Ethnicity, Gender, and Occupational Choice in Two Toronto Schools

Mary Percival Maxwell James D. Maxwell Eva Krugly-Smolska queen's university

Using data from 811 respondents in two central Toronto schools with "mixed" social class composition but strong reputations for academic achievement, this article examines how ideal occupation and career indecision are linked to gender and ethnicity. Ethnic groups "of more recent arrival" show higher levels of ambition than Anglo-Canadians and Euro-Canadians. Females appear to have higher ambitions than males.

À l'aide de données provenant de 811 répondants de deux écoles du centre de Toronto présentant un milieu "mixte" du point de vue des classes sociales, mais jouissant d'un solide réputation quant au rendement des élèves, les auteurs analysent comment la profession idéale et l'indécision quant au choix d'une carrière sont reliées au genre et à l'ethnicité. Les groupes ethniques "arrivés plus récemment" font preuve de plus d'ambition que les Anglo-Canadiens et les Euro-Canadiens. De plus, les jeunes filles semblent être plus ambitieuses que les garçons.

ETHNICITY, GENDER, AND OCCUPATIONAL CHOICE: EMPIRICAL FINDINGS AND THEORETICAL PERSPECTIVES

Because level of education and occupation profoundly affect socio-economic status, it is not surprising that researchers interested in questions of equity, as well as those interested in theories of status determination, have examined career decision-making by students. In the United States, Hossler and Stage (1992) identify several models developed to explain the process. These include econometric models, consumer models, and sociological models. They might also have included as a separate category such psychological models as those suggested by Downing and Dowd (1988). As a result of their review, Hossler and Stage (1992) developed an integrative model of college choice tested on Grade 9 students. They identified several factors linked to a predisposition to post-secondary education, including: socio-economic status, student achievement, ethnicity, gender, parental educational expectations and encouragement, high school quality, high school curriculum track, and student involvement in high school activities. In Canada a similar but more detailed model was developed earlier by Porter, Porter, and Blishen (1982), but in contrast to Hossler and Stage, these authors

focussed on class explanations. Chen and Regan (1985, p. 59) amplified the British model put forward by Watson (1980) by including race and ethnicity among the non-work structural factors affecting choice and allocation to the labour market. Chen and Regan's model portrays the individual approaching work as affected by class, family, education, race and ethnicity, gender, media, and peer influences, which in turn determine resources of cash, skills, knowledge, and physique, as well as motives, expectations, interests, and aspirations. These in turn are affected by work-sphere cultural factors (the perception of opportunity), which feeds back to influence expectations and aspirations. In general terms, Chen and Regan (1985) as well as Watson (1980) follow the status attainment model of occupational choice put forward by Blau and Duncan (1967), and replicated by Boyd et al. in 1973 (1981). In its most terse summary, this model claims that status of origin determines status of destination.

The focus here is not on models but on the pattern of occupational choice. The effects of gender and ethnicity on this patterning will be explored. Race is not emphasized because of the cultural differences among and within "races," and more importantly, because of the term's ambiguity. Although the term "race" is tied to physical characteristics, it is socially constructed. Nevertheless, social scientists' use of the term, and their labelling practices, create a degree of ambiguity that may be found in the research studies we cite. This presents a dilemma that cannot be resolved here. Nevertheless, that dilemma underscores the fact that the concept of "race" is problematic. Ethnicity presents similar problems. Although it, too, is socially constructed by the lay population, it also suffers from the labelling practices of social scientists themselves. Whereas ethnicity is based on shared culture, including language, customs, and values, these labelling practices frequently imply that some groups are ethnic and others are not; yet the differing cultural practices of social groups imply ethnicity for all groups. Consequently, we have used the term "minority ethnic groups" to avoid the labelling effect of some groups being "ethnic" and others not.

The pertinent Canadian literature from 1960 to 1980 on female educational and occupational aspirations and attainment has been reviewed previously (Maxwell & Maxwell, 1984). Bibby and Posterski (1985), in a national survey of beliefs and values of 3,600 students from 152 Canadian schools revealed that only 1% of the males and females expected to marry and not work outside the home when they finished their education (p. 163). These studies suggest that by the late 1970s or early 1980s girls' aspirations and attitudes towards advanced education and towards attachment to the labour force had risen significantly compared with those reported for students prior to this period. Studies have shown that not only are females continuing the trend of increased levels of education but also that women's entry into the traditional male-dominated professional occupations continues to increase (Marshall, 1990). In addition, several Canadian studies document the trends since 1980, summarized elsewhere (Maxwell & Maxwell, 1994). These studies all document the significant effect

of structural features, especially of social class, but also of gender and ethnicity, on educational aspirations and attainment. However, there is little Canadian research on the role of ethnicity in educational and occupational aspirations.

A clear understanding of the role of ethnicity in educational and occupational aspirations is difficult to obtain because of the tendency in much of the research in the United States to equate ethnicity with race. None of the studies cited in this review of the non-Canadian literature defines the terms. Even Hossler and Stage (1992), in a heading titled "ethnicity," describe the situation of Black students, and conclude that "current research suggests that associations between race and predisposition are the result of other background variables such as socio-economic status or parents' educational level" (p. 434). Schulenberg, Vondracek, and Crouter (1984) reviewed research pertaining to occupational choice and observed that: "from the existing literature, little can be concluded about the effects of minority status—especially nonblack minority status—on vocational development" (p. 133). Arbona and Novy (1991) suggested that there are more gender than ethnic differences in students' career aspirations and expectations. Although they concluded that the association between ethnicity and career aspirations was not statistically significant, they nevertheless found differences among ethnic groups. Furthermore, the distribution of expectations among ethnic groups tended to resemble the distribution of actual employment within the groups. Their findings contrast somewhat with earlier findings of Dawkins (1981), who concluded that there were no differences between males and females in terms of educational aspirations, but that Black females were more likely than Black males to adjust their aspirations to conform to the realities of the U.S. occupational structure. Because Arbona and Novy (1991) did not control for the students' socio-economic background, their findings are, as they themselves suggest, difficult to interpret.

The picture that emerges from the literature to this point is somewhat confused. It appears that when ethnicity is equated with race, the only common factor affecting students' career choice is parental influence. It is unclear which other factors may play a role. Perhaps answers may be found in research in which ethnicity is defined with respect to specific cultural groups. However, if, as it is argued here, it is desirable to pursue enquiry about the influence of ethnicity in career choice from a cultural differences perspective, the research literature is both scarce and much less helpful. A better picture might be obtained by examining cross-national literature and literature on different ethnic groups within a particular country. But even then the pickings are slim.

Nurmi's (1987) study of students in Finland is useful for its examination of differences between countries. He found that girls tended to have more knowledge than boys about future hopes, and that subjects from higher social classes tended to project further into the future than those from lower classes. Furthermore, boys did not have more hopes than girls with respect to education and occupation. He contrasted these findings with the results of a German study

and suggested the discrepancy may be due to the fact that "Finnish culture is more egalitarian with respect to sex in the professional and educational field than is German culture" (p. 989).

The possibility that social values and expectations can be a factor among different ethnic groups is strengthened by Israeli studies, which have found a greater equality of the sexes regarding aspirations when compared to the situation as we know it in the United States. One study reported by Kfir (1988) indicated that rather than differences in level of aspirations there seemed to be differences in the content or field, so that female students seemed to be more interested in a broad education, and their achievement motivation was less practical (less instrumental) than that of male students (Shapira & Etzioni-Halevy, 1973, cited in Kfir, 1988). This contrast may be due partially to the fact that female students tend to be found in the academic tracks. But even these findings are tempered by religious differences, for in Israel those from traditional backgrounds regard all secondary education as unnecessary for girls.

Kfir's study not only allows for cross-national comparisons, but also examines ethnic differences within its own boundaries. It examines specifically the differences between Israelis of Afro-Asian (A-A) origin and those of European-American (E-A) origin. It concludes that attainment and aspirations are relatively low in the A-A group in Israel compared with the E-A group. This study seems to provide more evidence that cultural differences among ethnic groups may play an important role in students' aspirations, expectations, and career choice.

In Britain, Gupta (1977) found that Asian boys and girls (Asian in this case referring to those from India and Pakistan) expressed significantly higher educational as well as vocational aspirations than their English counterparts. One further variable in this study was that the Asian students were immigrants (defined as either them or both their parents having been born outside Britain). Gupta concluded that "the Asian family's cultural traditions, the greater parental interest and greater pressure for higher future goals, may be the plausible explanations for the higher educational and vocational aspirations of the Asian immigrant school-leavers" (p. 195). Gupta also suggested that migration and "ethnic coloured minority status" also play a role.

Hogg, Abrams, and Patel (1987) used social-identity theory to study occupational aspirations, self-esteem, and ethnic identification of male and female Indian and Anglo-Saxon British adolescents. They found that "all respondents were traditional in their occupational choice, with males, particularly Indian males, aspiring to higher status occupations than females" (p. 502). They concluded that there is a link between their variables that can only be explained by focussing on ethnic identification and sex-specific cultural norms of the groups involved, but they caution:

In order to predict the behaviours of members of different ethnic groups in a given socio-historical context, it is not enough to focus on social structure, belief structures, and

ethnic identification at the level of the ethnic group as a whole. Ethnic groups contain subgroups that may possess qualities that transcend the ethnic group itself or that are uniquely patterned and constituted as a function of ethnic group membership. As we have shown in this study, being female is very different for Anglo-Saxons and Indians. Similarly, sex differences and gender experiences in one ethnic group are not identical to those in another. (p. 504)

It is only with a series of articles by Marjoribanks (1985a, 1985b, 1991a, 1991b) that relationships among ethnicity and other variables which influence aspirations are examined in detail. Marjoribanks' major study and its follow-up were conducted in Australia using a sample of Anglo-Australian, Greek, and Southern Italian students from different class backgrounds. It is one of the few studies cited to this point that does not have race as an added variable. The results illustrate well the cautions raised above about variable experiences within ethnic groups. Greek adolescents generally had higher educational and occupational aspirations than Southern Italian and Anglo-Australian adolescents (Marjoribanks, 1985b). Although there were associations between adolescents' aspirations and their perceptions of parents' support, that was not the case for Southern Italian males, nor for Greek females (1991a). Furthermore, diverse patterns such as those just indicated belie the suggestion that higher aspirations and achievement are due exclusively to the immigrant success ethic as discussed by Bullivant (1988). Marjoribanks (1991b) concludes that:

three analyses of the Australian sample suggest the general propositions that: (a) although parents' academic socialization is related to measures of children's ability and academic achievement, there are ethnic group differences in the nature of those relationships; (b) there are ethnic group variations in relationships between parents' socialization, children's cognitive ability, and measures of adolescents' aspirations; (c) parents' academic socialization and children's cognitive performance have differential associations with measures of social status attainment, for young adults from different ethnic groups; (d) in each ethnic group, adolescents' perceptions of parents' support for learning have strong associations with the social status attainment of young adults. (p. 497)

This last conclusion echoes the only consistent finding in all the studies cited: the important role of parents (especially, parents' ethnicity) in students' educational and occupational aspirations.

The lack of empirical findings and theoretical discussion on ethnicity and occupational choice led us to examine the findings on ethnicity and actual status attainment. Blau and Duncan (1967), who formulated the original model of status attainment, found a bipolar model of status attainment for immigrants; the sons of immigrants who made it over educational hurdles were likely to be more successful than the native born, but those who did not lagged considerably behind (pp. 407–408). Boyd et al. (1981), in the main part of the Canadian replication, corrected for the gender bias in the original study. However, for

unexplained reasons, they limited their analysis of ethnicity to males. As opposed to the somewhat depressed status of their foreign-born fathers, primarily from European ethnic groups, native-born sons gained dramatically, and most of these gains could be attributed to education (Boyd et al., 1981, p. 669). Presumably, education has come to serve ethnic groups of both genders fairly well, although this effect of education must be tempered by findings that male and female status attainment are differently patterned, and that women experience less career mobility than men after their first job (Boyd, 1982, p. 8).

Although not without controversy, work by Campbell and Szablowski (1979), and more recently by Ogmundson and McLaughlin (1992), indicates that ethnic groups are proportionately better represented in Canadian elites than earlier researchers assumed. Using Porter's work (1965) as a basis of comparison, Herberg concludes that visible minorities (except Native people) and people from Jewish background have outstripped the British and French "Charter Groups" and other non-visible ethnic groups in post-secondary attainment, educational attendance (15 and older), and occupational attainment. Herberg (1989, 1990) attributes the fact that income is not commensurate with these achievements to the lack of adequate employment equity policies. Yasmin and Abu-Laban (1992) conclude that gender and education tend to have a stronger impact on occupational status than ethnicity. As in the case of the literature on choice and ambition, not a lot of attention has been paid to gender and type of ethnic origin. Once again the literature was not useful in our focal concern, which was the patterning of ambition among and within ethnic groups. The question was whether previous patterns and trends are continuing or changing. In general, the upper occupational levels appear to be accessible to males from varied origins. These individuals seem to gain the psychological, if not financial, rewards of mobility. For females from minority ethnic groups to attain rewards similar to men in the same group (and, it is hoped, financial rewards that are more just), they must have high motivational commitment to and qualify educationally for these occupations. We cannot, from the type of data we use, predict actual attainment. However, we can give some indication of the direction females are "headed," and some idea of future patterns of occupational attainment by gender and ethnicity.

THE METHODS AND THE DATA BASE

Our data were gathered by a questionnaire administered at two downtown Toronto high schools to all students in Grades 9 and 12 in attendance on the day the questionnaire was administered in the fall of 1986. These two public high schools, given the pseudonyms Harcourt and Jenner, were part of a larger study. They were chosen because they were founded at about the same time and had strong academic reputations although they, like most other Toronto schools, provide the full range of programs. They are also neighbourhood schools in the

sense that students from outside the area must make special application to attend; as our subsequent analysis of class composition indicates, they do not appear to be sought out by "upper-class" members of minority ethnic groups as an avenue of mobility for their children. We also selected the schools because both were known to have students from a variety of ethnic groups, typical of other schools in the Toronto area. In a recent survey by *Toronto Life* (1994) both schools had a university acceptance rate of 85%. Over 30% of their graduates were "Ontario scholars" (those with a graduating average grade of 80% or higher).

The larger study was designed to trace changes in adolescent values and ambitions over the decades and to examine the relationships of these to grade, gender, ethnicity, school type, social class, family form, sex-role ideology, projected sources of life satisfaction, and self-esteem. Our approach in this article and the larger study takes for granted much of what is discussed in discourse analysis and assumes that identity is made and remade under circumstances males and females of the various ethnic groups face under the power limitations of their existence.

Table 1 shows the distribution of respondents by school, gender, and grade. Small portions of questionnaire data¹ gathered from the two grades are used to elucidate the pattern of occupational aspirations (ideal occupation) and expectations (expected occupation) by gender within and between the various ethnic groups at the two schools.² The wording of the two questions was: "What is the occupation or career you would *most like to have if you were completely free to choose* regardless of whether it is a job usually done by men or what the opportunities are? Please specify." and "What occupation do you *expect* to have in the future? Please specify." The phrase "regardless of whether it is a job usually done by men" was used to overcome the sexual-stereotyping of occupations prevalent among high school students. By comparing the responses to these two questions, we were able to examine a fuller range of constraint than would have been revealed with a more neutral question. The assumption was not so much that male jobs were more desirable, although many of them had higher remuneration, power, and status, but that they were "off-limits" to females.

Vocational choice in this study was based on the Blishen Scale of Occupations (Blishen, 1974). This scale was used to examine the social class of the parents or, to look at it another way, the social origin of the students. Although the Blishen scale³ has some disadvantages as a measure of social class (Krahn & Lowe, 1993, p. 116), it is the most frequently used scale in Canada and was the only one available at the time the original study was undertaken. It has therefore been retained for purposes of continuity.

In the United States, the major and controversial study of school and social class effects (Coleman, Hoffer, & Kilgore, 1981a, 1981b, 1982a, 1982b) focussed on public and private schools. Although our study is exploratory, we did undertake some elementary examination of the possible effect of school and social

TABLE 1

Distribution of Respondents (N=811)

		Harco	ourt School	!		,	Jenner	· School	
		Male =202)		emale =212)	_(<i>Male</i> N=180	5)	-	emale N=211)
	n	%	n	%	1	n %		n	%
Grade 9	120	59.4	133	62.7	115	61.	8	127	60.2
Grade 12	82	40.6	79	37.3	71	38.	2	84	39.8

class. The profile of Jenner School exhibited higher social class origins and fewer students with origins in countries of more recent groups of migrants, namely China, Hong Kong, and Vietnam. The ambitions of students at Harcourt School were higher in terms of both ideal and expected occupation, their class origins lower, and their migrant status "more recent." Generally, the purpose of controlling for social class is to find out whether higher ambitions have been created by the advantages of class. As our evidence by school clearly indicates the reverse effect, we do not pursue class effects in this analysis. It appears that Harcourt school is associated with high ambition, despite its students' lower social origins. These ambitions could be attributed to the school itself. On the other hand, the high level of ambition could be attributed to recent immigrants' high ambitions for their children. However, without comparing other schools with the same ethnic and class composition, it is not possible to conclude that this is a school effect alone. We also examined various ethnic groups' social class origins to ensure that higher aspirations were not accounted for by the privilege of class. A high percentage of Asians, 62%, was found in the bottom three classes of the Blishen Scale, and almost 50% of the "Other" category (those who were not Anglo-, Euro-, or Asian-Canadian) also had parents in the bottom three categories. For Anglo-Canadians and Euro-Canadians the percentages were 15 and 59, respectively.

Despite our criticism of U.S. researchers' tendency to equate ethnicity and race and their practice of placing all ethnic groups into only three categories (Whites, Blacks, and Hispanics), in this study we had to do some grouping because of the small numbers in some ethnic categories. Determining ethnicity is itself a problem. Canadian researchers are more cognizant of the need to define explicitly these categories. The complexities of this task are treated in

detail by Herberg (1989), Yasmin and Abu-Laban (1992), and especially by Krótki and Reid (1994), among others. Herberg (1989), for example, asserts that although "ethno-racial-religious group" is the more accurate label, for purposes of simplicity the more common "ethnic group" or "ethnicity" is usually employed. How ethnicity is ascribed also varies, as these researchers tell us, and the Statistics Canada categories are not satisfactory and have changed over time. Similarly, in our study determining ethnic background proved a methodological problem; after due consideration, we determined ethnicity according to mother's country of origin. Although this method of determining ethnicity may seem arbitrary, we assumed that as the primary caregiver, the mother would have a greater influence on a child's ethnicity. Using this measure turned out to be unproblematic because when the final groupings were established, the father's place of birth coincided with the mother's category in the vast majority of cases. We decided that if one or two students were mis-categorized it would not make a significant difference in the patterns we were examining.

The students were placed initially in six specific ethnic categories: "Anglo-Canadian" (mothers born in Canada, the United States, and Britain), "Euro-Canadian," "Asian-Canadian" (including China and Southeast Asia), "Mexican/ South American-Canadian," "Middle Eastern/Indian-Canadian," and "Other Canadian," a category made up of ethnocultural groups too small to get statistically meaningful results if treated separately. The groups were further collapsed to four by combining the "Mexican/South American-Canadian," "Middle Eastern/Indian-Canadian," and "Other Canadian" groups. Our rationale for these combinations was to balance commonalities in ethnicity with having a sufficient number of respondents in each cell. Collapsing the categories provided a degree of contrast and more information than most of the previous studies cited. In the case of the "Euro-Canadian" category there is also the possibility of considerable diversity. Of the 20 countries represented, almost 80% of the respondents' mothers came from Italy (29.9%), Portugal (28.8%), or Greece (20.1%). The over-representation of southern Europeans makes the findings on Euro-Canadian females more significant. With this manner of categorization, however, religious affiliation is lost, and this loss is problematic, particularly in the case of Jewish background, where religious affiliation is often equated with ethnic affiliation. Nevertheless, the numbers were so small that this was not a significant issue.

Clumping of categories was also necessary in the case of occupational choice. Sometimes only one or two students chose a particular occupation. As a result, the occupations were grouped according to similarity in activity and status. The 14 occupation categories assigned were as follows: "Judge/Lawyer," "Dentist/M.D./Veterinarian" (later referred to as the medical category), "Engineer/Architect," "Actuary/Accountant," "Business person," "Professor," "Author/Editor," "Schoolteacher," "Artist/Actor," "Other medical occupation" (includes

nursing), "Other science/technology occupation," "Other helping professional," "Other professional," and "Other non-professional."

Determining to what extent and in what ways "ideal" and "expected" occupational choice were patterned by gender and by ethnicity in the mid-1980s, and the extent to which these two factors might act as constraints on the realization of ideal choice, were the basic goals of our article.

FINDINGS

Ethnic Distribution of the School Populations

It is important to remember that in this study, with ethnicity based on mother's birthplace, non-Anglo-Canadian ethnic groups constitute the majority. Anglo-Canadian children are the third-largest group, and Asian-Canadians and Euro-Canadians each constitute a larger percentage of the school populations. Less than 8% of the students at Harcourt were found to be Anglo-Canadian; at Jenner, the percentage was 35%. Although Jenner had more Anglo-Canadians, it had fewer students with European parentage: 13%, as opposed to 37% at Harcourt. However, at both schools the largest group by ethnic background (mother's birthplace) was Asian-Canadian. It was approximately 47% at Harcourt and 36% at Jenner, where it is more or less equal to the Anglo-Canadian parentage. Table 2 shows the pattern of ethnic origins.

Table 2

Ethnic Background by Grade for Harcourt and Jenner (N=757)*

			Har	court			Jer	ıner	
		Anglo- Cana- dian	Euro- Can- adian	Asian- Cana- dian	Other	Anglo- Cana- dian	Euro- Cana- dian	Asian- Cana- dian	Other
Gr. 9	n	17	78	112	20	83	33	85	29
	%	7.5	34.4	49.3	8.8	36.1	14.3	37.0	12.6
Gr. 12	n	10	64	68	9	51	18	53	27
	%	6.6	42.4	45.0	6.0	34.2	12.1	35.6	18.1
Col.	n	27	142	180	29	134	51	138	56
Col.total	%	7.1	37.6	47.6	7.7	35.3	13.5	36.4	14.8

^{*}Measured by mother's place of birth; codeable responses only.

Vocational Indecision

As mentioned previously, we used the Blishen Occupational Scale (Blishen, 1974) to code the occupations. Because *only* specific codeable responses were included in the tables, there were 452 responses for Ideal Occupation and 386 for Expected Occupation. Three response categories, "Nothing in particular," "Not thought about it yet," and "Do not intend to work," were included in both questions on occupational choice. We used these to measure vocational indecision.

As Breton (1972) pointed out, in any discussion of occupational choice an analysis of vocational indecision may be as important as the analysis of the choices themselves. Such indecision may take a variety of forms and generally reflects a degree of ambivalence that may be a function of gender, ethnicity, academic performance, parental support, and a variety of other factors.

The findings on career indecision by grade and gender are presented in Tables 3 and 4. Contrary to our expectations, with the exception of Euro-Canadians, there were virtually no differences in the rate of indecision by grade. One may assume that the decisions in Grade 9 were less realistic since they had not been "tested" against academic performance, but our data do not measure changes by individual students over time.

Strikingly, the highest degree of vocational indecision is among Asian-Canadian and Anglo-Canadian males, of whom 44% and 40% respectively have not made a choice. When studies of occupational choice are examined historically, the rate of career indecision was generally higher among females than among males — 35.1% and 33.6% respectively in the national study Breton conducted

TABLE 3

Career Decision/Indecision* by Grade and Ethnic Background (N=719)

		Angl Canad			uro- ıadian		sian- ıadian	_	Other nadian
		9	12	9	12	9	12	9	12
Decided	n	64 3	7	71	61	117	66	40	27
	%	66.7 6	8.5	65.1	76.2	61.3	61.1	85.1	79.4
Undecided	n	32 1	7	38	19	74	42	7	7
	%	33.3 3	1.5	34.9	23.8	38.7	38.9	14.9	20.6
Column	n	96 54	4	109	80	191	108	47	34

^{*} Measured by the codeable responses to the question on Ideal Occupation.

TABLE 4

Career Decision/Indecision* by Ethnic Background and Gender (%)

			nglo- nadian		uro- nadian		sian- nadian		ther adian
		М	F	M	F	М	F	M	F
Decided	n	41	60	57	75	81	102	28	39
	%	60.3	73.2	71.3	68.8	55.9	66.2	80.0	84.8
Unde- cided	n	27	22	23	34	64	52	7	7
cided	%	39.7	26.8	28.7	31.2	44.1	33.8	20.0	15.2

^{*} Measured by the codeable responses to the question on Ideal Occupation.

in 1968 (Breton, 1972, pp. 17–18). Sometimes this figure was higher because females who did not intend to work were included in the percentage; among our 721 respondents, only one male and one female indicated they did not intend to work. In this study, Asian-Canadians are the largest group numerically, and among them the rate of career indecision is 10% higher for males than females. The same held true for the Anglo-Canadians. Among Euro-Canadians, the percentage of deciders was roughly the same for both genders. These findings go against conventional thinking. Although we found a low rate of career indecision (30%) for females at Harcourt and Jenner, it was higher than that for females in the same grades at the two Toronto private girls' schools (23.3%) studied at the same time (Maxwell & Maxwell, 1994). The possibility that females are aiming higher and deciding earlier should be examined in further research.

Vocational Choice: Ideal and Expected Occupation

Table 5 (p. 269) shows the rank order of preferences of the occupational categories with regard to Ideal Occupation and the corresponding number and percentages of the responses to the question on Expected Occupation. These students had high aspirations for both their ideal and expected occupations. Although we were concerned with the patterning of the types of occupational choices these students made and not the social class rank of the choices, in fact over 80% of both sexes chose a Class I or II occupation as their ideal and over 85% expect occupations in these two classes.

Table 6 (pp. 270-271) shows that the most pronounced gender preferences by ethnicity are those of Asian-Canadian males, who chose the medical and

TABLE 5

Responses to Ideal and Expected Occupational Groupings*

		leal =452)		ected =386)
Occupation	n	%	n	%
Dentist/M.D./Veterinarian	122	27.0	99	25.6
Artist/Actor	64	14.2	30	7.8
Other professional	56	12.4	47	12.2
Engineer	40	8.8	32	8.3
Judge/Lawyer	39	8.6	44	11.4
Professor	27	6.0	13	3.4
Business person	19	4.2	20	5.2
Schoolteacher	17	3.8	25	6.5
Author/Editor	16	3.5	17	4.4
Actuary/Accountant	16	3.5	16	4.1
Other non-professional	14	3.1	13	3.4
Other helping professional	9	2.0	14	3.6
Other medical occupation	8	1.8	11	2.8
Other science/technology occupation	5	1.1	5	1.3

^{*} Measured by the codeable responses to the question on Ideal and on Expected Occupation.

engineering categories disproportionately (53.4%). Although the comparable percentage for the females is 38.9, 35 of the 37 chose medicine, whereas the males chose the medical and engineering categories equally. The medical category is even more strongly ethnically identified with Asian-Canadians—males and females alike. The category of "Engineer/Architect" was highly gendered (and very strongly Asian-Canadian male—19 [26.0%] Asian-Canadian males chose this category but only 2 Asian-Canadian females). Only two other categories, "Judge/Lawyer" and "Artist/Actor," were significantly gendered and in each case were chosen predominantly by females. Both males and females the traditional male high-status occupations of "Judge/Lawyer," "Dentist/M.D./ Veterinarian," and "Professor." Despite sex stereotyping, schoolteaching is now

TABLE 6

Ideal Occupation by Gender and Ethnicity Combined for Those Who Chose a Specific Occupation (N=431)

			Male	le			Female	ıale	
Occupation		Anglo- Canadian	Euro- Canadian	Asian- Canadian	Other Canadian	Anglo- Canadian	Euro- Canadian	Asian- Canadian	Other Canadian
Judge/Lawyer	u	1	3	I	1	3	7	15	9
	%	3.0	6.3		4.3	5.8	10.0	15.8	16.2
Dentist/M.D./	u	9	7	20	6	15	19	35	8
Veterinarian	%	18.2	14.6	27.4	39.1	28.8	27.1	36.8	21.6
Engineer/Architect	u	S	8	19	1		1	2	1
	%	15.2	16.7	26.0	4.3		1.4	2.1	2.7
Actuary/Accountant/	u	4	8	7	1	1	S	10	4
Business person	%	12.1	6.3	9.6	4.3	1.9	7.1	10.6	10.8
Author/Editor	u	I			1	9	κ	κ	2
	%	I			4.3	11.5	4.3	3.2	5.4
Schoolteacher	u	2	2	1		2	4	7	1
	%	6.1	4.2	1.4		3.8	5.7	2.1	2.7
Artist/Actor	u	9	7	4	4	13	13	∞	7
	%	18.2	14.6	5.5	17.4	25.0	18.6	8.4	18.9

TABLE 6 (continued)

Ideal Occupation by Gender and Ethnicity Combined for
Those Who Chose a Specific Occupation (N=431)

			Male	ıle			Fen	Female	
Occupation		Anglo- Canadian	Euro- Canadian	Asian- Canadian	Other Canadian	Anglo- Canadian	Euro- Canadian	Asian- Canadian	Other Canadian
Other medical/science/	u		7	8		1		5	1
technology occupation	%	I	4.2	4.1	I	1.9	1.4	5.4	2.7
Other professional	u	9	11	6	5	S	12	6	9
	%	18.2	22.9	12.3	21.7	9.6	17.1	9.5	16.2
Professor	u	2	4	∞	l	S	2	2	_
	%	6.1	8.3	11.0	I	6.6	2.9	2.1	2.7
Other non-professional	u	1	1	7	1	1	8	4	
	%	3.0	2.1	2.7	4.3	1.9	4.3	4.2	
Column totals	n	33	48	73	23	52	70	95	37

chosen by an equal percentage of each gender, although the numbers are small. Nursing is one of the occupations in the "Other medical" category but only 8 of the 431 students who gave a specific occupational response wished an occupation in the "Other medical" category. Six students actually selected nursing as their ideal. One of these was an Asian-Canadian male; the other five were females (one Anglo-Canadian, one Euro-Canadian, two Asian-Canadians, and one "Other"). Ten students *expected* this occupation; all were female and Anglo-Canadian, Euro-Canadian, or Asian-Canadian. The other traditional female occupation, secretary, was the ideal of only three females (one Euro-Canadian and two Asian-Canadians) and only three expected this occupation (one female each of Euro-Canadian, Asian-Canadian, and "Other"). It can safely be concluded that, except for a token few, by 1986 females at these schools did not aspire to or expect the traditional occupations of teaching, nursing, or secretarial work.

To see what forces might be at work we took the three largest ethnic groups (Anglo-, Euro-, and Asian-Canadians) and examined their occupational choice by gender. Traditionally, judges and lawyers have been occupations at the centre of power in the society. Occupations in medicine, dentistry, and veterinary medicine, particularly the two former, have had considerable financial rewards and considerable prestige. All five have been associated with patriarchy. Interestingly, these occupations were not nearly as frequently the choice of male Anglo-Canadians, and not of males in general, as they were the ideal of their female counterparts. These two categories together account for 34.6% of the Anglo-Canadian females', 37.1% of the Euro-Canadian females', and 52.6% of the Asian-Canadian females' ideal occupations. The comparable male percentages are: Anglo-Canadian, 21.2, Euro-Canadian, 20.9, and Asian-Canadian, 27.4. This gender discrepancy may be explained in part by the fact that the males may still perceive themselves to have access to other high-status occupations, such as engineering, thus spreading their choices over an extra category.

When we combined the "Dentist/M.D./Veterinarian" category with the "Engineer/Architect" and the "Other medical/science/technology" categories, we obtained an indication of the distribution of ethnic groups in the science and technology professions. Forty-two of the 95 female Asian-Canadian students (44.2%) and 42 of the 73 Asian-Canadian male students (57.5%) fit into this category. The equivalent percentages for the other groups are: male Euro-Canadian, 35.4, female Euro-Canadian, 30.0, male Anglo-Canadian, 33.3, and female Anglo-Canadian, 30.7. These trends parallel those found elsewhere (Krugly-Smolska, 1993).

Within ethnic groupings, there is little difference between male and female preferences for most other categories. Although only 12 Anglo-, Euro-, or Asian-Canadian females selected "Author/Editor," not a single male of these ethnic groups chose these occupations. Finally, the pattern of responses in the category "Other professional" (which includes armed forces officer, pilot, government

service officer, geologist, arbitrator, meteorologist, pharmacist, computer programmer, and psychologist) suggests that although this category is the most frequent choice of Anglo-Canadian and Euro-Canadian males, it is nearly as popular for the Euro-Canadian females. Given that almost 80% of the Euro-Canadians had Italian, Portuguese, or Greek backgrounds, where traditional female occupational roles prevailed beyond the time of their erosion in the north European countries, the high occupational aspirations of the females from these "Mediterranean" backgrounds is especially significant.

The degree of congruence between ideal and expected occupation was lowest for Anglo-Canadians (78.3% for males and 71.8% for females). Higher congruence characterized the Euro-Canadian (males 85.7% and females 76.5%) and Asian-Canadian (males 82.0% and females 79.1%) groups. Congruence may reflect a variety of social processes at work. Traditionally, the literature showed that females expected to settle for less than their ideal. In summarizing these studies, Maxwell and Maxwell (1984) identified the shift from ideal to expected as the result of "forces of constraint." On the other hand, a low level of expectation with regard to one's ideal occupation may make expectations themselves more realistic and result in a higher level of congruence. Therefore, a finding of low levels of expectations among non-Anglo-Canadian groups would explain a high level of congruence. This was not the case, as the overall level of expectations among Asian-Canadians and Euro-Canadians was even higher than that of their Anglo-Canadian gender counterparts.

The results of the study of girls at two private schools (Maxwell & Maxwell, 1994) showed that in 1986 over 88% of these privileged students wished to have an occupation traditionally defined as male, and that both their ideal and expected occupations were of high status. The public school females in the study we report here (who completed the identical questionnaire at the same time in the fall of 1986) had even higher aspirations. At the two private girls' schools, the ideal choice of 41.9% of the students was a Class I occupation, compared to 37.9% at Harcourt and Jenner. This suggests that by 1986 both private and public school girls no longer perceived the "forces of constraint" as previous decades of adolescent females had, and that as a result the gendered nature of the Canadian labour force could change substantially.

Associated with this trend, and reinforcing the conclusion that there is a reduction in constraint for females, is the significant gender difference evident in the percentages of students at Harcourt and Jenner, respectively, that gave Class I occupations as their ideal and expectation: males, 32.1% and 34.7%, and females, 37.9% and 38.1%. When ethnicity is examined by itself in relation to ideal occupational choice, Class I occupations revealed the following percentages for the three largest ethnic categories: Anglo-Canadian, 25.7, Euro-Canadian, 31.1, and Asian-Canadian, 42.1. The percentage of each category that *expected* Class I occupations was slightly higher.

To try to uncover the existence of constraint and to understand what trends were developing, we examined the choices themselves, and the shifts of those whose choices were not congruent. Three groups of "switchers" accounted for well over half of those who shifted (67 individuals); these groups had as their ideal choices "Dentist/M.D./Veterinarian" (17), "Artist/Actor" (13), and "Professor" (12). Since the medical group involves a high performance level and the category of "Artist/Actor" is filled with a different type of uncertainty, these shifts are not surprising. Similarly, of those who chose "Professor," over half shifted to higher-status occupations and the shift of the remainder was not profoundly downward. However, when the switchers were examined by gender, it was found that in two of these three categories more females than males shifted downward, indicating to us some residual role of constraint. Nevertheless, overall the evidence suggests that neither gender- nor ethnicity-based constraint played a strong role in occupational choice.

CONCLUSION

Overall, this study seems to contradict some traditional expectations. For example, perceptions of careers as gendered appear to be diminishing, as evidenced in our sample by the number of females planning to move into occupations traditionally considered male. However, our findings confirm that males continue to "stay away from" careers considered to be female. On the other hand, there are still gender differences among ethnic groups, contradicting to some extent Arbona and Novy (1991), who found more gender than ethnic differences. Second, the amount of career indecision by girls appears to be diminishing and is lower than that of boys. Girls appear to be deciding earlier and aiming higher. To the extent that this boldness in decision-making is realistic and not subject to the forces of constraint, it indicates considerable autonomy for ethnic women in today's society. However, it is perceptions of reality, rather than actual behaviour, that is reported here.

The findings show that the vast majority of both sexes chose very high-status occupations as both their ideal and what they expected. Over 80% of males and females chose a Class I or II occupation on the Blishen Scale as their ideal, and over 85% expected to achieve this relatively high status. We examined gender and ethnicity patterns for the 14 categories of occupations into which the students' responses were recoded, and found few differences between males and females within each ethnic group in terms of either their ideal or their expected occupation. The most notable exception was the category of "Engineer/Architect," which was disproportionately chosen by Asian-Canadian males. The similarities in males' and females' occupational choice (to the extent that aspirations and expectations may be realized) suggest that, in terms of the choices of their first job, females from minority ethnic groups may enjoy the same possibilities of upward mobility as their male counterparts. In this sense they are

unlikely to be disadvantaged in the same way as the females in the national study Boyd (1982) reported on, whose choice of occupation and first job did not ensure them the same mobility possibilities as males but rather placed them in a "pink-collar ghetto." Although the young women we studied may not get the promotions and salary increases of their male counterparts, they have not disqualified themselves from the possibility by their choice of occupation.

Herberg (1990) reports on the disadvantaging effects of ethnicity and income. The effects of gender (given the same job) on income are well known. The constraints on women in a dual-career marriage are also part of this scenario. Although constraint may not set in as early for the females in our study as for those reported on by Gaskell (1992), one should not be too optimistic. The continuing fiscal crisis of the state does not bode well for either equity in the workplace or support for child care.

Despite the high ambitions of the females in our study, it should be remembered that Kfir (1988) has noted that although the sexes differ little in level of aspiration, there are very distinct "fields of choice" associated with each. The continued lower proportion of females choosing careers in science and technology is evident. Arbona and Novy (1991) suggest that the distribution of expectations tends to resemble the distributions of actual employment within the groups and our study appears to support that hypothesis. This congruence recommends a further tempering of our initial optimism about the findings we report here.

Nevertheless, from the analysis of our data one can conclude that by 1986, at least in these two central Toronto schools, females no longer felt the "forces of constraint" to the extent that they had in 1966 and 1976 (Maxwell & Maxwell, 1984). Indeed, by one measure, the percentage choosing and expecting Class I occupations, girls had *higher* aspirations than boys. The lack of girls choosing traditional female occupations (teaching, nursing, and secretarial work), the strong preference for and expectation of high-status "male" occupations, and the lack of concern about the disadvantaging effects of marriage, led us to conclude that these girls no longer appeared to be disadvantaged by the traditional genderrole ideology with regard to occupations.

Our study has several implications for education and further research. Students still chose a rather limited variety of career choices. If this is still the case, teachers and guidance counsellors need to make a concerted effort to familiarize students with a broader spectrum of choices. With the "careers across the curriculum" initiatives of many provincial ministries of education, some of the present limitations could be transcended. Such a push is evident in the most recent curriculum document in Ontario. One of the 10 essential learning outcomes in the new *Common Curriculum* (Ontario Ministry of Education and Training, 1995) requires students to explore educational and career opportunities. In the same document it is suggested that, by the end of Grade 9, students "discuss barriers that have prevented women and members of certain racial and ethnocultural

groups from pursuing careers in the areas of mathematics, science and technology" (p. 84). Although this is a laudable goal, it can be problematic, for many researchers still do not agree on the reasons for, nor understand the patterns of participation in, these fields, especially in Canada. Oakes (1990) provides a review of the research in this area in the U.S.A., pointing out the gaps. She concludes that little is known about women's achievement and participation in science, and even less is known about racial minorities' participation in math and science. Among minority groups, less is known about Hispanics and other minorities than Blacks (p. 204).

This study has pointed to some of the issues that may influence these patterns in the Canadian context. More substantive research with larger sample sizes is now needed to confirm or refute the patterns of choice in evidence here, but more importantly, qualitative research is necessary if we are to start to understand better the reasons for students' choices.

The number of students opting for science and technology (other than medical) professions in a global economy is not increasing as generally hoped, and more effort may be required if the goal of diversity in a global economy is to be attained. Nevertheless, if current trends continue, it appears that just as the gendered nature of the labour force is changing, equity among Canadian ethnic groups may also be on the increase.

ACKNOWLEDGEMENTS

This study is based on research from a larger study of students of two public high schools, two private girls' schools and two private boys' schools in Toronto over three decades. Mary Percival Maxwell is indebted to the National Institute of Mental Health, the Wenner Gren Foundation, and the Canada Council for research awards which made the 1966 study possible. Mary Percival Maxwell and James D. Maxwell wish to thank the Queen's University School of Graduate Studies and Research for grants which permitted analysis of the 1976 data, and also the Social Science and Humanities Research Council of Canada for a Strategic Grant on Women and Work to collect the data for 1986 and to analyze the data over the 20-year period.

NOTES

- The original questionnaire, prepared in 1966, was designed to avoid the sexist flaws common in research to that date. All questions were worded so as to be appropriate for both sexes. In addition to standard "face sheet" questions, covering family background, we included questions about religion, ethnic and linguistic background, parents' education and occupation, family form, sexrole ideology, sources of projected life satisfactions, qualities of ideal date and spouse, perceptions of the gendered opportunity structure, the ideal married women's role, peer and school culture values, marriage and family aspirations, and the educational and occupational ambitions analyzed in this paper. The questionnaire was slightly modified in 1976 and in 1986 but all questions retained from the 1966 questionnaire were unchanged in wording and sequencing.
- The questionnaires were returned by all students in attendance on the day of administration. The significance of Grades 9 and 12 in the Ontario system has been discussed elsewhere (Maxwell & Maxwell, 1975, p. 111).

The scale is divided into seven classes. Class I contains judges, dentists, physicians and surgeons, lawyers, engineers (chemical, mining, electrical, and civil), actuaries, and architects. In Class II the occupations range from statisticians, engineers (mechanical), professors, stock and bond brokers, veterinarians, and business service officers at the top, to real estate agents, social welfare workers, and retail trade managers at the bottom.

REFERENCES

- Arbona, C., & Novy, D. M. (1991). Career aspirations and expectations of Black, Mexican American, and White students. Career Development Quarterly, 39, 231–239.
- Bibby, R. W., & Posterski, D. C.(1985). The emerging generation: An inside look at Canada's teenagers. Toronto: Irwin.
- Blau, P. M., & Duncan, O. D. (1967). The American occupational structure. New York: Wiley.
- Blishen, B. (1974). The construction and use of an occupational class scale. *Canadian Journal of Economics and Political Science*, 24, 519–531.
- Boyd, M. (1982). Sex differences in the Canadian occupational attainment process. *The Canadian Review of Sociology and Anthropology*, 19, 1–28.
- Boyd, M., Goyder, J., Jones, F., McRoberts, H., Pineo, P., & Porter, J. (1981). Status attainment in Canada. *The Canadian Review of Sociology and Anthropology*, 18, 657–673.
- Breton, R. (1972). Social and academic factors in the career decisions of Canadian youth: A study of secondary school students. Ottawa: Department of Manpower and Immigration.
- Bullivant, B. (1988). The ethnic success ethic: Ubiquitous phenomenon in English-speaking societies? *Ethnic and Racial Studies*, 11, 63–84.
- Campbell, C., & Szablowski, G. (1979). The superbureaucrats: Structure and behaviour in central agencies. Toronto: Macmillan.
- Chen, M. Y. T., & Regan, T. G. (1985). Work in the changing Canadian society. Toronto: Butter-worths
- Coleman, J. S., Hoffer, T., & Kilgore, S. (1981a). *Public and private schools* (Report submitted to the National Center for Education Statistics). Chicago: National Opinion Research Center.
- Coleman, J. S., Hoffer, T., & Kilgore, S. (1981b). Questions and answers: Our response. Harvard Educational Review, 51, 526–545.
- Coleman, J. S., Hoffer, T., & Kilgore, S. (1982a). High school achievement: Public, Catholic and private schools compared. New York: Basic Books.
- Coleman, J. S., Hoffer, T., & Kilgore, S. (1982b). Cognitive outcomes in public and private schools. Sociology of Education, 55, 65–76.
- Dawkins, M. (1981). Mobility aspirations of Black adolescents: A comparison of males and females. Adolescence, 16, 701–710.
- Downing, K. R., & Dowd, E. T. (1988). Career indecision: A summary of the research and implications for counselling. *British Journal of Guidance and Counselling*, 16, 145–156.
- Gaskell, J. (1992). Gender matters from school to work. Milton Keynes: Open University Press.
- Gupta, Y. (1977). The educational and vocational aspirations of Asian immigrant and English school-leavers: A comparative study. *British Journal of Sociology*, 28, 185–198.
- Herberg, E. (1989). Ethnic groups in Canada: Adaptations and transitions. Toronto: Nelson Books Canada.

- Herberg, E. (1990). The ethno-racial socioeconomic hierarchy in Canada: Theory and analysis of the new Vertical Mosaic. *International Journal of Comparative Sociology*, 31, 206–221.
- Hogg, M., Abrams, D., & Patel, Y. (1987). Ethnic identity, self-esteem, and occupational aspirations of Indian and Anglo-Saxon British adolescents. *Genetic, Social, and General Psychology Mono*graphs, 113, 489–507.
- Hossler, D., & Stage, F. K. (1992). Family and high school experience influences on the post-secondary educational plans of ninth-grade students. *American Educational Research Journal*, 29, 425–451.
- Kfir, D. (1988). Achievements and aspirations among boys and girls in high school: A comparison of two Israeli ethnic groups. *American Educational Research Journal*, 25, 213–236.
- Krahn, H. J., & Lowe, G. S. (1993). Work, industry, and Canadian society. Scarborough, ON: Nelson.
- Krótki, K. J. and Reid, C. (1994). Demography of Canadian population by ethnic groups. In J. W. Berry & J. A. Laponce (Eds.), *Ethnicity and culture in Canada: The research landscape* (pp. 17–59). Toronto: University of Toronto Press.
- Krugly-Smolska, E. (1993, June 6). A comparison of participation in science and technology occupations by ethnic minorities: Implications for equity. Paper presented at the annual meetings of the Canadian Sociology and Anthropology Association, Carleton University, Ottawa, Ontario.
- Marjoribanks, K. (1985a). Families, schools, and aspirations: Ethnic group differences. *Journal of Experimental Education*, 53, 141–147.
- Marjoribanks, K. (1985b). School attitudes and adolescents' aspirations: A follow-up analysis. *Journal of Comparative Family Studies*, 17, 333–348.
- Marjoribanks, K. (1991a). Adolescents' learning environments and aspirations: Ethnic, gender, and social-status group differences. *Perceptual and Motor Skills*, 72, 823–830.
- Marjoribanks, K. (1991b). Family environment and cognitive correlates of young adults' social status attainment: Ethnic group differences. *Journal of Biosociological Science*, 23, 491–498.
- Marshall, K. (1990). Women in male-dominated professions. In C. McKie & K. Thompson (Eds.), *Canadian social trends* (pp. 113–117). Toronto: Thompson.
- Maxwell, M., & Maxwell, J. (1975). Women, religion and achievement aspirations: A study of private school females. In R. Pike & E. Zureik (Eds.), *Socialization and values in Canadian society* (Vol. 2, pp. 104–128). Toronto: McClelland and Stewart.
- Maxwell, M., & Maxwell, J. (1984). Women and the elite: Educational and occupational aspirations of private school females. *The Canadian Review of Sociology and Anthropology*, 21, 371–394.
- Maxwell, M., & Maxwell, J. (1994). Three decades of private school females' ambitions: Implications for Canadian elites. *The Canadian Review of Sociology and Anthropology*, 31, 139–167.
- Nurmi, J.-E. (1987). Age, sex, social class, and quality of family interaction as determinants of adolescents' future orientation: A developmental task interpretation. Adolescence, 22, 977–991.
- Oakes, J. (1990). Opportunities, achievement, and choice: Women and minority students in science and mathematics. *Review of Research in Education*, 16, 153–222.
- Ogmundson, R., & McLaughlin, J. (1992). Trends in the ethnic origins of Canadian elites: The decline of the Brits? *The Canadian Review of Sociology and Anthropology*, 29, 227–242.
- Ontario Ministry of Education and Training. (1995). *The common curriculum: Policies and outcomes Grade 1–9.* Toronto: Queen's Printer.
- Porter, J. (1965). The vertical mosaic. Toronto: University of Toronto Press.

- Porter, J., Porter, M., & Blishen, B. R. (1982). Stations and callings: Making it through the school system. Toronto: Methuen.
- Schulenberg, J. F., Vondracek, F., & Crouter, A. (1984). The influence of the family on vocational development. *Journal of Marriage and the Family*, 46, 129–143.
- Toronto Life. (1994, September). The high school guide: Our first annual survey of secondary schools in Metro. A special pullout supplement. Toronto: Author.
- Watson, T. J. (1980). Sociology, work and industry. London: Routledge and Kegan Paul.
- Yasmin, M., & Abu-Laban, B. (1992). Ethnicity and occupational inequality: A reconsideration. Alberta Journal of Educational Research, 38, 205–218.

James D. Maxwell and Mary Percival Maxwell are professors in the Department of Sociology at Queen's University at Kingston, Ontario, K7L 3N6. Their research interests focus on private school education in Canada. Eva Krugly-Smolska is a professor in the Faculty of Education at Queen's University, Kingston, Ontario, K7L 3N6. Her research is in the area of culture, science, and education.