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Predicting achievement among Belgian university adult students: an integrative approach

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Using an integrative approach to predict adult students' achievement in university programs, 37 predictors were identified within the literature on academic success among traditional and adult students. These predictors were classified into four categories and tested using a questionnaire survey on a sample of 824 participants. Measured outcomes consisted in two dichotomised variables: objective (success or failure) and subjective (perceived impact) achievement. Logistic regression analyses showed that only emotional engagement predicted both types of achievement. Enrolment in a master degree (rather than a bachelor), staggering procedures, previous experience in continuing education, past academic success, self-efficacy beliefs and extracurricular activities positively influenced objective achievement. On the other hand, high self-regulated learning, positive perceptions of teachers care for contextualised learning, high utility value, good academic integration, low perceived cost value and low perceived self-esteem obstacles were the most powerful predictors of subjective achievement. These results highlight the importance of considering personal, psychological and environmental predictors in modelling adult university achievement.

Keywords: *academic achievement, adult learning, nontraditional students, mature students, working students, higher education*

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Introduction

Lifelong learning has become essential for people and communities to adapt to the dynamic and complex environments in contemporary societies (Jarvis 2008; Ortenblad and Koris 2014). And Universities play a crucial role in promoting lifelong learning (Yang, Schneller, and Roche 2015, de Viron and Davies 2015). Nevertheless, when considering lifelong learners achievement in university programs, indicators reveal lower retention and graduation rates when compared to their younger counterparts (Goncalves and Trunk 2014; Markle 2015). Understanding the determinants of these low achievement rates is the key objective here, both theoretically and empirically.

In the French-speaking part of Belgium, an adult learner is defined as someone who (1) has not been enrolled in formal educational settings for at least one year and (2) is available on the labor market (CIUF 2009). As the research presented hereafter was conducted in four Belgian universities, the authors adopted this definition, rather than the more frequent single age criterion (Markle 2015; McGivney 2004).

In the literature on adult learners' achievement, most studies present at least two limits. Firstly, they generally focus on a few number of factors to predict higher education achievement. Yet, given the high covariance between – for instance – all motivational constructs, it makes it difficult to identify the most powerful influences (De Clercq et al. 2013). That is why some research, including this one, adopt an integrative design, including several factors in multivariate analyses to measure their relative incremental contribution (De Clercq et al. 2013; Robbins et al. 2004). Secondly, persistence is frequently the sole outcome variable studied in adult students' populations. Although important, it is not always a sufficient premise to achievement (Wigfield and Eccles 2000). This is why achievement and persistence factors were combined here in order to identify the crucial variables predicting university adult students' achievement. Moreover, to catch the complexity of the meaning of achievement, formal success as well as subjective achievement (Wigfield and Cambria 2010) were taken into account. Indeed, adults can follow personal aims (such as acquiring specific skills) that are not conditioned by a diploma.

Based on an extensive review of the literature on students' achievement, 37 predictors were identified. This selection emerged from (1) two meta analyses concerning university students achievement conducted by Richardson, Abraham and Bond (2012) and by Robbins et al. (2004), (2) two dominant models on that same issue (expectancy-value model of achievement [Wigfield and Eccles 2000] and the model of training outcomes for adults [Donaldson and Graham 1999]) and (3) two national integrative studies (Dupont et al. 2012; Lambert 2012).

Description of the integrated variables

Inspired by the methodology developed by Dupont et al. (2012) and Kahu's conceptual framework (2013), the presentation of the predicting variables is organised according to two crossed distinctions (structural versus perceived variables and individual versus environmental ones).

Structural and individual variables

Learner's background is stressed in almost all academic achievement models. Indeed, *previous academic* achievement, often measured through the repeating year rate, is considered as a strong predictor of achievement at university (Cassidy 2012; De Clercq et al. 2013). *Gender* is also supposed to have an impact on achievement, women gaining greater academic success (DiPrete and Buchmann 2013). *Age* appears to show inconsistent results. Some observe a negative correlation with academic performance, arguing that older students present a higher fear of failure and anxiety towards exams (De Clercq et al. 2013), while others report greater success for older students, attributed to higher intrinsic motivation and better study skills (Cassidy 2012). What's more, learners with higher *socioeconomic status* often achieve better (Robbins et al. 2004; Galdiolo, Nils, and Vertongen 2012).

To complete this set of predictors, some other variables, specifically relevant for adult learners, are now pointed out to assume further hypothesis. First, *time elapsed* between initial education and entry as an adult learner in a university program should impede achievement, due to low self-efficacy beliefs and lack of adequate study skills (Stebleton and Soria 2012). Secondly, learners with *former experience in continuing education* are supposed to achieve easier, this factor being associated with effective motivational orientation (Lee and Pang 2014) and confidence to complete academic goals (Monroe 2006). Thirdly, the use of *VNFIL process* (Validation of Non-Formal and Informal Learning) should help students to involve earlier and easier in their training program, and thus to achieve better (Van Kleef 2014). Fourthly, *working* could be considered as an obstacle because of the limited time left for the training (McGivney 2004) but, on the other hand, a worker has more opportunities to make sense of training contents when linking them to his occupation (Olusegun 2015), which could enhance motivation and increase achievement. Fifthly, *extra-academic activities* (such as hobbies and family) could either be seen as time wasted for learning or as a necessary rejuvenation and experience gaining moment, helping to persist longer and thus to achieve better (Kasworm 2014). Finally, two last possibilities offered to adult students in Belgian universities could facilitate their achievement: *staggering procedures* (a one year program spread into two years) and *preparatory year* before entering the official program. Indeed, higher education strategies aiming at facilitating adult learner's transition are supposed to influence both academic success and social integration (Bergman et al. 2014).

Perceived and individual variables

Motivational beliefs

Some years ago, Bourgeois et al. (2009) confirmed expectancy-value model's (Wigfield and Eccles 2000) relevance for adult students. A high *intrinsic value* attributed to the learning task is predictive of achievement, as well as a high *utility perception, attainment value* and *positive expectancies*, whereas a high *cost or difficulty perception* are associated with risks of failure (Neuville 2004; Wigfield and Eccles 2000). Studies on self-efficacy beliefs (Bandura 1997) applied to education confirm that performance expectancies are a crucial predictor of learning, intention to persist and achievement (Cassidy 2012).

Adult learner literacy also stresses the importance of learning entry motives. Entry motives are learners' justifications concerning their entry in a training setting (Carré 2001). Vertongen et al. (2009) identified 4 relevant entry motives for university adult students: *epistemic* (e.g., to acquire new knowledge), *self-promotional* (e.g., to prove oneself to be able to succeed), *vocational* (e.g., career mobility) and *professional operatory* (e.g., to acquire new competencies for the job). Following Carré (2001) and Bourgeois et al. (2009), epistemic as well as professional operatory motives should be predictive of higher achievement.

Self-regulated learning

Self-regulated learning embraces the cognitive processes used to plan, control and regulate one's behaviour during learning activities. This is supposed to help learners to choose the most adaptive strategy considering their goals and is generally associated with academic performance (Justice and Dornan 2001; Ward and Walker 2008). More specifically, on the basis of Dresel et al. (2015) and Hilpert et al. (2013), it is expected that high use of *monitoring* (e.g., planning), *application* (e.g., linking theories to life situations), *effort* (e.g., reading more than wanted) and *help-seeking* strategies (e.g., asking a colleague in case of misunderstanding) should be correlated with higher academic performance.

Engagement

University engagement is a hypothetical construct observable on the cognitive, behavioural and emotional dimensions (Fredricks, Blumenfeld, and Paris 2004). *Cognitive and behavioural engagement* are often combined, because of their potential overlap (e.g., attending a course can be seen both as cognitive and behavioural engagement [Fredricks et al. 2004]) and, for the sake of simplicity, can be approached through the different self-regulated strategies above-mentioned (Hilpert et al. 2013). *Emotional engagement* concerns the positive or negative emotions students feel during their training (Pekrun, Elliot, and Maier 2009; Trigwell, Ellis, and Han 2012). We expect that high positive and low negative emotions will be positively linked to achievement.

Structural and environmental variables

According to Kahu (2013), three kinds of institutional characteristics could contribute to adult students' achievement: training program per se, training setting and pedagogical support.

Concerning the *training program*, adult students in a master degree should achieve better than those in baccalaureate or preparatory programs, because masters are better designed for adults (Davies 2009), and because master learners already succeeded in a degree or in a VNFIL procedure before, favouring later achievement.

Concerning *training settings*, most adult students enter customised programs when existing rather than full-time ones. As those programs are specifically designed to meet their needs, they should facilitate achievement (Nils 2005).

Finally, regarding *pedagogical support,* Krause and Coates (2008) outline the relevance of the student-staff relationship and the global need for a supportive university context, which could practically consist in *pedagogical support* in adult programs. Indeed, academic advising and methodological support might help adult learners to achieve better (Upcraft, Gardner, and Barefoot 2005) and could be perceived as an institutional commitment in favour of adult students academic achievement (Olusegun 2015).

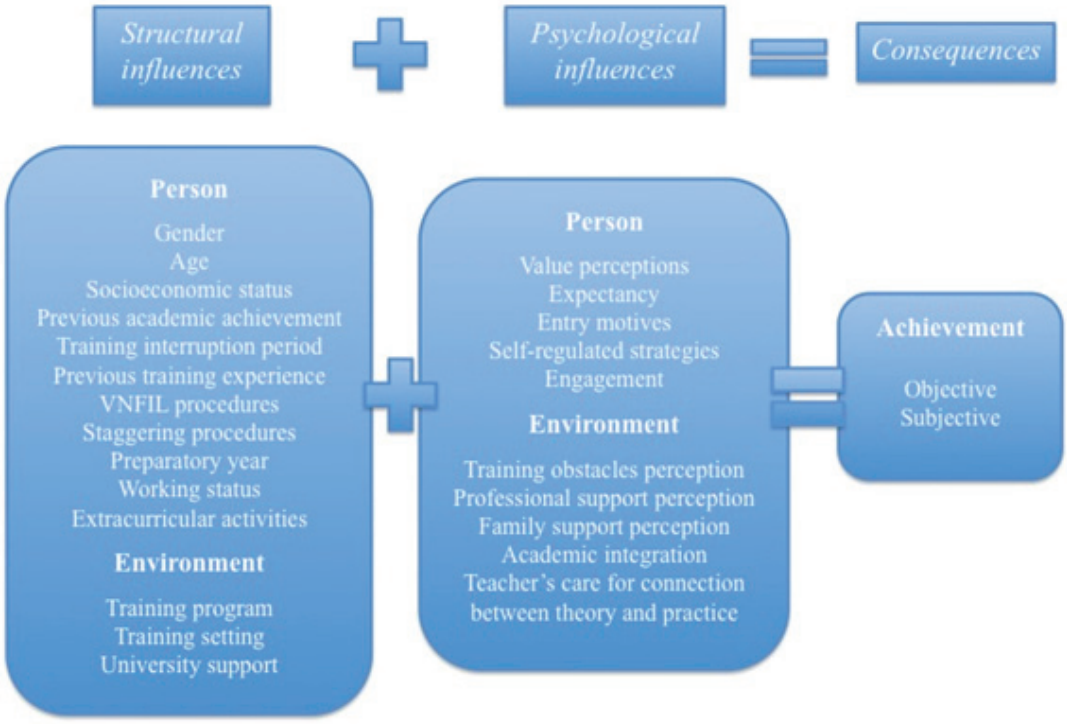
Perceived and environmental variables

On the bases of McGivney (2004), Vertongen and Nils (2009) identified four kinds of perceived environmental obstacles impeding adult students' achievement: *time management difficulties, training - private life interface conflicts, lack of self-esteem and material obstacles* (e.g., fees, trips). It is expected that the more adults will perceive those obstacles, the less they will achieve.

Contrary to these obstacles, several studies suggested the facilitating influence of peer support on academic achievement (Robbins et al. 2004; Wilcox, Winn, and Fyvie-Gauld 2005). More precisely, *support* from colleagues or superiors can become an important protective factor leading to more motivation and better achievement (Birdi, Allan, and Warr 1997; Clark, Dobbins, and Ladd 1993). Parallel to organizational support, *family support* could also be seen as a strong protective factor (Kember et al. 2005; Roman, Cuestas, and Fenollar 2008).

Besides the contribution of interactions with peers on achievement, Tinto also stressed the importance of *academic integration* (Schmitz 2009; Tinto 1997) or, in other words, the way the learner connects to others in the learning environment (Wilcox, Winn, and Fyvie-Gauld 2005), and perceive relations with staff and, very specifically for adult learners, teachers care for *contextualised learning* (Kasworm 2003; Thomas 2013).

Figure 1. *Conceptual framework*



Method

Procedure

Data were collected using an Internet questionnaire survey at two moments (beginning of the academic year and mid second semester). At Time 1, participants were asked about program entry motives, perceived social support and all the environmental variables included in the research. At Time 2, questions concerned motivational beliefs, self-regulated strategies, engagement, perceived obstacles, social support, academic integration, perceived contextualised learning, and subjective achievement.

Participants

Out of the 952 initial participants who responded at the two measurement times, 128 were excluded because they were not satisfying the criteria of adult student defined earlier. The remaining 824 adult learners (387 males) were 20 to 69 years old (M=32.63, SD=8.23), distributed in 46 programs (79% in human sciences, 14%

in health sciences and 7% in sciences and technologies) from four French-speaking Belgian universities. Participants had been recruited through emailing campaigns and oral communications during their first classes, being informed that university was studying academic achievement, with no further details. Participation was voluntary and confidential.

Measures

Most scales were adapted from previous studies on traditional university students. Structural and individual variables (previous academic achievement [1], gender, age, socioeconomic status [2], time between previous studies and current training, experience in continuing education, professional status, extracurricular activities, use of VNFIL process, staggering procedure and/or preparatory year) were directly collected via single direct questions. Indicators for structural and environmental variables (training level [3], training setting [4] and pedagogical support [5]) were obtained from university administration and/or program supervisors. The other variables, belonging to the perceived (individual and environmental) categories, were measured using scales presented and illustrated in table 1. All the items in these scales were answered using seven-point Likert scales ranging from 1 ('I totally disagree') to 7 ('I totally agree').

Concerning our two dependent variables, objective achievement was collected from university administration, and consisted in a dichotomous indicator (success or failure/dropout, which did not allow us to distinguish between these two kinds of underachievement). Subjective achievement was measured on a 7 items (α = .90) scale inspired from Nils (2005). Four items measured the perceived impact of the training in students' personal lives whereas the remaining three measured its perceived professional impact.

Because of (1) missing data randomly observed in our different questionnaires, (2) the fact that one of our two dependent variables was dichotomous and (3) our will to use comparable mathematical models at the back of our statistical analyses [6], we decided to discretize all our variables. To do so, the subjective achievement variable was dichotomized via a cut-point mean of 4 (low and high subjective achievement), which is very close to the median and the mean (M=4.25, SD=1.46). Second, to discretize the independent variables, the interactive binning node algorithm of the *Optimal*

[1] Deducted from the number of repeated years.

[2] Parents educational level.

[3] Preparatory year, bachelor or master program.

[4] Conventional, customised or adjusted training settings.

[5] Staff dedicated to pedagogical support.

[6] Linear regression is based on least square estimation, whereas logistic regression is based on maximum likelihood estimation.

Binning for Relationship to Target method (via the SAS Entreprise Miner program) was used. By putting each dependent variable as a target, this method indicates, for each independent variable, which ranges of responses do differ in relationship with the target (Tuffery 2010). When buckets were too small in terms of frequency (n<5%), they were merged with the nearest bucket. When no buckets were found for an isolated given predictor, a manual theoretical discretization ('from 1 to 3 = low', 'from 3.01 to 4.99 = medium' and 'from 5 to 7 = high') was generated in order to check if some relation could be found between this predictor and the dependent variable when all other independent variables were taken into account. After that, dummies variables were created, allowing to compare k-1 category of a given variable with a category of reference, including missing data (Tuffery 2010). In the two final data files (one for each dependent variable), '1' always referred to the presence of the variable whereas '0' means its absence (or a missing data).

Table 1 reports, for each subscale, the variable category, number of items, reliability statistic, main studies at the basis of the scale, different transformed variable levels and an item example.

Table1. *Descriptive summary of all the scales used in the study.*

Variable category [7]	Variable name	Number of items	α [8]	Main references	Variable Levels (objective achievement)	Variable Levels (subjective achievement)	Item example
PIV – entry motives (Time 1)	Epistemic	2	.75	Carré (2001), Vertongen et al. (2009)	1 = '1 to 3' 2 = '3.01 to 4.99' 3 = '5 to 7'	Id.	I entered this university program because I wanted to acquire new knowledge.
	Self-promotion	2	.77		1 = '1 to 6.52' 2 = '6.53 to 7'	1 = '1 to 3' 2 = '3.01 to 4.99' 3 = '5 to 7'	I entered this university program in order to prove myself I can go further in my study curriculum.
	Vocational	3	.52		1 = '1 to 6.71' 2 = '6.72 to 7'	1 = '1 to 3' 2 = '3.01 to 4.99' 3 = '5 to 7'	I entered this university program because I wanted to become more competitive in the labour market.
	Professional operatory	3	.66		1 = '1 to 3.71' 2 = '3.72 to 7'	1 = '1 to 4.37' 2 = '4.38 to 6.34' 3 = '6.35 to 7'	I entered this university program because I wanted to acquire theoretical frameworks that are useful for some activities in my work.

[7] 'Variable categories: 'PIV' = Perceived individual variables and 'PEV' = Perceived environmental variables.

[8] 'α' = Cronbach's alpha.

PIV – motivational beliefs/ expectancy-value components (Time 2)	Intrinsic and attainment value [9]	7	.82	Neuville (2004), Vertongen et al. (2009)	1 = '1 to 5.50' 2 = '5.51 to 7'	1 = '1 to 5.06' 2 = '5.07 to 6.45' 3 = '6.46 to 7'	In general, I find that attending my courses is interesting.
	Utility perception	3	.69		1 = '1 to 5.65' 2 = '5.66 to 6.06' 3 = '6.07 to 7'	1 = '1 to 3.71' 2 = '3.72 to 6.69' 3 = '6.70 to 7'	This training is useful to my professional project.
	Cost – difficulty perception	4	.74		1 = '1 to 3.27' 2 = '3.28 to 7'	1 = '1 to 4.09' 2 = '4.10 to 7'	In this training, I need to work hard in order to get a good result.
	Expectancy	4	.77		1 = '1 to 5.36' 2 = '5.37 to 7'	1 = '1 to 5.00' 2 = '5.01 to 7'	I feel I'm able to attain my university training objectives.
PIV – Self-regulated learning and engagement (Time 2)	Monitoring strategies	3	.51	Galand and Frenay (2005), Hilpert et al. (2013)	1 = '1 to 5.02' 2 = '5.03 to 7'	1 = '1 to 4.37' 2 = '4.38 to 7'	Before I begin to study a lesson, I ask myself what's the best way to take it up.
	Application strategies	3	.66		1 = '1 to 5.00' 2 = '5.01 to 7'	1 = '1 to 3.36' 2 = '3.37 to 5.16' 3 = '5.17 to 6.02' 4 = '6.03 to 7'	During lessons, I try to see the relevance of what I learn for my professional life.
	Effort strategies	2	.36		1 = '1 to 4.01' 2 = '4.02 to 7'	1 = '1 to 4.09' 2 = '4.10 to 7'	I make an effort even when what I'm learning does not interest me.
	Help-seeking strategies	2	.80		1 = '1 to 5.04' 2 = '5.05 to 7'	1 = '1 to 5.31' 2 = '5.32 to 7'	I do not hesitate to ask for help where necessary.
	Positive emotional engagement	2	.62	Govaerts and Gregoire (2008)	1 = '1 to 4.54' 2 = '4.55 to 5.53' 3 = '5.54 to 7'	1 = '1 to 2.02' 2 = '2.03 to 3.53' 3 = '3.54 to 5.53' 4 = '5.54 to 7'	During your courses, in which measure do you feel happiness?
	Negative emotional engagement	3	.60		1 = '1 to 2.40' 2 = '2.41 to 2.72' 3 = '2.73 to 7'	1 = '1 to 3' 2 = '3.01 to 4.99' 3 = '5 to 7'	During your courses, in which measure do you feel boredom?

[9] Considering factor analysis results, no differences could be identified between those two dimensions; we thus decided to mix them.

PEV – obstacles perception (Time 2)	Time management difficulties	5	.82	McGivney (2004), Vertongen and Nils (2009)	1 = '1 to 4.64' 2 = '4.65 to 4.80' 3 = '4.81 to 7'	1 = '1 to 4.84' 2 = '4.85 to 7'	In which measure do you estimate that the accumulation of your activities and responsibilities is an obstacle to the pursuit of your training?
	Training-private life interface conflicts	3	.74		1 = '1 to 3.72' 2 = '3.73 to 7'	1 = '1 to 3' 2 = '3.01 to 4.99' 3 = '5 to 7'	In which measure do you estimate that your familial engagement is an obstacle to the pursuit of your training?
	Lack of self-esteem	2	.69		1 = '1 to 3.06' 2 = '3.07 to 7'	1 = '1 to 3' 2 = '3.01 to 4.99' 3 = '5 to 7'	In which measure do you estimate that the analysis and study skills required by the courses are an obstacle to the pursuit of your training?
	Material obstacles	3	.48		1 = '1 to 3.34' 2 = '3.35 to 7'	1 = '1 to 3' 2 = '3.01 to 4.99' 3 = '5 to 7'	In which measure do you estimate that the courses time schedule is an obstacle to the pursuit of your training?

PEV – Social support (Time 1 and 2)	Family support Time 1	4	.82	Maurer, Weiss, and Barbeite (2003)	1 = '1 to 3.53' 2 = '3.54 to 7'	1 = '1 to 4.56' 2 = '4.57 to 7'	Your familial environment (husband/wife, child, parents) supports you in the pursuit of your training (encouragements, trust marks, etc.)
	Family support Time 2	2	.64		1 = '1 to 5.00' 2 = '5.01 to 5.50' 3 = '5.51 to 7'	1 = '1 to 5.03' 2 = '5.04 to 7'	
	Professional support Time 1	4	.75		1 = '1 to 5.87' 2 = '5.88 to 7'	1 = '1 to 3' 2 = '3.01 to 4.99' 3 = '5 to 7'	Your organisation brings you a concrete, practical support related to your training.
	Professional support Time 2	3	.76		1 = '1 to 4.04' 2 = '4.05 to 7'	1 = '1 to 3.43' 2 = '3.44 to 7'	
PEV (Time 2)	Academic integration	3	.79	Schmitz (2009)	1 = '1 to 5.02' 2 = '5.03 to 7'	1 = '1 to 3.06' 2 = '3.07 to 5.52' 3 = '5.53 to 7'	I feel integrated with my classroom colleagues.
	Perceived contextualised learning	4	.87	Kasworm (2003)	1 = '1 to 3.52' 2 = '3.53 to 7'	1 = '1 to 3.51' 2 = '3.52 to 5.78' 3 = '5.79 to 7'	Teachers use our professional or extraprofessional experience during their lessons.
Dependent variables	Objective achievement	1	/	/	0 = 'failure or dropout' 1 = 'achievement'	/	/
	Subjective achievement	7	.90	Nils (2005)	/	0 = 'low impact (1 to 4)' 1 = 'high impact (4 to 7)'	My training helps me to better understand myself.

Results

The fact that no significant link could be found between our two dependent variables (χ^2 (1)=.57, ns.) led us to the development of two distinct models (prediction of objective and subjective achievement).

In order to determine which factors best explained our dependent variables when all other factors were taken into account, we used the backward likelihood ratio method of the binary logistic regression (Tuffery 2010).

Prediction of objective achievement

Among the 824 participants, 617 were objective achievers. The final model converged after 4 iterations, explaining 15% of the total variance (Cox & Snell R square [10] =.15; Nagelkerke R square=.23). Hosmer-Lemeshow goodness of fit test[11] was not significant (χ^2 (7)=5.76, ns.), which means that the model well suits to the data (Tuffery 2010). Table 2 reports the remaining independent variables predicting objective achievement, in statistical power descending order. As can be seen, adults who were enrolled in a preparatory or a master program, who used a staggering procedure, didn't repeat a year in the past, spent less than 3 hours a week in extracurricular activities [12], had a previous experience in continuing education [13], didn't have too high self-efficacy beliefs [14] and had a quite positive emotional engagement, saw their probability of achievement increased.

[10] Similar to the linear regression R square.

[11] The Hosmer-Lemeshow is a statistical test measuring goodness of fit for logistic regression models.[12] Even if remaining in the last model, only significant at $p<.06$.

[13] Even if remaining in the last model, only significant at $p<.12$.

[14] Even if remaining in the last model, only significant at $p<.08$.

Table2. *Logistic predictors of university adult students' objective achievement.*

Factor	Dummie level [15]	β	Standard Error	Wald	*p*	Exp(β)
Training setting	1 = bachelor	-1.59	.22	54.51	<.001	.20
Emotional engagement	1 = 'from 4.55 to 5.53'	1.34	.36	13.97	<.001	3.83
Previous academic achievement	1 = absence of previous repeating rate	.72	.22	10.62	<.01	2.04
Staggering procedure	1 = use of staggering procedure	.96	.30	10.58	<.01	2.63
Extracurricular activities time	1 = more than 3 hours a week	-.40	.21	3.59	<.06	.67
Self-efficacy beliefs	1 = 'from 1 to 5.36'	.41	.23	3.10	<.08	1.51
Previous experience in continuing education	1 = presence of previous experience	.31	.19	2.55	<.12	1.36

[15] The reference category (0) always refers to all the other variable modalities.

Prediction of subjective achievement

On the 824 participants, valid data for subjective achievement were available for 386 of them. Among them, 223 reported a high subjective impact of their training. The final model converged after 12 iterations, explaining 27% of the total variance (Cox & Snell R square=.27; Nagelkerke R square=.37). Hosmer-Lemeshow goodness of fit test was not significant (χ^2 (8)=5.23, ns). Table 3 reports the remaining independent variables in the model of subjective achievement prediction, in a decreasing order of importance. Adult university students who were high users of application strategies [16] and low perceivers of costs/difficulties were more likely to report high subjective achievement, whereas a low emotional engagement [17], a low perceived contextualised learning, a moderate perception of a lack of self-esteem obstacle, a low utility perception and a low academic integration [18] predicted a lower subjective achievement.

Table3. *Logistic predictors of university adult students' subjective achievement.*

Factor	Dummie level	β	Standard Error	Wald	*p*	Exp(β)
Use of application strategies 2	1 = 'from 6.03 to 7'	1.87	.44	18.23	<.001	6.47
Emotional engagement 2	1 = 'from 2.03 to 3.53'	-1.15	.32	13.30	<.001	.32
Emotional engagement 1	1 = 'from 1 to 2.02'	-2.39	.70	11.65	<.01	.09
Perceived contextualised learning	1 = 'from 1 to 3'	-.85	.26	10.43	<.01	.43
Cost – difficulty perception	1 = 'from 1 to 4.09'	.92	.29	9.67	<.01	2.50
Use of application strategies 1	1 = 'from 5.17 to 6.02'	.77	.27	8.28	<.01	2.17
Lack of self-esteem obstacle perception	1 ='from 3.01 to 4.99'	-.83	.29	8.20	<.01	.44
Utility perception	1 = 'from 1 to 3.71'	-1.42	.66	4.62	<.05	.24
Academic integration	1 = 'from 1 to 3.06'	-.83	.48	3.00	<.09	.44

[16] Referring to variable levels 1 and 2 (Table 3).

[17] Referring to variable levels 1 and 2 (Table 3).

[18] Let's note here that this effect, even if remaining in the last model, is only significant at *p*<.09.

Discussion

Regarding both kinds of achievement, our results confirm the expected impact of emotional engagement. This corroborates that academic emotions play an important role as proximal predictors of achievement (Fredricks et al. 2004; Pekrun et al. 2009). No other predictor remained in both models, upholding the relevance of the distinction between objective and subjective achievement. Moreover, our results stressed the appropriateness of studying several kinds of predictors as subjective achievement is logically linked to perceived influences (e. g., motivational beliefs) whereas objective performance combines structural variables as well as perceived influences.

Concerning the predictors of objective achievement, a strong negative impact of the bachelor training setting is observed. This could be caused by the fact that bachelors programs are generally not designed for adult learners and workers, at least in European Universities (Davies 2009). What's more, previous academic achievement emerges as a significant predictor of achievement, consistent with De Clercq et al. (2013) and Robbins et al. (2004). Staggering procedure also appears as a key predictor of academic performance. This opportunity seems to be an excellent adaptation to the typical time constraints of adult learners. Furthermore, spending time in extracurricular activities is not associated with lower achievement, provided adult students do not exceed three hours per week. As for traditional students (Robbins et al. 2004), self-efficacy stands out as a significant predictor of academic performance. Nevertheless, our results nuance this effect. Indeed, too much self-confidence seems to decrease perceived work utility and, eventually, leads to a decrease in academic performance, as shown by Vancouver et al. (2002). The traditional positive impact of self-efficacy must thus be considered carefully. Lastly, learners with previous experience in continuing education show better achievement, probably due to their familiarity and habits with continuing education.

On the other hand, subjective achievement was positively related to the use of application self-regulated strategies (Hilpert et al. 2013). This strong result confirms the relevance of integrative thinking pedagogies for adult learners (such as practical and theoretical or tacit and explicit knowledge [Tynjälä 2009]), and can be directly associated with the positive impact of perceived contextualised learning. Those consistent results call for the design of applicable and need-based courses, also favouring meaningful interaction between staff and students (Thomas 2013).

What's more, the cost-difficulty and the utility perception, both "value" components of the expectancy-value model (Wigfield and Eccles 2000), show consistent results with the literature. This relevance of the utility value is not surprising when we

consider the adult need for application: the more an adult considers his training program as useful for his career, the more he will attribute to it a positive impact. Logically, as adults often combine different important commitments (work, house, children, etc.), a low cost and perceived difficulty of the training program will also increase its positive perceived impact. Furthermore, this study shows the negative impact of self-esteem obstacle perception on subjective achievement: when adult learners think that their learning skills are not sufficient or that they will not be able to manage the stress linked to evaluation periods, it has a negative impact on their subjective achievement. Finally, this study confirms the importance of Tinto's (1997) focus on academic integration. Benefiting of a large network of learning colleagues seems to work as a protective factor and lead to subjective achievement.

This work also presents some limitations that call for future research. First, even if we included a large array of achievement predictors, future studies should take other variables (e.g., the classroom size) into account in order to enhance the explained variance. Second, this study only looked at direct effects; indirect ones need thus to be further examined. Similarly, cluster analysis could be used to identify different combinations of variables, and distinct achievement profiles. Third, some independent variables were measured at time 1 (beginning of the academic year) and others at time 2 (half of the second semester), depending on the theoretical framework at the background. In the line of Pulkka and Niemivirta's (2013), we could hypothesise that some perception variables – such as motivational ones – are evolving in time. Longitudinal research could be undertaken in order to determine potential growth curves, permitting to better explain the dynamic of achievement among adult learners. Fourth, for the reasons detailed in the method section of this paper, we had to mix adults who dropped out with adults who failed. Yet, it could be interesting to distinguish them, and more precisely to measure the dropout moment to identify factors leading to early or late disengagement. Fifth, subjective achievement appears here as a quite new dependent variable in the field of achievement theories. We measured it through the perceived personal and professional impact of the training, which is one potential indicator among others. Future research should deeper validate our subjective achievement scale and enlarge the scope of this dependent variable. Finally, we dichotomised all our variables. This necessary choice inevitably leads to a loss of subtlety. Replicating such integrative studies with other statistical methods is thus necessary with the aim of confirming our results.

To conclude, the present study provides some indications about ways to improve university adult learners achievement. A recommendation from this research intended for educational practitioners and counselors is the crucial role of analysing with the adult learners the meaning and

reasons for their engagement before entering university program. What's more, in relation to motivational and emotional variables, interventions exist that increase the value and expectancy components of the expectancy-value model. Indeed, Vanlede, Philippot, and Galand (2006) showed the possibility for teachers to raise the learner's perception of competence by working on their academic memories. Positive feedback use also always seems to be beneficial. Concerning the value perception, our results confirm the need for connection between learning experiences and daily life events (Olusegun 2015). Following this line, the best advice to instructors would be to make frequent links between theories and practical implications, promoting a higher education experience that is relevant to students' interests and future goals (Thomas 2013). Finally, university program managers should try to improve adult students conditions, especially using staggered procedures or VNFIL process and preparatory years.

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