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Self-Determination Theory: An Analysis of Student Motivation in an Accounting Degree Program*

Edvalda Araújo Leal
Ph.D., Department of Accounting Sciences, Federal University of Uberlândia
E-mail: edvalda@facic.ufu.br

Gilberto José Miranda
Ph.D., Department of Accounting Sciences, Federal University of Uberlândia
E-mail: gilbertojm@facic.ufu.br

Carlos Roberto Souza Carmo
Master, Department of Accounting Sciences, Federal University of Uberlândia
E-mail: crscarmo@facic.ufu.br

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ABSTRACT

The Self-Determination Theory has been widely discussed in the field of motivation in school learning and, according to some researchers, this theory can be summarized as a *continuum* of self-determination that indicates six types of motivation, which vary qualitatively according to the internalization of external rules of behavior. In this sense, the present study aimed to evaluate the motivation of Accounting Science students in a public university in light of the Self-Determination Theory. The research sample consisted of 259 students enrolled in all academic terms of the Accounting degree program of a public higher education institution in Brazil. The survey results were analyzed using exploratory factor analysis, which identified seven factors that explain 61.09% of the total data variability. The results of the present study are somewhat consistent with those found in previous studies, and the motivation for learning was quite diverse among the students studied. However, some students were concerned with deepening their level of expertise or achieving adequate foundations for their future role. Others were concerned only with getting their diploma or were present in classes simply to meet attendance requirements. These findings show the relevance of studies on the teaching of Accounting because the field has epistemological peculiarities that must be considered while teaching and learning. It is important to emphasize the importance of understanding and evaluating students' motivational levels because this will facilitate planning while encouraging and exploring motivation in academic settings.

Keywords: Self-Determination. Motivation. Students. Teaching. Accounting.

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1 INTRODUCTION

Motivation in the school context has been highlighted in several studies in recent years. In most cases, the goal has been to find ways to influence students to increase their involvement in learning activities (Guimarães, Bzuneck, & Sanches, 2002).

Students' motivation is considered a galvanizing energy in the teaching and learning process that permeates all levels of education, both in relation to the amount of time students spend studying as well as their academic performance and achievements, and contributes importantly to the achievement of immediate satisfaction in their lives - wellbeing *versus* malaise (Lens, Matos, & Vansteenkiste, 2008). For these authors, motivation is "a psychological process in which personality traits (e.g., motives, reasons, skills, interests, expectations, and future perspectives) interact with perceived environmental characteristics" (Lens, Matos, & Vansteenkiste, 2008, p. 17); this indicates that student motivation can be affected by changes within the students themselves, in their learning environment, or in school culture.

In this sense, the Self-Determination Theory (SDT) has been widely discussed in the field of motivation in school learning, and many studies have shown that motivation can affect students' learning and performance and, conversely, that learning can affect motivation (Wechsler, 2006, Pfromm, 1987, Schunk, 1991, Mitchell, Jr., 1992).

The principles of the SDT state that individuals' motivations differ, being determined and driven by contexts that support psychological needs that manifest themselves in different ways, making students' motivation for learning "a complex, multi-determined phenomenon, which can only be inferred by observing behavior, either in real performance situations or by self-reporting" (Guimarães & Bzuneck, 2008, p.111).

Based on the SDT, Guimarães and Bzuneck (2008) presented a study on the psychometric properties of a Brazilian version of the Academic Motivation Scale (AMS), which was conducted with a group of university students in the northern region of the state of Paraná. The authors used factor analysis to evaluate the data and inferred that the seven factors identified showed good internal consistency, with the exception of the evaluation of extrinsic motivation by identified regulation. The correlations between the studied variables supported the proposition of a self-determination *continuum* for the behavior regulation types.

In this context, the question guiding the present study is the following: what are the types and levels of academic motivation affecting Accounting Sciences students in light of the SDT? In other words, the purpose of the study is to evaluate the motivation of Accounting Science students from a Brazilian public university in light of the SDT, using Guimarães and Bzuneck's (2008) study as a basis.

A quantitative approach was adopted in the research: a survey was conducted by distributing a questionnaire to Accounting Science students (259 participants). A factor analysis was performed along with principal components extraction, internal consistency analysis, and descriptive statistics.

The main difference between this study and that of Guimarães and Bzuneck's (2008) lies in the sample studied because the present study investigated university students enrolled in an Accounting Sciences program rather than students enrolled in several programs. The importance of the proposed research lies in its empirical scientific contribution because it seeks to identify, in light of the SDT, the factors that might promote or jeopardize the motivation of Accounting Science students.

Little research has been conducted in Brazil regarding academic motivation in higher education, representing a gap with regard to knowing and understanding the styles of behavior regulation in Brazilian university students (Guimarães & Bzuneck, 2008). This gap is particularly noticeable in the accounting context because the field has epistemological peculiarities that must be considered during the teaching and learning process (Njoku, Heijden, & Inanga, 2010; Pierre, Wilson, Ravenscroft, & Rebele, 2009; Kachelmeier, 2002; Bell, Frecka, & Solomon, 1993); notably, these include understanding and evaluating students' motivational levels because only then is planning to explore and encourage motivation in the classroom possible.

The study is divided into five sections, the first of which is this introduction. The second section discusses the SDT, its fundamentals, proposed scales, and previous studies. The research method is presented in the third section. The calculated results are presented in the fourth section, and concluding remarks are presented in the fifth and final section.

2 THE SELF-DETERMINATION THEORY (SDT)

According to Gagné and Deci (2005, p. 331), Porter and Lawler (1968) proposed a model of work motivation based on the motivation theory of Vroom (1964) that operates on two dimensions: intrinsic motivation and extrinsic motivation. According to this theory, intrinsic motivation involves people performing an activity because they find it interesting and feel spontaneous satisfaction in carrying it out. Extrinsic motivation, in contrast, requires an instrumentality between the activity and some separable consequences such as verbal or tangible rewards. The satisfaction does not come from the activity itself but rather from the extrinsic consequences produced by the activity.

In other words, the SDT "makes an important distinction between two different motivational issues: ***why*** *versus* ***what for***. What is the purpose of your activity and why do you want to accomplish this goal?; what are the reasons that lead the effort to achieve this goal?" (Lens, Matos, & Vansteenkiste, 2008, p. 19, emphasis added).

School learning has also been studied through the concepts of intrinsic and extrinsic motivation. Researchers state that an intrinsically motivated student "is one whose involvement and maintenance in the activity happens as a result of the task itself because it is interesting and creates satisfaction; students with this type of motivation work on activities because they consider them pleasant" (Siqueira & Wechsler, 2006, p. 22). The extrinsically motivated student "is one who performs a task or activity because they are interested in social or external rewards; a student with this type of motivation is more interested in the opinion of the other person, [...] external recognition, praise or just avoiding punishment" (Siqueira & Wechsler, 2006, p. 22).

According to Siqueira and Wechsler (2006, p. 22), researchers' interest in the motivational aspects of learning is a recent development, whereas older theories positioned motivation as an important precondition. However, today's studies show a reciprocal relationship, i.e., "motivation can have an effect on learning and performance at the same time that learning can affect motivation" (Siqueira and Wechsler, 2006, p. 22).

According to Penna (2001), motivation is the study object of Psychology, and the various theories are derived from four main movements: behavioral, cognitive, psychoanalytic, and humanistic. The SDT builds on the principle of evaluating different manifestations of motivation that may be involved in the teaching and learning process.

It has also been argued by researchers that motivation (intrinsic or extrinsic) varies in relation to culture (Trumbull & Rothstein-Fisch, 2011; Kaplan, Karabenick, & De Groot, 2009; Brockelman, 2009; Rothstein-Fisch & Trumbull, 2008; Otsuka & Smith, 2005; Henderlong & Lepper, 2002). For Trumbull and Rothstein-Fisch (2011), the very notion of self-determination is limited by culture because some cultures are more oriented to the "I" than to the "other". Moreover, what counts as an extrinsic motivator and the way in which it is used is also culturally variable (Rothstein-Fisch & Trumbull, 2008).

As research has evolved on this topic (Lens, Matos, & Vansteenkiste, 2008; Vansteenkiste, Lens, & Deci, 2006; Siqueira & Wechsler, 2006; Gagné & Deci, 2005), different degrees of motivation have been mapped, in addition to the cultural aspects. Gagné and Deci (2005) have presented a self-determination *continuum* (Figure 1), in which six types of motivation are differentiated that vary qualitatively according to the internalization of external behavioral regulation.

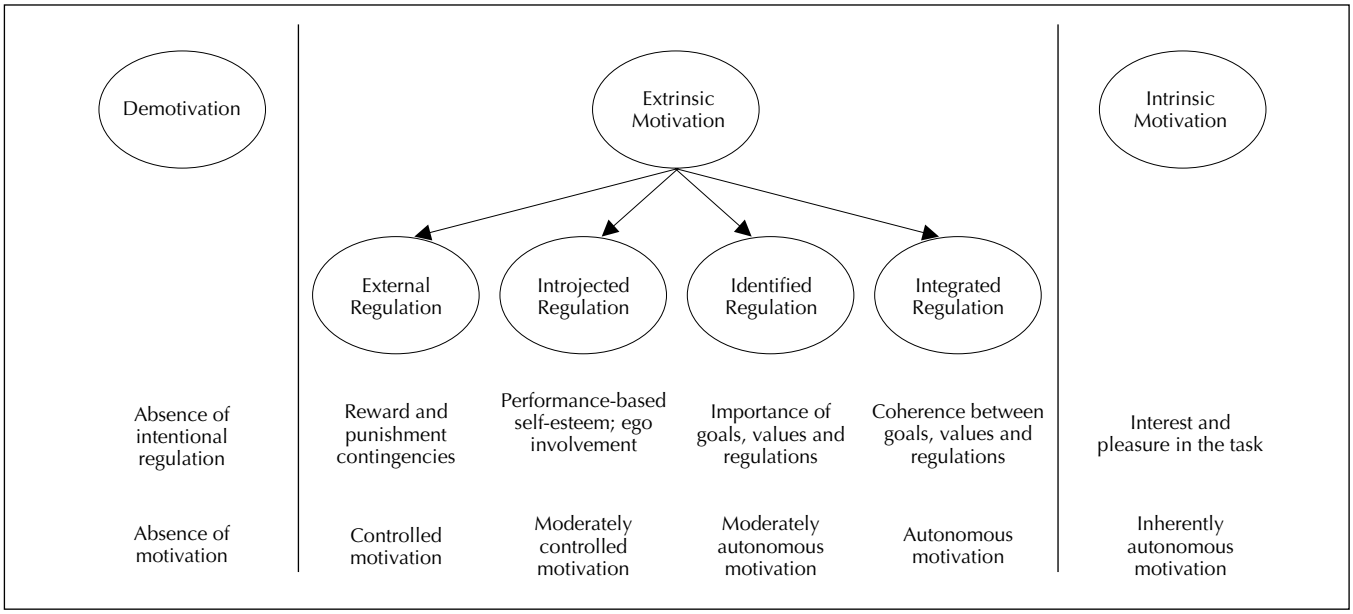

Figure 1 *The Self-Determination continuum*

Source: Adapted from Gagné and Deci (2005, p. 336).

According to this approach, the analysis of the motivation of an individual can be classified into three groups: demotivation, extrinsic motivation, and intrinsic motivation. Demotivation, as the name implies, is characterized by a lack of motivation, i.e., the person has no intention to engage in proactive behavior, and "in such a situation, there is devaluation of activity and a lack of perceived personal control." (Guimarães & Bzuneck, 2008, p. 103).

The second group, extrinsic motivation, is divided into four types of behavioral regulation: a) External regulation; this is the least autonomous form of motivation because, in this case, the person acts to obtain rewards or avoid punishments. For example, "a student can be (even highly) motivated to study on a Friday evening because that way his/her mother might let him/her go to a party on Saturday night (extrinsic motivation and external regulation)" (Lens, Matos, &

Vansteenkiste, 2008, p. 19). b) Introjected regulation; the person manages external consequences according to the result of internal pressures such as guilt and anxiety. For instance, "a student can give his/her best in school because his/her parents require it and he/she does not want to disobey them and because otherwise he/she would feel guilty. Thus, he/she studies to avoid feeling guilty" (Lens, Matos, & Vansteenkiste, 2008, p. 19). c) Identified regulation; this form is more autonomous than the previous types because, in this case, some internalization already exists, even if the reason for doing something is of external origin. For example, "A student can do his/her best in school because he/she wants to go to college and become an architect. He/She perceives himself/herself as a future architect. This student's motivation is instrumental and hence extrinsic, but identifies itself with the reason to study" (Lens, Matos, & Vansteenkiste, 2008, p. 19). d) Integrated regulation; here, the behavior, goals and values of the person are coherent. This is the most autonomous form of extrinsic motivation, although the focus remains "on personal benefits arising from carrying out the activity" (Guimarães & Bzuneck, 2008, p. 103).

Finally, in relation to intrinsic motivation, the person has interest and enjoyment in performing the task, and the activity is perceived as an end in itself.

Guimarães and Bzuneck (2008) note that several studies have found associations between the types of motivation and positive learning results with the use of deep information processing strategies and psychological wellbeing (Grolnick & Ryan, 1989; Miserandino, 1996; Ryan & Deci, 2000). In the same line of thought, Osborne and Jones (2011) propose a theoretical model that directly links the structure of self-motivation to academic results. Furthermore, the authors suggest strategies to increase student motivation (increasing student autonomy, demonstrating the usefulness of academic knowledge, supporting student success, initiating and supporting students' interests, and fostering a sense of belonging to the group) and, consequently, their academic results.

To evaluate academic motivation, some studies have set out to develop and validate questionnaires or scales, as follows: Yamauchi (1980) developed a scale to measure motives related to academic performance, involving a sample of 299 university students; Harter (1981) constructed an instrument to assess children's intrinsic *versus* extrinsic orientation in school learning and mastery in the classroom (based on a sample of 2,925 subjects); Palenzuela (1987) attempted to develop a Spanish questionnaire to evaluate intrinsic motivation and self-determination; and Shah (1988) developed a motivation scale for performance based on four factors of need; namely, motivation to perform, to achieve academic success, toward vocational performance and social performance, and skills.

Following this pattern, Vallerand, Blais, Briere, and Pelletier (1989) developed and validated (in French) the psychometric properties of an instrument termed the *Echelle de Motivation en Education* [Academic Motivation Scale] (EME), the objective of which was to measure motivation in education. This study was conducted with 746 university students. The results confirmed the existence of seven subscales that measured three types of internal motivation: (a) to know, (b) to experience sensations, and (c) to accomplish, in addition to three other types of motivation: (a) external; (b) introjected, and (c) identified regulation.

Other studies on the construction or adaptation of instruments to evaluate motivation for learning were conducted by Deci and Ryan (1985), Vallerand et al. (1992), Amabile, Hill, Hennessey, and Tighe (1994), Guimarães, Bzuneck, and Sanches (2002), Reeve and Sickenius (1994), and Guimarães, Bzuneck, and Boruchovitch (2003). The results of these studies show that it is possible to evaluate learning motivation in a valid, accurate, and reliable way.

It is noteworthy that Vallerand et al. (1992) proposed to validate the scale for measuring learning motivation (EME) constructed by Vallerand et al. (1989). The results revealed that the EME showed satisfactory levels of internal consistency and temporal stability. The instrument showed robust psychometric properties, reinforcing the construct's validity (Vallerand et al., 1992).

The French scale *Echelle de Motivation en Education* (EME), which was developed and validated by Vallerand et al. (1989), was translated into a Portuguese version, which was renamed the 'Escala de Motivação Acadêmica' (Academic Motivation Scale - AMS), although few studies have been conducted in Brazil on academic motivation in higher education (Sobral, 2003; Guimarães & Bzuneck, 2008; Souza, 2008; Falcão & Rosa, 2008; Engelmann, 2010).

Initially, this scale was applied by Sobral (2003), who evaluated student motivation in a medical degree program based on the SDT's precepts. The Portuguese version applied by Sobral (2003) listed 28 items divided into seven subscales of four items each, evaluating the three types of intrinsic motivation (to know, to accomplish, and to experience sensations) and the three types of extrinsic motivation (External, Introjection, and Identification) as well as Demotivation.

Guimarães and Bzuneck (2008) conducted a survey of the psychometric properties of a Brazilian version of the AMS with a group of university students. According to the authors, the seven factors identified showed good internal consistency, with the exception of the evaluation of extrinsic motivation by identified regulation. The correlations between variables supported the proposition of a self-determination *continuum* for the different types of behavior regulation. This study provided support for the construction of the instrument used in the present study.

Using the AMS, Souza (2008) conducted a study to assess whether future goals, self-stipulated by education

students at a public university in northern Paraná, could influence the students' perceptions about the activities required in their program; the study also assessed the type of motivation adopted by the students in the present. At the end of the work, the author observed a prevalence of autonomous (intrinsic) motivation among the students in the research sample.

In a study conducted with the students of an Arts program at a public university in northern Paraná, using the AMS, Engelmann (2010) sought to identify the type of motivation, perception of basic skill needs for learning, learning strategies used, perception of academic performance, and students' intention to remain in the program. In light of the SDT and after analyzing the data collected, the researcher noted that it was possible to observe a predominance of the most autonomous type of motivation among the 192 students in the four grades of the program. Regarding the perception of basic needs that are relevant to learning, Engelmann (2010) noted that three of these needs (a sense of belonging, competence, and autonomy) are directly related to the intrinsic motivation of students. The researcher also noted that students positively used adaptive learning strategies that are related to managing resources and deep learning. Regarding the perception of performance, it was found that the best performance meets the personal expectations of success and security regarding the achievement of the established goals.

With regard to the relationship between the variables studied by Engelmann (2010), the students' perceptions about the basic needs for learning in the social context of the program revealed that these needs were predictors of the intrinsic motivation detected. Regarding demotivation, the perceived satisfaction of those needs had a negative predictive effect. The variation of the use of deep learning strategies was related to extrinsic motivation variables through introjected regulation and intrinsic motivation.

Specifically, in the field of Applied Social Sciences, Falcão and Rosa (2008) applied the AMS to 267 university students from public and private institutions in the state of Rio de Janeiro to identify and compare the characteristics of students' motivating factors on the management programs of public and private institutions. According to the authors, extrinsic motivation was scored the highest, which suggested that freshman students of university programs are extrinsically oriented towards pursuing goals due to the characteristics of the educational system itself. The survey also showed that because most private university students are already active in the labor market, they perceive the act of attending university as a higher motivating factor, unlike students in public institutions. The authors emphasized that the perceptions of this last category of students is more related to the beginning of their professional life.

Falcão and Rosa's (2008) study analyzing the motivational characteristics of freshmen and non-freshmen students found that students in public universities exhibit a pattern of increasing motivation as they progress through the programs. In private institutions, the opposite occurs because most of these students enter university with greater motivation, and this motivation decreases over time.

Falcão and Rosa (2008) and Boruchovitch (2008) also found differences with respect to gender. Female students showed a higher level of intrinsic motivation than male students. The researchers noted that this finding may be related to increasing female participation in the labor market. However, when they attempted to analyze levels of extrinsic motivation, the male students showed higher levels of motivation. To explain the latter finding, Falcão and Rosa (2008) assume that social variables have an effect, i.e., they believe that men, still living in a society that exhibits traces of patriarchy, are more motivated to fulfill tasks and the pursuit of material rewards for their livelihood and that of their family.

Oliveira, Theóphilo, Batista, and Soares (2010) conducted a survey with students regarding an Accounting Sciences program to identify their motivation level based on the SDT. They used the AMS for this purpose, and the results were analyzed using descriptive statistics that indicated high levels of student motivation (both in earlier and later academic terms). However, the authors point to lower levels of student motivation during later terms of the program (non-freshmen).

Table 1 summarizes the studies presented.

Table 1 *SDT: progression of the studies*

Authors	Objectives
Vroom (1964)	Proposed a theory of motivation.
Porter and Lawler (1968)	Proposed the study of motivation on two dimensions: intrinsic motivation and extrinsic motivation.
Yamauchi (1980); Harter (1981); Deci and Ryan (1985); Palenzuela (1987); Shah (1988); Vallerand et al. (1989, 1992); Reeve and Sickenius; (1994); Amabile et al. (1994), Guimarães, Bzuneck, and Sanches (2002); Guimarães, Bzuneck, and Boruchovitch (2003), and Sobral (2003).	Proposed measurement scales of learning motivation.
Gagné and Deci (2005)	Proposed a self-determination *continuum*: demotivation, extrinsic motivation (external regulation, introjected regulation, identified regulation, integrated regulation), and intrinsic motivation.
Guimarães and Bzuneck (2008), Souza (2008); Falcão and Rosa (2008), Engelmann (2010)	Proposed measurement scales of learning motivation, based on the self-determination *continuum*.

3 METHODS

The instrument used in the present study was the Brazilian version of the AMS proposed by Guimarães and Bzuneck (2008). This instrument includes 29 items, with each point of the self-determination *continuum* being evaluated by a set of items that encompasses three types of intrinsic motivation (to know, to accomplish, and to experience sensations), three types of extrinsic motivation (External, Introjection, and Identification), and Demotivation. An initial question: "Why do I come to university?", was presented to the participants, and this was followed by 29 statements, each of which was answered using a *Likert* seven-point scale (1 not true at all to 7 totally true).

3.1 Data Collection and Participants.

A pretest of the survey instrument was initially applied to a group of five students, and after adjustments, data collection began. The process began by scheduling a date and time with the professors of each class researched (1st to 10th academic terms) of the Accounting Sciences program of a Brazilian public university.

Permission was sought from the professor to give the questionnaire to the participating students to complete in the classroom, and, before answering, the students signed an informed consent form. Students were informed about the study objectives and assured about the confidentiality of the information provided and their freedom not to answer the questionnaire, if they so wished.

The study sample consisted of 259 students enrolled in all academic terms (1st to 10th) of the Accounting Sciences program of a public higher education institution in Brazil.

According to Fávero, Belfiore, Silva, and Chan (2009, p. 237), a sample must generally have "at least 5 times more observations than the number of variables that make up the database." In the present study, 259 Accounting Sciences students in a Brazilian Public Institution participated, representing almost 9 times the number of variables in the database (29). The profile of the respondents was 153 (59.1%) females and 106 (40.9%) males, distributed among the following age groups: 38 (14.7%) up to 19 years of age, 182 (70.3%) from 20 to 25 years of age, and 39 (15.1%) aged 26 years or older. Of the students, 136 (52.5%) had some work experience in the field of accounting.

3.2 Data Analysis.

Initially, the statistical test known as exploratory factor analysis was conducted to simplify the data set obtained with the application of the instrument. The test evaluates how much each factor is associated with each variable, as well as analyzing to what degree the set of factors found explains the variability of results obtained in the sample by summing the variances of the original variables (Fávero et al., 2009).

After organizing the items based on the results of the factor analysis, descriptive statistical analysis was used to assess the means and standard deviations. The *Pearson's* correlation coefficient was then calculated to ascertain the linear association between the studied variables.

4 PRESENTATION AND ANALYSIS OF RESULTS

Factor analysis was performed using the 29 items resulting from the study of Guimarães and Bzuneck (2008). First, the *Scree* graph (Figure 2) is shown, which indicates the eigenvalues and the principal components representing, on each slope, the rotation point for each factor found. This graph also informally displays the variance explained by the principal components in order from the highest to the lowest (Hair, Black, Babin, Anderson, & Tatham, 2005).

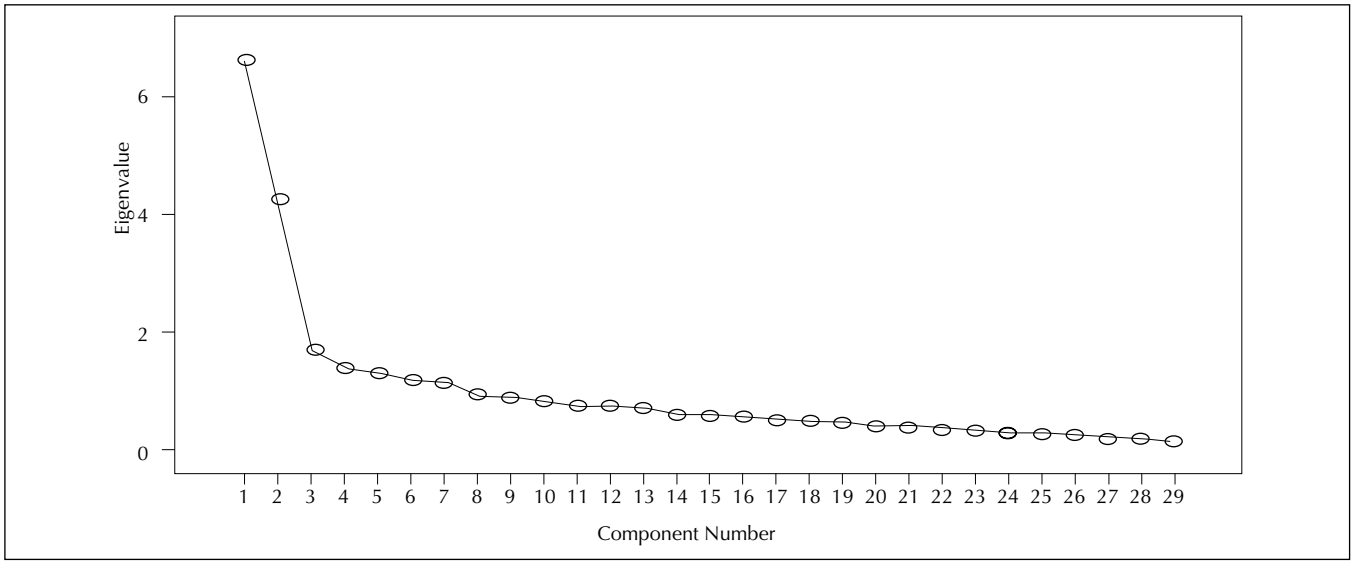

Figure 2 *Estimates of the eigenvalues as a function of the number of factors*

Source: Study data.

In this study, the principal components analysis indicated seven factors that explain 61.09% of the total variability of the data. As observed, the eigenvalues decline approximately linearly after the seventh principal component. Table 2 presents the defined components.

Table 2 *Summary of the percentage of explained variance of the eigenvalues based on the principal components analysis*

Component	Eigenvalue	% de Variance	Cumulative Eigenvalue	% Cumulative Variance
1	6.653	22.941	6,653	22.941
2	4.270	14.725	10,923	37.666
3	1.716	5.916	12,639	43.581
4	1.432	4.937	14,071	48.519
5	1.325	4.567	15,396	53.086
6	1.184	4.082	16,580	57.168
7	1.137	3.922	17,717	61.090

Source: Study data.

Table 2 shows that the 29 variables (questions) could be reduced to seven factors that explain 61.09% of the variation in the original data. Factor composition was based on the selection of questions with loadings greater than 0.38. For Kline (1994), factor loadings of greater than 0.30 are acceptable because they explain at least 9% of the total variance.

Table 3 *Factor analysis (Varimax Rotation)*

Items	Factors						
	F1 Integ. / Intr.	F2 Demot.	F3 Introj.	F4 Extern.	F5 Identif.	F6 Extern.	F7 Extern.
Q4-For the pleasure I obtain by engaging in interesting discussions with professors	0.545						
Q12-Because education is a privilege	0.572						
Q17-Because the university is a pleasure for me	0.735						
Q18-Because access to knowledge takes place at the university	0.568						
Q21-Because I love coming to the university	0.690						
Q24-I come to the university because attendance is necessary for learning	0.542						
Q26-Because studying broadens one's horizons	0.778						
Q27-I come to the university because that is what I chose for myself	0.686						
Q1-Honestly, I do not know why I come to the university		0.632					
Q7-I really feel that I am wasting my time at the university		0.718					
Q9-I had good reasons for coming to the university, but I now have doubts about continuing		0.566					
Q13-I do not see why I must come to the university		0.782					
Q16-I do not know or understand what I'm doing at the university		0.782					
Q19-I do not see what difference it makes coming to the university		0.830					
Q5-I come to the university to prove to myself that I am able to complete the program			0.656				
Q8-I come because that is what is expected of me			0.543				
Q10-To prove to myself that I am an intelligent person			0.815				
Q20-Because I want to prove to myself that I can be successful in my studies			0.665				
Q3-I come to the university so that I will not fail				0.736			
Q11-I come to the university because attendance is mandatory				0.699			
Q14-I come to the university to obtain a diploma				0.440			
Q25-If attendance was not mandatory, few students would attend classes				0.583			
Q22-Because I think attendance is required for students to take the program seriously					0.751		
Q23-I want to avoid people seeing me as someone who has flunked out					0.496		
Q6-I come to the university so I don't have to stay at home						0.705	
Q29- Seeing my friends is the main reason why I come to the university						0.788	
Q2-I come to the university because I think attendance should be mandatory							0.620
Q15-I come to the university because being successful makes me feel important							0.387
Q28-I come to the university because as long as I am studying, I do not have to work							0.708

continous

continued

Items	Factors						
	F1 Integ. / Intr.	F2 Demot.	F3 Introj.	F4 Extern.	F5 Identif.	F6 Extern.	F7 Extern.
Eigenvalues	6.653	4.270	1.716	1.432	1.325	1.184	1.137
% Explained variance	22.941	14.725	5.916	4.937	4.567	4.082	3.922
% Cumulative Variance	22.941	37.666	43.581	48.519	53.086	57.168	61.090
Cronbach's alpha	0.846	0.835	0.711	0.731	0.523	0.434	0.366

Source: Study data.

The results demonstrate the existence of seven factors, corroborating the results of Guimarães and Bzuneck (2008), although the factor composition presented some differences that should be explained in detail.

Note, initially, that Factor 1 combined items relating to "extrinsic motivation by integrated regulation" (Q12, Q18, Q26, and Q27), items related to "intrinsic motivation" (Q4, Q17, and Q21), and one item related to "extrinsic motivation by identified regulation." The mean scores attributed to this factor reached 4.72 points on a scale of 1-7, as shown in Table 4. Therefore, it can be inferred that the students in the study sample mostly presented themselves as intrinsically motivated or extrinsically motivated in the most autonomous manner possible, i.e., in addition to being motivated to perform academic activities from the perspective of the personal benefits that may accrue from such activities, these students also showed interest and enjoyment in performing the tasks, thereby corroborating the studies of Guimarães and Bzuneck (2008), Falcão and Rosa (2008), and Boruchovitch (2008).

However, in the study of Guimarães and Bzuneck (2008), the types "intrinsic motivation" and "extrinsic motivation by integrated regulation" also had the highest means, at 4.44 and 5.43, respectively. Similarly, in Falcão and Rosa (2008), the means of these two factors were as follows: "intrinsic motivation" - 5.74 and "extrinsic motivation by integrated regulation" - 5.66. This suggests that Accounting Sciences students classified as Factor 1 in the present study displayed motivation with lower levels of autonomy than previously surveyed students (including those enrolled in management programs). This may be one cause of the allocation of questions related to intrinsic motivation along with questions related to "extrinsic motivation by integrated regulation".

Factor 2, regarding "demotivation", presents the same items (Q1, Q7, Q9, Q13, Q16, and Q19) listed in Guimarães and Bzuneck (2008), demonstrating that these items effectively identify students' lack of motivation. Factor 2 has the lowest mean (1.51 points on a scale of 1 to 7, as shown in Table 4) among the seven factors resulting from the study, i.e., few students identify themselves with the "demotivation" category. This finding is consistent with the results found by Guimarães and Bzuneck (2008), in which "demotivation" also earned the lowest mean among the evaluated factors (1.50), and those of Falcão and Rosa (2008), whose research identified a mean score of the factor related to "demotivation" of 1.56.

Factor 3 grouped four items that refer to the "extrinsic motivation by introjected regulation" type (Q5, Q8, Q10, and Q20). In Guimarães and Bzuneck (2008), two other variables were present (Q15 and Q23) in addition to these. Factor 3 had a mean of 3.08, as shown in Table 4. Students with this type of motivation usually manage the result of internal pressures, as in the example provided by Lens, Matos, and Vansteenkiste (2008, p. 19), in which the "[...] student can give his/her best in school because his/her parents require it and he/she does not want to disobey them because otherwise he/she would feel guilty. Thus, he/she studies so he/she will not feel guilty".

The "extrinsic motivation by external regulation" type is split across two factors: Factors 4 and 6. Factor 4 comprised items Q3, Q11, Q14, and Q25, i.e., in addition to the items originally designed for this evaluation, an "extrinsic motivation by identified regulation" evaluation item was also incorporated (Q25). As observed, all items of this factor frequently allude to class attendance as a reason to come to the university. Guimarães and Bzuneck (2008) termed this factor "external regulation by attendance". Factor 4 had the second highest mean (3.75, Table 4). In other words, Factor 4 was the second factor in terms of the number of students. In the study conducted by Guimarães and Bzuneck (2008), this factor was ranked fifth, with a mean of 2.97, indicating that attendance constitutes a strong (extrinsic) reason why Accounting Sciences students attend university. Accordingly, the findings of Prates, Joly, Dias, and Almeida (2011, p. 104) show that "the more competent the university student is, the less he/she is motivated by social rewards or just by school attendance and the less demotivated he/she feels."

Factor 6, also related to "extrinsic motivation by external regulation", incorporated only two items (Q6 and Q29). Guimarães and Bzuneck (2008) defined this factor as "external regulation by social interaction". Factor 6 had the second lowest mean (2.05). The same was found in Guimarães and Bzuneck (2008), where the mean was 2.03, (Table 4), indicating that few students come to the university due to that type of motivation.

Guimarães and Bzuneck (2008) mention that the "extrinsic motivation by identified regulation" type was unable to be analyzed due to the exclusion of items that did not reach the stipulated factor loading or that did not contain other factors. In this study, similarly, Factor 5 comprised only two items (Q22 and Q23), the first being related to "extrinsic motivation by identified regulation" and the second to "extrinsic motivation by intro-

jected regulation". The mean score achieved by Factor 5 was 2.47 (Table 4).

Finally, Factor 7 grouped together items Q2, Q15, and Q28, each of which relates to a different motivation type. Q2 refers to "extrinsic motivation by identified regulation", Q15 refers to "extrinsic motivation by introjected regulation", and Q28 refers to "extrinsic motivation by external regulation". This combination of items in Factor 7 does not allow us to establish a clear characterization of the factor. The mean score achieved by Factor 7 was 2.63 (Table 4).

To evaluate the reliability of the factors, the *Cronbach's Alpha* internal consistency coefficient was applied. The indices of the first four factors found (Table 3) are considered acceptable when evaluated using Cronbach's alpha. However, Factors 5, 6, and 7 had low internal consistency due to the limited number of items grouped around these factors, thus preventing further analysis.

Once the composition of each subscale had been determined according to the results of the factor analysis, the mean performance, minimum score, maximum score, and standard deviation of the participants were calculated for the seven evaluation subscales, as shown in Table 4.

Table 4 *Performance analysis in evaluating motivation types*

Factors	Minimum	Maximum	Mean	Standard deviation
F1 Integrated / Intrinsic	1.00	7.00	4.72	1.86
F2 Demotivated	1.00	7.00	1.51	1.20
F3 Introjected	1.00	7.00	3.08	1.93
F4 External	1.00	7.00	3.75	2.05
F5 Identified	1.00	7.00	2.47	1.78
F6 External	1.00	7.00	2.05	1.52
F7 Identified / Introjected / External	1.00	6.67	2.63	1.48

Source: Study data.

It can be noted therefore that the Accounting Sciences students studied have a self-determined motivation profile because Factor 1 had the largest mean ("intrinsic motivation" and "extrinsic motivation by integrated regulation"), although the means obtained were lower than those determined in previous studies (Guimarães & Bzuneck, 2008; Falcão & Rosa, 2008). The second highest mean was obtained by "extrinsic motivation by external regulation", reinforcing evidence that Accounting Sciences students have less autonomous extrinsic motivations than students in other programs.

Figure 3 shows a comparison between the motivation means of freshmen (first year) and senior students (final year). Note that at the start of the program, students had higher autonomous motivation levels (intrinsic, integrated, and identified) and that the situation is reversed over time, i.e., non-autonomous motivation types (introjected, external, and demotivated) are higher in the final years of the program. According to Guimarães and Bzuneck (2008), the importance of achieving goals supports conducting school activities in integrated regulation. In this context, the concern of Accounting Sciences students is directed toward obtaining a diploma and the possibilities provided thereby, namely, a job, better pay, high quality of life, and prestige, among others.

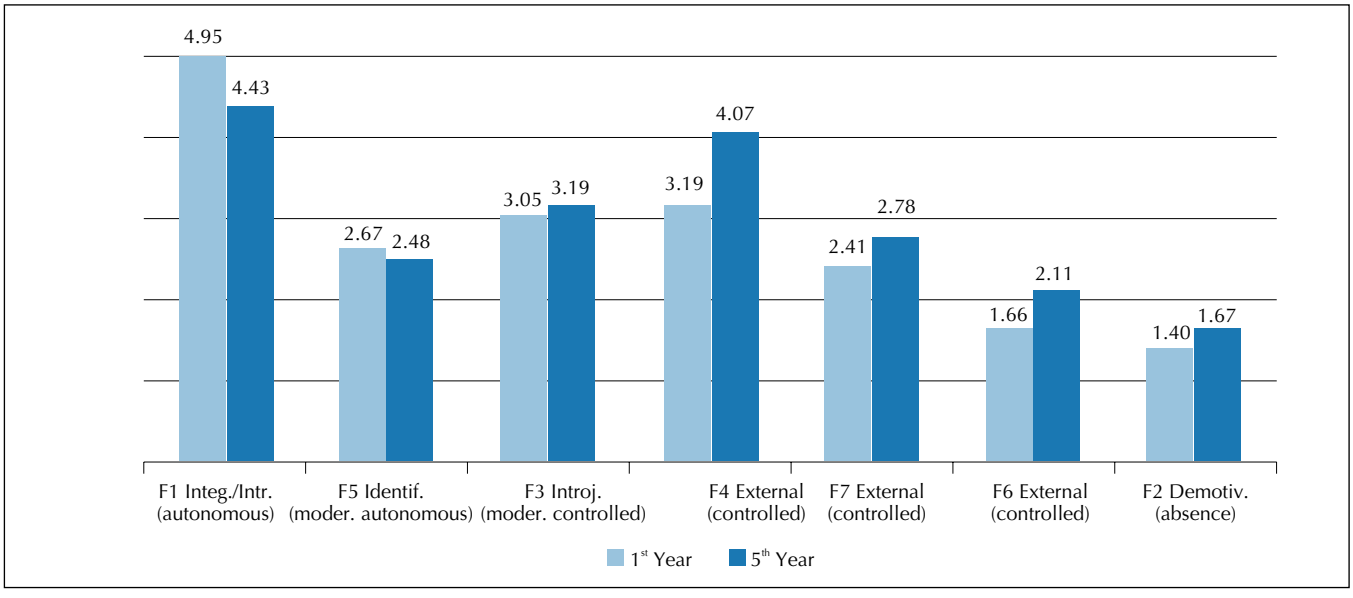

Figure 3 *Motivation of freshmen versus senior students*

Source: Study data.

The results showed that "extrinsic motivation by external regulation" is higher for students in later academic terms than for freshman students, i.e., students in later terms perform an activity because they feel pressured by something or someone to do it. These results were not consistent with those obtained by Oliveira et al. (2010), in which the percentages found for this type of motivation were higher for students of earlier terms.

Cunha and Pinto (2009) argue that university expansion implies the arrival of increasingly heterogeneous students in terms of cognitive styles, prior schooling, motivations, and expectations; it also implies a diversification of ages and an increasing presence of working students who are studying part-time at the university, generally at night. Likewise, Miranda (2011) listed possible causes for a decrease in the number of students graduating from Accounting Sciences programs. These include the fact that people who left school early (mostly workers) are beginning to enroll in higher education; thus, it is possible that they would need longer to complete the program. Students also drop out, which is the most likely cause for the decrease and also the most disturbing. All of these factors can affect Accounting Sciences students' motivation in general, as well as in the institution researched.

Other factors may also affect the motivation of university students. Currently, the reasons for the expansion of higher education in Brazil and the forms of access to it are diverse. For example, there are quotas for vacancies due to affirmative action policies aimed at improving access for historically marginalized population segments. Black and indigenous people are included in these segments, for whom vacancy quotas in public education institutions are reserved, provided they meet the criteria of low income and a compatible educational trajectory (Instituto Nacional de Estudos e Pesquisas Educacionais AnísioTeixeira [Anísio Teixeira National Institute for Educational Studies and Research], 2006).

5 FINAL CONSIDERATIONS

Given the significance of motivation as a way of influencing students to increase their involvement in learning activities, the present study aimed to evaluate the motivation of Accounting Sciences students from a Brazilian public university in light of the SDT, based on Guimarães and Bzuneck (2008), which surveyed the psychometric properties of the AMS.

The results of the present study were analyzed using exploratory factor analysis, which yielded seven factors from the 29 variables studied; these factors explained 61.09% of the total variability of the data. Items for the evaluation of extrinsic motivation by integrated regulation and items related to intrinsic motivation were grouped around a single factor (Factor 1), and this factor showed strong internal consistency (alpha, 0.84). We note that despite the autonomous style of behavior regulation in integrated regulation, the focus remains on the personal benefits arising from performing the activity (Guimarães & Bzuneck, 2008). This means that the expectations of Accounting Sciences students when entering university are predominantly linked to professional benefits, and the program is simply a means to achieve a desired end.

A rich diversity of learning motivations can be observed among the studied students. Comparisons between the different variables comprising the present study revealed, on the one hand, students who were anxious to deepen their level of knowledge or achieve an adequate basis for the performance of their future roles and, on the other hand, students who were concerned only with getting a diploma or who were interested in attending classes simply to meet attendance requirements.

The level of motivational autonomy decreases over the course of the program. One of the possible causes for this may be linked to the didactic and pedagogical qualifications of the professors, as emphasized by Lagioia, Santiago, Gomes, and Ribeiro Filho (2007). These authors support the hypothesis that the main reasons that lead Accounting Sciences students to modify their expectations of the program are the didactic deficiency of the professors and program limitations.

In this sense, it was found that environmental factors affect the intrinsic motivation of individuals because behavior is driven by contexts that provide support for psychological needs, demanding autonomy, competence, and connectedness of relationship that can vary according to the level and type of motivation (Sobral, 2003).

The findings of the present study can therefore provide a substantial contribution to the teaching of accounting in that they highlight the importance of the teacher understanding motivational processes and their relevance in the classroom. In the university environment, students' behavior can be regulated by several factors, such as social influences, internal pressures, attendance, or even being compelled to attend classes in search of interaction.

Knowing the motivations of students means that teachers and institutions can act to stimulate the students and maintain motivation levels throughout the program, according to the results found in the present study. This is especially true when there are clues that the didactic and pedagogical skills of teachers may be related to student motivation. An important action, therefore, would be to invest in teacher training, as mentioned in previous studies on Accounting education (Miranda, Casa Nova, & Cornacchione, 2012; Miranda, 2011; Njoku, Heijden, & Inanga, 2010; Pierre et al., 2009).

The findings also suggest the need for new methods of classroom education that are capable of streamlining the teaching and learning process by involving students in the design of the content to be studied in the classroom. This is important due to the inclusion in the

university environment of increasingly heterogeneous students across different generations who are increasingly connected to new technologies. These factors call for the implementation of new education strategies that motivate and engage Accounting Sciences students in the learning process.

New and more extensive research is thus needed. It is suggested, accordingly, that this study be replicated in other contexts, especially in the Accounting Science programs of private higher education institutions to compare results and thus establish trends on Accounting students' motivation, thereby contributing to educational debate. Furthermore, it is suggested that the causes of these students' declining motivation as the program progresses be explored together with the motivational effects of using different teaching modalities. Finally, as suggested by Boruchovitch (2008), there is a need for studies using qualitative methodologies, such as the observation of student behavior, to better understand the phenomenon of motivation, given that previous studies have primarily used quantitative approaches.

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