

# Student teachers' competence and career certainty: The effects of career anxiety and perceived control

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**Abstract.** In comparison to other professional faculties, student teachers are less certain about their career decisions. Consequently, examining the factors that influence their perceptions of career competence and certainty may be beneficial for their professional development. We examined how student teachers' ( $n = 194$ ) gender, grade of instruction, practicum, career anxiety, and perceived control affected their career competence and certainty. Anxiety had large and negative effects on competence and certainty. In contrast, primary control enhanced competence whereas secondary control enhanced certainty. High-practicum ratings were also associated with greater competence and certainty; however, these effects were mediated by anxiety and perceived control. These findings help us understand the transition that student teachers make from studentship to becoming professional teachers.

**Key words:** career anxiety; career certainty; perceived control; practicum; student teachers

## 1. Introduction

Many student teachers want to contribute to society by helping children (Serow, Eaker, & Ciechalski, 1992; Su, 1993). Others want to use teaching as a backup to their real interests of becoming musicians, professional athletes, or full-time parents (Rury, 1989). Encouragingly, whether inspired by noble, selfish, or convenient motives, 86% of student teachers believe they made the correct decision to become professional teachers (Su, 1993). Unfortunately, only about 50% of student teachers expect to teach for their

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entire working lives (Su, 1993). In comparison, about 77% of law students and 99% of medical students intend to practice their professions for their entire working lives (Cavenagh, Dewberry, & Jones, 2000). From the outset, it seems, student teachers are, by comparison, less certain about their careers than students pursuing many other professions.

Why do students in these faculties have such different career projections? Obviously, there are differences in salary, status, and prestige all of which may inspire greater commitment from legal and medical students than from student teachers. Nevertheless, student teachers expect that intrinsic rewards, such as educating children, will compensate for their hard work (Lam, Foong, & Ngoh-Moo, 1995; Su, 1993; Su, Hawkins, Huang, & Zhao, 2001). Another possibility is that these professional programs differ in how they prepare students. Unlike the medical and legal curricula, which include relatively complex subjects (Cavenagh et al., 2000), teacher education programs have been criticized for not being as intellectually rigorous as other professional faculties (Clifton, Mandzuk, & Roberts, 1994; Kramer, 1991; Russell, McPherson, & Martin, 2001) serving, instead, "as a haven for the indecisive rather than as the first step in a true sequence of professional development" (Serow et al., 1992, p. 136).

In response to these differences, many faculties of education, particularly at Canadian universities have recently made curriculum and program changes designed to improve their reputations and enhance student teachers' preparation (Russell et al., 2001). Few of these initiatives, however, focus on ensuring that student teachers make an early commitment to teaching as a profession (Clifton et al., 1994; Kramer, 1991). Because some education programs do not explicitly promote professional competencies, attitudes, and values to the same extent as the faculties of law and medicine, student teachers still may not be as quick to consider themselves' professionals (Evans & Tribble, 1986). This hesitant shift from student to professional makes it especially important to investigate both program and psychosocial factors that influence student teachers' commitment to the profession (Hasinoff & Mandzuk, 2005). As such, this study examines how student teachers' gender, grade of instruction, practicum experience, and psychosocial dispositions, particularly career anxiety and perceived control, affect their perceptions of career competence and career certainty.

## **2. The Literature**

### **2.1. CAREER COMPETENCE AND CERTAINTY**

Student teachers have been in school, of one type or another, for most of their lives, thus, many of them believe that they "know" what being a teacher "looks like." This surface familiarity, however, does not translate into an accurate understanding of either the skills of becoming an

effective teacher (Ethell & McMeniman, 2000; Russell et al., 2001) or the underlying unpredictability of the profession (Lortie, 1975, 2000). In this respect, we examine two dependent variables instrumental to professional development: student teachers' career competence and certainty. Career competence refers to student teachers' perceptions of their capacity to effectively fill their professional roles (Tschannen-Moran, Woolfolk-Hoy, & Hoy, 1998), and career certainty refers to the confidence they have in their decision to become professional teachers. By taking into account both the practical component of being able to succeed in the profession as well as the cognitive component of allegiance to the profession, we believe career competence and career certainty both represent important elements of commitment to the teaching profession.

In most professional programs, certainty about career choices normally begins well before training, when students *choose* their particular profession (Cavenagh et al., 2000). Individuals interested in pursuing law and medicine, for example, almost universally write demanding entrance examinations that require both intellectual and financial commitment to their career decision. There are, however, no such pre-requisites to help solidify the career decisions of student teachers at Canadian universities. In one of the few studies to explicitly differentiate between student teachers' decisions to pursue teaching as a career and intentions to actually teach, Su (1993) asked student teachers if they had made the "correct" decision. Of 2947 respondents, 86% reported that they had made the correct choice, 1% indicated it was the wrong decision, and 12% were uncertain about their decision, indicating that while the majority of student teachers report that pursuing teaching was the correct choice for them, uncertainty persisted in the minds of many others.

Uncertainty may, in fact, increase once student teachers are enrolled in their educational programs because they hear about professional burnout and, because of this, some professors advise them to plan strategically for alternative careers (Su, 1993). Whether or not influenced by their professors, at present only about 50% of teachers, in both Canada and the U.S., stay in the profession for more than 5 years (Darling-Hammond, 1990; Stinebrickner, 1998). The similarity between student teachers' reported intentions to teach and their actual attrition rate suggests that early reports of certainty and commitment may accurately reflect the real-world decisions they make in the future. As such, we suggest that early perceptions of career competence and certainty may represent both student teachers' immediate achievement and motivation and their long-term commitment to teaching as a profession.

Attrition among new teachers is also high, likely indicating unresolved uncertainties (Darling-Hammond, 1990). Some researchers suggest that new teachers are "pushed" from the profession by discontent, which may have been carried over from their education programs, and "pulled" toward

more appealing opportunities when they experience the actual stress and tensions of teaching full-time (Darling-Hammond, 1990; Murnane, Singer, & Willett, 1988). Overall, the evidence indicates that new teachers' commitment is related to experiential, demographic, and individual factors (Darling-Hammond, 1990; Murnane et al., 1988; Serow et al., 1992). More specifically, in terms of psychosocial variables, teachers report leaving the profession due to a lack of independence, lack of control, and heightened anxiety (Darling-Hammond, 1990; Howard & Johnson, 2004; Lewis, 1999). In terms of demographic variables, gender and teaching level also influence commitment. Specifically, women and elementary school teachers are more committed to teaching (Coladarci, 1992; Evans & Tribble, 1986; Midgley, Feldlaufer, & Eccles, 1989), but they also report that they are more anxious about their careers than men and high-school teachers (Thompson, 1983). Thus, it is likely that these factors influence student teachers' career competence and certainty, particularly as they gain experience with classroom teaching during their teaching practica (Clifton et al., 1994; Kramer, 1991).

## 2.2. THE PRACTICUM, CAREER ANXIETY, AND PERCEIVED CONTROL

Many student teachers report their teaching practicum as the most valued part of their education programs. However, the practicum also creates stress and anxiety in student teachers as they work in unfamiliar classrooms that "belong" to their collaborating teachers and as they try to make sense of conflicting information from classrooms, schools, and faculties of education (Murray-Harvey et al., 2000). Nevertheless, research on the effects of practicum experiences on student teachers' stress and anxiety are mixed. Morton, Vesco, Williams, and Awender (1997), for example, found that students' anxiety decreased with successive experiences, whereas Capel (1997) found little reduction in anxiety. This discrepancy may indicate differences between education programs: some may be more attuned to the realities of actual school and classroom experiences than others (Brouwer & Korthagen, 2005; Russell et al., 2001). In general, it seems that practicum experiences are a "reality shock" for many student teachers as they become aware of the discrepancy between their pre-conceived ideas about teaching and the reality of the profession (Brouwer & Korthagen, 2005; Clifton et al., 1994; Russell et al., 2001). For the student teachers in this study, we were not sure how their practicum experiences would influence their perceived competence and career certainty, but we expected career anxiety to negatively influence both career competence and certainty.

The practicum experiences and related anxiety are part of the transition student teachers make from being students to becoming professional teachers. Most of the psychological research on transitions has focused on students' shifting from high school to college (Perry, Hall, & Ruthig, 2005).

For those continuing their education beyond basic college degrees, as are our student teachers, additional transition periods include the first year in the professional program and the beginning of their teaching careers (Perry, 2003; Perry et al., 2000; Perry, Menec, & Struthers, 1999). In general, the literature suggests that educational transitions are difficult for students because new and unpredictable experiences may threaten their sense of control (Perry, 2003; Perry et al., 2005a, b). The inconsistencies and unpredictability of teacher-education programs and specifically practicum experiences may result in student teachers perceiving themselves as "out of control."

According to Control Theory (Perry et al., 2005a; Rothbaum, Weisz, & Snyder, 1982; Rotter, 1966), retaining a perception of control in unpredictable situations is beneficial for achievement and motivation, therefore, suggesting that perceived control will also benefit career competence and certainty. Two components of perceived control are central in the literature: primary control, the extent to which students believe they possess the necessary self-regulatory skills to effectively influence their performances, and secondary control, the extent to which they adjust themselves psychologically to match their environment (Rothbaum et al., 1982). Generally, primary control enhances students' achievement, whereas secondary control helps them maintain achievement striving. A wide range of studies demonstrate that high levels of both primary and secondary control seem to shield students from the potentially negative experiences they have during transitional periods (Hall et al., 2006; Perry, 2003; Perry et al., 1999, 2000, 2005a, b). Thus, we argue that high levels of primary and secondary control will shield student teachers from the low-control aspects of their teacher-preparation programs. In fact, we expect that student teachers with more primary and secondary control will report higher levels of competence and career certainty than student teachers with less primary and secondary control.

### 3. Method

#### 3.1. PARTICIPANTS AND PROCEDURE

Information was collected from 194 students, 117 females and 59 males, enrolled in the first year of a 2-year post-Bachelor's teacher education program at a large mid-western Canadian university. The average age of these student teachers was 24.7 years ( $SD = 4.8$ ). In this program, students enroll in cohort groups that prepare them to teach Early Years (Kindergarten–Grade 4;  $n = 51$ ), Middle Years (Grades 5–8;  $n = 59$ ), or Senior Years (Grades 9–12;  $n = 93$ ). Over the 2 years, the student teachers complete 60 credit hours of courses integrated with 24 weeks of practicum experiences (Schulz & Mandzuk, 2005). For this study, the student teachers completed questionnaires before their first practicum in October and

Table I. Summary information for all variables in the Model

Variables	No. items	Anchors	Actual range	Alpha	<i>M</i>	<i>SD</i>
1. Gender	1	1 = female; 2 = male	1–2	–	1.36	0.48
2. Stream	1	1 = elementary; 2 = senior	1–2	–	1.53	0.50
3. Practicum rating	1	1 = very negative; 10 = very positive	1–10	–	7.84	1.92
4. Career anxiety	6	1 = not worried; 10 = very worried	6–60	0.88	22.40	11.98
5. Primary control	6	1 = strongly disagree; 5 = strongly agree	14–30	0.75	22.89	3.33
6. Secondary control	5	1 = strongly disagree; 5 = strongly agree	8–25	0.77	18.52	3.89
7. Career competence	5	1 = not at all true of me; 7 = very true of me	11–35	0.86	27.31	4.95
8. Career certainty	5	1 = strongly disagree; 5 = strongly agree	9–39	0.85	31.63	6.36
	2	1 = not committed; 7 = very committed				

then again prior to their second practicum in February. We obtained the student teachers' informed consent and administered the questionnaire during 30 min of class time. Participation was voluntary and, as compensation, all their names were entered into a draw for a \$200 (Cnd) gift certificate at the university bookstore.

### 3.2. VARIABLES

#### 3.2.1. *Professional Education Variables*

Three professional education variables were included in the model: gender, professional stream, and practicum rating. For *gender*, females were coded as "1" and males were coded as "2" (see Table I). Sixty percent of the students were female (117 students), 30% were male (59 students), and 18 students did not indicate their gender. The gender distribution in our sample is similar to the distribution in the Faculty and similar to those in other faculties of education in North America (Su et al., 2001).

The student teachers were registered in one of three *professional streams*, namely, Early Years, Middle Years, and Senior Years in which the educational and instructional philosophy differed somewhat. In brief, instruction

in the Early and Middle Years programs generally focused on teaching children whereas instruction in the Senior Years program generally focused on teaching disciplines. In order to correct for unequal group sizes resulting from the disproportionate number in the Senior Years program, a dichotomous variable was created in which Early and Middle Years students were combined into one group called the "elementary stream," and the other was called the "senior stream." We coded the elementary stream as "1" ( $n = 100$ ) and the senior stream as "2" ( $n = 93$ ). One student teacher did not indicate his or her professional stream.

A single item was used to assess students' *practicum* experience. The student teachers were asked: "On a scale of 1 to 10, how would you rate your teaching practicum so far this year?" Scores ranged from 1 (very negative) to 10 (very positive) with a mean of 7.84 ( $SD = 1.92$ ), and 57% of the respondents rated their practicum experience as 8 or higher (Skewness =  $-1.06$ ). Although skewed, the variable was not transformed because the transformations had no appreciable effect on the size of the regression coefficients.

### 3.2.2. *Psychosocial Variables*

Three intervening variables were measured after the practicum in February: career anxiety, primary control, and secondary control. Students' *career anxiety* was assessed on a 6-item scale. Participants responded to questions such as: "How worried or concerned are you about finding out later that you do not like the career you chose?" and "How worried or concerned are you about wasting your life in a meaningless job and never having a meaningful career?" (1 = not worried to 10 = very worried). The six items were factor analyzed and loaded between 0.73 and 0.83 on one factor explaining 63% of the total variance (Stevens, 2002). All items were summed so that higher scores indicated higher anxiety (Range = 6–60; Cronbach's  $\alpha = 0.88$ ).

*Primary control* was assessed on a 6-item Likert scale that indicated the extent to which the student teachers agreed with statements such as: "What matters most is that I can influence what happens to me" and "There is little you can do to avoid life's calamities" (1 = strongly disagree to 5 = strongly agree). This scale was developed by Perry, Hladkyj, Pekrun, and Pelletier (2001) and has been used in many studies since then, including research with student teachers (Hladkyj, Daniels, Perry, Mandzuk, & Clifton, 2005). The six items were factor analyzed and loaded between 0.47 and 0.81 on one factor explaining 46% of the total variance (Stevens, 2002). All items were summed so that higher scores indicated higher levels of primary control (Range = 14–30; Cronbach's  $\alpha = 0.75$ ).

*Secondary control* was assessed on a 5-item Likert scale that had student teachers indicate the extent to which they agreed with statements such as: "No matter how well I do on a test or in a course, I try to see beyond my

grades to how my experience at university helps me to learn about myself” and “Whenever I have a bad experience at university I try to see how I can turn it around and benefit from it” (1 = strongly disagree to 5 = strongly agree). This scale, based on Rothbaum et al.’s (1982) theory has been used in many studies, including research with student teachers (Hall et al. 2006; Hladkyj et al., 2005). The five items used in this study were factor analyzed and loaded between 0.64 and 0.79 on one factor explaining 53% of the total variance (Stevens, 2002). All items were summed so that high scores indicated high secondary control (Range = 8–25; Cronbach’s alpha = 0.77).

### 3.2.3. *Career Competence and Certainty*

The two dependent variables were assessed in February after the first practicum. For *career competence*, student teachers’ perceptions were measured by a 5-item Likert scale that assessed their general feelings of preparedness for teaching with items such as: “I know I will be good at what I do once I graduate and start my career” and “It will not take me much training to get comfortable at a new position” (1 = not at all true of me to 7 = very true of me). The five items were factor analyzed and all loaded between 0.70 and 0.87 on one factor explaining 65% of the total variance (Stevens, 2002). All items were summed so that high scores reflected greater perceptions of competence (Range = 11–35; Cronbach’s alpha = 0.86).

To capture the nuances of these student teachers’ recent career decisions, both general and specific questions were posed to assess *career certainty*. First, the student teachers responded to five general statements assessing their uncertainty about their careers such as: “I’m still thinking about the kind of job I want in the future” and “I have not made a definite decision about a career for myself” (1 = strongly disagree to 5 = strongly agree). Next, they answered two specific questions about their commitment to teaching: “How committed are you to the stream in which you are registered?” and “How committed are you in general to becoming a teacher?” (1 = not committed to 7 = very committed). Although the items came from slightly different scales, each measured career certainty and, as such, shared a common conceptual basis. The seven items were factor analyzed and loaded between 0.56 and 0.87 on one factor explaining 56% of the total variance (Stevens, 2002). The five negatively-worded items were reverse scored and summed with the two positively-worded items so that high scores reflected a greater degree of certainty about teaching as a profession (Range = 9–39; Cronbach’s alpha = 0.85).

Following these analyses, all of the psychosocial and dependent variables were included in a confirmatory factor analysis. The factor structure was supported: five factors were extracted with loadings meeting the assumptions of parsimony and simple structure and the factors explained 59% of the variance with all eigenvalues greater than 1.00 (Stevens, 2002).



Table II. Correlation matrix

Variables	1	2	3	4	5	6	7
1. Gender	–						
2. Stream	0.17*	–					
3. Practicum rating	0.04	0.01	–				
4. Career anxiety	–0.07	–0.20**	–0.23**	–			
5. Primary control	–0.05	0.10	0.12	0.07	–		
6. Secondary control	–0.17*	0.02	0.27**	–0.16*	0.28**	–	
7. Career competence	0.00	0.16*	0.29**	–0.33**	0.22*	0.18*	–
8. Career certainty	–0.15*	–0.08	0.27**	–0.38**	–0.01	0.26**	0.23**

\*  $p < 0.05$ .

\*\*  $p < 0.01$ .

#### 4. Results

A two-step regression procedure with pairwise deletion of missing values (Tabachnick & Fidell, 2001) was used to examine the direct and indirect relationships between the independent, intervening, and dependent variables. These procedures allowed us to assess the influence of the three professional education variables, gender, program, and practicum in Step 1, and those variables along with the three psychosocial variables, career anxiety, primary control, and secondary control in Step 2, on the two dependent variables of career competence and certainty. We decided on this two-step model because the professional education variables, representing program characteristics, were considered exogenous, and the psychosocial variables were considered mediating variables.

Table II presents the zero-order correlation coefficients for the variables in the model. Not surprisingly, the dependent variables are positively correlated ( $r = 0.23$ ,  $p < 0.01$ ), suggesting that, for these students, perceptions of career competence and certainty are concomitant. Career anxiety is negatively correlated with competence ( $r = -0.33$ ,  $p < 0.01$ ) and career certainty ( $r = -0.38$ ,  $p < 0.01$ ), whereas practicum rating is positively correlated with competence ( $r = 0.29$ ,  $p < 0.01$ ) and career certainty ( $r = 0.27$ ,  $p < 0.01$ ). Together these findings provide ecological validity for the constructs and suggest that reducing career anxiety and increasing positive practicum experiences may enhance student teachers' perceptions of competence and certainty. Primary and secondary control are positively correlated ( $r = 0.28$ ,  $p < 0.01$ ), and primary control is positively correlated with career competence ( $r = 0.22$ ,  $p < 0.01$ ), while secondary control is correlated with both career certainty ( $r = 0.26$ ,  $p < 0.01$ ) and career anxiety ( $r = -0.16$ ,  $p < 0.05$ ).

Table III. Standardized regression coefficients and adjusted  $R^2$  for the reduced form and fully recursive models for perceptions of career competence

	Career competence	
	Step 1	Step 2
Professional education variables		
Gender	-0.04	-0.03
Professional stream	0.17*	0.09
Practicum rating	0.29***	0.20**
Psychosocial variables		
Career anxiety		-0.28***
Primary control		0.21**
Secondary control		0.02
Adjusted $R^2$	0.09	0.18***

\*  $p < 0.05$ .

\*\*  $p < 0.01$ .

\*\*\*  $p < 0.001$ .

#### 4.1. CAREER COMPETENCE

Career competence was regressed on the professional education variables, gender, professional stream, and practicum rating in Step 1, and on these variables plus the psychosocial variables, career anxiety, primary control, and secondary control in Step 2 (see Table III). In Step 1, professional stream,  $\beta = 0.17$ ,  $t(168) = 2.23$ ,  $p < 0.05$ , and practicum rating,  $\beta = 0.29$ ,  $t(168) = 3.97$ ,  $p < 0.001$ , have significant effects, suggesting that senior stream student teachers report greater perceptions of competence than elementary stream student teachers and that practicum rating is positively related to perceptions of competence. There is no significant gender effect,  $\beta = -0.04$ ,  $t(165) = 0.56$ , *ns*, which is not surprising given that the zero-order correlation is zero.

In Step 2, the psychosocial variables are added, and career anxiety has the largest effect on competence,  $\beta = -0.28$ ,  $t(165) = -3.79$ ,  $p < 0.001$ , suggesting that student teachers with high levels of anxiety question their competency to teach. Primary control,  $\beta = 0.21$ ,  $t(165) = 2.80$ ,  $p < 0.01$ , has a positive and significant effect, suggesting that this psychosocial disposition contributes to students developing greater perceptions of their competence. In other words, student teachers' career competence is enhanced by not being anxious about their careers and by beliefs that improving their teaching performance is within their control. Secondary control, however, does not contribute significantly to perceptions of competence, although the correlation between the two variables is significant ( $r = 0.18$ ,  $p < 0.05$ ).

The effects of professional stream and practicum, evident in Step 1, are mediated, to a certain degree, by the psychosocial variables in Step 2. In fact, almost 50% of the effect of professional stream is mediated by anxiety and primary control and the direct effect is no longer significant,  $\beta = 0.09$ ,  $t(165) = 1.22$ , *ns*. Although the effect of practicum is significant in Step 2,  $\beta = 0.20$ ,  $t(165) = 2.67$ ,  $p < 0.01$ , about 30% of the total causal effect is mediated by career anxiety and primary control, suggesting that even though practicum experiences positively affect perceptions of career competence, individual differences in anxiety and primary control have substantial effects on the relationship between these two variables.

The professional education variables (Step 1) explained approximately 9% of the variance in students' perceptions of competence, and when the psychosocial variables are added (Step 2), the amount of variance explained increased to 18% which is a significant increment  $R^2_{\text{change}} = 0.09$ ,  $F_{\text{change}}(6, 165) = 7.12$ ,  $p < 0.001$ . In total, the evidence illustrates that along with their experiences in the practicum, psychosocial variables, particularly career anxiety and primary control, significantly affect the student teachers' perceptions of their competence to teach. Nevertheless, the evidence does not say that the student teachers are, in fact, certain about teaching as a career, which is the issue we examine next.

#### 4.2. CAREER CERTAINTY

In the analyses of career certainty we used the same procedures (see Table IV). In Step 1, gender,  $\beta = -0.16$ ,  $t(168) = -2.08$ ,  $p < 0.05$ , and practicum rating,  $\beta = 0.27$ ,  $t(168) = 3.72$ ,  $p < 0.001$ , significantly affect career certainty indicating that males tend to be less certain than females and that positive practicum ratings, not surprisingly, relate to greater career certainty. There is, however, no significant effect of professional stream on career certainty,  $\beta = -0.06$ ,  $t(168) = -0.76$ , *ns*.

In Step 2, the psychosocial variables are added. Similar to the previous findings, anxiety has the largest influence on career certainty,  $\beta = -0.35$ ,  $t(165) = -4.80$ ,  $p < 0.001$ , suggesting that students with high levels of anxiety are not as certain of their teaching careers as students with lower levels of anxiety. Secondary control has a significant, but substantially lower, effect on career certainty,  $\beta = 0.15$ ,  $t(165) = 2.04$ ,  $p < 0.05$ . Overall, this evidence suggests that anxiety decreases the perception of certainty for student teachers, while secondary control increases their perceptions. In other words, career certainty is enhanced when student teachers are not anxious and are able to adjust psychologically to an unpredictable classroom. Primary control, however, is not significantly related to career certainty,  $\beta = -0.04$ ,  $t(165) = -0.69$ , *ns*.

The significant gender and practicum effects in Step 1 are mediated, to a certain degree, by the psychosocial variables. The effect of gender remains

Table IV. Standardized regression coefficients and adjusted  $R^2$  for the reduced form and fully recursive models for career certainty

	Career certainty	
	Step 1	Step 2
Professional education variables		
Gender	-0.16*	-0.14*
Professional stream	-0.06	-0.13
Practicum rating	0.27**	0.16*
Psychosocial variables		
Career anxiety		-0.35***
Primary control		-0.04
Secondary control		0.15*
Adjusted $R^2$	0.08	0.22***

\*  $p < 0.05$ .

\*\*  $p < 0.01$ .

\*\*\*  $p < 0.001$ .

almost the same, suggesting that males are less certain of their careers than females. More importantly, almost 41% of the effect of practicum ratings on career certainty is mediated by career anxiety and secondary control ( $\beta = 0.16$ ,  $t(165) = 2.19$ ,  $p < 0.05$ ), suggesting that even though practicum experiences positively affect career certainty, individual differences in anxiety and secondary control affect the relationship between these two variables.

The professional education variables (Step 1) explained approximately 8% of the variance in the career certainty of the student teachers, and when the psychosocial variables are added (Step 2) the amount of variance explained increased to 22%, which is a significant increment,  $R^2_{\text{change}} = 0.14$ ,  $F_{\text{change}}(6, 165) = 10.37$ ,  $p < 0.001$ . This evidence also suggests that psychosocial variables, particularly career anxiety and secondary control, significantly affect student teachers' certainty of having chosen the correct profession. In sum, high-practicum ratings, low anxiety, and high perceptions of control all positively influence student teachers' sense of competence and career certainty.

## 5. Discussion

Some research has investigated the demographic and psychosocial characteristics that contribute to teachers' premature departures from the profession. Far less research, however, has considered the effects of these

characteristics on student teachers' commitment to teaching during their professional programs. Our study indicates that psychosocial variables including career anxiety and perceived control are strongly related to student teachers' perceptions of career competence and career certainty while demographic variables have smaller effects. More specifically, practicum rating has a relatively strong and positive effect on perceptions of competence and career certainty, whereas gender and professional stream have minimal effects. While anxiety negatively impacts both competence and certainty, the effects of perceived control are different for the two dependent variables: primary control is positively related to perceptions of career competence, while secondary control is positively related to career certainty. These findings, exploring both program characteristics and psychosocial differences, contribute to a better understanding of the transition student teachers are making from studentship to becoming professional teachers.

### 5.1. PROFESSIONAL EDUCATION AND PERCEIVED CONTROL

Given the tendency for teaching to be considered a feminized profession and for more women than men to become elementary school teachers (Coladarci, 1992; Evans & Tribble, 1986; Midgley et al., 1989), we expected women and elementary stream student teachers to report higher levels of competence and certainty than men and senior stream student teachers. This hypothesis, however, is only supported for *career certainty*: female student teachers report greater certainty than males and the difference between elementary and senior stream student teachers approaches, but does not reach, statistical significance. Together these findings suggest that elementary student teachers, who are also more likely to be women, are more certain about their careers than senior stream student teachers. In terms of explaining the professional stream effect, research suggests that senior school English, chemistry, and physics teachers are most likely to leave teaching (Murnane et al., 1988), perhaps because they have the academic credentials necessary to pursue other careers. Senior school teachers also tend to focus on teaching a particular discipline rather than teaching "children." If they are less resolved to work with children than elementary teachers (Evans & Tribble, 1986), then other employment opportunities may be quite appealing. The effects of gender and professional stream on certainty are small and the findings in terms of *competency* are not significant, suggesting that women and men and elementary and senior stream student teachers feel equally competent about their professional commitments. Although not significant, these findings are interesting because they suggest that men, who may undertake a more extensive decision making process than women before entering a stereotypically female profession, expect to become competent teachers but still feel less committed to the profession.

In our sample, there is no relationship between either gender or professional stream and the practicum rating. Twenty-two percent of the student teachers, independent of gender and professional stream, indicate a very positive first practicum experience. Generally, the results show that higher practicum ratings are related to greater perceptions of competence and certainty. This relationship, however, is mediated by perceived control. At the zero-order level, primary control is unrelated to student teachers' assessments of their practicum experience, while secondary control is positively related to their assessments. This suggests that primary and secondary control exert different influences on the relationship between practicum and the dependent variables. Specifically, we found that primary control relates to perceptions of competence and thus mediates the effects of practicum on this outcome, whereas secondary control relates to certainty and thus mediates the effects of practicum on this outcome. In accordance with Control Theory (Perry et al., 2005a; Rothbaum et al., 1982; Rotter, 1966), these findings support the idea that primary control has a direct linkage with career competence which is instrumental for achievement (i.e., good teaching) and secondary control has a direct linkage with career certainty which is instrumental for psychological adjustment to the profession (i.e., commitment). In sum, primary control likely enhances student teachers' achievement and motivation through competency perceptions, while secondary control likely helps develop and maintain their commitment to the teaching profession in terms of their career certainty. We expected these adaptive effects of perceived control to be the strongest findings in our results; however, it is the debilitating effects of career anxiety that are most prominent.

## 5.2. CAREER ANXIETY

We had not expected career anxiety to emerge as the single most important predictor of both competence and certainty, but the magnitude of the relationships, while controlling for background variables and perceptions of control, are almost as strong as the zero-order correlations. Student teachers' anxiety is related to poorer perceptions of competence and career certainty and mediates the positive influence of practicum on both outcomes. This study does not permit an analysis of the nature or origin of this anxiety, but based on the literature (Brouwer & Korthagen, 2005; Murray-Harvey et al., 2000), we speculate that student teachers' career anxiety is related to their practicum experiences. Even the preliminary transition into real classrooms through a practicum is probably anxiety-provoking because teaching is, by nature, unpredictable and complex work (Radford, Cashion, & Latchford, 1993). In fact, 30 years ago, Lortie (1975, 2002) pointed out the "endemic uncertainties" of teaching and concluded that "uncertainty is the lot of those who teach" (p. 133). Future research,

of course, will need to investigate the sources of this debilitating career anxiety. With a more thorough understanding of student teachers' anxiety it will be possible for teacher education programs to create challenging programs in both material content and professional responsibilities, while at the same time, helping student teachers overcome their anxiety and learn to manage unpredictable environments through, in part, enhancing their perceptions of control.

Interventions aimed at reducing student teachers' career anxiety and enhancing their perceptions of control is one of many options. Nevertheless, this option may potentially help student teachers cope with their immediate anxieties related to the practicum and then to cultivate long-term commitments to the profession. Attributional retraining (AR) is a control-enhancing protocol that has, in fact, been successfully used to increase university students' perceptions of control and ultimately their achievement and adjustment (Perry et al., 2005a). Not surprisingly, the effects of AR are particularly beneficial for uncertain students (Haynes (in press); Perry & Struthers, 1994). It is an open question, however, if AR will benefit student teachers who are anxious about their performances during their practicum and careers. Future research could evaluate the effectiveness of this type of intervention in helping them become less anxious and more committed to teaching from the outset of their decisions to become professional teachers.

Nevertheless, it is evident that many student teachers pursue teaching careers with the noble desire to make a contribution to society, and the education of children is at the forefront of their intentions. As a society, we need competent teachers to succeed and prosper. As a result, many faculties of education in Canada are adjusting their programs to improve the education of student teachers (Russell et al., 2001). However, under any system of educational improvement, for student teachers to be transformed into teachers who contribute to society, they must first perceive themselves as being competent and committed to a rigorous program that prepares them for a demanding, but ultimately uncertain, profession. Future research should focus on preparing student teachers so that their noble desires are not subverted by the stark reality they experience in classrooms, either as student teachers or as professional educators.

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