

The Link between Financial Literacy and Education of Canadian University Students

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Abstract – This study aims to understand the relationship between the financial literacy level of Canadian university students and their prior education on the subject. The results revealed that education on financial topics improved FL level. However, the improvement is almost insignificant for courses taken at the secondary level, and not nearly as important at the university level as we thought it would be. Also, the improvement varied by the different fields of study at the university level and for the different dimensions of FL. Finally, the results showed that FL is influenced by socio-demographic variables as well.

Keywords – Financial Literacy, Education, High School, University Student, Financial Knowledge, Course In Financial Literacy.

I. INTRODUCTION

This research pertains to the study of relationships that exist between the level of acquired knowledge in Financial Literacy (FL) and prior education, through universities or high schools. According to the Financial Consumer Agency of Canada, FL is defined as “*having the knowledge, skills and confidence to make responsible financial decisions.*” Therefore, if we retain this definition and its implications on the national and international levels, a sizable number of studies have shown that the financial behavior of individuals, especially young adults, has become increasingly irresponsible. Furthermore, these behaviors are significantly different across certain demographic groups. Indeed, results show that FL level is influenced by certain socio-demographic variables such as gender (Chen & Volpe, 1998, 2002; Lusardi & al., 2008, Tamborini & al. 2012), ethnicity (Sabri & al., 2010; Lusardi & al., 2010), age (Danes & al., 1999) and social status (Cole, Sampson & Zia, 2009; Lusardi & Mitchell, 2007).

What are the consequences of having inadequate knowledge regarding FL? According to certain authors, lack of FL leads to problems in personal and home finances, such as: difficulty making timely credit card payments, not reimbursing loans on time, resorting to the use of credit margins to “finance” basic expenses, indebtedness, a jeopardized creditworthy rating, a refusal from financial institutions to grant loans, bankruptcy, a lack of retirement savings and the foreclosure on home loans by financial institutions (Parrish & Servon, 2006; Perry & Morris, 2005; DeVaney & al. 1996), to cite but a few. These personal behaviors can also have adverse consequences on a country’s economy, including: financial institutions, levels of government, and society as a whole. This is best illustrated by the negative repercussions associated with the world financial crisis of 2008. However, financial literacy-

likely contributed to a significant reduction in the social and psychological pressures, and their ensuing consequences. To this end, Neill et al. (2005) found that people who are part of a family that demonstrates high financial literacy are less likely to experience stress and are physically and mentally healthier. The benefits of having sound financial literacy can also have a positive and productive impact in the workplace. In fact, certain researchers highlight that higher FL could lower absenteeism (Champion-Hughes, 2001), increase the retention of employees (Champion-Hughes, 2001), reduce the level of stress and anxiety in the workplace (Kim, 2007) and increase the efficiency of the organization (Vitt & al., 2000). Therefore, it seems that educating students in FL, thereby making them more responsible regarding their personal finances, might reduce their financial problems overall and may even have a positive impact on their productivity. It is imperative that these future leaders of our society be properly prepared to make sound financial decisions that will contribute to consolidating a prosperous Canadian economy.

Researchers, governments, and financial institutions are also trying to find solutions that will improve the overall level of FL in the general population. In 2008, the United States government under the direction of President George W. Bush, created “*The President’s Advisory Council on Financial Literacy*” making FL a national priority (Iowa State University, 2008). In 2011, Jim Flaherty, Canadian Minister of Finance, recognized the urgency of the situation and declared that FL was useful since it enabled us to reinforce and stabilize the many facets of our financial system (Department of Finance Canada, 2011). With that in mind, it is not surprising to see numerous Canadian organizations, such as: The Financial Consumer Agency of Canada, ABC Life Literacy, and The Canadian Center for Financial Literacy (CCFL), promoting FL since they have been aware of its importance in the economic development of countries.

Previous research studies on the subject all agree on the implications resulting from insufficient FL, whether they are in the United States (Avard, Manton, English & Wlaket, 2005; Chen & Volpe, 1998; Hilgert, Hogarth & Beverly, 2003; Mandell, 2008; Mandell & Klein, 2009; Markovich & DeVaney, 1997; Volpe, Chen & Liu, 2006; Warwick & Masfield, 2000; Lusardi & Mitchell, 2007), Canada (Keown, 2001) or else where. According to some authors, a low level of FL is in direct correlation with a lack of financial education, meaning that financial knowledge would improve FL as a whole (Scott, 2010; Hira 1993). We can assume that if we can increase the financial knowledge in individuals, we will also be improving their financial behavior. Indeed, a number of studies demonstrate the link between financial literacy and financial be-

havior (Robb and Woodyard, 2011; Borden, Lee Serido & Collins, 2008; Chen & Volpe, 1998; Robb & Sharpe, 2009; Jones, 2005). With that being said, these organizations who aim to promote FL should also aim to increase the level of financial knowledge provided to individuals. It then becomes imperative that these organizations know the most effective ways to convey this knowledge and which FL components need to be specifically focused on. In addition, Alen Grennsman said, "Indeed, improving basic financial education at the elementary and secondary school levels will provide a foundation for financial literacy." If that is the case, then we can expect that students who took a course in FL at the secondary level would have better knowledge of FL than those who did not take a course. Also, university students that are majoring in business studies should have a superior level of FL knowledge than students majoring in other fields of study. This is mainly because they have chosen to focus their studies on financially-relevant topics and because they will have courses directly related to financial literacy, such as: economics, finance and accounting. Therefore, it would be relevant to examine how taking courses in FL related fields, at the secondary or university level, improves financial knowledge. The extent to which the financial literacy knowledge of business students is higher than that of non-business students for different components of financial literacy, such as: investment, taxes, etc. should also be noted. These relationships are important to study because they can be used to find solutions that will improve the level of FL in individuals. They will also show the direct correlation between financial education and increased financial knowledge in regards to the different aspects surrounding FL. By considering the impact that financial knowledge has on our economy, this type of research, that studies the relationship between the financial literacy and education of Canadian students, is quite pertinent because it aims to answer the question of whether or not the programs offered by our high schools and universities are enough to help students properly function on a personal financial level.

The objective of this study is to understand how the level of knowledge in financial literacy is improved when using the standard educational programs offered by our high schools and universities. We will verify this information for each of the various dimensions' FL score (investment, interest rate, income tax, inflation and credit ratings) to see if there are any gaps in a particular dimension of FL in the school curriculums. In order to do that, this study investigates if the performance of university students in financial literacy is increased if they took a FL-related course in high school. It also examines students in business-related majors, as well as other majors, in order to determine the extent to which a student's chosen academic field of study explains their FL scores.

This study is quantitative in nature and begins with the hypothetical-deductive method analysis, which uses the method of probability sampling for the selection of a final sample. It applies a statistical analysis to the data collected from a standardized questionnaire, namely, the Jump\$start

model, which has been used and validated in other studies of similar context.

With all of this information in mind, and with the objectives of the study clearly shown, it is necessary to discuss and review the pertinent financial literature related to this study so as to include the best scientific knowledge base available. Thereafter, we will discuss the methodological orientations of the study, the interpretation of the results, and finally, the general conclusion of our research.

II. LITERATURE REVIEW AND HYPOTHESIS

The review of existing literature, regarding this study, has been conducted based on the principal variables in our hypothesis that shall be presented later in this paper.

2.1. Definition of Financial Literacy (FL)

Even if the different parties involved admit that FL plays a fundamental role in our economy, there is non-unanimity on a clear and precise definition of what exactly FL means (Huston, 2010), nor is there a consensus on its dimensions and components. Furthermore, of the seventy articles examined by Huston (2010), only eight presented an actual definition of FL, and even those were only described in summary form. Of the eight definitions presented, some consider the basis aspects of financial knowledge (Kim, 2001), some examine the abilities required to make sound financial decisions (Vitt & al., 2000) and others concentrate on both dimensions simultaneously (Servon & Kaetner, 2008; Jump\$start Coalition, 2007). The American studies that were inclined to measure levels of FL were also interested in different dimensions of the concept. Certain researchers deliberately considered only particular components, such as: investments (Volpe & al., 1996), credit cards (Hones, 2005) and loans (Müller et Weber, 2010). Other authors were interested in each different component related to financial knowledge and its impact on behavior (Mandell, 2008; Chen and Volpe; 2002), while others concentrated on the different aggregate components by creating a single unique measurement of FL, namely, the percentage of questions answered correctly (Volpe & al., 1996; Servon and Kaetner, 2008; Hung & al., 2009).

In this study, we will use a global FL questionnaire which include different components of FL. We'll talk more about the questionnaire in the next section and in the section 3.2.

2.2. Measurement of Financial Literacy

Many studies determined the level of FL in students, young adults or the general population as a whole. Certain authors developed their own personal questionnaires to evaluate the levels of FL, and others used a questionnaire provided by Jump\$start. For example, Lalonde and Schmidt (2011) used 31 questions from the Jump\$start questionnaire for their study, and based on a sample of 192 students at the same American college, they obtained a FL score of 60.6%. In another study, Chinen and Endo (2012) obtained an average score of 70% based on 10 Jump\$start questions answered by 361 students from a university in California. For their research, Chen and Volpe (1998) obtained an average FL score of 52.87% from a sample of 900 participants at 14 different colleges, where 52.6% of participants

studied business administration, using 36 multiple choice questions on various FL topics. Furthermore, in his study, Mandell (2008) obtained a FL score of 61.9% from a sample of 1,030 students at the collegial level representing every field of study and used all of the questions from the JumpStart questionnaire. Finally, according to Keown (2011), Canadians between the ages of 18 and 64 years old obtained an average FL score of 64.28% based on a questionnaire of 14 JumpStart items. (We have noted that the results vary between 50% and 65%, and that it is difficult to compare the individual scores considering the disparities that exist in sample populations.)

In our study, we use the JumpStart questionnaire because it includes the various components related to FL (investment, inflation, income taxes, credit report and interest rates), which makes it easier to create a standard measurement of FL. This questionnaire will provide us with a general insight into the FL level of students enrolled in Canadian universities, because at this moment in time, there exists little data pertaining to this matter.

2.3. Financial Literacy Levels and Socio-Demographic Characteristics

Many studies have attempted to determine the FL scores according to gender, ethnicity, age and social status. For example, an American study showed that at least 33% of young adults are at ease with the concepts of interest rates, inflation and risk (Lusardi & al., 2010). Other studies demonstrated a link between FL knowledge, race and ethnicity (Sabri & al., 2010; Lusardi & al., 2010). For example, Lusardi & al., (2010), found that Caucasians were more apt than African-Americans and Hispanics to correctly answer FL questions. A certain number of studies also show that female students tend to have more credit cards, more debt, and less financial knowledge than their male counterparts (Chen & Volpe, 1998, 2002; Lusardi & al., 2008). However, even though these studies were looking at different socio-demographic aspects, they all agreed that there is a lack of FL in the general American population (Mandell & Klein; 2009, Lusardi & Mitchell, 2007, Mandell, 2008). Although studies related to FL are quite numerous and available in many countries around the world, most notably in the United States, such is not the case in Canada. Yet, in February 2015, the Bank of Canada indicated that Statistic Canada data's showed the amount of debt incurred by Canadian households had reached a new record Bank of Canada (2015). Finally, previous research has shown that certain socio-demographic groups are more at risk for having lower financial literacy scores such as women (Tamborini & al. 2012), persons living in rural areas (Cole, Sampson & Zia., 2009) and lower income individuals (Lusardi & Mitchell, 2007).

In this study, we also control for socio-demographic factors, such as: sex, age, income (parental), ethnicity, marital status, number of children, high school grades and level of parental education. Understanding the level of FL in terms of socio-demographic features also allows organizations to better promote FL programs.

2.4. Courses in Financial Literacy at the Secondary and University Levels

Many researchers have studied the significance of FL courses at the secondary level and have found a number of results. In the United States, Peng, Bartholomae, Fox & Cravener (2007), found that there was no significant relationship between a course on personal finances taken at the secondary education level and knowledge of investments, but those who had taken such a course at the collegial level were more likely to have a higher FL level in that particular field. They mention that one of the factors that contributed to these results is because courses at the collegial level are more likely to include information on investment concepts as opposed to those offered at the secondary level. Another contributing factor to these results is, as the personal financial responsibilities of students increase, so does their interest in the field of finance. These results seem to concur with the conclusions of Mandell and Klein (2009), who found that students at the secondary level who completed courses in finance did not demonstrate higher levels of FL compared to those who had not taken such courses, even after a few years. Contrary to this view, Danes, & al., (1999) established that the teaching of FL has had a "positive impact on the financial knowledge base, the behavior of students, and their auto-efficiency". Bernheim, Garrett and Maki (2001) designed their questionnaire for persons who had obtained their secondary school diploma between 12 and 31 years preceding their study. Their results showed that the exposure to financial concepts in secondary school had a positive impact in the long-run regarding financial knowledge and behavior in terms of savings. The research results of Murphy (2005), who was interested in students at an African-American university, showed that the more the students (N = 277) progressed in their studies, the more they were at ease with financial literacy. As we can see, the results on the influence of financial courses related to financial knowledge and behavior is not unanimous. These studies are hard to compare though because they vary on the education levels the financial knowledge was presented at and the particular component that was studied, such as savings and investments.

Other studies on financial education have found that there is a link between the FL score and certain fields of study at university level. Chung and Park (2014) became interested solely in students following the program of business administration. Comparing the scores of students (N = 105) in Economics, Finance and Accounting with those in Marketing and Management resulted in finding that students had higher FL scores in the first category relative to the second. Finally, the study by Chen and Volpe (1998) compared the fields of business administration with all the other fields of study combined (for 14 colleges) and found that those who studied business administration had better scores in FL.

Following this review of existing literature, we observe the lack of FL in the United States and Canada. Even though the problem applies equally well to Canada, there exists little academic research quantifying their current state of FL affairs. In addition, previous American research studies showed links between the different university majors, but they either compared only business adminis-

tration with all the other fields combined, or they compared only the different disciplines used within the faculty of business administration. Other studies have concentrated on one particular ethnicity or one university, without presenting an overall picture of a region or a country as a whole. Consequently, our research is Canadian-specific, and includes all fields of study, in order to determine the extent to which business students obtain a better FL score, while also considering the different dimensions of FL and assessing how much each field of study may or may not improve FL scores. This study also assesses how taking FL courses at the high school or university level influences FL score.

III. EMPIRICAL MODEL AND SAMPLE

After presenting the empirical model in our study, we then will describe the parameters of our sample.

3.1 Empirical models

$$1 - SCORE_{FL} = \alpha_0 + \alpha_1 GENDER + \alpha_2 MARITAL_S + \alpha_3 AGE + \alpha_4 NB_{CHILD} + \alpha_5 EDUC_P + \alpha_6 P_{SAL_{40\ 000-79\ 999}} + \alpha_7 P_{SAL_{80\ 000-159\ 999}} + \alpha_8 P_{SAL_{>160\ 000}} + \alpha_9 GPA_{>90} + \alpha_{10} GPA_{80-89} + \alpha_{11} ETHNICITY$$

$$2 - SCORE_{FL} = \alpha_0 + \alpha_1 GENDER + \alpha_2 MARITAL_S + \alpha_3 AGE + \alpha_4 NB_{CHILD} + \alpha_5 EDUC_P + \alpha_6 P_{SAL_{40\ 000-79\ 999}} + \alpha_7 P_{SAL_{80\ 000-159\ 999}} + \alpha_8 P_{SAL_{>160\ 000}} + \alpha_9 GPA_{>90} + \alpha_{10} GPA_{80-89} + \alpha_{11} ETHNICITY + \alpha_{12} HS_{course}$$

$$3 - SCORE_{FL} = \alpha_0 + \alpha_1 GENDER + \alpha_2 MARITAL_S + \alpha_3 AGE + \alpha_4 NB_{CHILD} + \alpha_5 EDUC_P + \alpha_6 P_{SAL_{40\ 000-79\ 999}} + \alpha_7 P_{SAL_{80\ 000-159\ 999}} + \alpha_8 P_{SAL_{>160\ 000}} + \alpha_9 GPA_{>90} + \alpha_{10} GPA_{80-89} + \alpha_{11} ETHNICITY + \alpha_{12} HS_{course} + \alpha_{13} ACAD_y + \alpha_{14} D_{Art} + \alpha_{15} D_{Eng} + \alpha_{16} D_{Humanities} + \alpha_{17} D_{Nursing} + \alpha_{18} D_{PureSc} + \alpha_{19} D_{SocSc} + \alpha_{20} D_{Other} + \alpha_{21} UNIV_C$$

The variables used in the preceding formulas are defined as follows:

SCORE_{FL} = Number of questions properly answered from a total of 27 queries that will allow us to measure the depth of knowledge in FL;

GENDER = A dichotomous value of 1 if a participant is female, and zero if male;

MARITAL_s = A dichotomous value of 1 if the participant is married, and zero if not;

AGE = The age of the participant;

NB_{child} = The number of children in the participant's household;

EDUC_p = A dichotomous value of 1 if the participant's parents have a collegial education or higher, and zero if not;

P_{SALP<39 999} = A dichotomous value of 1 if the participant's parents have a salary less than \$39,999, and zero if not;

P_{SALP40 000-79 999} = A dichotomous value of 1 if the participant's parents have a salary between \$40,000 and 79,999, and zero if not;

P_{SALP80 000- 159 999} = A dichotomous value of 1 if the salary of the participant's parents is between \$80,000 and \$159,999, and zero if not;

According to the review of existing literature, numerous socio-demographic variables can explain levels of financial literacy (Mandell & al., 2007). These variables (gender, parental education, age, number of children, secondary school grades, and parental income) shall be used as control variables in model 1. This will allow us, in models 2 and 3, to evaluate the importance of education on FL scores while also controlling for certain factors. With that being said, in model 2, we add the variable which indicates whether or not the student took a course on FL at the secondary level. Afterwards, we will be able to evaluate the improvement of the R² between models 1 and 2 in order to assess if taking a FL course at the secondary level improves the FL score of university students. In model 3, we include the variables related to the different fields of study taken by university students. This allows us to evaluate the R² improvement between models 2 and 3 in order to assess if the inclusion of fields of study in model 3 resulted in explained variations of FL scores. Our three models are as follows:

P_{SALP>160 000} = A dichotomous value of 1 if the salary of the participant's parents is greater than \$160,000, and zero if not;

GPA_{>90} = A dichotomous value of 1 if the participant had an academic average greater than 90% in secondary school, and zero if not;

GPA₈₀₋₈₉ = A dichotomous value of 1 if a participant had an academic average between 80% and 89% in secondary school, and zero if not;

GPA_{<79} = A dichotomous value of 1 if the participant had an academic average of less than 79% in secondary school, and zero if not;

ETHNICITY = A dichotomous value of 1 if the participant is Caucasian, and zero otherwise;

HS_{course} = A dichotomous value of 1 if the participant did financial related courses in high school, and zero if not;

ACAD_y = The academic year of the student;

D_{Business} = A dichotomous value of 1 if the participant's field of study is Business Administration;

D_{Art} = A dichotomous value of 1 if the participant's field of study is Arts, and zero if not;

D_{Eng} = A dichotomous value of 1 if the participant's field of study is Engineering, and zero if not;

$D_{Humanities}$ = A dichotomous value of 1 if the participant’s field of study is in Humanities, and zero if not;
 $D_{Nursing}$ = A dichotomous value of 1 if the participant’s field of study is Nursing Sciences, and zero if not;
 D_{Pure_Sc} = A dichotomous value of 1 if the participant’s field of study is Pure Sciences, and zero if not;
 D_{SocSc} = A dichotomous value of 1 if the participant’s field of study is Social Sciences, and zero if not;
 D_{Other} = A dichotomous value of 1 if the participant’s field of study is Other than those mentioned above, and zero if not;
 $UNIV_c$ = A dichotomous value of 1 if the participant took financial related courses at university level, and zero if not;
 $\epsilon_{i,t}$ = error term

3.2 Sample

In order to calculate the FL scores, we used a Canadian adaptation of the American questionnaire Jump \$tart. This questionnaire has been used in numerous studies to evaluate the level of FL in students and young adults (Alhewawi & Elkhali, 2013; Deng & al., 2013; Haynes & al., 2011; Hilgert & al. 2003; Mandell, 2007; Lusardi & al., 2010). Our adaptation of this questionnaire consisted of 25 questions on themes related to FL that were then categorized into five dimensions, which are: income tax, infla-

tion, interest rates and investments. In addition to these FL-related questions, our questionnaire included questions regarding demographics. The questionnaire was sent to all Canadian universities, both French-speaking and English-speaking, so that it may be sent to students via email. Since answering this questionnaire was done purely on a voluntary basis, a lottery-style prize of \$500 was offered as an incentive.

The descriptive statistics of certain variables, used for the purpose of analysis, are presented in Table 1. We first observe that the FL score for the entire sample is 53.15%, which is weak when compared with some of the previous studies such as: Schmidt, 2011 (60.6%); Chinen and Endo, 2012 (70%); Chen and Volpe, 1998 (52.6%); Mandell, & al. 2008 (61,9%) and Keown, 2011 (64.28%). However, the results are difficult to compare since these studies were aimed at different populations and because the FL measures used in those studies are distinct. Also, we can see that university students obtain lower scores on topics related to income taxes and investments, and score higher on topics related to credit reports and interest rates. Finally, we notice that: the average age of our sample is 25 years old, 89% of our sample is not married, and 74% of our sample is women.

Table 1: Descriptive Statistics

	Average	Minimum	Maximum	SD		Average	Minimum	Maximum	SD
SCORE_{FL}	53.15%	3.03	96.97	19.63%	SCORE_{FL}	53,15%	3,03	96,97	19,63%
SCORE_{Inflation}	56.28%	0.00	100.00	28.21%	AGE	25.17	18.00	58.00	6.20
SCORE_{Credit report}	75.43%	0.00	100.00	28.06%	STATUS	89%	0.00	1.00	0.31
SCORE_{Investment}	48.84%	0.00	100.00	25.48%	GENDER	74%	0.00	1.00	0.44
SCORE_{Income taxes}	38.44%	0.00	100.00	26.87%	N	1221			
SCORE_{Interest rate}	64.76%	0.00	100.00	30.90%					
AGE	25.17	18.00	58.00	6.20					
STATUS	89%	0.00	1.00	0.31					
GENDER	74%	0.00	1.00	0.44					
N	1221								

IV. RESULTS

Results of the regression analyses conducted as shown in Table 2 were obtained using the combined Ordinary Least Squares method.

As previously indicated, model 1 only includes the control variables. The results of this model indicate that socio-demographic variables explain 18% of the variance in the FL scores. Also, we observed that many of these control variables are significant. First and foremost, we note that the GENDER variable is negatively related to the FL scores, which means that young women performed worse than their male counterparts, and therefore, had a lower FL score. Thus, the situation is the same as it is in the United States, since numerous studies have arrived at this same conclusion (Fonseca & al., 2012; Chen and Volpe, 2002; Powell and Ansic, 1997).

Table 2 also shows that the AGE variable has a positive and significant relationship with the SCORE_{FL}, meaning that people with more life experience have better financial

knowledge. Other studies also used age as a control variable, and found that the different stages of the life cycle influence FL (Lusardi & Tufano, 2009; Rooij, Lusardi & Alessie, 2011; Gerardi, Goette, & Meier, 2010). However, we did not show a significant relationship between the SCORE_{FL} and NB_{child} variables. Also, we did not obtain any significant relationships between the level of parental education and FL, as is also the case with Mandell, & al. (2007). In accordance with many American studies (Ansong & Gyensare, 2012; Chen & Volpe, 1998; Cull & Whitton, 2011; Fonseca & al., 2012), we did not obtain any significant results for the marital Status variable and FL level as well.

As for the salary of parents, we created a set of binary variables whose uncoded variable is SAL_{P<39,999}\$. The results indicate that the students whose parents have a salary between \$40,000 and \$79,000 per year obtain better FL scores than those whose parents’ salary is lower than \$39,999. Furthermore, students whose parents’ annual salary was between \$80,000 and \$159,999 had an even

higher FL score. These results are contradictory to those obtained by Mandell, & al. (2007), who does not find any link between the salary of parents and the FL scores, but in accordance with the results obtained by Lusardi, & al. (2010) who found a significant relationship between these two variables. Finally, students whose parents have a salary higher than \$160,000/year do not obtain higher FL scores than those whose parents have a salary lower than \$39,999/year. This last result can be explained by the fact that the children of wealthy parents have no financial worries, hence they are not preoccupied with FL. Consequently, the results of this study highlight a relationship between the financial literacy scores of university students and the salary of their parents. However, this relationship does not exist at all salary levels, and may explain the contradictory results obtained by other studies.

In order to determine if the average academic score in secondary school had a measurable impact with the SCORE_{FL} variable, we also created a set of binary variables whose variable AV_{AC} < 80 is left uncoded. Thus, the results indicate that students who had obtained an average between 80% and 89% also obtained higher FL scores than those who had received an average lower than 80%. Furthermore, those who had obtained an average higher than 90% obtained an even higher FL score. These results are similar to those of Lindsey-Taliefero & al., (2011) who also demonstrated that academic scores were related to FL levels.

Finally, like other American studies, (Lusardi & al., 2010a; Sabri & al., 2010), we found that ethnicity has a significant relationship with FL. In this study, we compare Caucasians with all other ethnicities and found that Caucasians overall, had a better FL score. This result is expected since other ethnic groups, including foreign-exchange-students who are in Canada for their studies, do not necessarily have the same financial culture in their country as we do here. This result, however, is relevant and

encourages regulators to target FL programs for new immigrants as well.

Table 2: Influence of FL courses, socio-demographic variables and fields of study on FL score

	Model 1 Control Variables	Model 2 HS courses	Model 2 Field of Study
Constant	15.183***	18.644***	29.75***
GENDER	-8.418***	-8.294***	(6.07)***
MARITAL_S	.502	-.033	(0.16)
AGE	1.094***	1.076***	0.91***
NB_{child}	-.933	-.911	(0.19)
EDUC_P	.363	.283	0.43
P_{SAL 40 000-79 999}	6.023***	5.886***	5.21***
P_{SAL 80 000- 159 999}	6.485***	6.409***	5.37***
P_{SAL >160 000}	-.596	-.262	(0.36)
GPA_{>90}	11.066***	11.047***	9.68***
GPA₈₀₋₈₉	6.454***	6.307***	5.41***
ETHNICITY	6.035***	5.733***	7.24***
HS_{COURSE}		-4.188***	(3.74)***
ACAM_Y			0.97***
C_{Art}			(11.64)***
C_{Eng}			(12.69)***
D_{Humanities}			(13.84)***
D_{Nursing}			(8.76)***
D_{PureSc.}			(12.06)***
D_{Sc.Soc}			(9.76)***
D_{others}			(13.08)***
UNIV_C			(3.61)***
R	0.44	0.45	0.51
R²	0.19	0.20	0.26
R² adjusted	0.18	0.19	0.25
R² Variation		0.01***	0.06***
N	1221		

Table 3: Influence of FL courses, socio-demographic variables and fields of study on FL score for various dimensions of FL

	Investment			Inflation			Income taxes		
	Model 1 Control Variables	Model 2 HS courses	Model 2 Field of Study	Model 1 Control Variables	Model 2 HS courses	Model 2 Field of Study	Model 1 Control Variables	Model 2 HS courses	Model 2 Field of Study
Constant	9.01	14.40**	27.51***	18.27*	22.13**	34.36***	8.94	13.92*	15.31**
GENDER	(12.39)***	(12.20)***	(9.42)***	(11.59)**	(11.45)**	(8.71)***	(5.77)***	(5.59)***	(6.63)***
STATUS	(0.45)	(1.28)	(1.37)	(2.05)	(2.65)	(3.06)	3.90	3.13	(1.62)
AGE	1.21***	1.19***	1.11***	1.38***	1.36***	1.29***	1.24***	1.21***	0.99***
NB_{child}	(0.88)	(0.84)	(0.38)	(2.56)**	(2.54)**	(2.14)	(0.65)	(0.62)	0.11
EDUC_P	1.03	0.91	1.14	1.07	0.98	1.38	(0.67)	(0.78)	0.45
SAL_{P40 000-79 999}	5.42**	5.21**	4.11**	4.35*	4.20*	3.73	11.91**	11.71***	3.25
SAL_{P80 000- 159 999}	7.43***	7.32***	5.50***	3.49	3.40	2.21	10.40***	10.29***	5.18**
SAL_{P>160 000}	(0.88)	(0.36)	(0.75)	(0.36)	0.01	(0.06)	1.54	2.02	(1.98)
AV_{AC}>90	12.88***	12.85***	11.75***	8.22***	8.20***	7.76***	18.03***	18.00***	9.10***
AV_{AC}80-89	7.92***	7.69***	6.96***	3.65**	3.49*	3.25	10.52***	10.31***	6.52***
ETHNICITY	4.85**	4.38**	6.50***	5.07**	4.73**	6.35**	12.39***	11.95***	8.31***
HS_{COURSE}		(6.52)***	(6.06)***		(4.67)***	(4.07)***		(6.03)***	(0.87)

ACAM _y			0.64**			0.65			1.04***
C _{Art}			(14.93)***			(14.18)***			(15.73)***
C _{Eng}			(14.34)***			(15.21)***			(18.51)***
D _{Humanities}			(17.31)***			(18.05)***			(15.46)***
D _{Nursing}			(8.62)***			(14.55)***			(12.76)***
D _{PureSc.}			(16.05)***			(15.12)***			(16.11)***
D _{Sc.Soc}			(10.92)***			(16.09)***			(11.75)***
D _{others}			(14.33)***			(17.33)***			(15.86)***
UNIV _C			(6.17)***			(3.44)*			(3.69)**
R	0.41	0.43	0.49	0.35	0.36	0.41	0.36	0.38	0.41
R²	0.16	0.18	0.24	0.12	0.13	0.17	0.13	0.14	0.16
R² adjusted	0.16	0.17	0.23	0.11	0.12	0.15	0.12	0.13	0.15
R² Variation		0.02***	0.06***		0.01**	0.04***		0.01***	0.03***

Table 3: Influence of FL courses, socio demographic variables and fields of study on FL score for various dimension of FL (continued)

	Credit report			Interest rate		
	Model 1 Control Variables	Model 2 HS courses	Model 2 Field of Study	Model 1 Control Variables	Model 2 HS courses	Model 2 Field of Study
Constant	39.07***	40.59***	48.58***	8.94	13.92***	25.32***
GENDER	(2.68)	(2.62)	(1.52)	(5.77)***	(5.59)***	(3.59)*
STATUS	4.88	4.65	4.41	3.90	3.13	3.19
AGE	0.79***	0.78**	0.46**	1.24***	1.21***	0.90***
NB_{child}	(1.01)	(1.00)	0.11	(0.65)	(0.62)	0.48
EDUC_P	(0.88)	(0.92)	(0.94)	(0.67)	(0.78)	(0.79)
SAL_{P40 000-79 999}	7.27***	7.21***	7.14***	11.91***	11.71***	10.99***
SAL_{P80 000- 159 999}	5.87**	5.84**	5.92**	10.40***	10.29***	9.51***
SAL_{P>160 000}	1.08	1.23	1.52	1.54	2.02	2.25
AV_{AC>90}	11.82***	11.82***	10.20***	18.03***	18.00***	15.54***
AV_{AC80-89}	8.02***	7.95***	6.77***	10.52***	10.31***	8.71***
ETHNY	7.04***	6.91***	7.53***	12.39***	11.95***	13.36***
HS_{course}		(1.85)	(1.17)		(6.03)***	(5.75)***
ACAM_y			1.46***			1.62***
DOM_{ART}			(6.50)			(10.41)**
DOM_{ENG}			(9.31)**			(12.09)**
DOM_{Sc.H}			(5.48)			(15.21)***
DOM_{Sc.Inf.}			(5.97)			(5.99)
DOM_{Sc.Soc.}			(2.04)			(10.57)**
DOM_{Sc.}			(5.15)			(9.20)**
DOM_{others}			(8.82)***			(13.03)***
UNIV_C			(1.91)			(1.84)
R	0.25	0.25	0.29	0.36	0.38	0.41
R²	0.06	0.06	0.08	0.13	0.14	0.17
R² adjusted	0.05	0.05	0.07	0.12	0.13	0.16
R² Variation		0.00	0.02***		0.01***	0.03***

In the second model, we note that the HS_{course} variable is negative and significant at 1%. This result indicates that students who have not taken any courses in FL at the secondary level get poorer FL scores later on. However, the R^2 increase is only by 1%. Although this increase is significant, it is relatively small. This result means that FL knowledge is improved by high school courses, but the improvement is not meaningful and could suggest that FL courses in high school should be better adapted to meet today's needs.

In the third model, we add the fields of study variables. In order to evaluate the effect of the fields of study on FL scores, we once again created a set of binary variables where the uncoded variable is the DOM_{ADM} . As we observed, all the variables related to the fields of study have negative and significant coefficients. These results indicate that students who study in the fields of Arts, Engineering, Humanities, Nursing Science, Pure Science and Social Science all obtain lower FL scores than those who study or stem from Business Administration. These results are as expected and in conformity with those of Peng, Bartholomae, Fox & Cravener, (2007) which showed that students who have taken a course in personal finances at the collegial level in the United States possess superior knowledge in investment related fields. Also, this model results in an R^2 of 26%, which represents an improvement of 6% compared to model 2 and is significant. Therefore, model 3 shows that the fields of study variables account for 6% of the variations in the FL scores. This result is somewhat surprising because we thought that majoring in business administration studies would have improved the percentage of explained variance by more than 6%. This result seems to indicate that education is not enough to improve the financial literacy of young adults.

Even so, these results mean that financial-related courses in high school or at university help increase FL knowledge. However, our results suggest that financial education needs to be improved in order have a better impact on financial knowledge.

Table 3 presents the results for each dimension of FL. The results are essentially the same as far as the overall score, except for inflation and the credit bureau dimensions. Regarding the inflation score, we observe that both variables $SAL_{p40\ 000-79\ 999}$ and $SAL_{p80\ 000-159\ 999}$ are no longer significant at a threshold of 5%. This result would suggest that the less fortunate would therefore be just as knowledgeable as other son the topic of inflation. Regarding the FL score on the credit report dimension, men do not score better than women, so here, the gender variable is no longer significant.

The results in Table 3 also indicate that having taken a course in a field related to FL at the secondary level and studying in the field of business at university level allows for the strongest improvement in the investments dimension with an increase of 8% in the explained variance. This is compared to the 2% increase for the credit report dimension, which we observed having the lowest increase in explained variance. As for the other dimensions, we observed an increase of 5%, 4% and 3% in the explained variance for the inflation, income taxes and interest rate dimensions, respectively. Finally, table 3 shows that for the credit report FL score, only the engineering field has a significantly lower score than the business field, meaning that field of study and courses in FL at the secondary level does not improve knowledge on the credit report dimension. This result is as expected, because when we broke the FL scores into each component, university students got the best score for the credit report dimension (see Table 1).

Table 4 : FL score per dimension and academic field of study

	Business	Art	Engineering	Humanities	Nursing	Pure Science	Social Sciences	Others	Mean Score excluding Business
Income taxes	53%	33%	39%	36%	37%	41%	35%	37%	37%
Interest	74%	62%	66%	59%	66%	67%	64%	63%	64%
Investment	65%	42%	54%	43%	49%	51%	44%	47%	47%
Credit report	80%	73%	73%	74%	72%	77%	78%	73%	74%
Inflation	72%	53%	62%	53%	54%	55%	55%	53%	55%
Total score	65%	49%	56%	49%	52%	55%	51%	51%	52%
N	110	73	93	191	137	241	205	171	

Table 4 shows the FL score for the different dimensions of FL and for the different academic areas. First, we can clearly see that the business students achieve better scores in all areas of FL. However, we note that the score on the theta income dimension is very low for all fields of study, even for business students. The biggest gap when comparing business students with the other students is the inflation dimension, followed by investment, and then income taxes. We observe the lowest gaps for the interest rate and credit report dimensions. Finally, this table shows

us that after business students, engineering students are those that score better globally, followed by pure science students. Also, arts and humanities students obtain the lowest total FL scores. This information is beneficial because it will help to target specific programs to improve FL across all aspects of life.

V. CONCLUSION

Ever since the financial crisis of 2008, FL now attracts even more attention from researchers, educators, government officials and those responsible for economic policies, (Olga, 2011; Postmus & al., 2013) in many countries, across the world (Nicolini & al., 2013). The repercussions caused by insufficient FL are simply too important to ignore because of their impact on households, companies, financial institutions, governments and the world economy. It is vital that Canadian researchers be interested in finding solutions to increase FL knowledge adapted specifically to their country.

This study focused on the relationship that exists between the level of acquired knowledge in Financial Literacy and prior relevant education through universities and high schools. Our sample was comprised of 1,221 participants from across the Provinces of Canada.

The results of this study indicate that, overall, the level of financial literacy of Canadian university students is low, especially in regards to the income tax dimension. Furthermore, the results show that business students have a greater level of FL than any other field of study, followed by students in the engineering field and pure science field. In addition, the level of FL is influenced by some socio-demographic variables as well. Indeed, the results of the study showed that young men have a higher level of FL than young women. Also, age had a positive relationship with FL level, meaning that FL improves with time and experience. Additionally, parental income, GPA and ethnicity are also factors that influence the level of FL. Finally, although taking a FL-related course at the secondary level or being in a business field of study at the university level improves the FL score, the improvement is not substantial.

This research is one of the few scientific studies completed that address the financial literacy of Canadian university students. Therefore, it contributes on a scientific level by adding new data regarding the financial literacy of Canadians. This study also distinguishes itself because it is one of the few interested in the link between FL and university fields of study, and it used a sample representative of an entire country. The results of this study may be pertinent to organizations whose mandate it is to find ways to improve the level of FL in Canadians, since it allows them to identify certain groups that are more likely to have lower levels of FL.

In conclusion, we can say that FL courses (at the secondary and university levels) can improve the overall level of FL. However, those courses should be adapted to counter the weaknesses observed in specific FL dimensions, this will result in a more substantial improvement for FL. Consequently, more research needs to be done in order to further study the various FL weaknesses and identify ways in which to integrate them into the secondary curriculum.

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