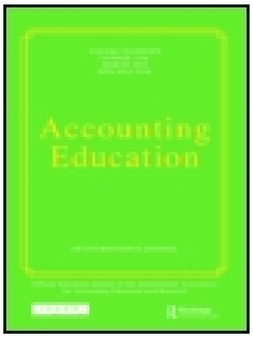

Accounting Education

ISSN: 0963-9284 (Print) 1468-4489 (Online) Journal homepage: http://www.tandfonline.com/loi/raed20

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To cite this article: Anne Fortin, Louise Sauvé, Chantal Viger & France Landry (2016): Nontraditional student withdrawal from undergraduate accounting programmes: a holistic perspective, Accounting Education

To link to this article: http://dx.doi.org/10.1080/09639284.2016.1193034

Published online: 23 Jun 2016.

ACCOUNTING EDUCATION, 2016
http://dx.doi.org/10.1080/09639284.2016.1193034

Routledge
Taylor & Francis Group

Nontraditional student withdrawal from undergraduate accounting programmes: a holistic perspective

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ABSTRACT
A collaborative project of several Quebec universities, this study investigates nontraditional student withdrawal from undergraduate accounting programmes. A nontraditional student is older than 24, or is a commuter or a part-time student, or combines some of these characteristics. Univariate and multivariate analyses of student dropout factors were performed. A logistic regression for full-time students indicates several significant determinants of student withdrawal: returning to school after working for some time, enrolment in a non-first choice programme, dissatisfaction with programme choice and courses, and low grade point average (GPA). For part-time students, low GPA is the main explanatory factor for student withdrawal. Other factors appear to be instrumental in withdrawal decisions, such as management of external resources (time and family responsibilities) for women. The results suggest that students would benefit from university support services to acquire learning strategies that improve perseverance. Lastly, in-class learning activities that help bolster grades could decrease student withdrawal rates.

ARTICLE HISTORY
Received 23 February 2015
Revised 6 November 2015, 21 January 2016, 6 April 2016
Accepted 9 April 2016

KEYWORDS
Accounting studies; dropping out; interactive multimedia system; university students; withdrawal

1. Introduction

Student perseverance and withdrawal from postsecondary studies are major problems for postsecondary institutions, especially in light of the increasing challenge of retaining students during their freshman year (King, 2005). According to a recent OECD (2013) study, the postsecondary dropout rate in its member countries is 30%. In US and Canadian universities, withdrawal rates range from 20% to 25% for first-year students (Grayson & Grayson, 2003). In Quebec (Canada), 33% of students drop out of university at some point in their undergraduate studies (Ministère de l'Éducation, du Loisir et du Sport [MELS], 2012), with nearly half leaving during the first year (CSE, 2008). Some programmes have higher dropout rates than others (Convert, 2010; Endrizzi, 2010; Harvey & Luckman, 2014; Long, Ferrier, & Heagney, 2006). For example, according to the *Université du Québec*'s institutional research office (Direction de la recherche institutionnelle

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de l'Université du Québec, 2013), the dropout rate for the 2005–2011 undergraduate accounting cohorts at the university's Montreal campus was around 39%.

The nontraditional student group is now becoming more dominant (Haynie, 2015; Hess, 2011; Marsh, 2014). Pelletier (2010, p. 1) emphasizes that '[l]ooking at the demographics of today's student body, nontraditional is the new traditional'. Bean and Metzner (1985, p. 489) define nontraditional students as follows:

> A nontraditional student is older than 24, or does not live in a campus residence (e.g. is a commuter), or is a part-time student, or some combination of these three factors; is not greatly influenced by the social environment of the institution; and is chiefly concerned with the institution's academic offerings (especially courses, certification, and degrees).

As most Quebec students are commuters and many study part-time or are older, they fit the profile of nontraditional students as defined by Bean and Metzner (1985). We investigate the following research question: Given the high dropout rate, what are the determinants of first-year nontraditional student withdrawal from accounting programmes in Quebec universities?

Non-continuation is costly for both accounting students and academic institutions (Müller, Prinsloo, & du Plessis, 2007). More broadly, attrition is an expense that denies the government a return on its investment (Leveson, McNeil, & Joiner, 2013). In a highly funded public system like Quebec's, attrition is a major concern. Nevertheless, the government's investment in accounting education appears well founded given the current demand for accounting graduates and better than average short- to medium-term employment prospects compared with other occupations in Quebec (Government of Canada, 2015). In the US, demand has risen for accounting professionals (AICPA Students, Academics & Inclusion, 2015). For these reasons, a better understanding of the factors that influence student withdrawal in accounting programmes can help institutions introduce support measures and develop a fulfilling learning experience (Müller et al., 2007) to foster retention. For accounting students, knowing their risk profile (Prinsloo, Müller, & du Plessis, 2010) may help them tailor their course load to their situation, seek academic help and obtain learning tools to succeed in their studies and graduate from their programme.

Given that reasons for student withdrawal can vary according to the type of programme (Müller et al., 2007), it is relevant to investigate the factors that influence accounting students in that regard. A review of the last 25 years of research revealed no study of nontraditional students in accounting programmes and only one study that surveyed undergraduate students enrolled in an accounting programme about the factors that lead to withdrawal. This lone study was conducted in Sudan with students in a two-year accounting diploma programme (Osman, O'Leary, & Brimble, 2014). Student withdrawal from accounting programmes in developing and developed countries can be influenced by a number of factors arising from the different economic, cultural, and social conditions in their respective countries (Osman et al., 2014).

To answer our research question, we surveyed first-year undergraduate accounting students enrolled in three French-speaking universities in the province of Quebec (Canada). To explain student withdrawal, we took a holistic approach that considered personal characteristics and difficulties arising from family situations, finances, academic integration, social integration, learning strategies, and knowledge gaps (in mathematics and French). The analysis distinguished between full-time and part-time students.

Results from the univariate analyses reveal that full-time students most likely to drop out of accounting are older, have children, do not have financial support from or live with relatives, had a job before undertaking their programme of study, did not enrol in accounting as their first choice, and are dissatisfied with their programme choice and courses. Gender, marital status, and working more than 20 hours per week do not appear to be significant. In addition, the higher the student's grade point average (GPA), the lower his or her likelihood of dropping out. For part-time students, low GPA is the main explanatory factor for student withdrawal, followed by commuting time if they live 41 km or more from the university. However, overall, several other factors seem to play a role in student leaving, for example, management of external resources (such as time and family responsibilities) for women.

The results suggest that students, particularly female students, would benefit from university support services to acquire learning strategies that improve academic performance and perseverance, and that in-class learning activities that engage students and help them increase their grades would help decrease student withdrawal rates.

1.1. Contribution

The current study contributes to the accounting education literature in the following ways. First, our results provide an understanding of the factors that contribute to first-year nontraditional student withdrawal from accounting programmes in Quebec universities. These determinants may apply to accounting programmes in other countries as the nontraditional student population increases around the world (Marsh, 2014; Pelletier, 2010). Second, we take a holistic approach that considers a wide array of student characteristics. Third, our analysis distinguishes between two major categories of nontraditional students, that is, full-time and part-time students. Finally, we discuss potential institutional actions to address some of the withdrawal factors.

In the following sections, we explain the factors that can influence the decision to drop out of postsecondary studies. We follow with a presentation of our research methodology, the outcome of our investigation, a discussion of the results, and the conclusion.

2. Postsecondary dropout factors

Prior research has produced several theoretical models to explain postsecondary dropout trends (see Eccles & Wigfield, 2002; Sandler, 1998; Tinto, 1975), of which the most widely used (Neuville et al., 2007) is Tinto's (1975, redefined in 1993). This model posits that student withdrawal is determined by the student's integration in the institution and involvement in the university community (Tinto, 1975, 1993). Although very useful, the model does not make sufficient allowance for the personal and academic problems that confront students in their academic life (DeRemer, 2002; Houle, 2004; Liu, 2002; Ouellet, 2006). Further, it applies mainly to traditional full-time students, who do not have to juggle work and studies, or family, work, and studies.

Characteristics of student withdrawal in prior research differ from one study to another (Parkin & Baldwin, 2009). Few studies have examined how a group of factors can influence the departure decision. Instead, the focus has been on a narrow range of individual factors, including (1) socio-demographic variables such as age (Baillargeon & N'zué, 2007) and

gender (Conseil canadien sur l'apprentissage, 2006; Frenette & Zeman, 2007); (2) academic variables such as enrolment status (CSE, 2008; Humphrey, 2006); (3) students' family situation such as marital status and parental responsibilities (Ma & Frempong, 2008; Shaienks & Gluszynski, 2007); and (4) financial condition (Berger, Motte, & Parkin, 2009; CSE, 2008; Finnie & Qiu, 2008; Hossler, Ziskin, Sooyeon, Osman, & Gross, 2008; McElroy, 2008), such as financial resources and type of employment. Most withdrawal models (e.g. Eccles & Wigfield, 2002; Sandler, 1998; Titus, 2003) use frameworks that investigate dropout factors in specific contexts (e.g. first term).

Our aim is to consider the widest possible number of factors that can influence student withdrawal. Prior literature has reported that the problems with the greatest impact on this decision are personal (e.g. Fortin, Marcotte, Potvin, Royer, & Joly, 2006; Roy, 2006; Tremblay, 2005), social (e.g. Kulm & Cramer, 2006; Roy, 2006; Wright et al., 2008), motivational (e.g. Dion, 2006; Isaak, Graves, & Mayers, 2007), and pedagogical (e.g. Hyland, Howell, & Zhang, 2010; Ma & Frempong, 2008; Roy, 2006; Sauvé et al., 2007). To classify these difficulties, we turned to Sauvé, Wright, Debeurme, Fournier, and Fontaine (2006), Sauvé, Racette, and Royer (2008), and Sauvé et al. (2012), who grouped them into seven categories as illustrated in Table 1. In the following sections we examine findings on personal characteristics and difficulties arising from family situation, finances, academic integration, social integration, learning strategies, and knowledge gaps (mathematics and French).

2.1. Personal characteristics

Studies show that certain personal variables may be highly significant in the decision to withdraw from university. For the purposes of our study, we look at gender, age, and residence.

2.1.1. Gender

According to Alon and Gelbgiser (2011), women are more likely than men to enrol in and graduate from university. Finnie, Lascelles, and Sweetman (2005) note that gender may be

Table 1. Classification of problems experienced by postsecondary students that may be determinants of withdrawal.

Problems		Description
1	Personal characteristics	Gender; age; residence
2	Family	Marital status; parental responsibilities; family support
3	Financial	Financial situation; working during school
4	Academic integration	Enrolment status; orientation; knowledge of institutional support and postsecondary language; knowledge of programme of study; programme choice; previous academic level; previous situation; etc.
5	Social integration	Involvement in extra-curricular activities; establishment of positive relationships with other students; interactions with members of the institution who might influence student's professional objectives and personal development.
6	Deficits in learning strategies (cognitive and self-regulation)	Listening and reading strategies; oral and written expression strategies; external resource management strategies; strategies to manage attention, concentration and memorization; motivation, stress and emotional management strategies
7	Academic deficits	Oral and written skills (reading and writing French); maths skills

a factor in withdrawal trends, particularly when subjects are male students at risk of being hindered in their academic perseverance by the presence of moderating variables such as higher risk of failure, low academic achievement in high school, and lack of motivation in their studies. Ma and Frempong (2008) report that gender is more important to postsecondary student attrition than the non-significant variables of age and residence. In addition, 'Male youths were 1.39 times more likely than female youths to drop out of postsecondary education' (Ma & Frempong, 2008, p. 18). London, Rosenthal, Levy, and Lobel (2011) explain that perceived social support and identity compatibility create greater engagement in women as well as lower expectations of dropping out. The authors considered three aspects of motivation: social factors of engagement (sense of belonging to one's environment); academic factors of engagement (confidence in own abilities in relation to the programme of study); and an expectation of remaining in the programme of studies or career domain. Teixeira, Gomes, and Borges (2013) showed that in an introductory accounting course 'female students seemed to feel more prepared to face higher education requirements and responsibilities than the male students' (p. 123).

However, gender was not a factor in student withdrawal in several studies (Harvey & Luckman, 2014; Leveson et al., 2013; Long et al., 2006; Yorke & Longden, 2008). In a study of humanities and administration students (management, accounting, and finance), Sauvé et al. (2012) report that the same proportion of men (23.5% of the sample) and women (76.5%) listed similar difficulties with learning strategies.

Studies in accounting have attempted to identify whether gender plays a role in academic success, which is a factor in academic perseverance (Bean & Metzner, 1985). These investigations have resulted in contradictory findings (Auyeung & Sands, 1994; Byrne & Flood, 2008; Gracia & Jenkins, 2003; Jenkins, 1998; Koh & Koy, 1999). Auyeung and Sands (1994) observed that men are more successful in introductory classes. In a study conducted in Singapore, Koh and Koy (1999) noted that male students do better in the two first years of their study programme. Arthur and Everaert (2012) found that females outperform male students in answering examination questions, regardless of the type of question. In a study conducted in Malaysia, Tho (1994) concluded that women had an advantage. Gracia and Jenkins (2003) found that women outperformed men at second-year level on a degree programme in Accounting and Finance. Other authors have failed to observe any difference between men and women in terms of performance (Byrne & Flood, 2008; Jackling & Anderson, 1998; Jenkins, 1998).

2.1.2. Age

Berger et al. (2009) note that the older the student, the greater their likelihood of dropping out. Long et al. (2006) found that students 25 years or older have a higher rate of attrition. According to Engle and Tinto (2008), low-income and first-generation postsecondary students tend to be older and therefore more likely to have additional responsibilities that can hinder academic perseverance. Adults need to understand the reason for education more than their younger peers do (Knowles, 1990) and can rely on their experiential capital to acquire new skills by picturing how they apply to real-life situations (Frayssinhes, 2010).

According to Spanard (1990), adults cite lack of time and stress as their primary reasons for dropping out or suspending their studies. The time they devote to work and family may lead them to neglect their studies at first and then ultimately to drop out. This finding appears to be confirmed by Thompson's (1992) qualitative study of nursing students,

who reported that one of the most important conditions for obtaining a diploma is the ability to balance the time spent on family, work, and studies. Yorke and Longden (2008) indicate that older first-year students find the following aspects difficult: financial problems, employment demands while studying, the needs of dependants and lack of family support. When the time spent caring for dependents exceeds 16 hours per week, the students' intention to leave the university increases significantly (Leveson et al., 2013). Contrary to the majority of studies, Harvey and Luckman (2014) did not find a relationship between age and student attrition.

Studies in accounting have found that age is negatively associated with academic performance (Gracia & Jenkins, 2003; Koh & Koy, 1999).

2.1.3. Residence

Commuter students who spend a great deal of time traveling to and from university have a greater likelihood of withdrawing from their studies (Leveson et al., 2013; Long et al., 2006).

2.2. Family problems

College and university students with a dependent child are in an even more tenuous situation. One minor event can lead them to drop out or suspend their studies for an indefinite period (Matus-Grossman & Goden, 2002; Rose, 1998). In Yorke and Longden (2008), students with dependents indicated their dependents' needs and financial problems as influencing their decision to leave university. Long et al. (2006) also showed higher attrition rates for students who were the main carers for someone dependent (children or other vulnerable persons).

In university withdrawal models proposed by Bean and Metzner (1985), Tinto (1993), and Cabrera, Castaneda, Nora, and Hengstler (1992), certain factors external to the institution are mentioned, most prominently encouragement and support from friends and family. We define social support as encouragement given by family and friends, and parental attitude towards education. Social support has also been defined as the existence or availability of reliable people who are ready to assist, cherish, and love (Sarason, Levine, Basham, & Sarason, 1983, quoted in Grant-Vallone, Reid, Umali, & Pohlert, 2004). Academic perseverance is therefore fostered by support from close others.

2.3. Financial problems

Students who believe that their current finances are insufficient may be inclined to take fewer courses or to work off campus, two strategies that have a negative impact by limiting academic and social integration (St-John, Cabrera, Nora, & Asker, 2000). Students who work and miss class or who worry about their financial resources and feel overwhelmed by all their responsibilities are at risk of failing class and dropping out of their classes or programme (McInnis & James, 2004; Michalski, 2014; Rose, 1998). Based on a survey of 3000 undergraduate students, Vierstraete and Yergeau (2013) conclude that those who reported financial difficulties were more likely to drop out in their first or second undergraduate year. Younger students appeared to be most affected by financial difficulties. According to Ekos Research Associates Inc. (2006), 20% of student

withdrawals from postsecondary studies in Canada are related to employment. Long et al. (2006) found that work has an effect on attrition beyond 19 hours per week. For Leveson et al. (2013), the effect is manifest if the students work more than 16 hours per week. In Yorke and Longden's (2008) study, students working part-time more than 12 hours per week mentioned financial problems and work demands more often than other students as a reason for dropping out. Sudanese students in Osman et al. (2014) also mention financial factors and finding a job as potential factors in withdrawing from their accounting studies.

Vierstraete and Yergeau's (2013) study shows that working as a source of funding while attending university, especially in off-campus jobs, negatively impacts on academic success. Oettinger (2005) and Van Dyke, Little, and Callender (2005) also concluded that time spent on work is detrimental to studies. However, other research does not support these findings. Strauss and Volkwein (2002) reported a positive relationship between time spent working and student GPA. Light (2001) found no relationship between paid work and academic performance. It could be reasonably assumed that working more hours per week would leave students less time for studying outside of class and that this would negatively influence their academic performance. However, Ackerman and Gross (2003) found that students with less available time to study had a significantly higher GPA than did those with more study time. Nonis and Hudson (2006, 2010) concluded that there is no significant direct relationship between study time and academic performance, but that study time only impacts on performance when a student is able to concentrate in class (Nonis & Hudson, 2010). Forbus, Newbold, and Mehta report (2011, p. 121) that even if 'non-traditional students were working more hours and dealing with more stress than traditional students, they also had higher academic success levels as measured by GPA'. The authors attribute this result to nontraditional students' honing of their time management skills through experience and maturity (Forbus et al., 2011).

Student debt is also a factor in dropping out of university (Canada Millennium Scholarship Foundation, 2007; Carmichael & Finnie, 2008; PRA, 2007). However, students that benefit from financial support from parents or relatives and those who live with their parents while studying have lower rates of attrition than others (Long et al., 2006).

2.4. Academic integration problems

One way to measure students' academic integration is to examine the various adjustments they make to meet the demands and requirements of their new institution (Tinto, 2005). If they fail to adjust to their new environment or devote the necessary time to learning and becoming familiar with the procedures of their programmes, area of study and institution or with the language used by university staff, they are at risk of dropping out (Endrizzi, 2010; Fernandez de Morgado, 2009; Ma & Frempong, 2008; Pascarella & Terenzini, 2005; Vezeau & Bouffard, 2009; Willcoxson, Cotter, & Joy, 2011). These adjustments may prove more or less difficult, depending on the student's academic and professional path, their area of study and previous school experience (Convert, 2010). Factors like the institution itself, the programme of studies and the student's enrolment status have a major impact on student success (Endrizzi, 2010). The following sections address the various academic integration problems in the university environment.

2.4.1. Enrolment status

The OECD (2013) reports that full-time enrolment leads to better academic integration and is a significant factor in success and perseverance. Sales, Drolet, and Bonneau (1996), Pageau and Bujold (2000), Rose (1998), and Long et al. (2006) note that part-time attendance is associated with lower graduation rates, and part-time students require extra support to help them persevere and succeed at their studies.

Bean and Metzner (1985) identified factors that lead mature part-time students to drop out. Based on their literature survey, they proposed an explanatory model that classifies dropout factors into categories and evaluates them according to their weighting in the withdrawal or perseverance decision. The authors drew the following conclusions from their survey:

- The most important variable in the dropout or perseverance decision is academic performance. The lower the scores, the greater the likelihood of dropping out.
- Next are psychological variables (such as perceived usefulness of the courses, satisfaction level, goals) and academic variables (study skills, accessibility of programmes and courses, absenteeism).
- Student characteristics upon entering university (age, gender, ethnicity, place of residence, goals, etc.) are third on the list.
- Lastly, environmental variables have an effect (finances, outside encouragement, family responsibilities, etc.).

2.4.2. Orientation and knowledge of institution and programme

As Kember (1990) emphasizes, students' academic and vocational needs and interests should be compatible with the content and structure of their study programme, and the course's instructional design should be relevant to how the students approach their studies. Students who have queries about their classes that are not resolved quickly by the administration lose interest in their studies. Yorke and Longden (2008) mention that students who have little prior knowledge of their programme consider withdrawal more often than those who are better informed.

The challenge of maintaining student perseverance must be taken into consideration as early as students' first school term. Several universities offer freshmen orientation classes aimed at developing academic abilities, easing the transition to the university environment and introducing resources students can use to gain knowledge of their new environment. According to King (2005), orientation classes help integrate the students, but institutions must understand that students need academic and personal support throughout their studies (King, 2005). According to Salmon, Houart, and Slosse (2012), to avoid failure and dropping out, tools must be implemented to help students explore their educational path and goals, to motivate them to fulfil these goals and to help them feel they can be successful and integrate socially and academically.

Students' knowledge of their programme is measured by their understanding of the organization of the programme, the objectives of their courses, and the opportunities to which the programme can lead. Presumably, students who are well informed about their programme are less likely to experience disappointment or frustration and will pursue their studies until they receive their diploma.

2.4.3. Programme choice

Students who were not accepted to their first choice of programme might not have enough interest in the programme of studies that they entered into. The lack of interest in their programme might lead them to drop out (Harvey & Luckman, 2014; Long et al., 2006; Pageau & Bujold, 2000; Willcoxson et al., 2011).

2.4.4. Previous academic level and situation

Long et al. (2006) found that attrition is higher if students have already completed a university degree or if their highest educational attainment is a trade or vocational qualification. Students who already have a university degree and are returning to university to do another programme might be unhappy with the quality of the learning experience (Yorke & Longden, 2008). Students who have a trade or vocational qualification might be less prepared for university than those who follow the traditional educational path to university. Finally, students returning to their studies after working for a certain time might find it difficult to cope with academic demands.

2.5. Social integration problems

According to Tinto (1975, 1993), students' experience at the institution is measured by their academic and social integration. The former is determined through academic performance (formal experience) and interactions with the institution's personnel (informal experience). The latter is measured by students' participation in group extra-curricular activities (formal) and interaction with peers (informal). The interaction of both types of integration, academic and social, along with students' interactions with the outside, leads them to reassess their objectives and involvement outside of the institution. It is this reassessment that guides their decision to persevere or to drop out.

On the topic of social integration in university, Rasmussen (2003) cites the following problems that might lead to non-continuation of studies: age differences with peer groups, differences between university and high school peer groups, lack of a similar group or social circle in the new environment, difficulty making friends or establishing a social or support network, and incompatibility with the institution's culture. Chenard (2005) notes that student integration into university may be considerably influenced by the absence of a network of relatable friends. Yorke and Longden (2008) concluded that younger students, those without dependants and those without prior experience of higher education had more social integration problems.

Students' interpersonal relationships at university are important, and those who report positive contacts with others also display, among other traits, a level of motivation far superior to that of other respondents (Bennett, 2003). Hermanowicz (2004) notes that students thinking about leaving the institution where they began their studies generally have little communication with their social peers. They do not consult with university personnel or their friends, which indicates that the decision to leave university most likely occurs in social isolation. Therefore, those who drop out from university seem to be dissatisfied with their personal relationships, are socially isolated, and suffer from lack of social opportunities (Coffman & Gilligan, 2003).

2.6. Learning strategies

A number of studies point out a correlation between use of effective learning strategies and academic performance (Al-Harthy, Was, & Isaacson, 2010; Chyung, Moll, & Berg, 2010; Dawson, Meadows, & Haffie, 2010; Larue & Hrimech, 2009; Pintrich & Zusho, 2007; Vezeau & Bouffard, 2009; Wolters, 2010).

Learning strategies have been given various definitions, objectives, and characteristics, such as:

- Methods students use to acquire, assimilate, and recall information (Weinstein & Meyer, 1991).
- A set of actions or observable and non-observable strategies (behaviours, thoughts, techniques, and tactics) used for specific purposes and adjusted to the variables of a given situation. These strategies vary in accordance with the type of knowledge to be acquired (Sauvé et al., 2007).
- Thoughts and behaviours expressed as conscious, intentional, and flexible processes and actions directed towards academic success (Larue & Hrimech, 2009).

Ruph (2010) believes that learning strategies are primarily high-level, conscious, and deliberate mental activities aimed at acquiring new knowledge or developing new skills. These metacognitive and self-regulated activities can be expressed in a wide variety of ways. The author classifies learning strategies into two main categories:

- Cognitive strategies: mental information processing activities aimed at constructing theoretical and practical knowledge. They consist of *cognitive input strategies* used to appropriate perceptive, oral and written information relevant to the intended learning and aimed at future use (i.e. *listening and reading strategies*), and *cognitive output strategies*, which appropriate and use knowledge for a production or communication goal (i.e. *spoken and written expression strategies*).
- Affective and organizational self-regulation strategies: mental activities that guide actions intended to create favourable learning conditions. These are *external resource management strategies*, *strategies for attention, concentration and memorization management,* and *motivation, stress and emotional management strategies*.

Listening and reading strategies include anticipating information needs in accordance with the task to be accomplished, methodically exploring information sources, selecting information relevant to the anticipated goal, making connections between various pieces of information and appropriately organizing information. Spoken and written expression strategies involve formulating a clear idea of what is to be communicated and why, tailoring the communication to the context, intended recipient, or audience, and selecting and structuring elements of the communication by choosing the most appropriate way to make the communication.

External resource management strategies are the ways in which students strategically plan their entire term (time management and time to dedicate to courses, studying, work, etc.), organize their work location and space and time management tools (e.g. agenda), and classify their written documents and computer files. Strategies for attention,

concentration and memorization management consist of knowing and using strategies for paying attention, selecting the time and the environments most conducive to the level of concentration needed for tasks, and planning and managing long-term memorization efforts (preparing for classes, immediately reviewing class notes and setting up reminders). Motivation, stress, and emotional management strategies mean knowing anxiety and stress triggers and control and management strategies, and being aware of sources of motivation.

Many university students have poor learning skills (Ruph & Hrimech, 2001), including problems studying effectively (Ruph, 2010). Studies (Al-Harthy et al., 2010; Dawson et al., 2010; Ferla, Valcke, & Schuyten, 2008; Rodarte-Luna & Sherry, 2008; Vanmuylder, Salvia, De Broeu, Rooze, & Louryan, 2006) show that students are unsure about learning strategies. Poor knowledge or mastery of learning strategies may be a factor in academic failure (Endrizzi, 2010; Vezeau & Bouffard, 2009) and may lead to dropping out.

Some of the main learning strategies lacking in university students are: (1) cognitive strategies for reading and information retrieval (Beaudry, Boulianne, Fisher, Grandtner, & Haghebaert, 2008; Beaudry, Camerlain, & Begin, 2007; Kozanitis, 2010; Ruph, 2010; Sauvé et al., 2008); (2) external resource management strategies such as time management (Dion, 2006; Huard, 2009; Racette, 2009; Ruph, 2010) and task management (Ferla et al., 2008; Greene & Azevedo, 2007; Ruph, 2010; Shaienks & Gluszynski, 2007), and (3) emotional self-regulation (Bartels & Magun-Jackson, 2009; Berger et al., 2009; Kozanitis, 2010; Racette, 2009; Rodarte-Luna & Sherry, 2008; Ruph, 2010).

Carr, Fullerton, Severino, and McHugh (1996), after investigating the management of homework assignments and study time, concluded that students who drop out tend to carve out too little time for studying, a conclusion echoed by Humphrey (2006), Shaienks and Gluszynski (2007), Racette (2008), and Ma and Frempong (2008). Other authors highlighted poor planning and task management (Ferla et al., 2008; Shaienks & Gluszynski, 2007).

Sauvé et al. (2012) observed that humanities, administration, science, and education students are unsure about the learning strategies they use. Sauvé et al. (2012) reported, in descending order of importance, problems with (1) attention, concentration, and memorization management, (2) listening and reading, (3) motivation, stress, and emotional management, (4) speaking and writing, and (5) managing external resources. The students indicated difficulty memorizing all the subject matter, concentrating during study time, lack of knowledge of their own strategies to manage attention, concentration and memorization, and the belief that they had a learning disability (slow pace of learning and lack of concentration). The respondents also reported considerable difficulty with listening and reading. Students were unfamiliar with strategies to help them easily retain what they read or use in day-to-day academic situations. When reading, students were unable to highlight the main ideas in the text or repeat or summarize what they read.

Schleifer and Dull (2009) conducted a study on metacognition by administering the Metacognitive Awareness Inventory (MAI) to 1201 accounting students. 'Essentially, metacognition involves a self-awareness of how one learns and thinks' (Schleifer & Dull, 2009, p. 339). Bruning, Schraw, and Ronning (1995) proposed a model of metacognition that 'includes two main components of metacognition: knowledge of cognition (what one knows about cognition) and regulation of cognition (how one controls cognition)' (Schleifer & Dull, 2009, p. 342). The MAI (Schraw & Dennison, 1994) has eight

scales, three for metaknowledge (declarative, procedural, and conditional knowledge) and five for metaregulation (planning, information management, monitoring, debugging, and evaluation). Metaknowledge relates to the two cognitive strategies investigated in the current study, that is, listening and reading strategies, and spoken and written expression strategies. Metaregulation relates to the three affective and organizational self-regulation strategies surveyed in this study, that is, external resource management strategies, strategies for attention, concentration and memorization management, and motivation, stress and emotional management strategies. Schleifer and Dull's (2009) results show that metaknowledge and metaregulation are positively associated with higher grades and significantly correlated with each other. Female students scored better on two metacognition scales and had better grades overall. Students in upper-level accounting had greater metaknowledge but not greater metaregulation than students in the lower-level classes.

2.7. Prior knowledge

Some studies demonstrate that students drop out because they lack the programme's basic requirements for knowledge (Tinto, 2005) or prior courses (Gainen, 1995; Ruph & Hrimech, 2001) or both (Cartier & Langevin, 2001). According to King (2005), college preparation is a critical determinant of academic perseverance because even academically successful prospective students can run into difficulties when faced with the new requirements of college work. Students who lack basic mathematics (Doré-Côté, 2007; Giroux, 2008) and skills in the language of instruction (French in this case) (Bissonnette, Richard, Gauthier, & Bouchard, 2010; Convert, 2010) are most likely to encounter problems that may lead them to drop out from their programme.

2.7.1. Maths deficits

Maths deficits in high school contribute to withdrawal from postsecondary education (Doré-Côté, 2007; Giroux, 2008). A number of writers established a correlation between maths grades and success in introductory accounting courses (Crawford & Wang, 2014; Gul & Cheong Fong, 1993; Koh & Koy, 1999; Mitchell, 1988; Tho, 1994), especially the section of the introductory course requiring calculations (Auyeung & Sands, 1994). Keef (1998) found no correlation, except for the administrative accounting section of the introductory course. Yunker, Yunker, and Krull (2009) noted that performance in introductory accounting is determined mainly by a student's GPA, which in turn is strongly correlated with maths skills. Seow, Pan, and Tay (2014) found that mathematical aptitude affected academic performance (final programme GPA) of undergraduate accounting students,

2.7.2. French deficits

Success in postsecondary studies often depends on mastering basic spoken and written knowledge and skills in the language of instruction. Without these assets, students may find themselves failing and eventually withdraw from their studies (Bissonnette et al., 2010; Convert, 2010). Students who have problems reading in the language of instruction have problems in all their courses and are very likely to drop out (Tinto, 2010).

Elias (1999) discussed the importance of oral and written communication and found accounting students lacking in these skills. The author asked 126 accounting students to complete two questionnaires to measure their apprehension of oral and written communication and found a negative correlation between apprehension of these skills and performance. However, Keef (1988) found no correlation between native English skills and success in introductory accounting.

3. Methodology

3.1. Study variables

The independent variables used in this study are listed in Table 1 and were discussed in the previous section. The dependent variable is student withdrawal. The variables were measured as follows.

3.1.1. Personal characteristics

There were two gender categories, male and female (respectively, coded 1 and 0 in the analyses), and two age groups, 18–24 and 25 years or older. Responses to the question on distance of the student's residence in kilometres from the university during the school term led to specification of the variable distance from university – 41 km or more (coded 1, 0 otherwise).

3.1.2. Family problems

Marital status was measured using a dichotomous variable, spouse or no spouse (respectively, coded 1 and 0). The respondents were asked to indicate their residence as either at a parent's or a relative's home, alone or with other students in an apartment/house/residence, in an apartment/house with a spouse and a child or children, in an apartment/house with a child or children, or other. Family responsibilities (with children) were identified by the answers 'apartment/house with a spouse and a child or children' and 'apartment/house with a child or children'. Support – relatives means housing and/or financial support from family or relatives. Housing support was identified by using the response to place of residence as 'at a parents or a relative's home', while financial support was identified by the answer 'family' to the question about financing sources, to which the possible answers were family, loans, bursaries, loans and bursaries, or personal savings.

3.1.3. Finances

To the question about finances, students were given the response choices excellent, good, satisfactory, and unsatisfactory. The financial problems variable was then measured using two categories, unsatisfactory and satisfactory or better (respectively, coded 1 and 0). Eight questions or statements on financial strain were also included, for example, 'I often borrow from friends or family in order to pay my personal expenses.' Participants were asked to read all items and identify those that applied to them. Each positive answer was coded 1. The financial strain variable was then computed as the sum of the items coded 1 (Cronbach's alpha = 0.744).[1]

The employment status section contained one question about working while attending university. The possible responses to questions about work were none, fewer than 10 hours

per week, between 10 and 15 hours per week, between 15 and 20 hours per week, between 20 and 30 hours per week, and more than 30 hours per week. As the effect on students' studies is expected to increase with the number of hours of work, the working while attending university variable was broken down into two categories: none up to 20 hours per week, and more than 20 hours per week (respectively, coded 0 and 1).

3.1.4. Academic and social integration problems

In the Province of Quebec, students are usually admitted to university on the basis of a two-year pre-university programme called Cegep that students complete after high school. Most university programmes last three years. When candidates only have a high school diploma (including vocational or trade qualification), they can be admitted to accounting programmes on the basis of work experience. Further, some candidates already have a university degree in another field when they apply for the accounting programme. Level of studies completed thus consisted of three categories: high school, Cegep, and university. Enrolment status choices were full-time or part-time. Respondents were asked to indicate their status prior to beginning their studies as either pre-university programme, technical programme, adult education, work, or other. The variable previous situation was then measured using two categories: working or other (respectively, coded 1 and 0). Finally, they were asked whether the programme in which they were enrolled was their first, second, or third choice. The variable programme choice was then coded 1 for non-first choice programme, 0 otherwise.

The survey asked about dissatisfaction with programme choice and courses (7 questions; Cronbach's alpha = 0.642), problems related to knowledge of the institution in terms of institutional support (6 questions; Cronbach's alpha = 0.666), knowledge of the study programme (14 questions; Cronbach's alpha = 0.723), and relationship difficulties (10 questions; Cronbach's alpha = 0.691), for example, participation in extra-curricular activities, establishment of positive connections with other students, interactions with members of the institution who might influence their professional objectives and personal development.[2]

3.1.5. Learning strategies

Students' learning strategy problems were measured using an adapted statement grid developed and validated by Sauvé et al. (2007) in a university environment.

Listening and reading strategies. This category includes cognitive strategies aimed at appropriating information relevant to the intended learning and the intellectual operations of comprehension, representation and information retention with a view to future use. According to Ruph (2010), related problems include comprehension, organizing a course's subject matter, particularly identifying essential information, summarizing, synthesizing and organizing knowledge hierarchically, and making connections with real-life situations. The listening and reading strategy questionnaire consisted of 26 questions. Cronbach's alpha was 0.857, indicating very good reliability.

Spoken and written expression strategies. This category consists of cognitive strategies for using knowledge acquired in various situations. According to Ruph (2010), difficulties include communicating ideas, such as making oneself understood, deciding what to say and what not to say, organizing communications (repetition, omission, and lack of structure), and forgetting some of the instructions or data in a problem. The questionnaire on

spoken and written expression strategy consisted of 21 questions. Cronbach's alpha was 0.827, indicating very good reliability.

External resource management strategies. This category consists of strategies aimed at enhancing learning through effective planning, organization, and use of available resources. According to Ruph (2010), problems include organizing, planning and managing time and the study environment, cramming, adhering to a schedule, feeling there is not enough time, frequent tardiness, end of semester rush, problems locating course materials quickly, and frequently forgetting all types of information (homework assignments, exam dates, and appointments). The questionnaire on external resource management strategies consisted of 18 questions. Cronbach's alpha was 0.816, indicating very good reliability.

Strategies for attention, concentration and memorization management. This category consists of strategies aimed at improving intellectual abilities, attentiveness and ability to concentrate on learning tasks, and planning and managing long-term memorization. According to Ruph (2010), problems include attention and concentration difficulties, particularly delays in fully engaging in tasks, resisting distractions in the environment (noise, sounds, and images), attending to other personal concerns and maintaining concentration over long periods (during class, a lecture, or an assignment). The author also highlighted students' memorization problems such as memory gaps, difficulty retaining the study material, forgetting the material after exams, and quickly forgetting what was read. The questionnaire on strategies for attention, concentration, and memorization management consisted of 11 questions. Cronbach's alpha was 0.703, indicating good reliability.

Motivation, stress, and emotional management strategies. This category consists of strategies to recognize and control stress and motivation. According to Ruph (2010), problems can be lack of guidance, undefined goals, feeling of wasting time, lack of perseverance, problems engaging in a task, procrastination, and failure to make studies a priority. They also include skill-related troubles such as lack of self-confidence, uncertainty about academic success, defeatist thoughts, self-criticism, and feeling inferior to other students. Stress-related problems can be exam jitters, mental blocks in the face of difficulties, homework stress, stage fright in front of class, and feeling overworked. Lastly, impulsiveness problems are also included, such as responding too quickly and acting without forethought or thought of consequences. The questionnaire on motivation, stress, and emotional management strategies consisted of 24 questions. Cronbach's alpha was 0.780, indicating good reliability.

3.1.6. Academic deficits

Lack of basic maths skills. We investigated maths basic skills (maths deficits) in terms of knowledge of exponents, equations and inequalities, functions, distance calculations, number systems, and so forth. Our choice of variables was based on an analysis of remedial courses offered in Cegeps and universities and the expertise of two professors (Cegep and university respectively) who teach these classes. The respondents were asked to answer a statement grid that identifies gaps, with the assumption that respondents were aware of these gaps. The questionnaire consisted of 19 questions. Cronbach's alpha was 0.944, indicating excellent reliability.

Lack of basic French skills. We defined lack of basic French skills (French deficits) as lack of coherence in writing and faulty punctuation, grammar, and vocabulary. These

choices of variables were based on studies by MELS (2009), Dubois and Roberge (2010), and Philion, Bourassa, Leblanc, Plouffe, and Arcand (2010). The respondents were asked to answer a statement grid that identifies gaps, with the assumption that respondents were aware of these gaps. The questionnaire consisted of 18 questions. Cronbach's alpha was 0.892, indicating very good reliability.

3.1.7. Dependent variable: student withdrawal

Student withdrawal can occur in a variety of ways. Grayson and Grayson (2003) report that students can drop out and notify the institution, they can leave without notification, the institution asks them to leave, they may decide not to enrol for the next term or school year, they decide on their own to interrupt their studies but with the intention of returning, or they change institutions.

For the purposes of this study, dropouts are defined as students who voluntarily decide not to reenrol in the accounting programme in the third term, that is, the following year (whether or not they notify the institution of their intentions) and students who are asked to leave (King, 2005). The third term was chosen as the measurement period since nearly half of withdrawals occur during the first year, according to the *Conseil supérieur de l'éducation* (CSE, 2008). This variable was measured on the basis of student files provided by the registrar.

3.2. Sample

In fall of 2012 and winter 2013, we surveyed first-year undergraduate accounting students enrolled in three French-speaking universities in the province of Quebec (Canada). Our convenience sample consisted of 643 students distributed as follows across each of the three participating universities (U): U1 = 44, U2 = 74, U3 = 525.[3] The three universities are located in large urban cities and all offer similar institutional support for students. The first year in the accounting programme at all three universities includes business courses (e.g. marketing, management, microeconomics) and three accounting courses, that is, introductory financial accounting, intermediate financial accounting I and cost accounting.

3.3. Data collection

3.3.1. Data collection instrument

The main data collection instrument was the SAMI-Persévérance platform, an interactive multimedia programme developed to foster postsecondary perseverance by analysing the problems experienced by learners (Sauvé et al., 2007). The programme, which is found at http://taperseverance.savie.ca, enables students to self-diagnose and use tools to deal with their problems. The site hosted all the questionnaires mentioned in this study, as well as a registration form used to collect demographic and social variables.

3.3.2. Process

After the research received the ethical approval of each participating university's institutional committee, the data were collected in two phases. In the first phase, a designated

professor/collaborator in each of the participating institutions was responsible for having the accounting students in their institution complete the questionnaires.

They proceeded by inviting students enrolled in an orientation course in the accounting programme or in an accounting course to take part in the study. Students completed the questionnaires in class. At two institutions, students were given three bonus points on their class grades if they took part in the study. In the other institution, students took part in a draw for a cash prize of $100 (one prize per course). Using the SAMI-Persévérance website, students were asked to register on the site (providing their university student ID), after which they were directed to the consent form describing the research project, the pros and cons of participating, and the commitments and procedures used to ensure data confidentiality. They were asked to confirm their consent to take part in the research and then complete the questionnaires, for which they were given approximately 60 minutes. The professors observed that students took between 45 and 60 minutes to complete the questionnaires. However, the website did not collect the information on completion time. The order of presentation of the questions did not vary since the SAMI-Persévérance website did not allow such variation.

The second data collection phase was carried out with the registrar of each participating institution one year after the first phase. The information provided enabled us to check whether participants in the first phase re-enrolled in the accounting programme in the subsequent year, and to note their GPA at that time or at the time they dropped out. Data from phases 1 and 2 were matched on the basis of students' university ID. The sample used to analyse student withdrawal consisted of 643 students (457 full-time students and 186 part-time students), including 118 who dropped out of their accounting programme (75 full-time students and 43 part-time students). We thus had extensive data enabling us to compare students who dropped out with those who remained in their programme. Further, the sample corresponds to Bean and Metzner's (1985) definition of nontraditional students: 38.6% (248) were older than 24, 98.1% (631) did not live in a campus residence (i.e. they were commuters), were part-time students (28.9%), or had a combination of these three factors.

3.3.3. Analysis methods

Univariate analyses (contingency tables and analyses of variance) were performed for the various independent variables to account for student withdrawal. As the univariate analyses indicated different explanatory variables for full-time and part-time students, separate logistic regressions were performed to explain withdrawal. The variables selected for each regression were those significant at $p \leq .05$ in the univariate analyses. A mediation analysis was also performed for full-time students with GPA as the mediator. Peduzzi, Concato, Kemper, Holford, and Feinstein (1996) showed that the number of events (withdrawals) per predictive variable in logistic regressions should be about 10 or greater; otherwise, the regression coefficients are biased in both positive and negative directions, and significant associations in the wrong direction can occur. Therefore, the number of variables in the regressions is constrained by the number of withdrawals, for example, a maximum of eight variables in the regression for full-time students since there are 75 withdrawals. The correlations between the various study variables are presented in the Appendix.

In analysing the withdrawal decision, we hypothesize that student profiles as constructed with the data at time of collection reflect influences on student withdrawal. Some factors do not change, for example, demographic data or the students' prior situation before entering the programme. To the extent that other aspects may have changed at the time of the decision to withdraw, for example, the students' financial situation or his/her motivation and stress, these changed factors could explain students' withdrawal decision. Further, the logistic regressions explain part of the variance in the withdrawal decision but not all. Therefore, factors other than those considered have played a role in students' decision.

4. Analysis of results

4.1. Univariate analyses of student withdrawal

Table 2 presents the result of the contingency tables for the variables representing personal characteristics and family, financial, and some academic problems for all students as well as separately for full-time and part-time students. Based on the results, it appears that more part-time than full-time students are likely to leave their accounting programme. However, none of the variables presented in Table 2 show significant differences between part-time students who stay in their programme and those who leave, except for distance of 41 km or more from university, which has a marginally significant effect ($p = .058$). In fact, results for all students seem to be driven by results for full-time students, in view of the fact that the variables for which there are significant differences at $p \leq .05$ for the whole sample are also significant for full-time students, except for financial problems ($p = .057$ for full-time students). Overall and for full-time students, the results show that student withdrawal is not influenced by gender and marital status, but that older students are more likely to withdraw, as are those who already have another university diploma or only a high school diploma. Students with children drop out in greater numbers than those without children. Students who did not have housing and/or financial support from relatives were more inclined to leave their programme than those with such support. Having financial problems is a factor in withdrawal for the whole sample (marginally significant for full-time students). Surprisingly, working more than 20 hours per week did not increase the likelihood of students' leaving their programme. However, working before undertaking a programme of study increased the likelihood of dropping out. Full-time students are more likely to withdraw if their current programme of study was not their first choice (marginally significant for the whole sample).[4]

To study differences between students who withdrew from their programme and those who did not, analyses of variance were performed for academic and social integration problems, financial strain, five learning strategies, mathematics and French deficits, and GPA. Table 3 presents the results for the whole sample. Overall, the only variables that indicate a significant difference in terms of student withdrawal are dissatisfaction with programme choice and courses and GPA obtained one year after the experiment, that is, leavers are more dissatisfied and have a lower GPA. Full-time students who drop out are less satisfied with programme choice and courses (note d, Table 3), while part-time students who withdraw have fewer deficits in French (note e, Table 3). It thus seems that part-time students with French deficits work harder to overcome their difficulties in order to stay in their

Table 2. Univariate analyses – contingency tables.

		All students				Full-time students				Part-time students			
Variables	Situation	N^a	Withdrawals[b]	%	p^c	N^a	Withdrawals[b]	%	p^c	N^a	Withdrawals[b]	%	p^c
Enrolment status	Full-time	457	75	16.4	**.032**								
	Part-time	186	43	23.1									
Gender	Male	292	57	19.5	.539	224	41	18.3	.313	68	16	23.5	.999
	Female	351	61	17.4		233	34	14.6		118	27	22.9	
Age	18–24 years old	392	55	14.0	**.000**	332	40	12.0	**.000**	60	15	25.0	.414
	25 years or older	248	62	25.0		123	34	27.6		125	28	22.4	
Distance from university	Less than 41 km	524	93	17.7	.240	365	60	16.4	.559	159	33	20.8	.058
	41 km or more	119	25	21.0		92	15	16.3		27	10	37.0	
Level of previous studies	High school	118	29	24.6	**.000**	59	13	22.0	**.001**	59	16	27.1	.222
	Cegep	427	60	14.1		329	41	12.5		98	19	19.4	
	University	98	29	29.6		69	21	30.4		29	8	27.6	
Marital status	With a spouse	168	36	21.4	.247	87	19	21.8	.147	81	17	21.0	.601
	Without a spouse	475	82	17.3		370	56	15.1		105	26	24.8	
Parental responsibilities	With children	104	26	25.0	**.041**	52	14	26.9	**.029**	52	12	23.1	.579
	Without children	539	92	17.1		405	61	15.1		134	31	23.1	
Support – Relatives	Housing or financial support – relatives	370	52	14.1	**.001**	306	39	12.7	**.002**	64	13	20.3	.321
	None	273	66	24.2		151	36	23.8		122	30	24.6	
Financial problems	Unsatisfactory	31	10	32.3	**.041**	27	8	29.6	.057	4	2	50.0	.229
	Satisfactory or better	612	108	17.6		430	67	15.6		182	41	22.5	
Work during school	None up to 20 hours/week	425	72	16.9	.119	375	63	16.8	.385	50	9	18.0	.211
	More than 20 hours/week	218	46	21.1		82	12	14.6		136	34	25.0	
Previous situation	Working	163	41	25.2	**.008**	72	19	26.4	**.013**	91	22	24.2	.436
	Studies/other	480	77	16.0		385	56	14.5		95	21	22.1	
Programme choice	First choice	559	97	17.4	.065	396	59	14.9	**.025**	163	38	23.3	.553
	Second/third choice	84	21	25.0		61	16	26.2		23	5	21.7	

Note: $p \leq 0.05$ are in bold.
[a]Total of 643 observations, except 640 for age: 457 full-time students and 186 part-time students.
[b]Total of 118 withdrawals, except 117 for age: 75 full-time students and 43 part-time students.
[c]Fisher's exact test or chi-squared: one-sided tests, except for gender and marital status.

Table 3. Univariate analyses of withdrawal (ANOVAs) for all students – academic and social integration problems, financial strain, learning strategies, French and maths deficits, and GPA.

Independent variables	Withdrawal	N[a]	Mean	Standard deviation	F or Welch[b]	p[c]
Dissatisfaction with programme choice and courses	Yes	118	0.09	0.18	4.408	**.019**[d]
	No	525	0.05	0.12		
	Total	643	0.06	0.14		
Lack of knowledge of institutional support	Yes	118	1.21	1.57	0.348	.278
	No	525	1.30	1.64		
	Total	643	1.28	1.48		
Lack of knowledge of the study programme	Yes	118	1.40	2.28	0.012	.456
	No	525	1.37	1.86		
	Total	643	1.38	1.95		
Relationship difficulties	Yes	118	1.20	1.80	2.072	.104
	No	525	0.98	1.46		
	Total	643	1.02	1.53		
Financial strain	Yes	118	1.09	1.59	0.316	.287
	No	525	1.19	1.68		
	Total	643	1.17	1.66		
Listening and reading	Yes	103	6.33	5.39	0.048	.827
	No	501	6.45	5.06		
	Total	604	6.43	5.12		
Spoken and written expression	Yes	102	3.53	3.84	0.167	.683
	No	500	3.54	3.66		
	Total	602	3.53	3.68		
Management of external resources	Yes	102	4.00	3.45	0.000	.987
	No	493	4.01	3.59		
	Total	595	4.01	3.56		
Attention, concentration, memorization	Yes	104	2.58	2.24	0.009	.923
	No	496	2.60	2.31		
	Total	600	2.60	2.30		
Motivation, stress, emotions	Yes	101	3.32	3.35	0.215	.643
	No	495	3.48	3.26		
	Total	596	3.45	3.27		
Maths deficits	Yes	98	2.71	4.47	1.049	.153
	No	490	2.22	4.34		
	Total	558	2.30	4.36		
French deficits	Yes	103	3.12	3.56	0.308	.290[e]
	No	494	3.36	4.19		
	Total	597	3.32	4.09		
GPA one year after experiment	Yes	118	1.53	1.32	129.4	**.000**[f]
	No	525	2.97	0.78		
	Total	643	2.70	1.06		

[a]Some students did not respond to all the questionnaires.
[b]The Welch test is used when the Levene test for homogeneity of variance indicates a difference between groups significant at $p \leq .05$.
[c]One-sided tests except for learning strategies.
[d]Also different at $\boldsymbol{p = .018}$ for full-time students with a mean of 0.10 for drop outs and a mean of 0.06 for non-drop outs.
[e]Different at $\boldsymbol{p = .008}$ for part-time students with a mean of 3.24 for drop outs and a mean of 5.15 for non-drop outs.
[f]Also different at $\boldsymbol{p = .000}$ for part-time and full-time students with drop outs and non-drop outs means similar to those for all students.

study programme. Both full-time and part-time dropouts have lower GPAs (note f, Table 3).

The correlations presented in the Appendix indicate that GPA is negatively related to lack of knowledge of institutional support, attention, concentration and memorization, maths deficits ($p \leq .05$, one-sided test) and French deficits ($p \leq .10$, one-sided test). Listening and reading and spoken and written expression are highly correlated with French deficits ($r = 0.40$ and 0.59, respectively, $p \leq .001$, one-sided tests). These correlations indicate that remedial work on student weaknesses in maths and French would help improve their

grades, thereby increasing their likelihood of remaining in their programme. Further, knowledge of institutional support resources including a better understanding of professors' requirements for assignments and exams, and help in acquiring attention, concentration and memorization strategies would also lead to improved grades and student retention in the programme.

4.2. Logistic regressions explaining student withdrawal

Separate logistic regressions were performed to explain withdrawal of full-time and part-time students. The variables selected for each regression were those significant at $p \leq .05$ in the univariate analyses (Tables 2 and 3). Table 4 presents the regressions for full-time students, including a mediation analysis.

The mediation analysis is based on the procedures outlined in Baron and Kenny (1986). It was performed to determine whether the independent variables affect the withdrawal decision through GPA. To demonstrate mediation, the following relationships are necessary: (1) independent variables are associated with the mediator (GPA); (2) independent variables are associated with the dependent variable (student withdrawal); (3a) the mediator is associated with the dependent variable, and (3b) this association remains even after controlling for the effect of the independent variables. Further, to establish that the mediator completely mediates the relationship between an independent variable and the withdrawal decision, the effect of the independent variable on the dependent variable must no longer be significant.

Table 4. Logistic regression explaining student withdrawal and mediation effect – full-time students.

Part A: models

Variable	(1) OLS regression on GPA β coefficient[a]	(2) Logistic regression on withdrawal β coefficient[b]	(3) Logistic regression on withdrawal β coefficient[b]	(3) Odds ratio
Intercept	2.579***	−1.733***	1.639***	5.150
Age 25 or older	−0.278**	0.747**	0.345	1.412
Cegep studies	0.410***	−0.522**	0.071	1.073
With children	−0.163	−0.106	−0.547	0.579
Support – relatives	0.059	−0.298	−0.393	0.675
Previous situation – work	0.009	0.441*	0.587*	1.798
Non-first choice programme	−0.342***	0.873***	0.689**	1.992
Dissatisfaction with programme choice and courses	−0.220	2.063***	2.453***	11.627
GPA			−1.483***	0.227
(1) Test for β_1–$\beta_7 = 0$	$F = 7.33$	$p < .001$	Adj $R^2 = 0.089$	
(2) Test for β_1–$\beta_7 = 0$	Chi-square = 32.65	$p < .001$	Nagelkerke $R^2 = 0.118$	
(3) Test for β_1–$\beta_8 = 0$	Chi-square = 129.50	$p < .001$	Nagelkerke $R^2 = 0.421$	

Part B: classification by model (3)

Withdrawal	Actual number by category	Correctly classified by model	Percentage correctly classified
Yes	74	56	75.7
No	381	310	81.4
Total	455	366	80.4

[a]Two-sided tests.
[b]One-sided tests.
*$p \leq .10$.
**$p \leq .05$.
***$p \leq .01$.

The first regression in Table 4 (model 1) indicates that prior Cegep studies are positively related to GPA (mediator), and being 25 years or older and the current programme of study not being students' first choice are negatively related to GPA. These same variables are also associated with the dependent variable (student withdrawal): prior Cegep studies is negatively related to withdrawal, and being 25 years or older and the current programme of study not being students' first choice are positively related to dropping out (model 2). The ANOVA in Table 3 has already shown that the mediator (GPA) is negatively associated with the dependent variable (student withdrawal). Model 3 in Table 4 shows that the mediator (GPA) is associated with the dependent variable (student withdrawal) even after controlling for the effect of the independent variables. Further, prior Cegep studies and being 25 years or older are completely mediated by GPA since their effect on student withdrawal is no longer significant in model 3. The current programme of study not being students' first choice is partially mediated by GPA since the relationship with student withdrawal is still significant but the coefficient is smaller than in model 2.

Model 3 also shows that students who were working for some time prior to returning to university and those dissatisfied with their programme choice and courses are more likely to drop out of their programme.[5] The odds ratios for model 3 show that the most important variable in the decision of full-time students to withdraw from university is dissatisfaction with programme choice and courses. The second most important variable is GPA: the higher the grades, the lower the likelihood of leaving the programme. The fact of having children and having support from relatives were not significant in the multivariate analysis, indicating that these variables were not by themselves direct predictors of withdrawal.

Table 5 presents the regression for part-time students. Only two variables were significant at $p \leq .05$ in the univariate analyses (Tables 2 and 3): GPA and French deficits. However, since distance from university – 41 km or more was marginally significant in the univariate analysis (Table 2), this variable was considered in the regression. It was found that the three variables are significantly related to student withdrawal.[6] Students living 41 km or more from the university are 2.464 times more likely to drop out. The

Table 5. Logistic regression explaining student withdrawal — part-time students.

Part A: model

Variable	β coefficient[a]	Odds ratio
Intercept	1.525***	4.594
Distance from university – 41 km or more	0.902*	2.464
French deficits	−0.101**	0.904
GPA	−1.101***	0.332

Test for β_1–$\beta_3 = 0$ Chi-square = 47.83 $p < .001$ Nagelkerke $R^2 = 0.383$

Part B: classification by model

Withdrawal	Actual number by category	Correctly classified by model	Percentage correctly classified
Yes	37	26	70.3
No	129	104	80.6
Total	166	130	78.3

[a]One-sided tests
*$p \leq .10$.
**$p \leq .05$.
***$p \leq .01$.

odds ratio of 0.904 for French deficits is less than 1, indicating that for each unit increase in the scale, students are 0.904 times less likely to withdraw from the programme. However, GPA is the strongest explanatory variable with an odds ratio of 0.332: as student grades improve, the likelihood of leaving the programme decreases significantly.

4.3. Additional analyses for dropout students

Table 6 presents further analyses for dropout students to better understand the reasons that might explain their withdrawal decision. Personal, family, and financial characteristics of dropout students are considered in relation to academic and social integration problems, financial strain, learning strategies, and French and maths deficits. Results for $p \leq .10$ are reported. The two most prominent characteristics are age and gender. Students 25 years or older are less dissatisfied with their programme choice and courses, but their lack of knowledge of institutional support is greater than that of younger students; for instance, they do not know who to turn to for information, advice or assistance to help

Table 6. Univariate analyses (ANOVAs) for dropout students – academic and social integration problems, financial strain, learning strategies, French and maths deficits.

Variables		Situation	N[a]	Mean	St. dev.	F or Welch[b]	p[c]
Dissatisfaction with programme choice and courses	Age	18–24 years old	55	0.12	0.20	5.415	.022
		25 years or older	62	0.05	0.13		
	Programme choice	First choice	97	0.08	0.16	2.696	.057
		Second/third	21	0.17	0.25		
Lack of knowledge of institutional support	Age	18–24 years old	55	0.96	1.36	2.937	.089
		25 years or older	62	1.45	1.72		
	Work during school	None up to 20 hrs	72	1.47	1.67	5.866	.017
		More than 20 hrs	46	0.80	1.31		
	Financial problems	Unsatisfactory	10	2.20	1.93	4.467	.037
		Satisfactory or better	108	1.12	1.51		
Relationship difficulties	Work during school	None up to 20 hrs	72	1.56	1.96	8.776	.004
		More than 20 hrs	46	0.65	1.35		
Financial strain	Parental responsibilities	With children	26	0.62	1.24	4.252	.044
		Without children	92	1.23	1.65		
Listening and reading	Gender	Male	49	4.67	4.36	9.587	.003
		Female	54	7.83	5.81		
	Financial problems	Unsatisfactory	9	10.33	6.12	5.699	.019
		Satisfactory or better	94	5.95	5.10		
Management of external resources	Age	18–24 years old	50	4.60	3.42	3.026	.085
		25 years or older	52	3.42	3.42		
	Gender	Male	49	3.39	3.16	3.030	.085
		Female	53	4.57	3.64		
Attention, concentration, memorization	Gender	Male	50	2.16	1.93	3.424	.067
		Female	54	2.96	2.44		
Motivation, stress, emotions	Gender	Male	49	2.69	3.29	3.364	.070
		Female	52	3.90	3.34		
Maths deficits	Age	18–24 years old	48	1.56	2.71	6.795	.011
		25 years or older	49	3.86	5.52		
	Level of previous studies	Cegep	51	1.73	2.94	5.203	.026
		Other diplomas	47	3.79	5.52		
French deficits	Age	18–24 years old	50	2.38	2.96	4.764	.032
		25 years or older	52	3.88	3.95		

[a]Some students did not respond to all the questionnaires.
[b]The Welch test is used when the Levene test for homogeneity of variances indicates a difference between groups significant at $p \leq .05$.
[c]Two-sided tests except for programme choice.

them navigate the institution or how to go about understanding their professors' requirements for assignments and exams. Older students seem to have less difficulty managing external resources such as their time. Finally, older students have more maths and French deficits that may hamper their success particularly in courses such as cost accounting.

Female students who drop out have more learning strategy difficulties than male dropouts. They have more listening and reading difficulties, for example, taking notes effectively, retaining the material read, extracting the main ideas from the material read, or asking questions to clarify understanding. Female students have more difficulties managing external resources, for example, dedicating enough time to their studies while meeting their work or family obligations. In terms of attention, concentration and memorization, they express greater concern about inattentiveness in class or when working on assignments, lack of concentration during study time, and learning different strategies (e.g. reading out loud) to remain focused on what they read. Finally, female students have more difficulties related to motivation, stress and emotions, for example, tendency to get discouraged when they struggle with their classes and feeling overloaded but not knowing what to do about it, and lack of self-confidence.

Students who work more than 20 hours per week during their studies seem to be more familiar with institutional support than those who work less. They also appear to have fewer relationship difficulties, possibly because they have a lesser need to connect with other students or participate more actively in the activities of their faculty due to their heavy schedule. Students with financial problems, that is, an unsatisfactory financial situation, are less familiar with institutional support and have more listening and reading problems than those in a better financial position. Students with parental responsibilities express fewer financial strain concerns, for example, financing their studies or living expenses, than those without children, possibly because they have support from a spouse.

Students for whom the accounting programme was their second or third choice were more dissatisfied with their programme choice and courses. Finally, dropout students who came to accounting with a high school or a previous university diploma had more maths deficiencies than those with a Cegep degree.

5. Discussion

5.1. Personal, family, financial, academic, and social integration problems

Our findings indicate that accounting students at greater risk of dropping out are part-time students, and that the influence of personal, family, financial, and some academic integration characteristics on withdrawal differs between part-time and full-time students.

5.1.1. Full-time students

According to univariate results, full-time students most likely to drop out of accounting are older, have children, do not live with or have financial support from relatives, studied previously in university or only have a high school diploma (no Cegep diploma), and are returning to school after working for some time. Students for whom the programme is not their first choice and those dissatisfied with their programme

choice and courses are more likely to drop out. Gender, marital status and working more than 20 hours per week during school do not appear to be significant.

These results tie in with those of Berger et al. (2009) and Long et al. (2006), who found a connection between students' age and the likelihood of dropping out, a risk that increases with age. The non-significant result obtained respecting gender is similar to that found in studies by Harvey and Luckman (2014), Leveson et al. (2013), Long et al. (2006), and Yorke and Longden (2008). However, this result contradicts Ma and Frempong (2008), who concluded that gender affects postsecondary student attrition more than age. In line with Berkner, Cuccaro-Alamin, and McCormick (1996: cited by Rose, 1998), who found that students with at least three specific socioeconomic traits are more likely to drop out, we could hypothesize that full-time accounting students could be considered at risk of dropping out if they (1) are older; (2) have children; and (3) lack housing/financial support from relatives.

However, the multivariate analysis shows that GPA fully mediates the effect of age and previous diploma on full-time student withdrawal. Having children and support from relatives are not significant in the logistic regression. This situation might be due to the variable age explaining all the variation since almost all full-time students who had children were 25 years or older. Further, older students are usually more autonomous and not supported by relatives.

Both univariate and multivariate results indicate that the higher an accounting student's GPA, the less likely that student is to drop out. Therefore, academic success fosters perseverance (Bean & Metzner, 1985; Harvey & Luckman, 2014).

The univariate analyses demonstrate no significant difference for full-time students who worked 20 hours per week or more. This result contradicts Ekos Research Associates Inc. (2006), which found that 20% of postsecondary withdrawals in Canada were related to employment. It is also at odds with the results of Oettinger (2005), Van Dyke et al. (2005), Long et al. (2006), Leveson et al. (2013), and Yorke and Longden (2008), who concluded that significant time spent working was a barrier to university studies. The fact that working more than 20 hours per week is not a risk factor for full-time accounting students might indicate that these accounting students are disciplined in time management (Forbus et al., 2011). Further, even if working several hours potentially reduces their study time, the students could still perform well academically if they are able to concentrate in class (Nonis & Hudson, 2010). Another plausible explanation could be that the students' job situation changed after they completed the questionnaires.

Our univariate analyses also indicate a moderate connection between financial problems and full-time students dropping out of university, supporting the conclusions of Vierstraete and Yergeau (2013), among others, with respect to the problems that may lead accounting students to drop out between the first and the second undergraduate years.

5.1.2. Part-time students

As posited by Bean and Metzner (1985), academic performance (GPA) is the strongest explanatory variable in the withdrawal decision of part-time students. The lower the scores, the greater the likelihood of dropping out. Commuting over long distances of 41 km or more also influences student dropout. This result is in line with those of Leveson et al. (2013) and Long et al. (2006). No other personal, family, financial, academic,

and social variables were significant for part-time students, which might be due to the fact that these students can adapt their course load to their situation.

5.2. Inadequate learning strategies

There are no significant differences between dropout and non-dropout students for learning strategies, whether students attend full-time or part-time. This result seems to indicate that problems in terms of the five learning strategies investigated are experienced by students whether they drop out or not. However, the additional analyses for dropout students show that female students have more problems than male students in terms of listening and reading, managing external resources, attention, concentration and memorization, and motivation, stress and emotions. Among others, female dropout students were deemed to be less adept at time management or less effective in estimating the time required for studies compared to male dropout students. Female students who have children are often the primary caregivers for dependents, requiring balancing studies with family responsibilities (an aspect of managing of external resources). Leveson et al. (2013) showed that spending more than 16 hours a week to care for dependents is a significant predictor of withdrawal.

Older dropout students (25 years or older) seemed to have fewer problems managing external resources than younger dropouts (e.g. problems organizing, planning and managing time and the study environment). Hence, their motives for dropping out may lie elsewhere, for example, in a lower GPA possibly related to an insufficient background in mathematics (Crawford & Wang, 2014; Yunker et al., 2009).

5.3. Inadequate background

Contrary to expectations raised by the conclusions of Doré-Côté (2007), Giroux (2008), Bissonnette et al. (2010), Convert (2010), and Tinto (2010), deficits in mathematics and French did not seem to influence the withdrawal decision. However, older dropout students had more deficits in mathematics and French than younger ones. These difficulties may translate into lower academic results, in turn influencing withdrawal. Dropout students who have a high school or university diploma have more maths deficits than those with a Cegep diploma. Hence, they seem to be less prepared in that respect. The mediation analysis for full-time students shows that age and previous diplomas (Cegep studies) are mediated by GPA. However, part-time students who had greater French deficits did not drop out of the accounting programme, having perhaps put more effort into their studies to compensate for their deficiencies. Alternatively, they may have had stronger mathematic abilities that compensated for their lack of language skills.

5.4. Other considerations

In a chronological analysis of the discourses on student failure from the 1950s to the present day, Manathunga (2014) shows that the blame for such failure has shifted from students over to universities, teachers and teaching methods. Zepke (2013) mentions that teachers and institutions are 'vital enablers of [student] engagement' (p. 7). Their role is important since students' engagement is linked to their success (Thomas, 2012,

cited in Zepke, 2013) and it decreases their intention to leave the university (Leveson et al., 2013).

Research on learning styles seeks to help teachers adapt their teaching methods to connect with the diverse ways in which students learn (Hawk & Shah, 2007). It is also aimed at improving student performance and ultimately retention, since academic performance is linked with withdrawal, as observed in the present study. Most studies on accounting students' learning style used Kolb's inventory (Eide, Geiger, & Schwartz, 2001). According to Kolb (1984), learning styles are the 'generalized differences in learning orientation based on the degree to which people emphasize the four modes of the learning process' (p. 76). Kolb's experiential learning model:

> asserts a four-mode or four-process learning cycle that covers and generally starts with Concrete Experience (CE), moving to Reflective Observation (RO), then to Abstract Conceptualization (AC), and finally to Active Experimentation (AE), with the most effective and complete learning taking place when learning activities embrace all four modes. (Hawk & Shah, 2007, p. 3)

The combination of modes of preference leads to the four learning styles: Diverger (CE and RO), Assimilator (RO and AC), Converger (AC and AE), and Accommodator (AE and CE). Marriott (2002) concluded that UK accounting students adopted the Accommodator style, while Adler, Whiting, and Wynn-Williams (2004) found that New-Zealand accounting students exhibited the Assimilator and Converger styles. Tan and Laswad (2015) showed that their New-Zealand accounting students exhibiting the Assimilator and Converger styles seemed to perform better in examinations than students with diverging or accommodating styles.

In similar efforts to understand and improve students' performance, authors looked at other cognitive style models and student approaches to learning (SAL). For example, Honn and Ugrin (2012) used the sequential-global dimension of the Felder and Silverman (1988) cognitive style model to examine the effect of alignment between the requirements of a task in management accounting and students' style on performance. They found that misfit between student cognitive style and task requirements has a negative impact on performance. Duff and McKinstry (2007) provided an overview of SAL research, indicating that 'research supports the existence of two approaches: deep approaches and strategies, synonymous with effective and desirable attitudes to learning; and surface approaches and strategies, associated with ineffective and undesirable attitudes to learning' (Duff & McKinstry, 2007, p. 185). SAL research in accounting has shown that deep and strategic approaches improve performance while surface approaches are negatively related to performance (Duff & McKinstry, 2007).

Hence, to succeed, students must invest in their learning (Zepke, 2013). By recognizing students' strengths, varying teaching and assessment methods, and providing constructive feedback, teachers can foster students' self-belief in their strengths and the motivation that they need to be engaged in their studies (Zepke, 2013). Accounting professors need to go beyond simply lecturing if they want to engage their students. For example, using an 'Audience Response Systems (ARS), whereby the instructor poses questions related to the course material to students who each respond by using a clicker and receiving immediate feedback' (Premuroso, Tong, & Beed, 2011, p. 701), improved students' satisfaction and examination performance in an introductory financial accounting course. Eng, Lea,

and Cai (2013) report positive student perceptions regarding active learning and timely feedback by the use of clickers in introductory financial accounting.

6. Conclusion

In view of high dropout rates, this study sought to identify the determinants of first-year nontraditional student withdrawal from accounting programmes in Quebec universities. Results from univariate analyses reveal that full-time students most likely to drop out of accounting are older, have children, do not have financial support from or live with relatives, had a job before undertaking their programme of study, had not selected their accounting programme as their first choice, and are dissatisfied with their programme choice and courses. Gender, marital status, and working more than 20 hours per week do not appear to be significant. In addition, the higher an accounting student's GPA, the less likely that student is to drop out. The most important variable in the decision of full-time students to withdraw from university is dissatisfaction with programme choice and courses, while the second most important variable is GPA. For part-time students, a low GPA is the main explanatory factor for student withdrawal, followed by commute time when they live 41 km or more from the university.

However, overall, several other factors seem to play a role in student leaving, for example, management of external resources (such as time and family responsibilities) for students 25 years or older and women. In fact, as pointed out by Müller et al. (2007), reasons for leaving university are multiple and complex. The multiple factors interact and some may compensate for others.

Considering the above results and the fact that both dropout and non-dropout students in this study experienced learning strategy difficulties, assisting students with managing these strategies is worth considering. It would therefore be appropriate and effective for universities to offer learning strategy workshops or courses (Burchard, 2010; Roll, Aleven, McLaren, & Koedinger, 2011). However, Hyland et al. (2010) note that merely being exposed to information on strategies and skills does not necessarily translate into a change of habit; students must be prompted to seek the help they need and adopt appropriate learning strategies tailored to their situation.

Given that older dropout students are less cognizant of institutional support, offering orientation courses would be helpful (Erickson & Stone, 2012; Erickson, Stone, & Weber, 2010). Such courses could be given at the beginning of accounting programmes to provide an overview of the challenges students might face. Student services could also provide specific help with financial and personal problems, and they often oversee a number of student committees, including parent–student support groups that can help overcome isolation problems. Given that the very awareness of these services could help reduce dropout, a partnership between student services and professors who teach orientation classes could be the starting point for addressing the specific issues that accounting students face.

Part-time students who commute over a long distance would probably appreciate the increased use of electronic means. Hybrid forms of teaching that combine in-class sessions and distance education (Peraya, Charlier, & Deschryver, 2014) would cut down on commuting time to the university.

In view of the significant impact of accounting as a non-first choice programme on full-time students' withdrawal, the university could offer these students career counselling to help them better understand the programme and the career that they are getting into.

In conclusion, the results indicate that dissatisfaction with programme and courses leads full-time students to withdraw. Institutions and accounting teachers must take note and find ways to engage students in their learning (Zepke, 2013). Providing students with a supportive learning environment, active learning opportunities and academic challenges decreases the odds of students withdrawing from their studies (Leveson et al., 2013). Students need to see the connection between their studies and their desired profession. The first-year accounting curriculum, which consists mainly of business courses and basic accounting courses, might not appropriately reflect the nature of the accounting profession. It is up to accounting teachers to link the content of their courses with students' future professional work.

This study has limitations. Given its use of a convenience sample, caution is advised in generalizing the findings. The measurements assumed that the students provided truthful and complete information. However, fatigue could have hindered the quality of responses to the questionnaires other than those on demographic data. There is still unexplained variance in the logistic regressions, indicating that additional variables could also help explain student withdrawal. Since the data were collected prior to the actual withdrawal decision, if students' circumstances changed across the timeframe of the study, the changed factors could explain the students' withdrawal decision.

Future studies could explore the connection between dropping out and personal problems such as learning disabilities, or relationships to learning styles. The SAMI-Persévérance platform used in this study enables students to self-diagnose and use tools (such as explanation of the time value of money and present value calculations) to deal with their problems. Future research could investigate whether the tools that students actually use help improve their performance and contribute to their retention. Research on the effect of hybrid forms of teaching that combine in-class sessions and distance education (Peraya et al., 2014) on student engagement and success might yield interesting results respecting student retention. Lastly, distance education students could be studied separately to see whether results differ for this group.

Notes

1. Respondents answered all questionnaires by identifying items that applied to them. All variables that contained several items were computed in the same manner as the financial strain variable.
2. Six questions on moral support from parents and friends were also included. However, no results are reported since the scale's reliability was poor (Cronbach's alpha = 0.451).
3. Seven universities originally participated in the study. However, the students surveyed in three universities were in a second-year accounting course while all students surveyed in one university were in a distance education university. Since the reasons for dropping out may be different for students in their first year than for those in later years (Willcoxson et al., 2011), we kept only students who were in their first year of study. The distance education university was dropped from the sample since the impact from the institution could not be differentiated from that of distance education. Further, there were too few distance education students to analyse their withdrawal characteristics separately (only 35 students). This provided us with a more homogeneous sample.

4. There is no significant difference at $p \leq .05$ in the withdrawal rate between the largest university and the other two institutions (chi-squared, not tabulated).
5. In a receiver operating characteristic (ROC) curve, sensitivity (vertical axis) is plotted in function of 1-specificity (horizontal axis). Sensitivity is the true positive rate, that is, number of true positives/total number of positives (Hosmer & Lemeshow, 2000). Specificity is the true negative rate, that is, number of true negatives/total number of negatives (Hosmer & Lemeshow, 2000). The area below the curve indicates the quality of the model. For the logistic regression in Table 4, the area under the ROC curve is 0.851, considered an excellent result (Hosmer & Lemeshow, 2000). It can therefore be concluded that the logistic model discriminates between subjects well. Specificity is very high (98.2%), although sensitivity is not (45.9%) but accuracy is good (89.7%). The regression was generally effective in classifying those who did not leave their programme of study but relatively ineffective in classifying dropouts using a cutoff point of 50%. We use a cutoff point of 16.3%, which corresponds to the actual dropout rate for full-time students considered in the regression, to present model 3's rate of classification in Table 4. Adding a control for the largest university in model 3 does not change the results for the other variables, and the coefficient for the added variable is not significant at $p \leq .05$ (not tabulated). This is also the case for the analysis for part-time students presented in Table 5. Adding an interaction in model 3 between the current programme of study not being students' first choice and dissatisfaction with programme choice and courses does not change the results for the other variables. The interaction is not significant even at $p \leq .10$.
6. To present the model's rate of classification in Table 5, we use a cutoff point of 22.3%, which is the actual dropout rate for part-time students considered in the regression. The variance inflation factors are low, under 1.63, for all variables considered in regressions presented in Tables 4 and 5. For condition indices over 15, the regression coefficient decomposition matrix shows that none of the condition indices reflect variance proportions over 90% for two or more coefficients, indicating no problem with multicollinearity (Hair, Anderson, Tatham, & Black, 1998).

Acknowledgements

The authors thank the following collaborators of the participating institutions: Sylvain Beaudry, Diane Bigras, Pierrette Doré, Bruce Lagrange, Isabelle Lemay. The authors are grateful for the helpful comments of the two anonymous reviewers.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

This study was supported by Fonds de développement académique du réseau (FODAR) de l'Université du Québec.

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Appendix. Spearman's correlations

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1	1																										
2	0.08	1																									
3	0.03	−0.11	1																								
4	0.14	0.38	−0.04	1																							
5	0.03	−0.07	−0.11	−0.07	1																						
6	0.08	0.22	−0.03	0.12	0.02	1																					
7	−0.16	−0.19	−0.03	−0.38	0.04	−0.67	1																				
8	0.12	0.01	0.07	0.37	−0.08	−0.21	−0.60	1																			
9	0.05	0.25	−0.08	0.38	−0.04	0.05	−0.20	0.21	1																		
10	0.08	0.20	−0.21	0.46	−0.02	0.05	−0.21	0.21	0.53	1																	
11	−0.13	−0.30	0.08	−0.47	0.09	−0.09	0.24	−0.22	−0.43	−0.39	1																
12	0.08	−0.08	−0.02	0.13	0.06	0.03	−0.15	0.17	0.11	0.18	−0.13	1															
13	0.05	0.53	−0.07	0.27	0.01	0.18	−0.16	0.02	0.19	0.11	−0.28	−0.02	1														
14	0.10	0.35	−0.02	0.36	−0.01	0.34	−0.31	0.03	0.25	0.21	−0.34	0.04	0.29	1													
15	0.07	−0.01	0.05	−0.10	0.03	−0.04	0.06	−0.04	−0.07	−0.07	0.07	−0.00	−0.01	−0.10	1												
16	0.07	−0.06	0.02	−0.15	0.03	−0.08	0.09	−0.02	−0.09	−0.10	0.09	0.06	−0.09	−0.09	0.05	1											
17	−0.05	−0.00	−0.02	−0.01	−0.02	0.00	−0.04	0.05	−0.06	−0.04	0.01	0.06	−0.09	0.02	0.08	0.13	1										
18	−0.05	−0.02	−0.05	−0.01	0.01	−0.02	−0.01	0.04	−0.04	−0.06	−0.02	0.04	−0.10	−0.02	0.00	0.24	0.49	1									
19	0.03	−0.15	0.03	−0.08	0.02	−0.04	0.01	0.02	−0.14	−0.13	0.06	0.06	−0.16	−0.02	−0.02	0.24	0.37	0.43	1								
20	−0.03	−0.07	−0.06	−0.10	0.04	−0.01	0.05	−0.06	−0.11	−0.14	−0.04	0.10	0.02	0.01	0.01	0.16	0.20	0.26	0.39	1							
21	−0.02	0.03	−0.14	0.07	−0.01	−0.05	0.01	0.05	−0.04	−0.01	−0.02	0.09	−0.04	0.05	−0.01	0.14	0.40	0.39	0.42	0.29	1						
22	0.00	0.08	−0.09	0.10	0.04	0.01	−0.04	0.04	−0.01	0.04	−0.04	0.03	0.03	0.13	0.01	0.14	0.39	0.40	0.38	0.28	0.60	1					
23	0.00	−0.07	−0.10	−0.09	0.01	−0.05	0.05	−0.01	−0.09	−0.04	−0.01	0.04	−0.01	−0.04	0.03	0.21	0.24	0.33	0.35	0.33	0.56	0.49	1				
24	0.00	−0.05	−0.05	−0.06	−0.00	0.09	0.05	0.03	−0.06	−0.05	0.01	0.04	−0.05	−0.06	0.01	0.19	0.28	0.30	0.30	0.27	0.62	0.50	0.57	1			
25	−0.04	0.00	0.25	−0.02	0.07	−0.07	0.06	−0.00	−0.03	−0.03	0.01	0.04	−0.02	−0.02	−0.06	0.24	0.28	0.33	0.40	0.35	0.55	0.46	0.56	0.57	1		
26	0.10	0.16	−0.09	0.25	−0.03	0.07	−0.17	0.15	0.05	0.09	−0.12	0.03	0.09	0.13	−0.09	0.07	0.15	0.20	0.19	0.23	0.30	0.36	0.33	0.34	0.37	1	
27	−0.01	0.17	−0.10	0.14	−0.04	−0.00	−0.02	0.03	0.04	0.05	−0.08	0.04	0.08	0.11	−0.02	0.10	0.29	0.27	0.23	0.21	0.40	0.59	0.33	0.34	0.35	0.35	1
28	−0.41	−0.06	−0.02	−0.13	−0.01	−0.17	0.20	−0.08	−0.02	−0.08	0.08	−0.12	−0.04	−0.06	−0.07	−0.05	−0.09	0.01	−0.00	−0.00	−0.03	−0.04	0.02	−0.07	0.07	−0.07	−0.05

	Variables		Variables
1	Withdrawal	15	Programme choice – second/third choice
2	Part-time enrolment	16	Dissatisfaction with programme choice and courses
3	Gender (male)	17	Lack of knowledge of institutional support
4	Age – 25 years or older	18	Lack of knowledge of the study programme
5	Distance from university – 41 km or more	19	Relationship difficulties
6	Previous studies – high school	20	Financial strain
7	Previous studies – Cegep	21	Listening and reading
8	Previous studies – university	22	Spoken and written expression
9	Marital status – with a spouse	23	Management of external resources
10	Parental responsibilities – with children	24	Attention, concentration, memorization
11	Support – relatives	25	Motivation, stress, emotions
12	Financial problems – unsatisfactory	26	Maths deficits
13	Work during school – more than 20 hours/week	27	French deficits
14	Previous situation – working	28	GPA one year after experiment

Note: Correlations of .07 are significant at $p \leq .10$, of .08 and .09 at $p \leq .05$; between .10 and .12, at $p \leq .01$, and of .13 or more, at $p \leq .001$ (bilateral tests).