How often do they change their minds and does work-integrated learning play a role? An examination of 'major changers' and career certainty in higher education

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This project examined the role of cooperative education (co-op) in changing majors and career certainty in Canadian university students. Career certainty scores were collected using an online questionnaire from students in both cooperative education and non-cooperative education. The frequency with which students changed their major and their reasons for doing so were also collected. Results revealed that while non-co-op students changed their major significantly more often than their non-co-op peers, they did not differ in terms of career certainty. The two primary reasons cited by non-co-op students for changing majors were interest and impact on career. It is recommended that future research expand on this study to determine if the practical experience gained from co-op provides students with the real world practice they need to connect their classroom learning to their chosen career. Implications for the findings are discussed. (*Asia-Pacific Journal of Cooperative Education, Special Issue, 2015, 16(2), 145-152*)

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Acquiring an ideal job in today's labor market often requires post-secondary (i.e., tertiary) education, relevant skills, as well as some related work experience (Drysdale, Goyder, & Cardy, 2009). Choosing a career and planning a career path are decisions that students begin to ponder during their adolescence while they are in secondary school (Santrock, 2014). It is during these secondary school years when many students select courses that will lead directly into a more specified program in university – where they can acquire the knowledge and skills needed for their chosen career.

In addition to selecting a particular program of study (i.e., a major), students pursuing a university degree must also decide how they will acquire the necessary job-related skills in their field. Students may choose to pursue a degree program that incorporates formal work-integrated learning - such as cooperative education or a more traditional classroom based degree program. Cooperative education (co-op) is an academic program where students gain both the theoretical knowledge and work experience in their field of study. In contrast, traditional study programs (non-co-op) do not incorporate related work experience into the program. In Canada, cooperative education is structured with alternating academic terms and work terms throughout the duration of a student's program. The work placements are almost always related to the learning that is occurring on campus. As a result, cooperative education is an alternative style of education for students where they can apply the theory learned in class to practice in the work environment (Cooper, Orrell, & Bowden, 2010).

A key outcome of cooperative education is enhanced career benefits for post-secondary students (Dressler & Keeling, 2011). Students not only gain practical experience in jobs that are relevant to their discipline, but also develop critical career skills such as listening (Salopek, 1999), professionalism (Wiseman & Page, 2001), proficiency with technical tasks,

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and improved social skills (Bartkus, 2001). Co-op students also report enhanced self-concepts (Drysdale & McBeath, 2012) and stronger study skills (Drysdale & McBeath, 2014). Furthermore, research indicates that after graduation, co-op students are more likely to be employed and working in their undergraduate field of study compared to non-co-op students (Drysdale, Goyder, & Cardy, 2009). Cooperative education graduates have also been found to acquire higher incomes and more prestigious jobs than non-co-op graduates (Drysdale, Goyder, & Cardy, 2009) as well as to progress more quickly in their careers (Hayward & Horvath, 2000). Finally, the skill acquisition during co-op work terms, is reported to be positively related to career identification and clarification (Dressler & Keeling, 2011; Zegwaard & Coll, 2011) as well as career planning (Coll, Eames & Halsey, 1997; Mueller, 1992; Weston, 1986;).

Students in the non-co-op stream on the other hand have no formal work placements and often try to find 'summer jobs' that hopefully relate to their program in order to gain the practical work experience needed for a successful transition to the labor market post graduation. It is hypothesized that students who are unable to gain relevant work experience - more common for the students in non-co-op - may show less confidence in their career choice or in getting a job in their field post-graduation. As a result, these non-co-op students may change their career choice or major more often during their post-secondary studies.

The term *Major Changers* is used to refer to university students who change their major during the course of their undergraduate degree, a change that occurs most often in their first or second year of studies (Astin & Panos, 1969; Dodge, Mitchell, & Mensch, 2009; Steele, Kennedy, & Gordon, 1993; Titley, Titley, & Wolff, 1976). Although dated, a study by Kramer, Higley and Olsen (1994) found that two thirds of first year students and almost half of second year students changed their major at least once during their degrees. Students in their third or fourth year of studies may also change majors but it is far less common (Kramer, Higley, & Olsen, 1994). Changing academic majors has both its advantages and disadvantages. For example, students may change their major because they perceive some degree programs as more interesting or as having more career options. Acquiring a new academic interest or career goal may be the impetus for students to change majors because the new field of study provides a more direct career path for them. However, when a student changes their major they can face both academic and financial obstacles. For instance, many programs may not allow students to transfer course credits into their new program and as such, students must pay for additional tuition in their new field of study and delay graduation and their transition into the labor market post-graduation. The Ontario Government reports that for every student using financial assistance who delays graduation, the delay increases their tuition and living expenses loan by $7,300 and decreases their economic contribution to the local workforce (Ministry of Training, Colleges, and Universities, 2011).

Drawing from the literature review above it appears possible that when students feel confident in their ability to complete their current program of study and demonstrate career certainty, they will be less likely to change majors. Similarly, major dissatisfaction coupled with low career certainty may be related to the inadequate acquisition of the necessary work related skills for a chosen career. It is hypothesized that students in a work-integrated learning (WIL) program such as cooperative education, who may acquire work related skills and experiences may have a stronger career identity, and thereby change majors less

frequently than students in the regular non-co-op stream. Their increased level of career certainty and stability in their degree program may result in co-op students experiencing an easier transition to the labor market. The purpose of this study was to examine these relationships, thus enhancing our understanding of the role of co-op in student success. Making connections between the learning on campus and a desired career is believed to be essential for establishing a strong career identity and for having a smooth transition to the labor market post-graduation (McBeath, Drysdale, & Bohn, 2014). This study also examined differences between co-op and non-co-op students as a function of certain demographic variables such as gender, year of study, and faculty. Finally, the reasons students changed majors were also examined.

METHOD

Participants

Participants for this study were students registered at a large research-intensive Canadian university that offered cooperative education in all disciplines. Participants were recruited at the Student Life Centre on campus during a busy time of day during the winter academic term (January – April). The sample consisted of male and female participants from both co-op and non-co-op programs across all years of study and representing six academic faculties.

Measures

An online survey was developed for this study consisting of three measures: a demographic questionnaire, a vocational identity scale, and an academic major satisfaction scale. Scores from the vocational identity scale and scores from the academic major satisfaction scale were used as indicators of career certainty.

Demographic Questionnaire: Participants completed a short demographic questionnaire to collect data on gender, program (co-op vs. non-co-op), faculty (Applied Health Studies, Arts, Engineering, Mathematics, Science, and Environmental Studies), and year of study (first to fourth). Participants also recorded their number of program or major changes and reason(s) for such changes.

My Vocational Identity (*MVI),* (Holland, Daiger, & Power, 1980) was used to measure feelings of uncertainty regarding career goals, interests, and talents. The scale is comprised of 18 true/false type items such as "I am confused about the whole problem of deciding on a career" and "I am uncertain about which occupation I would enjoy". The *MVI* has shown validity and reliability with an internal consistency of 0.89 using KR-20 (Holland, Gottfredson & Power, 1980) and a retest reliability of 0.75 using Cronbach's alpha (Holland, Johnston, & Asama, 1993). Other studies having used the *MVI* also found it to be valid in research (Dipeolu, 2007; Rayman et al, 1983; Savickas, 1984; Yanchak, Lease & Strauser, 2005).

The *Academic Major Satisfaction Scale* (*AMSS*) was used to measure contentment with their present university major. It has been used to distinguish between 'major changers' and those who will remain in their program (Nauta, 2007). The scale contains six items measured on a 5-point Likert with 1 = completely disagree to 5 = completely agree. Examples of items are "I often wish I hadn't gotten into this major" and "I feel good about the major I've selected". The *AMSS* was validated by Nauta (2007) and Moody (2010) with internal consistency coefficients ranging from 0.90 to 0.94 using Cronbach's alpha.

Procedure

Recruited participants were provided with a link to the online survey and logged onto the survey website in their own time using their own computers. The survey was available through *QuestionPro (survey software program)*. When participants opened the link to the survey, they were presented with an information letter describing the study and ensuring full ethical clearance. The letter also stated that proceeding to the questions in the survey, implied consent to participate. If they, proceeded, items were presented along with the instructions for how to complete each section of the survey. Participants were given the option to skip questions and to leave the study at any time. The survey took approximately 15 minutes to complete. At the end of the survey, participants were given a verification code, which was used to claim an $8.00 university gift card.

RESULTS

The final sample consisted of 143 participants from both co-op (n = 62; 43.4%) and non-co-op programs (n = 81; 56.6%). Participants represented six academic faculties: Applied Health Studies (n = 13; 9.1%), Arts (n = 53; 37.1%), Engineering (n = 8; 5.6%), Mathematics (n = 18; 12.6%), Science (n = 36, 25.17%), and Environmental Studies (n = 8; 5.6%). Seven participants did not reveal their discipline. There was more than twice the number of females (n = 100; 70%) as males (n = 43; 30%). All years of study were well represented with 40 in first year (28%), 29 in second year (20.3%), 27 in third year (18.9%), and 42 in fourth year (29.4%). Five participants did not reveal their year of study.

To examine the relationships between gender and enrollment in co-op with academic major satisfaction and vocational identity, t-tests were performed. No significant differences were found for vocational identity and major satisfaction as a function of gender and enrollment in co-op - indicating that males and females in both co-op and non-co-op were similar in terms of career certainty.

A series of ANOVAs were performed to examine the relationship between faculty and year of study with the two measures of career certainty – vocational identity and academic major satisfaction. Results revealed a significant difference between year of study and academic major satisfaction score ($F(3, 133) = 2.78$, $p<0.05$). Post-hoc tests revealed that satisfaction increased significantly with each year of study.

ANOVA results also revealed a significant difference in academic major satisfaction as a function of faculty ($F(5, 136) = 2.68$, $p<0.05$). The eight students in the faculty of Engineering reported academic major satisfaction scores significantly below those of students in other faculties. There was no significant difference in vocational identity scores as a function of year of study or faculty.

Chi-square tests were conducted to examine the frequency with which students changed majors in relation to gender, program (co-op/non-co-op), faculty, and year of study. As seen in Figure 1, students in the cooperative education program were far less likely to change their majors compared to their non-co-op peers ($X^2 = 10.52$, $p=0.015$). In this sample, approximately 18% (n=11) of the co-op students had changed their majors whereas it was more than 40% (n=32) in the non-co-op student group. All other chi-square tests between variables were not significant indicating that male and females in all faculties and across all years of study changed majors with the same frequency.

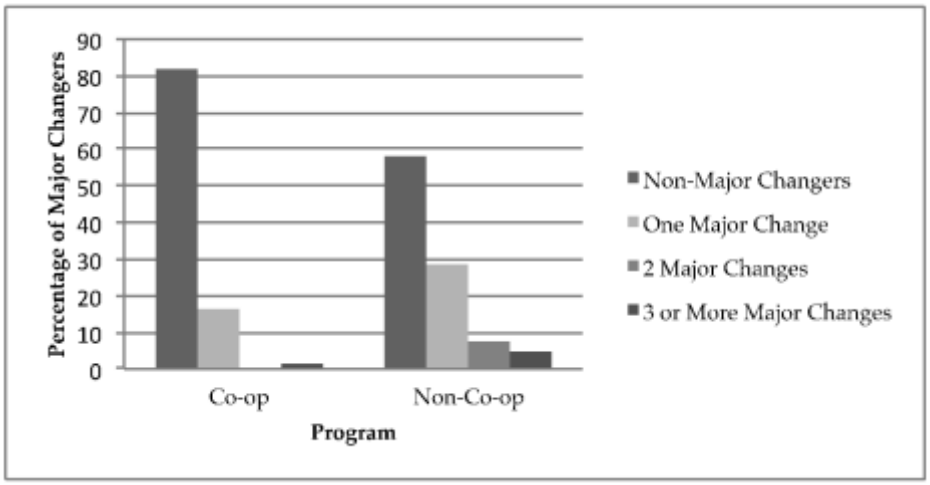

FIGURE 1: Proportion of "major changers" in cooperative and regular academic programs

Students who changed their major were asked to provide an explanation for why they chose to do so. The explanations provided by the 43 participants who changed majors fell into five categories: 1) program was too difficult; 2) to add/drop multiple programs or specializations; 3) new major appears more interesting; 4) staying with current major would negatively affect future goals (e.g., grad school, job market); and 5) disliked or dissatisfied with major. The majority of participants who changed their major did so because of new interests (30%) or because staying with their current major would negatively affect their future goals (23%) (Figure 2).

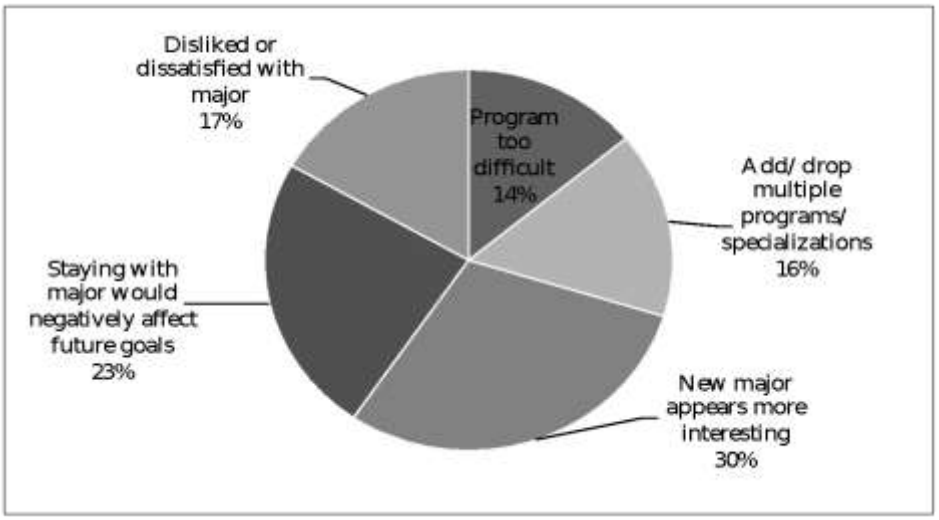

FIGURE 2: Reasons for changing majors (both co-op and non-co-op students). *N*=43.

The reasons for changing one's major were further examined as a function of co-op. The majority of non-co-op participants who changed majors (60%; 19/32) selected interest in a new major or impact on future career as the primary reasons. The co-op participants (n=11) on the other hand were evenly distributed across the five categories.

DISCUSSION

This study examined the relationship between participation in cooperative education and several behaviors and attitudes believed to be relevant to success in post-secondary education and career planning. The results indicated that students in cooperative education programs change their majors significantly less often than students in regular academic programs. This is an important finding as a student's choice of major in their post-secondary program has a direct impact on the work experiences they seek out during their studies and the career opportunities available to them upon graduation. The results also showed that not only were co-op students more than two times less likely to change their major, but that when they did change, it was most often because they felt staying with their current major would negatively affect their future goals. A possible explanation for these findings is that the work experiences that students receive in co-op programs help them to better connect their classroom learning to practical applications in real world work settings, thus strengthening their interest and commitment to their major of choice. Exposure to work experiences in their chosen field may also provide co-op students with more information about how to be successful on a given career path, thus motivating some students to change majors in order to better align their education with their career goals. Students in traditional (classroom based) programs may have less information than co-op students about the future career paths of their chosen major thus prompting them to change majors based on their current personal interests rather than their long-term goals.

Interestingly, the results showed that both co-op and non-co-op students appear to have equal levels of career certainty – yet non-co-op students are changing majors significantly more often than co-op students. There are two possible explanations proposed for this surprising finding. The first is that non-co-op students, who lack experience and information about jobs in their field, may have a limited perception of their possible career options, which causes them to be less confident about selecting a career path. Conversely, co-op students, who often work for several different employers in job placements, may have work experiences that broaden their knowledge about the careers available in their field of study, allowing them to become more cognizant of many possible occupations and less certain about one specific career path. A second explanation is that while co-op students may experience similar levels of uncertainty about their career as their non-co-op peers and similar levels of changing personal interests, they are less likely to change majors because they are reluctant to leave a co-op program. Co-op programs not only provide real world work experience in discipline related fields, which is necessary in obtaining a job upon graduation, but they also provide students with an ongoing source of income throughout their undergraduate studies. It is likely that co-op students would be unwilling to give up their opportunity for both marketable work experience and income by changing academic major (particularly switching to a non-co-op program) unless they are certain that the move will benefit their long term career plans.

The findings of this study help to further our understanding of the outcomes of participating in a work-integrated learning program, however there are limitations that must be addressed. This was an exploratory study and as such it is not possible to make causal inferences about the data. Further research is needed to truly understand the relationship between co-op programs and career certainty and major changing. The external validity for this study is low in that the sample size was small and the data were collected at a single post-secondary institution in Canada that is well known for its cooperative education

program. Future studies with larger samples and across institutions are needed to increase generalizability. It is likely that institutional differences exist, particularly in the emphasis put upon work placements and career planning. There are also several variables that might have an effect on career confidence and changing majors that are not being captured in this study. These include satisfaction with a work placement and overall grade point average.

In light of the above-mentioned limitations, the results of this study provide some indicators to universities and academic advisors. It is possible that students who enter non-co-op programs are more at risk of changing majors and may face negative academic and financial implications in doing so. Academic advisors may wish to meet with non-co-op students early on in their studies to confirm their academic/career plan and to recognize signs of major changing (i.e., interest in other programs, major too difficult, and dissatisfaction with major). If non-co-op students are able to change to their desired major early on in their studies, they will not delay graduation as much as they would have if they had waited to change majors. Universities with co-op/WIL programs should also provide co-op/WIL students with as much information as possible about the career paths and opportunities in their chosen field of study and help them with long term planning so that they can avoid switching majors or do so early in their program. However, these mixed findings suggest an uncertain picture of how directly cooperative education impacts a student's vocational identity and career planning process. More research is needed to clarify this relationship and to understand how students can make the most effective decision about their academic program and their career path. Further research could also examine if students in co-op programs are better able to transfer classroom knowledge to practical work experience and if their work experience broadens their knowledge about career opportunities in their chosen field of study.

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