Revista de Educação e Pesquisa em Contabilidade
Journal of Education and Research in Accounting

Periódico Trimestral, digital e gratuito publicado pela Academia Brasileira de Ciências Contábeis | Available online at www.repec.org.br

REPeC, Brasília, v. 15, n. 2, art. 3, p. 163-184, Apr./Jun. 2021 | DOI: http://dx.doi.org/10.17524/repec.v15i2.2751 | ISSN 1981-8610

Relationship between book reading and academic performance: an analysis addressing applied social sciences students

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Abstract

Objective: To identify and compare the relationship between extracurricular reading and student performance among applied social sciences students.

Method: Microdata from 338,977 students from nine undergraduate programs taking the National Assessment of Student Achievement (Enade) in 2018 were collected. Performance in the Enade is measured by scores obtained in the tests addressing specific content and general knowledge. Data were analyzed using descriptive statistics, Chi-square test, and regression models.

Results: Undergraduate programs are associated with extracurricular reading. Additionally, there is a positive relationship between the number of books a student reads and academic performance. This relationship is valid for tests addressing specific content, general knowledge, and consequently for the general performance of students in the Enade 2018.

Contributions: Undergraduate students are encouraged to read content beyond that proposed by their programs as the results suggest that extracurricular reading is relevant for both general and specific training. Additionally, it can improve reading skills, text comprehension, and writing, which are essential for students to succeed in an undergraduate program.

Keywords: Book; Reading; Academic performance; Higher education; Applied social sciences.

Published in Portuguese and English. Original Version in Portuguese.

Received in 10/4/2020. Ask to Revise on 2/1/2021. Resubmitted on 2/10/2021. Accepted on 4/29/2021 by Dr. Gerlando Augusto Sampaio Franco de Lima (Editor). Published on 6/30/2021. Organization responsible for the journal: Abracicon.

1. Introduction

The academic performance of college students is considered essential for the quality of training and the development of a qualified and competitive job market. International organizations such as the Organization for Economic Co-operation and Development and the University Ranking by Academic Performance (2020) have adopted student performance to analyze the quality of higher education among countries and devise strategies and actions to promote economic development and decrease social inequality (Takala, Kallo, Kauko, & Rinne, 2018).

Studies have addressed various factors that may influence academic performance, such as variables related to the Higher Education Institutions (HEI), the faculty body, and students (Corbucci, 2007; Glewwe, Hanushek, Humpage, & Ravina, 2015; Miranda, Lemos, Oliveira, & Ferreira, 2015). Oliveira and Caggy (2013), for instance, verified that family origin and financial and physical conditions might play a relevant role in student performance.

Extracurricular activities also positively influence training and social behavior (Bartkus, Nemelka, Nemelka, & Gardner, 2012; Sauerwein, Theis, & Fischer, 2016). One of these activities is extracurricular reading: reading performed at will, pleasure, interest, hobby, or other motivations, which differs from reading basic and complementary bibliographic references required in academic courses (Nasu, 2018). Extracurricular reading required in learning a foreign language positively influences students' performance and skills, improving their cultural knowledge and interpretation of information (Kuimova & Ukhov, 2016).

Reading can benefit students by promoting competencies, such as planning, control, management, accounting, finances, communication, and listening (Cardoso, 2006). Regarding professional competencies, reading is linked to learning and utility improved as students read specific materials (Nascimento, Garcia, & Albuquerque Filho, 2019).

Even though previous studies have reported valuable findings regarding the factors that determine student performance, the investigation of the effect of extracurricular reading on students' performance in the field of applied social sciences is still incipient, especially in comparative studies. Based on this context, this study's objective was to identify and compare the relationship between extracurricular reading and academic performance among applied social sciences students.

Three factors justify this study. First, the topic addressed here is relevant for the academic and professional development of undergraduate students and has implications for the academic milieu. An analysis of the relationship between extracurricular reading and student performance can reinforce the need of educators, parents, and students to take measures and actions to encourage reading in diverse subjects. Books are more frequently investigated because they represent one of the most accessible and widely known sources.

Secondly, schools and universities can develop projects to promote extracurricular activities, among which reading, since it can complement student training. Therefore, investigating extracurricular reading can motivate educational institutions to devise plans (e.g., extension projects and community services) intended to improve the quality of teaching and the training of students.

Finally, a comparative analysis enables programs and coordinators to identify how prone students are to read compared to students from other undergraduate programs. This comparison can support the actions of coordinators and professors to encourage reading among students, using other programs as benchmarking.

Regarding the structure of this paper, section 2 presents the literature review that supports this study. Section 3 presents the methodological aspects, including a description of the population, procedures used to compose the sample, and details regarding the study's variables. Section 4 reports the results and analyses. Finally, section 5 comprises the conclusions, limitations, and suggestions for future studies.

2. Literature Review

2.1 The relevance of reading for students' training and learning

Reading is essential for personal and professional development, especially in the face of changes (Kirsch & Guthrie, 1984). It also promotes learning and social relationships in a process involving sensory ability, motivation, perception, thinking, and memory (Cantalice & Oliveira, 2009). Disinterest in reading is of concern because of its negative implications for society, resulting in a deficit in text comprehension and students' poor academic performance. College students also show disinterest in reading as they often only read content required by professors (Tourinho, 2011).

Reading involves a cognitive process of interpreting written speech (Mol & Bus, 2011). It enables readers to form new opinions regarding varied topics. Therefore, a motivated child who reads from an early age is more likely to become an inquisitive and critical adult. Otherwise, s/he will not form an opinion of diverse subjects for lack of literary background and experience (Arana & Klebis, 2015).

Oliveira and Santos (2005) mention Garrido (1988), who notes that the relevance of reading in quality education is evident, more even so when students conclude middle and high school without the ability to read and interpret texts. When these students enter higher education, they face limitations and deficiencies resulted from their reading behavior. Being a competent reader is essential for college students, and their success is related to their reading maturity (Oliveira & Santos, 2005). Reading is crucial for individuals seeking knowledge, as they acquire a more significant ability to reflect and question facts present in everyday life (Oliveira, Santos, & Primi, 2003).

Reading is crucial for college students to apprehend the content of disciplines and scientific studies. A competent reader seeks to critically understand information during academic training and professional practice (Nascimento et al., 2019). College students are expected to be able to read critically to discern written information and expose the authors' opinions in a way that is adequate to the reading context (Hussein, 1999).

Students are expected to present a satisfactory reading level to understand and analyze written information (Cantalice & Oliveira, 2009). However, studies show that college students present a low reading comprehension level, which can directly interfere with their academic performance (Araújo, Camargos, Camargos, & Dias, 2013; Oliveira & Santos, 2006, 2005). Difficulties are apparent at the beginning of undergraduate programs and reflect on academic performance (Silva & Santos, 2004).

The main characteristics of readers with a low reading comprehension level include failure to decode texts, poor vocabulary, difficulty integrating information, poor memorization, lack of a learning strategy, and lack of motivation to read (Santos, Suehiro, & Oliveira, 2004. These deficits are, at least partially, caused by having no practice in reading. Mokhtari, Reichard, and Gardner (2009) reported that time spent watching TV interferes with the time spent reading. Additionally, the participants reported that they dedicated most of their time to the Internet (e.g., e-mail, chat, social networks, etc.). Thus, it is reasonable to assume that students are currently spending much time in the virtual environment, considering access to the Internet is widespread, suggesting even less time is dedicated to reading. Lieurya, Lorantb, Trosseillec, Champaultc, and Vourc'hc (2014) found a positive relationship between reading and academic performance compared to video games.

Reading is the primary form through which we obtain information and is significantly related to academic performance (Nasu, 2018; Oliveira & Santos, 2006, 2005; Silva & Santos, 2004), as competent readers more easily access academic content (Oliveira & Santos, 2005). Reading deficiencies and problems in producing a text seems to be the most worrisome among professors in the early years students enter college (Sampaio & Santos, 2002). Studies show that poor reading comprehension and lack of reading among college students result in poor academic performance as undergraduate programs demand considerable intellectual work, depending mainly on text comprehension (Marini, 1986). Therefore, obtaining a better understanding of how reading is associated with student performance is essential.

2.2 Extracurricular reading among applied social sciences students

In general, extracurricular activities are considered vital for business students (Bartkus et al., 2012) as these activities promote more competent interpersonal skills (Rubin, Bommer, & Baldwin, 2002). Rynes, Trank, Lawson and Ilies (2003) verified that taking part in extracurricular activities is an efficient way to promote leadership and interpersonal skills among business students, and one of such activities is reading. Note, however, that even though reading is essential for students in general, we discuss its relevance for applied social sciences students in this study.

Extracurricular reading has the potential to improve learning in general. For instance, Silva and Santos (2004) assessed the reading comprehension of 782 students attending eight undergraduate programs (i.e., medicine, dentistry, business administration, pedagogy, letters, civil engineering, and mathematics). The results revealed that business students presented the third worse reading comprehension performance, followed by dentistry and civil engineering students. Nascimento et al. (2019) verified that students from the accounting sciences programs presented difficulties understanding the text provided. Reading books and other extracurricular material can help improve the multidisciplinary background of future accountants. Current metrics such as Environment, Social, and Governance (ESG) are not always addressed in accounting undergraduate programs. For this reason, reading about environmental issues, social diversity, and other extracurricular subjects can help accountants broaden their knowledge and support the development of business reports and financial statements together with the companies' management, for instance.

Tourinho (2011) argues that reading is essential for training critical individuals who will influence and change their contexts. Reading positively affects even one's mental health, as one study verified among college students (Levine, Cherrier, Holding & Koestner, 2020). Additionally, the findings reported by McGaha and Fitzpatrick (2010) show that the more students read, the greater their professional aspirations. It is only natural that students are more engaged with their undergraduate programs and have more ambitious professionals aspirations the more books they read and the more frequently they go to libraries (McGaha & Fitzpatrick, 2010). Applied social sciences programs usually enable significant career growth, but if students do not take advantage, especially if they lack aspirations, they may stagnate professionally. In this sense, as defended by McGaha and Fitzpatrick (2010), extracurricular reading can inspire students and ultimately help them reach the highest ranks in their professions.

Regarding academic performance, students who do not read regularly are more likely to perform poorer than their counterparts (Cunha & Santos, 2006). Analyzing business, law, and psychology students, Oliveira and Santos (2006) found a positive relationship between reading comprehension and academic performance, including performance in disciplines such as business communication, introduction to administration, basic mathematics, scientific methodology, political sciences, general theory of state, civil law, economics and notions of economic law and others. Nasu (2018) also found evidence of a positive relationship between the number of books read and the performance of accounting students. However, we should note that excessive extracurricular reading might harm academic performance (Chen, 2007). Nonetheless, students should bear in mind that regular but not excessive extracurricular reading is essential for their success.

2.3 Related studies

This subsection is intended to describe relevant previous studies to understand the role of reading and its relationship with the academic performance of college students. These studies also ground the discussion of this study's results, showing the need for studies addressing the practice of extracurricular reading among students attending applied social sciences programs. The studies are described next.

Gallik (1999) investigated the relationship between recreational reading and academic performance among 151 students from a university in the United States. Data were collected through surveys. Thirteen responses were excluded, and a sample of 138 observations remained. The statistical tests indicated a positive correlation between recreational reading and academic performance (according to accumulated overall mean), supporting the study's hypothesis.

Oliveira and Santos (2005) analyzed the relationship between reading comprehension, academic performance, and learning. The sample was composed of 270 students from administration, law, and psychology programs attending day and evening classes at a private institution located in the interior of São Paulo. Questionnaires and the cloze test were applied to collect data. Results from the statistical tests revealed a positive relationship between the three variables.

Oliveira and Santos (2006) examined the relationship between reading comprehension and academic performance in 270 students from administration, law and psychology programs at a private university. The traditional version of the cloze test was applied to check the participants' reading comprehension. The statistical analyses indicate a positive relationship between reading comprehension and academic performance.

Chen (2007) accessed data from two national surveys conducted in Taiwan: one applied among 1st-year students and the other addressing 3rd-year students. A negative correlation was specifically found regarding the analysis of the relationship between extracurricular reading and academic performance. A potential explanation for this finding is that the students' extracurricular reading was excessive, even causing concern among their parents. Hence, reading non-academic content in excess may harm academic performance.

Addressing surveys conducted with 27,000 students attending primary school, Lieurya et al. (2014) investigated the effect of video games (e.g., sports, strategy, board games, etc.) and reading (e.g., magazines, newspapers, fantasy books, etc.) on cognitive and academic performance. The results showed that while video games are not significantly correlated with academic performance, reading has a positive relationship. Note, however, that there is a small effect. Nevertheless, reading different materials more strongly supports academic performance than video games.

Nasu (2018) examined extracurricular reading and its relationship with accounting students' performance and study time. Data were collected from Enade 2015, with a sample of 53,887 students. The results showed that extracurricular reading is positively associated with performance and time of study outside classes.

Alhammada and Ku (2019) conducted a qualitative study with 20 undergraduate students from an American university regarding e-books for academic learning. In general, the participants reported they preferred e-books to physical books. However, when preparing for a test, the students replaced a printed book for an e-book only if the latter offered similar content and additional resources.

Nascimento et al. (2019) verified whether reading contributed to the professional training of accounting students using the cloze test and the functions of reading scale. The sample was composed of 180 students from an HEI located in Fortaleza, CE, Brazil. The Cloze test indicated that students experienced difficulties in text comprehension, whereas the functions of reading scale indicated that the "learning" and "utility" functions were more frequently used. The conclusion is that there is an environment conducive for improving professional competencies, even if the functions "morality" and "stimulation" demand encouragement to overcome barriers to reading comprehension.

Levine et al. (2020) analyzed whether recreational reading benefits mental health and the motivation for this type of reading. Overall, 231 students from a Canadian university participated in the study. The results showed a positive relationship between recreational reading and mental health. Additionally, autonomous motivated students are more likely to read recreational books.

This literature review indicates that reading comprehension is a crucial factor for the academic performance of college students. This comprehension is improved as students practice reading curricular or extracurricular books. Therefore, based on the evidence presented by these studies, we expect to find a positive correlation between reading, even extracurricular reading, and student performance. Additionally, there is a gap concerning studies addressing extracurricular books related to the field of applied social sciences, whose programs – e.g., business administration, law, and accounting sciences –, are among the most competitive programs nationally. Thus, examining the role of extracurricular reading in the learning of students attending these programs is quite relevant.

3. Method

3.1 Data, population and sample

Data were collected from the website of the National Institute for Educational Studies and Research Anísio Teixeira (INEP, 2019) and concern the Enade from 2018. The applied social sciences programs included in the Lattes curriculum website were used for the sample selection (Conselho Nacional de Desenvolvimento Científico e Tecnológico, 2019). Note, however, that Enade 2018 was not mandatory for all the programs on the list. For this reason, the number of programs analyzed in this study is restricted. Nevertheless, nine undergraduate programs were included: business administration (BUS), law (LAW), economics (ECO), accounting (ACCOUN), tourism (TOU), social service (SOC), public administration (PUB), social communication – journalism (JOUR), and social communication – advertising and propaganda (ADV).

Enade is designed to assess the quality of Brazilian undergraduate programs by analyzing the students' academic performance. The exam comprises general education questions (e.g., social responsibility), which are common to all the programs, and questions specific to each program. One question specific for the accounting program may demand knowledge from accounting theory, a content that is unlikely to be addressed in the specific questions directed to other programs. Therefore, the students' performance is calculated through the weighted average of the scores obtained in the tests addressing specific content (75%) and general knowledge (25%).

Students from these programs who took the Enade 2018 represent this study's population, 398,859 students. After identifying the population, data were processed. More specifically, observations were excluded in six stages due to varied reasons, namely: (1) absence (code 222); (2) improper participation (code 334); (3) absence due to dual degree programs (code 444); (4) result disregarded by the applicator (code 556); (5) participant returned a blank test (code 333); and (6) "not applicable" (N/A) in the academic performance variables (overall score, general knowledge score, and specific content score), even after the first rounds of the exclusion process.

Table 1

Population, sample and exclusion stages: overall and per program

Program	BUS	LAW	ECO	ACCOUN	TOU	SOC	PUB	JOUR	ADV	Total
Population	120,405	145,425	9,582	62,475	3,328	24,625	4,306	11,447	17,266	398,859
(1) Absence	(20,628)	(17,906)	(1,497)	(9,502)	(625)	(3,222)	(816)	(1,645)	(3,274)	(59,115)
(2) Improper participation	(35)	(38)	(2)	(9)		(8)			(3)	(95)
(3) Absence due to dual degree program	(126)	(95)	(8)	(107)	(3)	(8)	(9)	(6)	(7)	(369)
(4) Result disregarded by the applicator	(1)	(1)				(1)			0	(3)
(5) Blank test	(81)	(71)	(22)	(26)		(28)	(5)	(20)	(2)	(255)
(6) N/A in academic performance	(15)		(4)	(10)	(4)	(4)	(2)	(3)	(3)	(45)
(=) Sample	99,519	127,314	8,049	52,821	2,696	21,354	3,474	9,773	13,977	338,977
%(A)	82.7	87.5	84.0	84.5	81.0	86.7	80.7	85.4	81.0	85.0

Note. [A]Representativeness of the sample in relation to the study population.

The analysis of multivariate outliers was performed considering a p-value of 0.15 using blocked adaptive computationally efficient outlier nominators (Billor, Hadi, & Velleman, 2000; Weber, 2010). The results revealed no multivariate outliers.

3.2 Study variables

In line with the study's objective, data concerning academic performance were collected, specifically overall score (NTGE), score concerning specific component (NTCE), and score concerning general knowledge (NTFG) – and extracurricular reading, which refers to the number of books read in 2018, that is, books that were not included in the courses' bibliography (BOOK). The variable REFER was also considered. It concerns the students' perceptions regarding the relevance of bibliographic references provided in their programs. Both the proxy for extracurricular reading (BOOK) and relevance of references (REFER) were used by a previous study (Nasu, 2018). Table 2 presents a description of the study's variables.

Table 2
Study's variables

Acronym	Description	Measurement (B)
NTGE	Overall score obtained in the Enade 2018	0 to 100 points.
NTCE	Score obtained in the test addressing specific content in the Enade 2018	0 to 100 points.
NTFG	Score obtained in the test addressing general knowledge in the Enade 2018	0 to 100 points.
BOOK	"Not considering the books listed in your course bibliography, how many books did you read this year?" (Question 22 of the Student Questionnaire-Enade 2018)	**0 books;** 1-2 books; 3-5 books; 6-8 books; 8+ books.
REFER	"Did the bibliographic references indicated by your professors contributed to your study and learning?" (Question 39 Student Questionnaire-Enade 2018)	1 (completely disagree) to 6 (completely agree) points.
PROG	Student's program	9 categories (BUS, LAW, ECO, ACCOUN, TOU, SOC, PUB, JOUR or ADV).
MODAL	Online or Brick-and-mortar learning	Online or Brick-and-mortar learning
REGION	Region where the program is located	5 categories (N, NE, S, SE or MW)(C).
SCHED	Classes schedule	4 categories (Full time, Morning, Afternoon, or Evening).
AGE	Student's age	Complete years
SEX	Student's sex	Man or Woman.
MARITAL	Student's marital status	5 categories (Single, Married, Divorced, Widowed or Other).
ETHNIC	Student's ethnicity	5 categories (Caucasian, Afro-descendent, Asian-descendent, Mixed race, Indigenous, and Not reported)(A).
INCOME	Student's family monthly income	0-3 times the minimum wage (MW), 4-6 times the minimum wage, or more than 6 times the minimum wage.
STDHOU	Hours of study outside classes	0 hours; 1-3 hours; 4-7 hours; 8-12 hours or more than 12 hours.

Note. (A)The students who did not report their ethnicity were excluded from the analyses that used this variable to avoid biases in interpreting the results.
(B)The category in bold in the qualitative variables represent the category of reference used in the regression model (next section)
(C)SE = Southeast; S = South; N = North; NE = Northeast; MW = Midwest.

In addition to academic performance and the variable of interest, control variables were collected to obtain a more accurate analysis. Control variables include program (PROG), whether it is online or brick-and-mortar learning (MODAL), the region where the program is located (REGION), program's schedule (SCHED), age (AGE), sex (SEX), marital status (MARITAL), ethnicity (ETHNIC), family monthly income (INCOME), and hours of study (STDHOU).

3.3 Data Analysis Techniques

After collecting and selecting the variables, descriptive statistics were performed for the quantitative and qualitative variables. A cross-table was developed for BOOK and PROG variables, and a Chi-square test was performed to verify associations. Finally, regression models were used to analyze the relationship between extracurricular reading and student performance to verify the effect of the explanatory variables on an explained variable (Fávero, 2015; Gordon, 2015), appropriate to meet this study's objective. Therefore, three regression models were developed, represented in Equations (1), (2), (3) as follow:

$$DES_i = \alpha_i + \beta_1.BOOK_i + \varepsilon_i \quad \text{Equation (1)}$$

$$DES_i = \alpha_i + \beta_1.\ BOOK_i + \beta_2.REFER_i + \beta_3.CONTROLS_i + \varepsilon_i \quad \text{Equation (2)}$$

$$NTFG_i = \alpha_i + \beta_1.\ BOOK_i + \beta_2.PROG_i + \beta_3.CONTROLS_i + \varepsilon_i \quad \text{Equation (3)}$$

The dependent variable (DES) is student performance, which can be NTGE, NTCE, or NTFG. Equation (1) is a multiple regression model, which considers only the dummies related to the BOOK variable. Therefore, the objective is to capture the effect of reading extracurricular books only, without other explanatory factors. Equation (2) verifies the existence of a relationship between reading extracurricular books and academic performance when the REFER variable and other controls (MODAL, REGION, SCHED, AGE, SEX, MARITAL, ETHNIC, INCOME and STDHOU) are included. As suggested by Fávero (2015), the qualitative variables are transformed into N-1 *dummies* (N=number of categories of the qualitative variable). The category of reference is in bold in Table 2. Finally, Equation (3) analyzes the impact of BOOK and PROG variables in NTFG, together with the control variables. Note that NTFG was used because general knowledge questions are asked to the students regardless of the program, differently from the NTCE (specific questions) and NTGE (in which 75% of the score concern specific content and 25% of the score concern general knowledge). The regression models were estimated using Ordinary Least Squares (OLS), with robust standard errors for heteroscedasticity. Additionally, the Variance Inflation Factor (VIF) was used to verify the models' multicollinearity.

OLS estimations with "traditional" (non-robust) standard errors were also performed and produced very similar results. However, for caution, only the results of regressions with robust standard errors are reported in the next section. Additionally, it is noteworthy that the variables concerning the parents' educational level were collected and included in the models. The main findings (related to the BOOK variable) were very similar to the reported.

One final point concerns endogeneity (more specifically, that of reverse correlation); that is, one could assume that students with higher cognitive abilities perform better, and in turn, would demand more reading, which would lead to the conclusion that academic performance affects reading. However, we believe that this reverse correlation is very unlikely in this study. The students take the Enade and complete the Student Questionnaire close to the end of the undergraduate program (graduating students). According to the schedule published on the D*iário Oficial da União* (INEP, 2018), the students could complete the questionnaire up to November 21st, 2018, and the Enade 2018 was applied on November 25th, 2018. For this reason, the students answered question 22 of the Student Questionnaire based on the books they read before the test. Consequently, reading is what influences student performance.

4. Results

Table 3 presents the descriptive statistics of the study's variables. Panel A portrays the quantitative variables and the mean overall score the applied social sciences students obtained in Enade 2018, 40.6 points, with a standard deviation (SD) of 14.3 points. The mean score obtained in the test addressing specific component was 46.1 points (SD=17.6 points), and in the general knowledge test was 38.7 points (SD=15.4 points). The students are expected to score better in the specific component, considering they specialize in the subjects that are specific to their program. The students were 28.8 years old on average (SD=7.9 years), so that they are relatively young, though some elderly individuals were identified (maximum=83.0 years). It is also surprising that there was one student aged 11 years (minimum). Regarding the REFER variable, the students reported that the bibliographic references provided in their programs were relevant for their learning (mean=5.0 points; SD=1.3 points).

Table 3
Descriptive statistics of the study's variables

Panel A: Quantitative variables	**N**	**Mean**	**SD**	**Minimum**	**Maximum**	**Median**
NTGE	338,997	40.6	14.3	0.0	92.8	39.5
NTCE	338,997	46.1	17.6	0.0	98.6	45.4
NTFG	338,997	38.7	15.4	0.0	97.5	37.6
AGE	338,997	28.8	7.9	11.0	83.0	26.0
REFER	332,089	5.0	1,3	1.0	6.0	5.0
Panel B: Qualitative variables (A)	**AF**	**RF**			**AF**	**RF**
MODAL						
Online	49,308	14.6	Brick-and-mortar		289,669	85.5
REGION						
SE	147,549	43.5	S		76,695	22.6
N	19,193	5.7	MW		30,247	8.9
NE	65,293	19.3				
SEX						
Female	202,398	59.7	Male		136,579	40.3
SCHED						
Full time	23,314	6.9	Afternoon		10,698	3.2
Morning	57,379	16.9	Evening		247,586	73.0
MARITAL						
Single	243,740	72.3	Widowed		972	0.3
Married	70,273	20.9	Other		11,537	3.4
Divorced	10,550	3.1				
ETHNIC						
Caucasian	180,641	54.5	Mixed		111,650	33.7
Afro-descendant	30,159	9.1	Indigenous		972	0.3
Asian-descendant	7,835	2.4				
INCOME						
0-3 times the minimum wage	156,451	46.4	+6 times the minimum wage		70,863	21.0
4-6 times the minimum wage	109,758	32.6				
BOOK						
0 books	48,365	14.4	6-8 books		29,225	8.7
1-2 books	122,378	36.3	+8 books		36,713	10.9
3-5 books	100,391	29.8				
STDHOU						
0 hours	28,641	8.5	8-12 hours		30,968	9.2
1-3 hours	161,405	47.9	12+ hours		24,730	7.3
4-7 hours	91,328	27.1				

Note. SD=Standard deviation; AF = Absolute Frequency; RF = Relative Frequency (in %).
(A)The frequencies of the PROG variable are presented in Table 1 and are therefore not reported here.

Panel B shows the study's qualitative variables. Most of the students in the sample attend brick-and-mortar universities (85.5%), are from the southeast (43.5%), women (59.7%), attend evening courses (73.0%), are single (72.3%), Caucasian (54.5%), and belong to families that receive zero to three times the minimum wage (46.4%). Most students read from one to two books in 2018 (36.3%) and studied from one to three hours a week (47.9%).

Next, a cross table was developed with PROG and BOOK variables (Table 4). We first discuss the results in general and then per program (comparatively).

Table 4
Crosstable of PROG and BOOK variables

PROG/ BOOK	0 book		1-2 books		3-5 books		6-8 books		+8 books		Total	
	AF	RF	AF	RF	AF	RF	AF	RF	AF	RF	AF	RF
BUS	16,500	16.7	40,166	40.6	26,891	27.2	7,233	7.3	8,096	8.2	98,886	100.0
LAW	14,522	11.5	40,920	32.3	41,106	32.5	12,579	9.9	17,500	13.8	126,627	100.0
ECO	1,256	15.7	2,614	32.7	2,484	31.0	693	8.7	954	11.9	8,001	100.0
ACCOUN	10,317	19.6	21,247	40.4	13,298	25.3	3,505	6.7	4,233	8.0	52,600	100.0
TOU	386	14.5	965	36.2	840	31.5	241	9.0	233	8.7	2,665	100.0
SOC	1,870	8.8	7,440	35.1	7,175	33.9	2,260	10.7	2,438	11.5	21,183	100.0
PUB	510	14.8	1,300	37.6	981	28.4	263	7.6	403	11.7	3,457	100.0
JOUR	846	8.7	2,599	26.7	3,463	35.6	1,251	12.9	1,575	16.2	9,734	100.0
ADV	2,158	15.5	5,127	36.8	4,153	29.8	1,200	8.6	1,281	9.2	13,919	100.0
Total	**48,365**	**14.3**	**122,378**	**36.3**	**100,391**	**29.8**	**29,225**	**8.7**	**36,713**	**10.9**	**337,072**	**100.0**

Note. AF = Absolute frequency (number of students); RF = Relative frequency (%).
The RFs were based on the AF of the table's last column (Total).

Most students reported reading from one to two books in 2018 (N=122,378; 36.3%), and a considerable portion of the students reported from three to five books (N=100,391; 29.8%). Note that 48,365 students (14.3%) did not read a single book in 2018. This information is of concern because it reveals that students are not developing reading skills, writing, and text comprehension, which are crucial for them to succeed in undergraduate programs (Oliveira & Santos, 2005). Table 3 shows that most students attend evening classes, suggesting that either there are more programs available in this period or that students work, which is common among those nearly graduating from their programs. Therefore, a significant portion of the students might work during the day and study in the evening, restricting their time available to read.

Another potential explanation for not reading books is a lack of financial resources to buy books. Table 3 shows that most students belong to families receiving zero to three times the minimum wage, which is entirely used to meet their families' basic needs. In this situation, students are suggested to go to public libraries. Additionally, the students have difficulties allocating free time to reading because they prefer listening to music, spending time on the Internet, or connecting to social media (Mokhtari et al., 2009). There is evidence that reading is more beneficial to student performance than video games (Lieurya et al. (2014). For this reason, changing habits may be necessary for students to keep a regular reading practice. Finally, the number of students reporting from six to eight books (N = 29,225; 8.7%) or above eight books (N = 36.713; 10.9%) was smaller. This is also a concern, considering that not even 20% of the 337,072 students attending applied social sciences reported reading six or more books in 2018.

Analysis considering the undergraduate programs shows that most students from all the programs reported reading from one to two books, except the students from the LAW and JOUR programs, the majority of whom reported reading from three to five books (LAW=41,106 students; 32.5%; JOUR=3,463 students; 35.6%). The students in the BUS, ACCOUN, and TOU programs were the ones who the least reported reading more than eight books (BUS = 8,096 students; 8.2%; ACCOUN=4,233 students; 8.0%; TOU=233 students; 8.7%). Additionally, BUS, COM and PUB students were also among those who less frequently read from six to eight books (BUS=7,233 students; 7.3%; ACCOUN=3,505 students; 6.7%; PUB=263 students; 7.6%). These findings suggest that there is room for improving reading habits among business students.

It is noteworthy that the ACCOUN program presents the highest percentage of students reporting zero books (10,317 students; 19.6%); that is, the students in this program present the highest percentages in the low-frequency reading categories. These findings concerning extracurricular reading among accounting students possibly explain the low approval rates in the Accounting Exam required to obtain a license and the poor performance obtained in tests assessing the quality of higher education, such as Enade. Even though not related to academic programs, extracurricular material promotes writing and text comprehension, essential for professional practice and being approved in professional exams, mainly because these tests address language questions and demand reading texts.

Comparatively, the JOUR students, on the other hand, reported reading the most throughout 2018. The students in this program obtained the highest reading percentages, (12.9%) from six to eight books, and (16.2%) more than eight books, with the smallest percentage of students in the zero books category (8.7%) in comparison to the remaining programs in applied social sciences. Students in journalism programs are likely to practice reading, whether related to the academic program or not. Finally, a Chi-square test was performed to verify whether there was a significant association between PROG and BOOK. The results showed that these variables were significantly related (Chi2=8,900,00; $p<0.01$). Hence, while some programs are associated with less frequent reading (e.g., ACCOUN), others are associated with more frequent reading (e.g., JOUR). Because the students in the ACCOUN program are less avid readers, extracurricular reading should be encouraged. Next, the relationship between reading books and academic performance was analyzed. Table 5 reports the results of Equations (1) and (2). Gordon (2015) indicates that VIFs between 4 and 10 are sometimes considered high, and according to Yan and Su (2013), VIFs above 10 may indicate multicollinearity problems. The mean VIFs obtained by the models in this study are below 2, indicating low multicollinearity.

Table 5

Results of regression models (1) and (2)

VAR. DEP.	NTFG		NTCE		NTGE	
EQUAÇÃO[B]	(1)	(2)	(1)	(2)	(1)	(2)
	Coefficient (RSE)	Coefficient (RSE)	Coefficient (RSE)	Coefficient (RSE)	Coefficient (RSE)	Coefficient (RSE)
CONSTANT	44.763	49.707	37.802	41.042	39.555	43.221
	(0.080)	(0.225)	(0.069)	(0.197)	(0.064)	(0.181)
BOOK (1-2 books)	0.161*	0.572***	-0.047	-0.198	0.005	-0.006
	(0.094)	(0.099)	(0.082)	(0.086)	(0.076)	(0.078)
BOOK (3-5 books)	2.114***	1.978***	1.360***	0.637***	1.548***	0.972***
	(0.098)	(0.104)	(0.085)	(0.090)	(0.078)	(0.083)
BOOK (6-8 books)	2.484***	1.968***	1.748***	0.614***	1.932***	0.953***
	(0.131)	(0.134)	(0.115)	(0.118)	(0.107)	(0.108)
BOOK (+8 books)	4.403***	3.115***	3.291***	1.431***	3.569***	1.852***
	(0.125)	(0.131)	(0.109)	(0.115)	(0.102)	(0.106)
REFER		-0.731***		-0.294***		-0.403***
		(0.026)		(0.022)		(0,021)
OTHER CONTROLS[A]	No	Yes	No	Yes	No	Yes
N[C]	337,072	326,500	337,072	326,500	337,072	326,500
F/Prob > F	546,89/0,00	1,335.78/0,00	407,50/0,00	1,054.44/0.00	548,64/0.00	1,409,74/0,00
R^2	0.0067	0.1042	0.0051	0.0835	0.0068	0.1093
Mean VIF	1.86	1.74	1.86	1.74	1.86	1.74

Note. DEP. VAR.=dependent variable. RSE=Robust standard errors between parentheses.
[A]For brevity and focus, the results concerning the control variables were omitted. Please see Appendix I to see the entire table.
[B]The regression models contain fewer observations than the complete sample due to missing values.
***, ** and * represent level of significance at 1%, 5%, and 10%, respectively.

The results from Equations (1) and (2) show that the BOOK variable is positively related to the performance variables (NTFG, NTCE, NTGE). Equation (1), in which NTFG is the dependent variable, shows that students who reported more than eight books (+8 books) scored 4.403 points higher in the general knowledge test than those who reported zero books (0 book –reference category). Likewise, students who read from six to eight books (6-8 books) scored 2.484 points higher in the general knowledge test than those who did not read a single book (0 books). Even students who read from one to two books (1-2 books) scored higher (coefficient=0.161; $p<0.10$) in the general knowledge test than students who did not read. The same interpretation is possible for the coefficients obtained in the regression models. Students who read more than eight books (+8 books) performed significantly better than those who did not read (0 books), suggesting that reading, even if extracurricular material, is relevant for better academic performance. This finding is consistent with Gallik (1999) and Nasu (2018), who found a positive relationship between extracurricular reading and academic performance.

For the NTCE and NTGE variables, reading from one to two books (1-2 books) was not statistically significant ($p>0.10$), suggesting that students who read from one to two extracurricular books do not perform better than those who read no books at all (0 books). The test addressing specific content asks questions addressing the content specific to each program; thus, extracurricular reading is only effective in improving the students' performance if it is more intense (reading three books or more). Because the score obtained in the specific component test (NTCE) composes 75% of the general score (NTGE), this effect extends to the students' overall performance. On the other hand, extracurricular reading effectively influences performance in NTFG.

This finding suggests that extracurricular reading improves the students' performance in tests that involve general knowledge. As students read content beyond the subjects specifically taught in their undergraduate programs, their general knowledge is improved, and their performance in tests addressing general content tends to improve. This is consistent with results presented by Silva and Santos (2004), in which reading comprehension was positively associated with academic performance among students from eight undergraduate programs. Extracurricular reading contributes to multidisciplinary training, and students acquire a more holistic perspective regarding their professional practice. **Kuimova and Ukhov (2016) argue that extracurricular reading benefits learning foreign languages, also improving empathy, independence, and social skills.**

A counter-intuitive result is related to the students' perceptions regarding academic support provided by the bibliographic references suggested by professors (REFER). Equation (2) in Table 5 reveals a negative relationship between REFER and the three performance variables (NTFG, NTCE, and NTGE). Therefore, even though the students believe that the references support learning (Table 3 – Panel A), this belief does not reflect their academic performance. For this reason, it is important to cross the subjective measures (REFER) with objective measures (NTFG, NTCE, and NTGE). Some potential explanations for the REFER variable are suggested. First, students with better performances tend to read and consult the programs' bibliographic references more frequently and be more critical. Second, bibliographic references may not reflect the content demanded by the Enade.

Even though Equations (1) and (2) present significant explanatory variables, their explanatory power (R2) is considered low. For instance, the R^2 for Equation (1) was below 1%. The highest R2, 10.93%, was obtained by Equation (2), in which the NTGE is the dependent variable. Even taking demographic and academic factors into account, there may be other factors not considered in this study that explain the performance variations verified in the tests addressing specific content and general knowledge in the Enade 2018. Future studies can explore this aspect more thoroughly.

After analyzing Equations (1) and (2), Table 6 shows the results from Equation (3). The mean VIF of 1.71 suggests low multicollinearity. Note that the coefficients tend to increase after the PROG variable is included and the number of books increases (1-2 books: 0.299; 3-5 books: 1.302; 6-8 books: 1.161; +8 books: 2.187), hence, confirming the logic between a positive relationship between extracurricular books and student performance.

Table 6

Regression model results (3)

NTFG	Coefficient	RSE	t	p
CONSTANT	48.342	0.237	204.370	0.000
BOOK (1-2 books)	0.299	0.098	3.060	0.002
BOOK (3-5 books)	1.302	0.103	12.670	0.000
BOOK (6-8 books)	1.161	0.133	8.700	0.000
BOOK (+8 books)	2.187	0.130	16.830	0.000
PROG (BUS)	1.528	0.088	17.300	0.000
PROG (LAW)	5.820	0.092	63.100	0.000
PROG (ECO)	7.222	0.205	35.200	0.000
PROG (TOU)	6.204	0.335	18.540	0.000
PROG (SOC)	2.717	0.137	19.780	0.000
PROG (PUB)	8.544	0.322	26.520	0.000
PROG (JOUR)	9.439	0.191	49.470	0.000
PROG (ADV)	2.841	0.168	16.940	0.000
REFER	-0.679	0.026	-26.610	0.000
OUTROS CONTROLES	Yes	Yes	Yes	Yes
N	337.072	F	1.598.69	
R2	0.0539	Prob F	0.00	

Note. RSE = Robust standard errors. Mean VIF=1.71.
Please see Appendix II to observe the complete table.

Regarding the undergraduate program, the students in all the programs, except for the SOC, performed better than the students in the accounting program (ACCOUN – reference category). As reported in Table 4, the accounting students read less frequently than the students in other programs. Therefore, an inferior performance is expected. Except for the SOC students, who scored 1.400 points below the accounting students, all the others scored significantly higher. Nascimento et al. (2019) verified that accounting sciences students faced difficulties understanding the texts, and Silva and Santos (2004) found that business students had the third-worst performance in reading comprehension among the eight programs analyzed. For this reason, we suggest that students from applied social sciences programs improve their reading skills.

Therefore, the regression models' results show a positive relationship between extracurricular reading and academic performance. This relationship remains even after including control variables. Even though reading has been shown to influence academic performance positively, excess extracurricular reading may be harmful (Chen, 2007). Further research is needed to investigate students' perception regarding the relevance of the bibliographic references suggested by professors on their learning process, considering that a negative relationship was found. Additionally, note that the models present a low explanatory power. The R^2 for Equation (3) was 5.39%. Therefore, future studies can consider other important variables to explain academic performance in addition to those addressed in this study, such as prior knowledge (Miranda et al., 2015).

5. Final Considerations

This study's objective was to analyze the relationship between extracurricular reading and the academic performance of applied social sciences students. Therefore, data from the 338,977 students from nine undergraduate programs who took the Enade 2018 were collected. Descriptive statistics, the Chi-square test and multiple regression models were performed to analyze data.

The descriptive statistics and Chi-square test results indicated that the programs are significantly associated with the number of books read. The students of specific programs (e.g., JOUR) were associated with a more significant number of books, while the students from other programs (e.g., ACCOUN) were associated with fewer books. It is noteworthy the number of books read by the ACCOUN students. In general, they read fewer books than the students in other programs. This result is of concern, even if the explanatory power (R^2) is low. The regression models produced evidence of a positive relationship between extracurricular reading and student performance. Therefore, students who read more books are more likely to perform better. In this case, ACCOUN students may want to read more. Additionally, except for the SOC students, the students in all the other programs performed significantly better than the ACCOUN students in the test addressing general knowledge in the Enade 2018. Together, the results suggest that reading extracurricular books is relevant for students' general and specific training, as it promotes reading competencies, text comprehension, and writing skills.

This study's results have two implications. First, the results show that the students of some programs in the field of applied social sciences are less likely to read extracurricular books. These results can help the coordinators of programs take action and motivate students to read to support their academic training and professional and personal lives. Secondly, the results show that the students from applied social sciences programs obtained a lower mean score in the general knowledge test (38.7 out of 100.0). Therefore, reading content other than that taught in undergraduate programs is necessary to complement the academic training of college students and for them to improve general knowledge. Thus, this study's results can warn students who intend to improve their academic performance through reading and motivate them to change their study habits and read extracurricular books.

This study's main limitations include the fact that the proxy of extracurricular reading (BOOK) is restricted, as it does not include other reading sources such as newspapers, magazines, specialized magazines, or academic papers not related to the undergraduate program. Additionally, this proxy is measured according to categories, limiting the number of quantitative analyses. These limitations are related to how the question was developed and applied in the Enade, over which researchers have no control. Nevertheless, there was an effort to do the best analysis with this proxy. Another limitation refers to the BOOK variable as it only identifies how many books were read in the year the student took the Enade. Hence, longitudinal analyses are needed to investigate better extracurricular reading, particularly books, to verify its relationship with student performance over time.

Finally, in addition to the recommendations for future studies provided throughout the text, we suggest that factors determining the reading of extracurricular books among applied social science students are investigated. Levine et al. (2020) contributes to this aspect and also notes that literature is limited. These results may be valuable for the coordinators of undergraduate programs, professors, and parents intending to encourage reading among these individuals. Additionally, considering the results of the REFER variable, we suggest a detailed study on how curricular reading affects academic performance, ideally using objective curricular reading and performance measures. Results may support the decision-making of coordinators and professors regarding the need to update or revise the bibliographic references provided in the programs.

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Appendix I

Complete table

Regression models' results (1) and (2)

VAR. DEP.	NTFG		NTCE		NTGE	
EQUATION	**(1)**	**(2)**	**(1)**	**(2)**	**(1)**	**(2)**
	Coefficient (RSE)	**Coefficient (RSE)**	**Coefficient (RSE)**	**Coefficient (RSE)**	**Coefficient (RSE)**	**Coefficient (RSE)**
CONSTANT	44.763	49.707	37.802	41.042	39.555	43.221
	(0.080)	(0.225)	(0.069)	(0.197)	(0.064)	(0.181)
BOOK (1-2 books)	0.161*	0.572***	-0.047	-0.198	0.005	-0.006
	(0.094)	(0.099)	(0.082)	(0.086)	(0.076)	(0.078)
BOOK (3-5 books)	2.114***	1.978***	1.360***	0.637***	1.548***	0.972***
	(0.098)	(0.104)	(0.085)	(0.090)	(0.078)	(0.083)
BOOK (6-8 books)	2.484***	1.968***	1.748***	0.614***	1.932***	0.953***
	(0.131)	(0.134)	(0.115)	(0.118)	(0.107)	(0.108)
BOOK (+8 books)	4.403***	3.115***	3.291***	1.431***	3.569***	1.852***
	(0.125)	(0.131)	(0.109)	(0.115)	(0.102)	(0.106)
REFER		-0.731***		-0.294***		-0.403***
		(0.026)		(0.022)		(0.021)
MODAL		4.960***		5.206***		5.145***
		(0.092)		(0.079)		(0.072)
REGION (N)		-0.909***		-2.472***		-2.081***
		(0.134)		(0.115)		(0.106)
REGION (NE)		-0.174**		-0.903**		-0.721**
		(0.084)		(0.074)		(0.068)
REGION (S)		-0.328***		-0.696***		-0.606***
		(0.080)		(0.070)		(0.065)
REGION (CO)		-1.593***		-2.121***		-1.999***
		(0.109)		(0.095)		(0.087)
SCHED (Morning)		-2.123***		-2.139***		-2.136***
		(0.141)		(0.128)		(0.117)
SCHED (Afternoon)		-2.680***		-1.742***		-1.977***
		(0.210)		(0.194)		(0.177)
SCHED (Evening)		-2.624***		-4.957***		-5.279***
		(0.125)		(0.114)		(0.104)
AGE		-0.180***		-0.166***		-0.169***
		(0.004)		(0.004)		(0.003)
SEX		3.265***		1.140***		1.671***
		(0.061)		(0.054)		(0.049)
MARITAL (Married)		-0.186**		-0.078		-0.105
		(0.082)		(0.071)		(0.065)
MARITAL (Divorced)		0.045		-0.333**		-0.239*
		(0.174)		(0.147)		(0.135)
MARITAL (Widowed)		-1.601***		-0.634		-0.877**
		(0.511)		(0.450)		(0.411)

VAR. DEP.	NTFG		NTCE		NTGE	
EQUATION	(1)	(2)	(1)	(2)	(1)	(2)
	Coefficient (RSE)	Coefficient (RSE)	Coefficient (RSE)	Coefficient (RSE)	Coefficient (RSE)	Coefficient (RSE)
MARITAL (Other)		0.828***		0.500***		0.582***
		(0.164)		(0.140)		(0.129)
ETHNIC (Afro)		-0.804***		-0.382***		-0.488***
		(0.107)		(0.095)		(0.086)
ETHNIC (Asian)		-2.539***		-1.739***		-1.940***
		(0.191)		(0.167)		(0.152)
ETHNIC (Mixed)		-1.301***		-0.975***		-1.056***
		(0.068)		(0.060)		(0.055)
ETHNIC (Indigenous)		-3.552***		-2.050***		-2.425***
		(0.164)		(0.480)		(0.444)
INCOME (3-6x MW)		2.621***		1.825***		2.024***
		(0.067)		(0.059)		(0.054)
INCOME (6+ x MW)		7.360***		4.747***		5.400***
		(0.084)		(0.074)		(0.069)
STDHOU (1-3Hs)		0.773***		1.021***		0.958***
		(0.124)		(0.107)		(0.098)
STDHOU (4-7Hs)		2.917***		3.163***		3.101***
		(0.132)		(0.114)		(0.105)
STDHOU (8-12Hs)		4.356***		4.616***		4.550***
		(0.155)		(0.136)		(0.125)
STDHOU (12+Hs)		4.493***		5.493***		5.243***
		(0.168)		(0.148)		(0.180)
N	337.072	326.500	337.072	326.500	337.072	326.500
F / prob > F	546.89 / 0.00	1335.78 / 0.00	407.50 / 0.00	1054.44 / 0.00	548.64 / 0.00	1409.74 / 0.00
R2	0.0067	0.1042	0.0051	0.0835	0.0068	0.1093
Mean VIF	1.86	1.74	1.86	1.74	1.86	1.74

Nota. DEP. VAR. =dependent variable. RSE = Robust standard errors are in parentheses. Mean VIF
(A) Standard errors (non-robust) were also estimated via OLS. The results were very similar to those presented in this table. Additionally, the variables concerning the parents' educational level were also collected and included in the models. The main results (related to the BOOK variables) were very similar.
(B)The regression models have less information than the complete sample due to missing values.
***, ** e * represent level of significance at 1%, 5%, and 10%, respectively.

Appendix II

Complete table

Regression models' results (3)

NTFG	Coefficient	RSE	t	p
CONSTANT	48.342	0.237	204.370	0.000
BOOK (1-2 books)	0.299	0.098	3.060	0.002
BOOK (3-5 books)	1.302	0.103	12.670	0.000
BOOK (6-8 books)	1.161	0.133	8.700	0.000
BOOK (+8 books)	2.187	0.130	16.830	0.000
PROG (BUS)	1.528	0.088	17.300	0.000
PROG (LAW)	5.820	0.092	63.100	0.000
PROG (ECO)	7.222	0.205	35.200	0.000
PROG (TOU)	6.204	0.335	18.540	0.000
PROG (SOC)	2.717	0.137	19.780	0.000
PROG (PUB)	8.544	0.322	26.520	0.000
PROG (JOUR)	9.439	0.191	49.470	0.000
PROG (ADV)	2.841	0.168	16.940	0.000
REFER	-0.679	0.026	-26.610	0.000
MODAL	2.885	0.099	29.230	0.000
REGION (N)	-1.055	0.133	-7.950	0.000
REGION (NE)	-0.201	0.083	-2.430	0.015
REGION (S)	-0.265	0.080	-3.330	0.001
REGION (CO)	-1.878	0.109	-17.260	0.000
SCHED (Morning)	-2.360	0.144	-16.360	0.000
SCHED (Afternoon)	-3.073	0.212	-14.510	0.000
SCHED (Evening)	-5.227	0.128	-40.830	0.000
AGE	-0.209	0.004	-47.100	0.000
SEX	3.271	0.062	53.090	0.000
MARITAL (Married)	0.045	0.081	0.550	0.583
MARITAL (Divorced)	0.024	0.173	0.140	0.888
MARITAL (Widowed)	-1.568	0.513	-3.060	0.002
MARITAL (Other)	0.870	0.162	5.360	0.000
ETHNIC (Afro)	-0.750	0.106	-7.080	0.000
ETHNIC (Asian)	-2.259	0.189	-11.920	0.000
ETHNIC (Mixed)	-1.136	0.068	-16.770	0.000
ETHNIC (Indigenous)	-3.473	0.555	-6.260	0.000
INCOME (3-6 x MW)	2.683	0.067	40.180	0.000
INCOME (6+ x MW)	7.090	0.084	84.880	0.000
STDHOU (1-3Hs)	0.821	0.123	6.690	0.000
STDHOU (4-7Hs)	2.802	0.131	21.470	0.000
STDHOU (8-12Hs)	4.101	0.154	26.700	0.000
STDHOU (12+Hs)	4.158	0.165	25.130	0.000
N	337.072	F	1.598.69	
R2	0.0539	Prob F	0.00	

Note. RSE = Robust standard errors. Mean VIF = 1.71.