentally undecided group were accompanied by corresponding changes in self-efficacy beliefs where decreases in career indecision were paralleled by increases in self-efficacy with regard to career decision-making activities.

A significant interaction effect was also obtained for perceived parental autonomy, but neither one-way analysis of variance nor paired-samples *t* tests yielded significant differences. Specifically, when we look at the post hoc tests to interpret the interaction effect, there are simply no significant differences. We can thus conclude that this interaction effect occurs artificially.

Second, some main effects of time were obtained on measures of perceived control from peers and perceived control from parents. Paired-sample *t* tests indicate that participants (all three groups combined) reported higher scores on these variables at T1 and at T2 than at T3. A significant effect of time on perceived autonomy support from peers and perceived autonomy (PAI) was also obtained. Participants reported lower scores on perceived autonomy support from peers at T1 ($M = 4.6$) than at T2 ($M = 4.8$) and T3 ($M = 4.8$), whereas they reported lower scores on PAI at T1 ($M = 5.5$) and T2 ($M = 5.6$) than at T3 ($M = 6.2$).

Third, main effects of group were obtained (all three measurement times combined). Specifically, individuals in the decided group were more autonomous and perceived less control from peers and parents as well as more autonomy support from peers than individuals in the chronically undecided group. Developmentally undecided individuals ($M = 6.1$) also reported higher levels of perceived autonomy than individuals in the chronically undecided group ($M = 4.4$). In addition, there was no difference on perceived autonomy between the decided and developmentally undecided groups.

DISCUSSION

The goals of the present study were to test the validity of types of career indecision over time and to investigate correlates of these types of indecision through the conceptual lenses of SDT. Results using the semiparametric, group-based approach to longitudinal data provided empirical support for the validity of the career indecision typology (Dysinger, 1950) over a period of 3 years by identifying three groups: decided (48% of the sample), developmentally undecided (27% of the sample), and chronically undecided (25% of the sample).

These results are important for at least three reasons. First, they reveal that half of college students are decided when it comes to career choice. Furthermore, of the undecided students, there are about as many who are developmentally undecided as there are who are chronically undecided (approximately 27% and 25%, respectively). These percentages are in line with those observed in previous studies using cluster analyses (Cohen et al., 1995). Second, our findings point to the need to carry out multiple assessments of career indecision over time to more accurately test whether individuals are chronically undecided or developmentally undecided. Indeed, using only T1 data would have prevented us from distinguishing between these two groups because they reported equivalent levels of career indecision at T1. However, from a practical point of view, it appears more

useful to be able to identify chronically undecided students at T1 rather than having to wait until T3 to make that determination. What might the results of the present study tell us about this important question? They make it possible not only to test more rigorously than any previous studies the typology proposed by Dysinger (1950) but also to identify those students who are at risk of developing chronic career indecision. Indeed, our main effects of groups indicate that regardless of the effect of time, the developmentally versus the chronically undecided differed on the perceived autonomy variable. Thus, these results suggest that at T1, those who were chronically undecided presented lower levels of autonomy than those who were developmentally undecided. Consequently, those students at risk of having chronic career indecision were those who, at the beginning of college (T1), had high levels of career indecision that were accompanied by low levels of autonomy. Thus, the Career Decision-Making Autonomy Scale derived from SDT and the CDS could be used jointly by school counselors to distinguish those who are chronically undecided from those who are developmentally undecided.

In addition, developmentally undecided individuals experienced increased self-efficacy over time, which was not the case for the chronically undecided. Importantly, T3 self-efficacy beliefs of developmentally undecided individuals were not significantly different from those of decided individuals. We can thus offer a tentative explanation for such findings: Developmentally undecided students experienced a decrease in career indecision over time because their level of self-efficacy toward career decision-making activities increased during this period. However, there is at least one other possible interpretation of the present findings. Indeed, the experience of making a career decision may cause the increase in self-efficacy over time for the developmentally undecided group. Thus, further studies are needed on this issue.

Although we did not observe such changes in perceived autonomy for individuals who were developmentally undecided, we nevertheless believe that perceived autonomy is an important dimension to consider for understanding the etiology of self-efficacy beliefs and, ultimately, career indecision. Indeed, it is possible that developmentally undecided individuals experienced increases in self-efficacy because their level of autonomy was relatively high and constant over time. Indeed, as we mentioned above, their levels of perceived autonomy were higher than those who were chronically undecided. Their high level of autonomy may have thus contributed to the initiation of behaviors such as seeking information on themselves and the work world that, in turn, promoted feelings of self-efficacy toward these activities. In contrast, the low level of autonomy that characterized chronically undecided individuals may have impeded the development of their self-efficacy beliefs through avoidance of career decision activities. This interpretation is in line with recent studies (Williams, McGregor, Zeldman, Freedman, & Deci, 2004) suggesting that autonomy may affect outcomes indirectly through self-efficacy beliefs. Of course, additional studies are needed to test

more rigorously our interpretation that perceived autonomy is an important motivational resource to help students to develop their self-efficacy beliefs and thus to reduce their levels of career indecision.

Our findings also suggest that social correlates such as control and autonomy support from parents and peers do not distinguish chronic from developmental indecision. This absence of significant differences between chronically and developmentally undecided groups on social correlates is intriguing. Indeed, SDT and the model of career indecision by Guay et al. (2003) suggest that these feelings of autonomy and self-efficacy are facilitated by autonomy-supportive contexts. Thus, if individuals who are developmentally undecided feel more autonomous and self-efficacious than the chronically undecided but do not perceive their parents and peers as being more autonomy-supportive than chronically undecided individuals, then what is the source of their feelings of autonomy and self-efficacy? Future studies are thus needed to answer this important question. However, significant differences were observed on social correlates between the chronically undecided and decided groups. That is, decided individuals perceived less control from their peers and their parents as well as more autonomy support from peers than individuals in the chronically undecided group.

Although the present results provided empirical support for our hypotheses, some limitations must be considered when interpreting these findings. First, the measures that were used were self-reported. Replication using multiple sources of evaluations (parent, peers) would reduce the problem of shared method variance. Second, we investigated a limited number of variables to understand career indecision typology. Other variables such as decision-making styles and ego identity should be included in further tests to better understand the unfolding of career indecision groups. Third, we had a reduced sample for which we had complete data (or at least two out of three measurement times). Finally, the sample was primarily composed of women. Future studies should thus use a larger and more representative sample.

In conclusion, few studies had adequately tested the typology of career indecision. In contrast to previous research, our methodologically sound study provides empirical support for this typology. In addition, studying individuals' experiences as proposed by SDT provided valuable insight into the correlates of both types of indecision. Finally, the present results have important practical implications. Indeed, school counselors should use interventions with chronically undecided students that promote not only the development of their self-efficacy beliefs but also their feelings of autonomy toward career decision-making activities. To this end, adopting an autonomy-supportive approach should help chronically undecided students to feel more autonomous and self-efficacious in relation to career decision-making activities.

REFERENCES

- 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.
- Chartrand, J. M., Martin, W. F., Robbins, S. B., & McAuliffe, G. J. (1994). Testing a level versus an interactional view of career indecision. *Journal of Career Assessment*, 2, 55-69.
- 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.
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum.
- Deci, E. L., & Ryan, R. M. (1991). A motivational approach to self: Integration in personality. In E. L. Deci & R. M. Ryan (Eds.), *Perspectives on motivation. Nebraska Symposium on Motivation* (Vol. 38, pp. 237-288). Lincoln: University of Nebraska Press.
- Dysinger, W. S. (1950). Maturation and vocational guidance. *Occupations*, 29, 198-201.
- Felsman, D. E., & Blustein, D. L. (1999). The role of peer relatedness in late adolescent career development. *Journal of Vocational Behavior*, 54, 279-295.
- Fuqua, D. R., Blum, C. R., & Hartman, B. W. (1988). Empirical support for the differential diagnosis of career indecision. *Career Development Quarterly*, 36, 364-373.
- Gati, I., & Asher, I. (2001). The PIC model for career decision making: Prescreening, in-depth exploration, and choice. In F. T. Leong & A. Barak (Eds.), *Contemporary models in vocational psychology* (pp. 7-54). Mahwah, NJ: Lawrence Erlbaum.
- Guay, F. (2000). *Career indecision*. Unpublished manuscript, Laval University, Quebec, Canada.
- Guay, F. (2005). Motivations underlying career decision-making activities: The career decision-making autonomy scale (CDMAS). *Journal of Career Assessment*, 13, 77-97.
- Guay, F., Senécal, C., Gauthier, L., & Fernet, C. (2003). Predicting career indecision: A self-determination theory perspective. *Journal of Counseling Psychology*, 50, 165-177.
- Hartman, B. W., Fuqua, D. R., & Hartman, P. T. (1983). The predictive potential of the career decision scale in identifying chronic career indecision. *Vocational Guidance Quarterly*, 32, 103-108.
- Jones, B. L., Nagin, D. S., & Roeder, K. (2001). A SAS procedure based on mixture models for estimating developmental trajectories. *Sociological Methods & Research*, 29, 374-393.
- Larson, L. M., Heppner, P. P., Ham, T., & Dugan, K. (1988). Investigating multiple subtypes of career indecision through cluster analysis. *Journal of Counseling Psychology*, 35, 439-446.
- 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.
- Nagin, D. S. (1999). Analyzing developmental trajectories: A semiparametric, group-based approach. *Psychological Methods*, 4, 139-157.
- Osipow, S. H. (1987). *Manual for the Career Decision Scale*. Odessa, FL: Psychological Assessment Resources.
- Osipow, S. H., Carney, C. G., & Barak, A. (1976). A scale of educational-vocational undecidedness: A typological approach. *Journal of Vocational Behavior*, 9, 233-243.
- Otis, N., & Pelletier, L. G. (2004). *The interpersonal behaviours scale (IBS): Perceptions of autonomy support, criticism, and relatedness in different life domains*. Manuscript submitted for publication, University of Ottawa.
- Sabourin, S., & Coallier, J. C. (1991). The relationship between response style and reports of career indecision. *Measurement & Evaluation in Counseling & Development*, 24, 69-79.
- 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.

- Vondracek, F. W., Hostetler, M., Schulenberg, J. E., & Shimizu, K. (1990). Dimensions of career indecision. *Journal of Counseling Psychology, 37*, 98-106.
- Williams, G. C., McGregor, H. A., Zeldman, A., Freedman, Z. R., & Deci, E. L. (2004). Testing a self-determination theory process model for promoting glycemic control through diabetes self-management. *Health Psychology, 23*, 58-66.