DOI: http://dx.doi.org/10.5334/pb-47-1-31
Psychologica Belgica
2007, 47-1/2, 31-50.

TINTO'S THEORETICAL PERSPECTIVE AND EXPECTANCY-VALUE PARADIGM: A CONFRONTATION TO EXPLAIN FRESHMEN'S ACADEMIC ACHIEVEMENT

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For decades, success in postsecondary education has preoccupied psychological and educational researchers. In this respect, Tinto's student integration model (1982, 1997) is one of the most frequently cited models. Tinto proposed that students' background characteristics, initial intentions and aspirations towards college influence their academic and social integration, which in turn affect their persistence. Unfortunately, although this model is an integrative one, it does not take motivational variables such as students' self-efficacy (Bandura, 1997; Bong & Skaalvik, 2003) and students' subjective value of academic tasks (Eccles & Wigfield, 2002; Neuville, 2004) into account although their impact on learning has been widely demonstrated (Robbins, Lauver, Le, Davis, & Langley, 2004). The purpose of this study, conducted with 2637 first-year university students from all the Bachelor's degree programs of a Belgian university, is to compare, through structural equation models, the explanatory power of these two research traditions (students' integration, on the one hand, and a motivational paradigm, on the other hand) in predicting students' academic performance.

Introduction

The transition from high school to college in Belgium is invariably accompanied by several changes in students' educational environment: a) heightened academic competition, b) increased pressure to excel, c) unfamiliar academic tasks, d) more frequent academic failure and e) new social networks (Perry, Hladkyj, Pekrun, & Pelletier, 2001). In these conditions, the risk of dropout during the first year of college is high. In Belgium, 55% of entering students do not graduate and 20% of those 55% drop out during first year (SET, Service des études UCL, 2006).

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This research was funded by grant G.4.563.06.F from the Fonds National de la Recherche Scientifique (FRFC/Pédagogie).

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For decades, success in postsecondary education has fascinated psychological and educational researchers. Gerdes and Mallinckrodt (1994) define successful adaptation to college as the decision to remain or persist, along with having a sense of psychological well-being and performing well academically. Historically, students' social characteristics (race, gender, socioeconomic status, etc.) and academic background (ability, test-score, grade-repeating history, etc.) were the only variables used to predict academic achievement (Pascarella & Terenzini, 2005). However, nearly 30 years ago, researchers became aware of the need to consider other dimensions to have a fuller understanding of the process leading students who are entering higher education for the first time to succeed or fail in their studies (Farsides & Woodfield, 2003; Gloria & Ho, 2003; Lee & Burkam, 2003).

In this framework, Tinto's student integration model (1982, 1987, 1997) emerged. This model is organised around the concepts of academic and social integration, that is to say the student's subjective perception of finding his or her place harmoniously in the academic and social life of the academic institution. Tinto proposed that students' background characteristics, initial intentions and aspirations towards college influence their academic and social integration, which in turn affect their persistence. This model is integrative and represents a significant shift in the literature. However it does not include the contributions of achievement motivation theories.

One of the most important and long standing achievement motivation theories is the expectancy-value paradigm. This perspective has its roots in the work of Lewin (1935, 1942), Atkinson (1957, 1964, 1974), and Battle (1965, 1966) and, more recently in research by Feather (1982, 1988), Covington (1992), Bandura (1997) and Eccles, Wigfield, and their colleagues (Eccles, 1983; Eccles, Adler, & Meece, 1984; Eccles & Wigfield, 1995, 2002; Eccles, Wigfield, Harold, & Blumenfeld, 1993; Wigfield, 1994; Wigfield & Eccles, 1992, 2000, 2002; Wigfield, Eccles, Yoon, Harold, Arbreton, Freedman-Doan, & Blumenfeld, 1997). According to these authors, achievement-related behaviours can be explained by the two cognitive constructs of expectancy, on the one hand, and value, on the other. The first and best-known construct is now conceptualised as students' subjective belief about their future probability of success. It is related to the question "Can I do this task?". The second construct could be defined as the perception of what the task will bring to the student. It refers to students' answers to the question "Why should I do this task?" (Eccles, 1983; Eccles et al., 1984; Eccles & Wigfield, 1995, 2002; Pintrich, 1988; Pintrich & De Groot, 1990; Pintrich & Schunk, 2002; Pintrich, Smith, Garcia, & McKeachie, 1993; Wigfield, 1994; Wigfield & Eccles, 1992, 2000, 2002). Many studies have shown the positive impact of these two motivational constructs on achievement behaviours such as self-regulated learning, persistence, choice and performance (Bandura & Schunk,

1981; Berndt & Miller, 1990; Bong, 2001; Eccles & Wigfield, 1995, 2002; Ethington, 1991; Feather, 1988; Pajares & Kranzler, 1995; Pajares & Miller, 1994; Pintrich & De Groot, 1990; Schunk & Ertmer, 2000; Wigfield & Eccles, 2000, 2002; Zimmerman & Bandura, 1994).

Purpose of this study

Despite the common interest of these two research traditions in explaining students' achievement behaviours, there is a lack of integration which limits a comprehensive understanding. As pointed out by Robbins et al. (2004), there is a need to create theoretical, causal models that can be tested to determine the linkages between social and motivational constructs. The purpose of this study is therefore both to compare and to integrate the explanatory power of these two streams of literature on the outcomes of students' college experiences. For this purpose, we targeted two central outcomes: persistence intention and performance (Robbins et al., 2004).

Three structural equation models will be compared: (1) one exclusively based on Tinto's theoretical perspective, focusing on social and academic integration variables as key factors in explaining academic achievement; (2) one testing the effects of motivational variables; and (3) an integrative model, using both social and academic integration and motivational variables as explanatory factors for academic achievement.

The models

The three models use the same outcome variables (persistence intention and performance) and the same input variables: mother's educational level, student's high school grade, and certainty of study choice (measures taken the first week of the academic year). This last variable was included because of its influence on achievement behaviour (Galand, Frenay, & Bourgeois, 2004; Galand, Neuville, & Frenay, 2005; Metzner, Lauer, & Rajecki, 2003). The specificities of each model lie in the intermediate variables assessed during the academic year.

Model 1: Tinto's integration model

According to Tinto (1997), our three input variables will influence students' social and academic integration. The two mutually interdependent integration variables will affect students' performance, with students' persistence intention, institutional commitment and academic engagement as mediators.

The institutional commitment is the extent to which students feel committed to the institution they are enrolled in (Beyers & Goossens, 2002; Robbins et al., 2004; Tinto, 1997). On the basis of the previous literature, we expect mothers' educational level and the students' high school grades to have a direct effect on their performance. This model is presented in Figure 1.

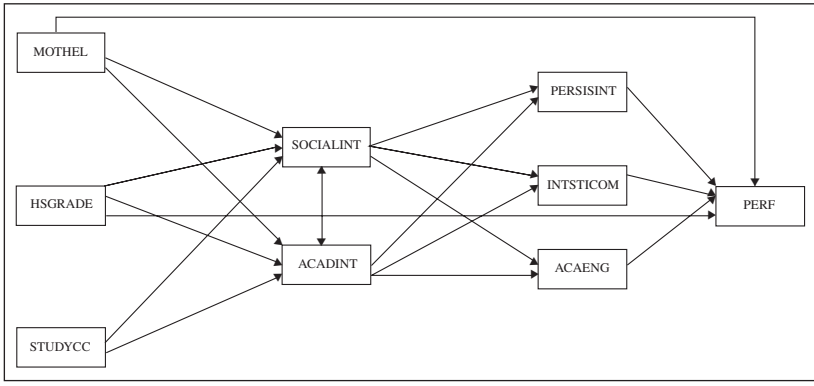

Figure 1.
Tinto's integration model.

Note. MOTHEL = mother's educational level; HSGRADE = high school grade; STUDYCC = study choice certainty; SOCIALINT = social integration; ACADINT = academic integration; PERSISINT = persistence intention; INSTICOM = institutional commitment; ACAENG = academic engagement; PERF = performance

Model 2: expectancy-value model

In addition to the three input variables (mother's educational level, student's high school grade and certainty of study choice) used in Tinto's model, we introduced one more: student's expectancy perceptions. This variable was measured twice, once at the beginning of the academic year (time 1) and again in the course of the year (time 2), at the same time as the perception of the value of the studies.

As in model 1, we predicted that mothers' educational level and students' high school grades would have a direct effect on their performance. We also expected students' high school grades to influence their expectancy perceptions at time 1 (T1) and time 2 (T2) (Bandura, 1997). We believe that students' value perceptions depend on the certainty of their decision to study (Neuville, 2004) and are influenced by their expectancy perceptions T2 (Mc Iver, Stipek, & Daniels, 1991; Wigfield & Eccles, 2002; Wigfield et al., 1997). Finally, the impact of expectancy perceptions T2 and value percep-

tions on students' performance is presumed to be mediated by students' persistence intention and academic engagement (Bong, 2001; Eccles & Wigfield, 1995, 2002; Schunk & Ertmer, 2000; Wigfield & Eccles, 2000, 2002). Figure 2 shows this model.

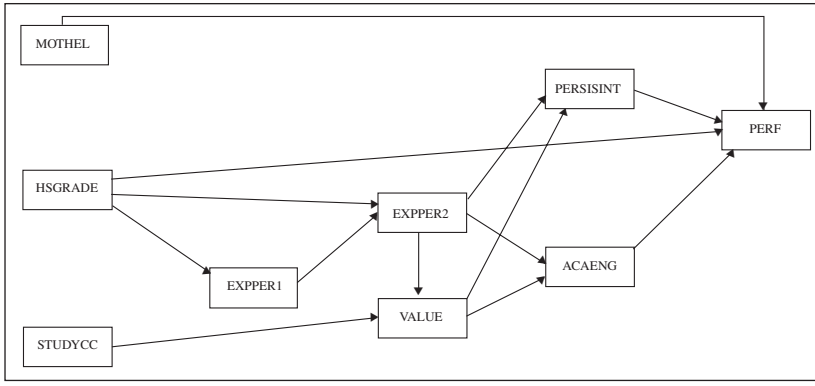

Figure 2.
Expectancy-value model.

Note. MOTHEL = mother's educational level; HSGRADE = high school grade; STUDYCC = study choice certainty; EXPPER1 = expectancy perceptions time 1; EXPPER2 = expectancy perceptions time 2; VALUE = value perceptions; PERSISINT = persistence intention; ACAENG = academic engagement; PERF = performance

Model 3: integrative model

The integrative model, presented in Figure 3, gathers together the specific variables and relationships of the two models discussed above. In other words, students' performance is expected to be explained by the integration variables (students' academic and social integration) as well as by the motivational variables (expectancy and value perceptions), with students' persistence intention, institutional commitment and academic engagement as mediators. Moreover, we hypothesise paths between the integration and motivational variables (these paths do not appear on the figure so as not to overload it).

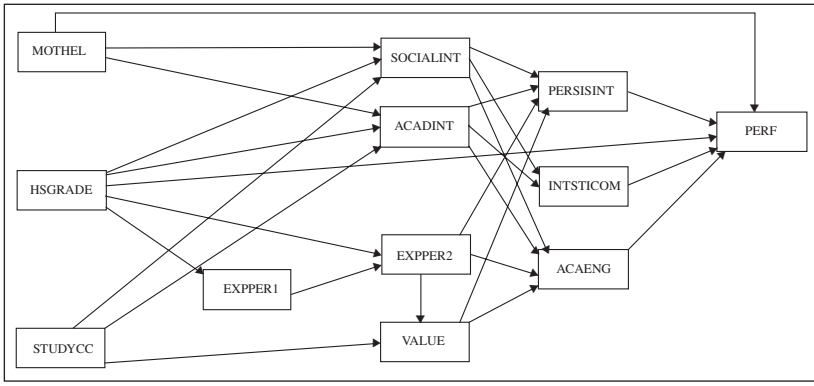

Figure 3.
Integrative model.

Note. MOTHEL = mother's educational level; HSGRADE = high school grade; STUDYCC = study choice certainty; SOCIALINT = social integration; ACADINT = academic integration; EXPPER1 = expectancy perceptions time 1; EXPPER2 = expectancy perceptions time 2; VALUE = value perceptions; PERSISINT = persistence intention; INSTICOM = institutional commitment; ACAENG = academic engagement; PERF = performance

Method

Participants

The participants were 2637 new entrants to Bachelor's degree programs at one French-speaking university in Belgium. Of these, 54.6% were female and 46.4% were male. Their mean age was 18.3 (*SD* = 1.46). All the students were asked to participate and were assured of the confidentiality of their responses.

Procedure

Data were collected through self-completion questionnaires in two waves: wave 1 (T1) at the beginning of the academic year (September 2005) and wave 2 (T2) a few weeks later (November 2005). The aim of the first wave was the collection of input variables (mother's educational level, student's average high school grade, certainty of study choice and expectancy perceptions T1). The second wave was about integration (student's academic and social integration) and motivational variables (expectancy perceptions T2 and value perceptions) as well as the student's intention to persist with studying, institutional commitment and academic engagement. Each questionnaire

was administered during a first-year course and took approximately half an hour to complete. Students were included in the study if they filled in both questionnaires. With permission from both the university authorities and the participants, we gained access to the students' academic results at the examination sessions in January and June 2006.

Measures

Except for the mothers' educational level and students' average high school grade, all items on the questionnaire were rated on 5-point Likert-type scales (generally with 1 = strongly disagree and 5 = strongly agree).

Student's high school grade

An estimate of previous academic achievement was obtained by asking students to indicate their overall average percentage in their last year of high school (1: 60-70%; 2: 70-80%; 3: 80-90%; 4: 90% or more).

Mother's educational level

Participants were asked to describe their mother's highest educational qualification using five possible levels (from 1: 'primary school' to 5: 'university degree').

Certainty of study choice

This measure was made up of two items. One item, taken from the Metzner et al.'s (2003) questionnaire, inquired "How certain are you that you have chosen the right major?" with five possible responses (1: 'not certain at all' to 5: 'absolutely certain'). The second item "If I do not succeed, I will take the same major again next year" was inspired by the Career Decision Scale (Osipow, Carney, Winer, Yanico, & Koschier, 1980).

Students' academic integration

A eight-item scale (Cronbach's α = .74) derived from Mannan (2001) measured students' perceptions of the academic staff's concern for students' intellectual development ("Teachers try hard to understand the difficulties we encounter in our academic work") and students' informal contact with academic staff on academic matters ("Teachers give us the opportunity to ask questions").

Students' social integration

Eight items, also derived from Mannan (2001), were used to measure students' level of involvement and satisfaction with their interpersonal relationships with other students ("My relationships with other students happen in a climate of confidence"). Cronbach's α for this scale was .83.

Expectancy perceptions

This construct was assessed through 11 items, mainly adapted from Dupeyrat (2000) and Galand (2001), and validated in a previous study (Neuville, 2004). Cronbach's α was .81. One of these items is " I think I will succeed in this major".

Value perceptions

Task value was considered as encompassing intrinsic interest (7 items: α = .75), perceived usefulness (3 items: α = .63) and perceived importance (5 items: α = .76). Even if those subcomponents may be distinguished, Eccles (2006) supports the perception of value as a global concept. The task value score is therefore a sum of these three subcomponents (15 items: α = .80). Items include, *inter alia*, "I am very interested in the content area of my courses", "I think the courses material is useful for me to learn", "It is important to me to get good grades in the courses". The items were mainly adapted from the work of Eccles and Wigfield (1995) and had been validated in a previous study (Neuville, 2004).

Students' intention to persist

Students' satisfaction with their choice of major and their desire to continue in the same line of study (Torres & Solberg, 2001) were assessed using eight items (α = .78). One (inverted) item is "I have already considered the possibility of changing my major".

Institutional commitment

Seven items, inspired by the Student Adaptation to College Questionnaire (SACQ) (Baker & Siryk, 1989), were used to measure the extent to which students feel committed to the institution they are enrolled in. This scale has a Cronbach's α of .83 and consists of items like "I have a strong feeling of belonging to my university".

Academic engagement

Students' engagement with their studies was evaluated by the number of hours per week they spend studying and their attendance at classes (Farsides & Woodfield, 2003). Like the other variables (except students' performance), it was a self-reported measure.

Performance

Student's academic performance was measured twice, and is given by their mean score in the examinations taken in January and June (as a percentage).

Results

A path analysis technique, using LISREL 8.3 software, was chosen to test the adequacy of the three models. The Lisrel program (Jöreskog & Sörbom, 1996) generates estimates of path coefficients for a set of linear structural equations. In this study, all path coefficients are reported in standardised form and the significance of each path was determined by computing the ratio of the estimate to its standardised error (Bentler & Dudgeon, 1996). With this approach, the feasibility of a model is tested by comparing a data-generated moment matrix with a model-implied matrix. Various goodness-of-fit indices are available to assess how well the proposed model fits the data, but unfortunately there is still no single generally-accepted index (Byrne, 1998). In this study, we report four frequently-used indices: chi-square relative to the degrees of freedom, CFI, AGFI and sRMR. Jöreskog and Sörbom (1996) suggest that χ^2 can be used as a measure of fit between the sample and the hypothesised model correlation or covariance matrix. A small χ^2 value relative to its degree of freedom is indicative of good fit, whereas a large χ^2 value reflects bad fit. More precisely, a χ^2/df ratio less than 5 is considered to be indicative of good fit (Hayduk, 1987). The CFI (comparative fit index) is derived from the comparison of a particular model with the independence model, while the AGFI (adjusted goodness-of-fit index) compare the model with the situation where no model is present. It is adjusted for the number of degrees of freedom in the specified model and thus addresses the issue of parsimony by incorporating a penalty for the inclusion of additional parameters. The CFI and AGFI range from zero (no fit) to 1.00 (perfect fit), with values equal to or higher than .90 being considered as indicative of a good fit. Finally, the standardised root mean square residual (sRMR) represents the average discrepancy between the observed and the theoretical correlation matrices and ranges from 0 to 1. Values lower than .05 indicate a good fit of the model (Byrne, 1998; Jöreskog & Sörbom, 1996).

Means, standard deviations, and correlations between scales are presented in Table 1. For all variables, the skewness and kurtosis fall between -1 and 1 and the data were checked for outliers.

Table 1.
Descriptive Statistics and Correlations Coefficients Between Scales.

Variables	M	SD	1	2	3	4	5	6	7	8	9	10	11
1. Study choice certainty	3.61	1.03	1.00										
2. Academic integration	3.25	.38	.16**	1.00									
3. Social integration	4.12	.61	.20**	.23**	1.00								
4. Expectancy perceptions T1	3.30	.53	.26**	.28**	.24**	1.00							
5. Expectancy perceptions T2	3.25	.70	.17**	.21**	.12**	.52**	1.00						
6. Value perceptions	3.88	.47	.30**	.26**	.19**	.16**	.12**	1.00					
7. Persistence intention	4.15	.83	.59**	.24**	.27**	.20**	.24**	.36**	1.00				
8. Institutional commitment	3.75	.63	.30**	.34**	.35**	.22**	.14**	.41**	.41**	1.00			
9. Academic engagement	4.03	.60	.14**	-.01	.06*	.01	.01	.27**	.27**	.09**	1.00		
10. Performance January (%)	49.6	20.2	.002	.05*	.08**	.04	.29**	.11**	.17**	.02	.16**	1.00	
11. Performance June (%)	44.5	26	.02	.04	.08**	.02	.26**	.11**	.19**	.04	.16**	.81**	1.00

Note. * < .05 ** < .01

The comparison of various indices of model fit (see Table 2) shows that the best fitting model is the second one (the expectancy-value model), followed by the third (the integrative model). Tinto's model is the worst fitting. The differences between Model 2 and Model 3 ($\chi^2(20) = 96.29$) and between Model 2 and Model 1 ($\chi^2(2) = 33.25$) are significant at $p < .001$, which indicates that the expectancy-value model provides a significantly better fit with the data than the other two models.

Table 2.
Goodness-of-fit indexes for the three models.

	df	χ^2	χ^2/df	CFI	AGFI	sRMR
Model 1: Tinto's model	27	146.62	5.43	.97	.98	.033
Model 2: expectancy-value model	25	113.37	4.53	.98	.98	.025
Model 3: integrative model	45	209.66	4.66	.97	.97	.032

Figure 4 displays the path diagram and the standardised parameter estimates for the expectancy-value model. Except for the path between expectancy perception T2 and value (which is significant at $p < .01$), all the other relationships are significant at $p < .001$. As predicted, mothers' educational level ($\beta = .08$) and students' high school grade ($\beta = .21$) have a direct effect on students' performance. We also expected students' past academic performance to have an impact on expectancy perceptions. Consistent with this prediction, there was an impact on expectancy perceptions at T2 ($\beta = .14$) but, unexpectedly, there was no effect on expectancy perceptions at T1. The only antecedent to students' expectancy perceptions at T1 was certainty of study choice ($\beta = .19$). Certainty of study choice also has an impact on value perceptions ($\beta = .14$) (as postulated), on expectancy perceptions T2 ($\beta = .10$), and on intention to persist ($\beta = .37$). As expected, the influence of value perceptions on performance passes through students' intention to persist ($\beta = .19$) and academic engagement ($\beta = .17$). However expectancy perceptions T2 have an effect on students' intention to persist ($\beta = .20$) and a direct impact on students' performance at the January examination session ($\beta = .21$) but no relation with academic engagement. As predicted, the results show a tenuous path from expectancy perceptions T2 to value perceptions ($\beta = .05$), and not the reverse: students value their studies more if they believe they are likely to succeed. Not expected, but interesting, is the path from intention to persist to academic engagement ($\beta = .09$). This suggests that the more strongly students intend to continue, the more they get involved in learning. Finally, the results indicate a massive link between students' performance in the January examinations and their results in the June examination session ($\beta = .81$).

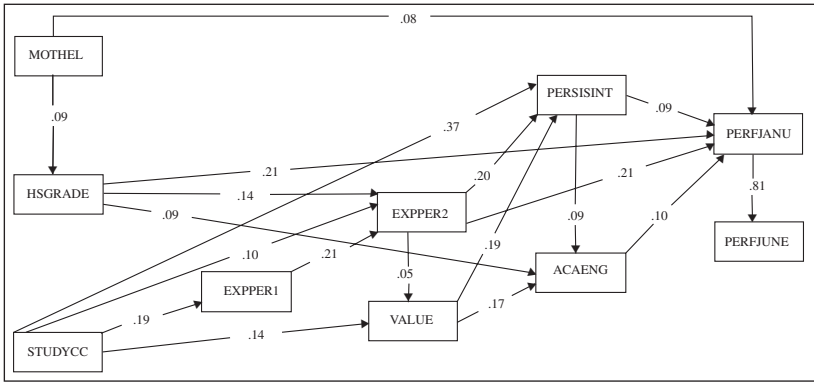

Figure 4.
Path diagram and standardised parameter estimates for the expectancy-value model.

Note. MOTHEL = mother's educational level; HSGRADE = high school grade; STUDYCC = study choice certainty; EXPPER1 = expectancy perceptions time 1; EXPPER2 = expectancy perceptions time 2; VALUE = value perceptions; PERSISINT = persistence intention; ACAENG = academic engagement; PERFJANU = performance at the January examination session; PERFJUNE = performance at the June examination session.

The squared multiple correlation of each structural relation corresponds to the strength of the paths to each outcome variable. This model was relatively effective in the prediction of students' performance in the June examinations (R^2 = .65) but was less successful in the prediction of the intention to persist (R^2 = .26) and the performance in the January examinations (R^2 = .15).

Discussion

This investigation represents one of the first efforts to test both the entire expectancy-value theory and Tinto's integration model, empirically. Indeed, as McCubbin (2003) pointed out, the greatest flaw in Tinto's integration model is that it has never been properly assessed statistically. The confrontation between the different models has allowed us to identify the significant variables for students' college outcomes and so to develop appropriate intervention strategies.

Our results clearly demonstrate the superiority of the expectancy-value model, and indicate that educational persistence models have underestimated the importance of motivational variables. At the same time, our findings suggest that motivational theories are relevant to both persistence and per-

formance criteria. The majority of the theoretical predictions drawn from the expectancy-value model were confirmed. We will, first, concentrate on the performance outcome and, subsequently, on the persistence outcome.

The background variables (mother's educational level, student's high school grade) were, as already widely demonstrated (Hezlett, Kuncel, Vey, Ahart, Ones, Campbell, & Camara, 2001; Pascarella & Terenzini, 2005; Robins et al., 2004; Vey, Hezlett, Kuncel, Ahart, Ones, Campbell, & Camara, 2001), directly related to the academic outcome of performance in the January examinations. The other predictors were, in descending order, expectancy perceptions (T2), academic engagement and intention to persist. In our study, the impact of expectancy perceptions had the same magnitude as the student's high school grade. This is in accord with the results of Robbins et al.'s (2004) meta-analysis, where these two variables were the strongest predictors of performance. The effect of students' expectancy perceptions on their performance has also appeared in numerous studies (Bong, 2001; Bong & Skaalvik, 2003; Chapman & Tunner, 1997; Hay, Ashman, & Van Kraayenoord, 1997; Muijs, 1997; Skaalvik & Valas, 1999; Torres & Solberg, 2001; Wigfield & Eccles, 2000). The single, very strong, path from students' performance at the January examination session to their performance at the June session indicates that the first months are extremely influential for students' academic development and justifies starting the academic intervention strategies at the beginning of the academic year.

Students' degree of certainty about their academic major is far and away the strongest predictor of their intention to persist. This finding is consistent with previous research (Chartrand, 1992; Metzner et al., 2003). The two variables which play a similar role in students' intention to continue are expectancy and value perceptions. Again this is consistent with previous research (Chartrand, 1992; Karpanty, 1998; Torres & Solberg, 2001). This impact of motivational variables on persistence really calls into question the pertinence of models such as Tinto's which do not consider these variables. What's more, the percentage of explained variance (R^2) of the persistence intention in the expectancy-value model was .26, while the R^2 for Tinto's model was lower (R^2 = .23).[1] In other words, students' social and academic integration are less important elements than motivational factors in understanding students' intention to persist.

One intriguing result concerns the links between students' high school grades and their expectancy perceptions. Contrary to our expectations, students' past academic performance was linked to their expectancy perceptions at T2 (several weeks after the start of the academic year) but not at T1 (at the

[2] This value comes from the Lisrel test of the adequacy of the Tinto's model (Model 1).

very beginning of the year). The only predictor for these perceptions was the certainty of study choice. That means that before having really understood what life at university is like, students' beliefs about their future probability for success are a good reflection of the proverb "where there's a will, there's a way". In other words, at the beginning of the year, students believe that if they really want to take the major in which they are enrolled, if they are certain of their subject choice, there is no reason not to succeed. On the other hand, some weeks later, students' expectancy perceptions are more anchored in reality, and their academic background (students' high school grade) is once again an influence.

The strengths of this investigation are considerable. First, it has been based on well-defined conceptual models and has compared and contrasted them. Second, this research has looked at both performance and persistence outcomes. Third, it was conducted with a large and representative sample drawn from all the departments of a university. Last but not least, this study has the advantage of a longitudinal design in which students' academic development was observed over the course of an entire academic year. Despite all these positive elements, and the fact that the results indicate a good and strong fit between the expectancy-value model and the data, it must be emphasised that the path coefficients between the variables are sometimes very weak. A partial explanation may lie in the large number of variables and relationships in the model which diffracts the explanatory power.

The results of this investigation suggest some promising leads for counselling interventions. First, the fact that the motivational variables appeared to be crucial for academic outcomes is highly positive: interventions to enhance students' expectancy and value perceptions are certainly possible. Recent research has investigated the role of autobiographical memory as a predictor of expectancy perceptions (Galand & Vanlede, 2004; Jackson, 2002; Vanlede, Philippot, Galand, & Bourgeois, 2006). The results indicate that it is possible to enhance students' perceptions of their abilities, even after academic failure, provided that they analyse their failure experiences as specifically and in as much detail as possible. This observation suggests that students with a history of failure may be able to attain self-efficacy levels similar to those of students with a history of success, providing that they process their failures specifically. The role of teachers in value perceptions is not only to support, but also to intensify students' conscious perception of the value of their course material. With this aim in view, teachers can activate students' personal interest through opportunities for choice and control over some academic activities. For example, teachers could constrain the general framework of an oral or written exercise (e.g., to make use of the theories developed in the course) while giving students freedom to choose the specific subject of their work. Brophy (1999) has proposed three strategies (modeling, coaching and scaf-

folding) to stimulate the acquisition of new values or interests in domain-specific activities. These are usually defined and exemplified in ways that focus on the cognitive aspects of learning, but Brophy (1999) suggests that they can also be used to address value/interest/appreciation aspects. Without going into detail, teachers could arouse what Brophy calls a "scaffolded appreciation" if they convey their own enthusiasm and positive feeling for the activity. It is also important that teachers clarify the utility of the course to enhance its perceived value. This is possible through explicit verbalisation of course goals and usefulness but also through less direct means. For example, teachers can utilise professionals' stories to explain how different theories are used in practice and why these are important.

As well developing students' motivational perceptions, our results also highlight the importance of working to solidify students' subject choices. This could take place in high school, where workshops focusing on vocational exploration, reflection and construction of students' professional futures could be organised (Prevatt & Kelly, 2003).

To conclude, this study offers several directions for future research. The first priority now is to focus on group-specific studies of students' failure or disengagement from higher education. In other words, to compare the importance of the predictive factors of failure and dropout identified in this study in different academic disciplines or according to the diversity of students. For example, does the influence of different variables depend on students' social background? Are the same variables influential among students from privileged backgrounds and those from more modest ones? Following Robins et al. (2004), we hypothesise that failure – and dropout – constitutes the culmination of various process among different types of students, enrolled in different academic disciplines and environments. A second topic for further research should be the role of emotional factors in students' academic engagement, which has already been shown to be important (Pekrun, Goetz, Titz, & Perry, 2002).

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Received November 20, 2006
Revision Received March 22, 2007
Accepted May 25, 2007