Universidade do Minho
Escola de Psicologia

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É AUTORIZADA A REPRODUÇÃO INTEGRAL DESTA DISSERTAÇÃO APENAS PARA EFEITOS DE INVESTIGAÇÃO, MEDIANTE DECLARAÇÃO ESCRITA DO INTERESSADO, QUE A TAL SE COMPROMETE;

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Index

Agradecimentos 3

Abstract 5

Introduction 6

Non-traditional students (NTS) 6

Research with NTS 8

Purpose of the study 9

Hypothetic Model 9

Method 11

Participants and the context 11

Measures 11

Procedure 12

Data Analysis 13

Results 13

Initial data screening 13

Testing the hypothesized model 14

Respecification and assessment of the final model 15

Discussion 18

Limitations and future studies 21

References 22

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Pelo sonho é que vamos, comovidos e mudos.
Basta a fé no que temos... Basta a alma que demos...
Sebastião da Gama, 1992

Título: Estudantes não-tradicionais na Universidade: um modelo explicativo da intenção de continuar a estudar

Resumo

Em Portugal, tem aumentado a participação de novos grupos de alunos no ensino superior, resultando numa presença cada vez maior de estudantes adultos neste contexto. Embora o desempenho académico constitua um fator importante no processo de decisão dos alunos para continuar a estudar na universidade, a investigação sobre este tema é limitada. O presente estudo analisou a relação entre o desempenho académico e a intenção de estudantes não-tradicionais (NTS) continuarem os seus estudos numa universidade pública (N = 327). Os dados foram analisados através da construção de um modelo de equações estruturais, observando-se que a intenção de continuar a estudar dos alunos de primeiro ano é significativamente determinada pelo seu desempenho académico e que essa conquista é parcialmente determinada pela opção de entrada dos alunos na universidade, média de ingresso e idade. Os resultados apoiaram a viabilidade do modelo e sugerem direções rentáveis em relação à continuidade de NTS na universidade. Os dados sugerem que as universidades deveriam refletir sobre o apoio académico que NTS necessitam receber para continuarem os seus estudos.

Palavras-chave: estudantes não-tradicionais universidade; desempenho académico; intenção de continuar, métodos de estudo; modelo de equações estruturais.

Title: Non-traditional university students at University: an explanatory model of the intention to continue studying

Abstract

Portugal is widening the participation of new groups of people in higher education, resulting in a growing presence of mature students at university. Although academic achievement is believed to be an important factor in students' decision to continue studying at university, the research on this topic is limited. The current study analyzed the relationship between academic achievement and the intention of non-traditional students (NTS) to continue studying at a public university (N=327). The data were analyzed by fitting a path model where first-year students' intention to continue studying is significantly determined by their academic achievement and that this achievement is partly determined by students' entry option at university, high school GPA and age. The findings supported the feasibility of the model and suggested profitable directions regarding the retention of NTS at university. The data suggest that universities should reflect upon the academic support that NTS receive to continue their studies.

Keywords: Non-traditional university students; academic achievement; intent to continue; study methods; structural equation model.

Introduction

Similar to other European countries, Portugal is encouraging and widening the participation of new groups of people in higher education (HE) as part of a social agenda to promote the equality of opportunities and increase the number of higher education graduates. As a result of these policies and the demographic trends (the number of 18-20-year-olds is decreasing and is expected to continue to fall in the next decade), there is a growing presence of mature students in HE (Russell, 2008). This is a welcomed path, but universities should ask, as Hay, Tan and Whaites (2010) questioned: 'Is higher education ready to receive these non-traditional students?' (p. 578). The current paper attempted to address this question by focusing on a sample of non-traditional students (NTS) from a Portuguese university.

Non-traditional students (NTS)

In Portugal, the majority of students are traditional students (TS), aged between 18 and 22 years old, who entered university directly following high school graduation and are fully committed to their studies. The NTS do not fit these criteria; however, the differentiating criteria are not clearly defined in the literature (Kim, 2007).

The NTS are known as adults or mature, depending on the authors. Thus, age is an important criterion, but the age at which a student is considered an NTS is not unanimous (e.g., 23 years old in Portugal, 25 years old in Spain). Another criterion is the students' working status: "student-worker phenomenon has transformed the concept of the traditional university student" (Munro, 2011, p. 118). Many other criteria are used in different countries and contexts (Cantwell, Archer, & Bourke, 2001; Gilardi & Guglielmetti, 2010; Laing & Robinson, 2003; Munro, 2011). For example, the U.S. Department of Education (2002) has identified NTS as students who fulfill at least one of the following characteristics: delayed enrollment (at least one year postponement of university entry); is a part-time student; has full-time employment; is financially independent; has family responsibilities (e.g., married or dependent). In sum, the features that characterize NTS do not follow a standard definition (Kim, 2007); rather, they are context-dependent. Thus, caution should be exercised when analyzing and comparing data from the literature.

European university students are increasingly diverse upon entrance (Organization for Economic Co-Operation and Development [OECD], 2006).as a result of, for example, atypical student inclusion policies. The term non-traditional stresses this perspective (e.g.,

mature-age students and economically disadvantaged people). Nevertheless, due to the economic crisis in Europe in the second decade of the XXI century, the number of Portuguese students who must perform small jobs to pay the fees is increasing. Thus, the difference in social economic status between the TS and NTS is decreasing. The increasing university fees, the low professional stability of Portuguese TS parents, and the increasing unemployment rate are pushing students to work in part-time jobs. In some cases, these last TS with part-time jobs are switching from daytime to evening classes, altering their student status. Therefore, aspects such as gender and social economic status are not considered as crucial variables in differentiating between the Traditional and Non-traditional students (Bean & Metzner, 1985; Adams & Corbett, 2010).

In several Portuguese universities that have recently widened their offer to NTS, the academic system is organized according to the life-style and needs of TS, reinforcing the NTS notion of being 'out of place' (Ogren, 2003). For this reason and due to the importance of other NTS life roles (i.e., job and family responsibilities), when compared to TS, NTS typically take fewer courses per semester and spend less time at the university. These factors compromise their social interaction with colleagues and attendance at lectures outside of the classroom (Ogren, 2003; Pascarella, Duby & Iverson, 1982). Non-traditional students' work experience and value of the university experience can help to explain their focus on class tasks and participation, with comments that often demonstrate a sustained life experience (Dornan, 2001). However, in situations in which the different tasks of their life (e.g., being a professional, a student, a father) compete, the management of the hierarchy of priorities can dictate the cancellation or postponement of these students' 'graduation project' (Chartrand, 1990; Johnston, 2001). One important challenge of NTS lies "in finding a balance between their academic and external commitments that enables them to reach a level of engagement sufficient to achieve academic success" (Gilardi & Guglielmetti, 2011, p. 36). The TS typically consider higher education as a natural step in their academic path that can help them to improve their job opportunities. NTS, on the other hand, typically undertake university studies for job fulfillment (i.e., as an opportunity to obtain a qualification that permits entry into certain jobs) or self-actualization (Adams & Corbett, 2010).

Research with NTS

The research on this new group at university began in the 1970s and has primarily focused on the analysis of factors that influence the adaptation of students to this new reality (Adams & Corbett, 2010; Chartrand, 1990, 1992; Metzner & Bean, 1987; Ogren, 2003; Tinto, 1975, 2002).

Non-traditional students' involvement and adaptation to university are associated with the proper management of their different life roles. These roles can be adopted simultaneously without conflict. However, in situations of perceived incompatibility, NTS typically choose their personal life (e.g., responding to the family demands rather than fulfilling their student role). Because NTS often have employment and family responsibilities, the university demands force them to negotiate their occupational and familiar goals on a daily basis (Adams & Corbett, 2010; Ogren, 2003).

To meet these goals, the NTS often seek emotional support from family and friends (e.g., help to take care of their children while they are at university) (Solomon & Gordon, 1981). However, their process of adaptation and involvement in the academy is difficult and not always considered by the Portuguese universities (e.g., time table with a meal break but the university restaurants are closed; the library closes before the end of the evening classes; the university academic office schedule is misaligned with that of the NTS).

Bean and Metzner (1987) analyzed several aspects that are important to the adjustment of NTS to the academic life. Based on these investigations, Chartrand (1992) employed SEM to analyze the direct and indirect effects of personal variables (i.e., age, educational goals and high school GPA); academic variables (i.e., certainty of major, satisfaction with the courses and perceived study skills); context variables (i.e., family and friends support, difficulties in financing their education, hours of employment, family responsibilities); and social integration on psychological outcomes (i.e., institutional commitment, academic adjustment and psychological distress) on the intent to continue. She concluded that the background variables were not important contributors to the model, whereas the academic variables played an important role in the model. Furthermore, Chartrand (1992) identified the need to fit the model with other ethnic groups, examine the role of gender and include academic achievement.

Purpose of the study

The studies in this area have primarily focused on the comparison between TS and NTS in their process of adaptation to HE (Cantwell, Archer & Bourke, 2010; Hay, Whaites & Tan, 2010, Kimbrough & Weave 1999). Nevertheless, the literature on NTS remains limited and there is a call for more empirical research on the topic (Cruce & Hillman, 2012; Pascarella, 2006; Tinto, 2002). The previous studies described several factors that influence university students' intention to continue studying (e.g., social integration, academic adjustment) but failed to assess the impact of academic achievement on the decision to continue their academic path. As mentioned, two decades ago, Chartrand (1992) stated the importance of conducting studies that assess the impact academic achievement on the intention to continue studying at university; however, such data are lacking.

The current study attempted to follow this suggestion by fitting a path model in a sample of NTS to analyze the relationship of background variables (i.e., option of entry at university, age, high school GPA) and academic achievement (HE GPA) on the intention to continue studying at the university. The path analysis methodology allows the simultaneous analysis of multiple variables and the assessment of the direct and indirect effects of the variables (see figure 1).

For the purpose of this research, we narrowed the definition of NTS by considering several of the characteristics suggested by the U.S. Department of Education (2002). We defined a NTS as a student who 1) is more than 23 years old, 2) delayed university enrollment for at least two years, 3) has family responsibilities (e.g., married; if divorced, is a parent of at least one child), and 4) has a full-time job. The present study adds to the literature base by examining the reasons that NTS continue studying at university.

Hypothetic Model

Firstly, it is expected that NTS with a successful academic background (i.e., high school GPA) achieve higher academic results and show a stronger intention to continue at university (Cantwell, Archer & Bourke, 2001; Hoskins, Newstead, & Dennis, 1997; Kimbrough & Weave, 1999). Secondly, the literature stresses that the non-traditional students' age is a strong predictor of academic achievement. Thirdly, the option of entry at university is an important variable in explaining non-traditional students' academic achievement and intention to continue studying (Kimbrough & Weave, 1999). Considering

the data provided by the investigations reviewed, the following predictions have been established in the model (see Figure 1):

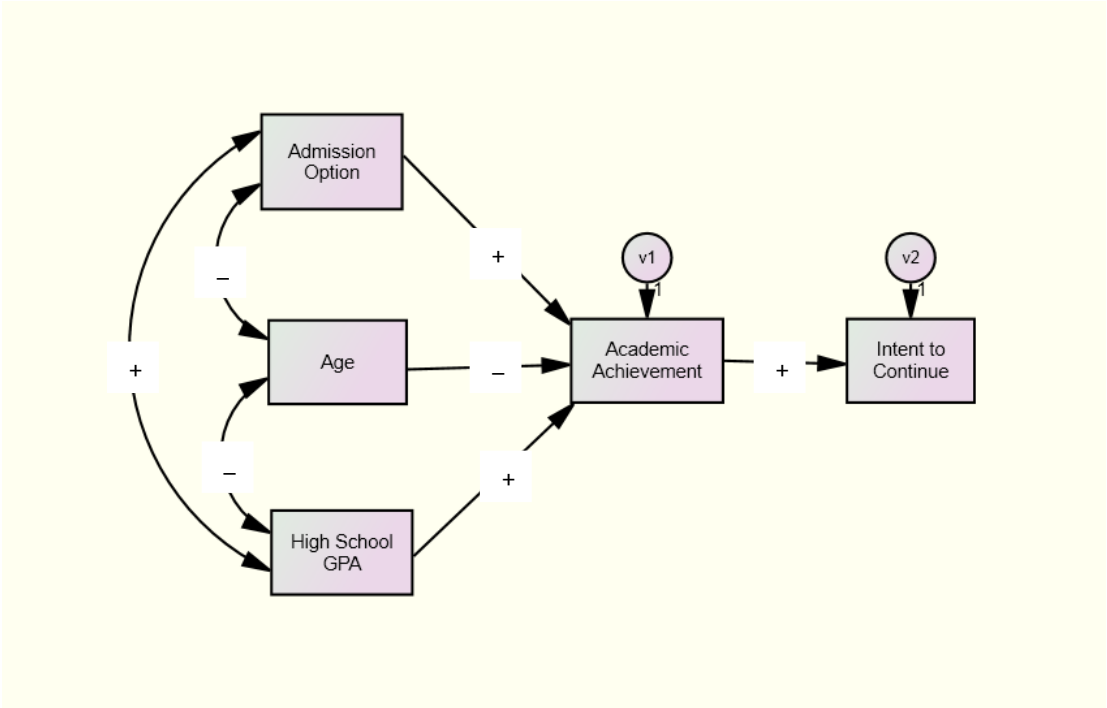
a) The intention to continue studying at university is significantly related to academic achievement. We expect a positive relationship between students' academic achievement and their intention to continue studying.

b) The option of admission at university, age, and high school GPA of NTS are related to academic achievement. Specifically, we expect that entrance into the first choice university, higher high school GPA and younger age are associated with higher academic achievement.

c) The option of admission at university, age, and high school GPA of NTS are significantly related. Specifically, we expect that older NTS exhibit lower high school GPAs, whereas younger NTS are the more likely to obtain a higher high school GPA and entry into their first choice university.

Although there is no empirical research support, it is logical to assume the existence of reciprocal relationships between the dependent variables (i.e., academic achievement and intention to continue). However, it is not theoretically acceptable to seek reciprocal causal relationships in the current study because the measures were collected at a single moment in time.

Figure 1. Hypothetical model of the intention to continue at the university of NTS.



Method

Participants and the context

The Portuguese university system is mainly public, non-residential, and follows a non-open enrollment policy. All courses have limited vacancies imposed by the government and are relatively inexpensive (yearly tuition fees in public universities is 900 euros, approximately two minimal wages). The study enrolled students from a northern Portuguese public university with a recent, although small, presence of NTS. At the time of this research, approximately 16,000 students, predominantly local students, were enrolled in the university. Approximately 3,000 attended master's and PhD degree programs, and approximately 1,400 followed the evening schedule for graduate courses. Due to the economic problems of the region, 38% of the undergraduate students received a scholarship.

A total of 327 first-year NTS (123 female) who fulfilled the study's definition of NTS voluntarily participated in the present research (i.e., students who 1) are more than 23 years old, 2) delayed their university enrollment for at least two years, 3) have family responsibilities (e.g., married; if divorced, is a parent of at least one child), and 4) have full-time employment). This sample represents 39.6% of the first-year students over the age of 23 at the university.

The information necessary to identify this sample was gathered at the university's academic services office. The average age of participants was 32.7 years (*SD*=8.21). Of the sample, 47.7% studied in the area of Languages and Humanities (e.g., Law studies) and 52.3% in the area of Sciences (e.g., Optometry).

Measures

Data on the variables of *option of admission at university, high school GPA and higher education GPA* were collected at the university's academic services office at the end of the higher education first-year admission process (September).

—*High school GPA. Grade Point Average* (GPA) is a standard measure of achievement used by high schools (10^{th}-12^{th} grade). In Portugal, the high school scores in each discipline range from 0 to 20, with a passing grade of 10. High school GPA corresponds to the mean of the students' high school grades across the three grade levels (50%) and the marks from the national exams at the end of high school (50%). The initial values were transformed into the following three categories: 1 (from 10 to 13), 2 (from 14 to 16), and 3 (from 17 to 18).

—*Option of admission at university.* Portuguese students apply to university using their high school GPA. On the national application form of the entry process, students can choose a maximum of five courses from the same scientific area but not necessarily from the same university (e.g., Medicine, Dental studies, Biology). As all of the courses have a fixed number of vacancies to offer, students are ranked and placed in a course by the central services of the Ministry of Education according to their high school GPA. At the end of the process, students can be placed (in one of the five options chosen) or fail admission if all of the selected course locations are occupied by students with higher high school GPAs. The variable "option of admission" was categorized as (1) second option and (2) first option.

— *Academic achievement.* Portuguese college students must attain 180 Exchange Credits Transfer System (ECTS) (60 per year) to complete their degree. The subjects fulfill varying numbers of ECTSs that sum to a total of 30 ECTSs per semester. Each ECTS corresponds to approximately 27 working hours. Academic achievement was assessed through Grade Point Average (GPA). This is a standard measure of achievement used by the university. A student's achievement in each subject is graded on the following 20point scale: Very Good (17-20), Good (14-16), Pass (10-13), and Fail (0-9). The GPA is then calculated using a numerator that contains the sum of the numerical grades for each subject multiplied by the number of ECTS for that subject and a denominator that contains the total number of credit points for the subjects undertaken. The initial values were transformed into the following three categories: 1 (from 10 to 13), 2 (from 14 to 16), and 3 (from 17 to 18).

—*Intent to continue.* An e-mail was sent to the 327 NTS enrolled at the end of the school year (July) that asked if they intended to continue studying at the university. The students that did not answer via e-mail (30%) were contacted by phone. The answer was scored as 1 (I don't intend to continue my studies at the university) and 2 (yes, I intend to continue).

—*Age.* The initial values were transformed into the following three categories: 1 (from 23 to 25 years old), 2 (from 26 to 40 years old), and 3 (from 41 to 59 years old).

Procedure

The university's research ethics committee authorized the study and the information related to the NTS admission process was collected at the university's academic services office in September. All of the students were informed of the goals of the research and informed that their participation was voluntary. The confidentiality of the data was assured. In July, the NTS participants were asked about their intention to continue their academic course

at the university via e-mail. At the end of the school year (August), the researchers collected the information on academic achievement (GPA) at the academic services office.

Data Analysis

The hypotheses of this study were analyzed using path analysis methodology with AMOS.18 (Arbuckle, 2009). First, a series of goodness of fit statistics were used to analyze the postulated model. Beyond chi-square (χ^2) and its associated probability (p), the information provided by the GFI and the AGFI (Jöreskog & Sörbom, 1983); the CFI (Bentler, 1990); and the RMSEA (Browne & Cudeck, 1993) was used. According to these authors, the model fits well when GFI and AGFI > .90, CFI > .95, and RMSEA ≤ .05.

Moreover, once we couldn't verify the fit of the model in another sample and the research on NTS was limited, we employed two model evaluation criteria, the Akaike Information Criterion (AIC) and Expected Cross-Validation Index (ECVI). The AIC reflects the extent to which parameter estimates from the original sample will cross-validate in future samples (Bandalos, 1993) and the ECVI assesses the likelihood that the model cross-validates across similar-sized samples from the same population (Browne & Cudeck, 1993).

Because the AIC and ECVI coefficients can assume any value, there are no fixed cutoff points to help in determining model-data fit. To evaluate the potential for replication of the proposed path model, we compared the ECVI and AIC values with those of both the saturated model and the independence model. Comparing the three models, the model with the smallest ECVI and AIC values exhibits the greatest potential for replication.

Results

Initial data screening

Table 1 presents the descriptive data and the Pearson correlation matrix for the study sample. Before conducting the statistical analyses corresponding to the goals of this study, we examined the matrix with regard to the presence of outliers, linearity and normality of the data. The data set had no missing values because all of the information was gathered by the university's academic services office.

One of the important assumptions of the path analysis strategy is that the distribution of any variable must be normal with regard to any value of the other variables, which

indicates that all linear combinations of the variables must be normal. As maximum likelihood (ML) can produce biased results when this assumption is violated (West, Finch, & Curran, 1995), we examined the kurtosis and skewness of each of the variables. Considering the values found (Finney & DiStefano, 2006), we estimated the fit of the model by means of ML. The correlations demonstrated that the variables were intercorrelated and not excessively high (r> .85).

Table 1. Correlation matrix and descriptive data (mean, standard deviation, kurtosis and skewness) of variables included in the structural model

	1	2	3	4	5
1. Admission Option	—				
2. Age	-.299**	—			
3. High School GPA	.425**	.-258**	—		
4. Intent to Continue	.240**	-.192**	.291**	—	
5. Academic Achievement	.339**	-.256**	.401**	.415**	—
M	1.61	1.96	1.91	1.70	1.94
SD	.488	.073	.647	.460	.678
Skewness	-.460	.060	.086	-.863	.071
Kurtosis	-1.799	-.971	-.616	-1.264	-.816

** p<.01

Testing the hypothesized model

In the first assessment of the path model, the estimated parameters showed the expected magnitudes and sign (consistent with the theory underlying the model), and the standard errors observed were not excessively large or small (Bentler, 1995). Considering the model as a whole, the analyses indicated that the fit of the hypothesized theoretical model to the data matrix was acceptable, $\chi^2(3) = 10.2$; $\chi 2/df = 3.4$; p= .017; GFI=.988; AGFI=.939; CFI=.993; RMSEA=.086.

Because the chi-square was statistically significant and the RMSEA value was higher than expected, data from the residuals and the modification indexes were analyzed. We concluded the need to fit a model that included the direct effect of high school GPA on the intent to continue (MI [modification index]= 6.091; with a minimum expected value for the

parameter of -.088). At the theoretical level, this effect is logical because it is positive, which indicates that higher high school GPA is associated with stronger intent to continue.

Respecification and assessment of the final model

Consequently, the direct effect of the variable high school GPA on intent to continue was included in the model, leaving the parameter free. The results indicated that the fit of the respecified model was very good, $\chi^2(2) = 2{,}8$; $\chi^2/df = 1.590$; p =.244; GFI = .997; AGFI = .974; CFI = .997; RMSEA = .036. As expected, the new estimated parameter was positive and statistically significant (.15). Neither the residuals nor the modification indexes suggested the need to make further changes to the model. Table 2 and Figure 2 show the coefficients that correspond to the direct effects in the model and their respective estimation errors, critical ratio, and associated probability.

Table 2. Standardized direct effects in the final model

	Coefficients	SE[1]	CR[2]	P<[3]
Standardized Regression Weights				
Admission Option → Academic Achievement	.177	.077	3.176	.001
Age → Academic Achievement	-.128	.050	-.2.447	.014
High School GPA → Academic Achievement	.293	.058	5.321	.000
Academic Achievement → Intent to Continue	.356	.037	6.546	.000
High School GPA → Intent to Continue	.148	.039	2.724	.006
Covariances				
Admission Option ↔ Age	-.102	.020	-5.166	.000
Admission Option ↔ High School GPA	.134	.019	7.060	.000
High School GPA ↔ Age	-.117	.026	-4.506	.000

[1]Standardized errors, [2] Critical ratio, [3] Probability.

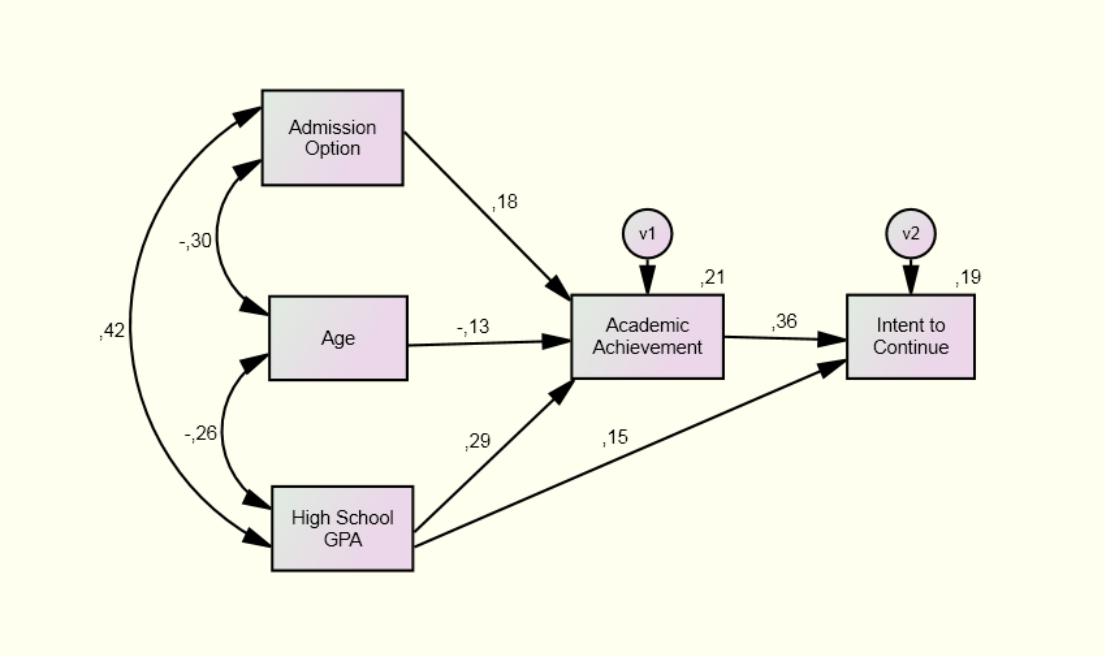


Figure 2. Standardized direct effects in the final model (all parameters are statistically significant at p<.001 except high school GPA on intent to continue and age on academic achievement that are at p<.01).

The results indicated that all of the study's hypotheses were confirmed. As predicted in the first and principal hypothesis, the academic achievement of the first-year NTS was positively and significantly associated with the intention to continue studying at university (.36), i.e., students with a higher university GPA were more likely to report the intention to continue studying at university. Although this relationship was statistically significant, it was lower than expected, and only 12.96% of the variance in students' intention to continue was explained by academic achievement. Thus, approximately 87% of the variance in students' decision to continue studying depends on variables other than the students' academic achievement at the end of the first year.

The modification of the initial model indicated the inclusion of a direct effect linking the students' previous knowledge (high school GPA) to the intention to continue; this effect was statistically significant (.15). Taking into consideration all of the effects included in the model (direct and indirect, see Table 3), only 19% of the variance in students' intention to continue at university was explained by the variables in the model.

The second hypothesis was also confirmed. Students' age, option of entry and high school GPA were associated with their academic achievement at the end of the first university

year. Specifically, students who entered in their first choice (.18), were younger (−.13) and had a higher high school GPA (.29) evidenced higher academic achievement at the end of the first year. Together, these three variables explained 21% of the variance in academic achievement at the end of the first year.

Thirdly, as expected, the option of entry at university was positively related to high school GPA (.42), i.e., students with a higher high school GPA were more likely to enter into their first choice course at university. A negative relation was found between the variables "age" and "option of entry at university" (−.30) and between the variables "age" and "high school GPA" (−.26). This data revealed that younger NTS tend to obtain a higher high school GPA and consequently enroll in their first choice course at university.

Table 3. Standardized indirect and total effects in the final model

	Age	High School GPA	Admission Option	Academic Achievement
Indirect Effects				
Academic Achievement	.000	.000	.000	.000
Intent to Continue	−.045	.104	.063	.000
Total Effects				
Academic Achievement	−.128	.293	.177	.000
Intent to Continue	−.045	.252	.063	.356

Finally, we examined whether the model is likely to be replicated in other samples of NTS. To answer this question, we compared the ECVI value of .088 found in the path model with that of both the saturated model (ECVI = .092) and the independence model (ECVI = .803). The ECVI value of the path model (.088) was the lowest, which indicates that this model best fits to the data and that the answer to the question is more likely to be affirmative. Moreover, to what extent will the parameters estimated from the current sample of NTS cross-validate in future samples of NTS? The findings demonstrated a high probability of cross-validation because the fit statistics of the hypothesized model (AIC = 28.825) were substantially smaller than those of the saturated (AIC = 30.000) or the independence (AIC = 261.667) models. In sum, although the results of these two parameters (AIC and ECVI) do not allow an unequivocal conclusion concerning the replicability of the model to other samples of NTS, these positive results strengthen the findings discussed and suggest profitable directions for future research.

Discussion

The principal goal of this research was to understand the extent to which academic achievement at the end of the first year a) predicts students' intention to continue studying (direct effect) and b) mediates the relationship between the students' option of entry at university, age, high school GPA and intention to continue at university (indirect effects of the model).

Generally, the results indicate the importance of assessing the impact of academic achievement on the intent to continue studying at the university, as suggested by Chartrand (1992). Taking into consideration the characteristics of the sample, the current study's most salient finding is that academic achievement was significantly related to the students' intention to continue their studies at university. Furthermore, high school GPA was positively associated with academic achievement, which suggests that previous and robust content knowledge is related to higher achievement and, therefore, the intention to continue studying at university. These findings are aligned with the literature (Cantwell, Archer & Bourke, 2001; Hoskins 1997; Kimbrough & Weave 1999).

Another important finding is that younger NTS tended to enter their first choices in higher education and achieve higher academic results. A possible explanation for these results may be related to the fact that these students have been away from the educational system for a lesser amount of time and are better prepared to cope with higher education academic demands than their older NTS colleagues. Furthermore, a higher high school GPA (in general indicating a better academic background) seems to help in persisting in this new academic course, and the opposite also holds true.

What can we learn from these findings? Focusing on a sample of NTS who were over the age of 23, delayed enrollment, and had full-time employment and family responsibilities, the data suggest the need to acknowledge a subgroup perspective when addressing NTS. In fact, younger NTS have a higher high school GPA and consequently higher academic achievement and a stronger intention to continue. Perhaps future research and the new students welcome programs developed by universities should consider the interval time of the delayed enrollment into HE as an important feature in the design of interventions. The data allow the presumption that shorter intervals are associated with higher academic achievement and stronger intention to continue. This result points to chirurgical academic interventions within this population. The university cannot ignore the long break in the academic studies of

NTS. This implies, for example, that work in the classroom and the practical work assigned should be adjusted to take into consideration the academic background of NTS.

The current path model showed a very good fit. Nevertheless, the results revealed that the variables in the model only explained 19% of the variance in the intent to continue; thus, a considerable amount of variance was unexplained. Thus, it is important to consider the inclusion of other variables that could increase the amount of explained variance. To deepen our comprehension about the students' intention to continue their studies, interviews were conducted with 30% of the participants, who were randomly selected. The data of these interviews are not analyzed or discussed here due to space constraints; however, we quote two NTS, as their words can add to the findings on the intent to continue:

> *"I entered at the university after being 9 years without studying. Right at the beginning of the academic year, I understood I was very rusty and that the classes' rhythm was too fast for me. I had a lot of trouble to follow the teacher. I tried to study and asked for support lessons, here and there, but the results didn't correspond to my expectations. Eventually, I learned that there is few material and exercises online to guide my study, clearly not enough. I have an important professional experience, but here lectures seem to ignore that fact. Well (...) I feel like I have been kindly invited to have dinner, but I wasn't asked about any food intolerances or special needs. The instructional menu around here is all the same and tailored to people who are not employed and have no kids to raise. The academic menu offered doesn't care about my needs (...). I need help to organize my studies! The university invited me to enter, but doesn't make effort enough to keep me in" (Student$_{5,}$ Law studies).*

> *"This academic year was good. I finished the four subjects I enrolled in with good grades. I only left high school two years ago, so returning to the books wasn't too difficult to me (...)*
> *I have a lot of work to do as an enterprise's secretary and I have three children to raise, so the time I have left to study is limited. Right now, my enterprise is going through a lot of difficulties and I might be fired in the end of summer. Hope not... So, I'm not sure if I'll be able to continue my studies next year. Let's wait and see how the situation evolves. I'd be very sad to leave because ending the 1.º cycle [180 ECTS] would help me to improve my situation at the enterprise" (Student$_{22,}$ Accountancy).*

Increasing and widening participation in higher education is an important goal, but how can universities (e.g., administrators, lectures, services and offices) help the NTS to continue studying? The investigation suggests the importance of organizing university welcoming programs to facilitate the integration of NTS. To fully reach this purpose, these programs could be organized by NTS in advanced grade levels, as these students are more likely to understand the needs of the new NTS.

Langer (2010), corroborating Galbraith (1991) and Daloz (1999), stated that mentoring is well suited to NTS if understood as help that develops adult learners' learning potential and results in a transformation of the person. For example, as multi-role students with little time for university activities, NTS may experience difficulty in determining the academic behaviors that are best suited to help them achieve academic success (e.g., take notes in class vs. listen and attempt to elaborate personal notes at home; skip class to prepare for the exam of other discipline; identify a study group vs. study alone). Sensitive mentors who are focused on meeting the needs of NTS could aid in these academic cornerstones.

The model hypothesized in the present research and the models of previous investigations (cf., Bean & Metzner, 1987; Chartrand, 1990, 1992) indicate some of the important variables when considering NTS students. According to Chartrand (1992), among other factors (e.g., support from family and friends), study skills are an important indicator of psychological adjustment and should be included in the services delivered to NTS.

The freshmen students who have been away from the educational system for at least two years feel the need for effective support in the areas of study skills and academic competencies, as one of the quoted students stated. The literature that focuses on TS stresses the importance of intentional training on learning strategies in higher education (cf., Rosário, Núñez, González-Pienda, Valle, Trigo & Guimarães, 2010; Weinstein, Husman, & Dierking, 2000; VanderStoep & Pintrich, 2007); such training may be even more important for NTS. Therefore, the university office could organize programs on self-regulating learning strategies (Rosário, et al., 2010) to help NTS understand the value of proactive behavior in promoting their academic achievement and, thus, strengthening their intention to continue their studies. Non-traditional students' lack of study skills is a major concern that sensitive academic policies should address.

As previously mentioned, the academic environment of HE is not tailored to the learning needs of NTS (Chartrand, 1992; Ogren, 2003) with requirements and processes that the intensive courses offered by the universities to prepare the 'non-traditional entry exams' do not foresee. The mapping of the academic needs perceived by the NTS (for example,

through interviews) and the installation of sensitive academic policies to fill in the identified gaps may be the next step in retaining these students.

This study did not include teacher or context variables, such as the role of students associations in NTS retention. However, faculties and administrators should reflect upon the corpus of data on NTS. The university is widening its offer to a public that traditionally did not have access to university training, but the teaching-learning processes are not adapted to the needs of this new population (e.g., assessment system followed, attending class norms).

The enrollment of NTS in higher education to improve their academic training is an important social goal. To retain these students at university, it is essential to understand how NTS should be welcomed and integrated into the academy beyond the first week of arrival at campus. It is also important to intentionally instruct them on how to cope with the new curricular challenges that they face (Kimbrough & Weave, 1999). Lastly, to increase the NTS at university, teachers could consider valuing their employment experience in class and altering teaching methodologies and the assessment system to accommodate the educational needs of NTS (Dornan, 2001), as suggested by the NTS quoted in this study.

Limitations and future studies

Although the present study has produced interesting results, including those arising from the statistical AIC and ECVI, the implications derived from them should be taken with the necessary caution due to some theoretical-methodological limitations. The use of a single sample of NTS from a single institution is an important limitation due to the diverse nature of NTS. Future studies should include data from a variety of institutions and contexts (e.g., three or four years in the first cycle [graduation]; institutions more or less research-oriented) and acknowledge the definition of NTS used (e.g., clear cut-off age, student-workers, full-time workers, part-time students, family responsibilities) (Yorke & Longden, 2004) to allow the comparison of results. Although NTS are globally considered in the literature, it is important to acknowledge the cultural differences and social and economic contexts, as the quotation of $Student_{22}$ stresses.

The design of data collection was cross-sectional, which does not allow causal inferences, even from the path analysis perspective. In the future, to obtain information about causes and effects and the potential reciprocal relations of the model variables, the data should be collected at two or more temporal moments.

The model should also be fit while taking into account the grade year to verify progression through the academic courses. Additionally, to increment the explained variance

with regard to academic achievement and the intent to continue, future research should include additional variables in the model such as, for example, financial hardships or the impact of the number of working hours [as suggested by the quoted student and by Sandler, 2000], cognitive and motivational variables (e.g., intellectual and emotional abilities, skills for developing self-regulated learning, academic self-efficacy, academic, personal and social goals), or context variables (e.g., learning support offered, academic mentoring, colleagues' social support). Such inclusions may aid in building a more comprehensive model that may guide intervention programs.

In sum, a robust learning process is a condition for retention (Tinto, 2002); thus, it is important to investigate the micro learning processes that occur in the classroom and reorganize this educational setting to improve student involvement in learning (e.g., type of questions asked to foster students' participation, detailed notes delivered, number and diversity of exercises and problems with feedback offered). Furthermore, lectures on pedagogical skills should be provided to respond to the academic needs of NTS. Without a true institutional commitment, Portuguese universities will continue to consider NTS as 'Cinderella students', as Atwood (2010) sharply coined them.

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