

## Affective and cognitive variables involved in structural prediction of university dropout

Alejandro Díaz Mujica<sup>1</sup>, María Victoria Pérez Villalobos<sup>1</sup>, Ana B. Bernardo Gutiérrez<sup>2</sup>,  
Antonio Cervero Fernández-Castañón<sup>2</sup>, and Julio Antonio González-Pianda<sup>2</sup>

<sup>1</sup> Universidad de Concepción (Chile), and <sup>2</sup> Universidad de Oviedo

### Abstract

**Background:** The aim of the study was to analyze the influence of potentially important individual variables (motivation, satisfaction with the course, self-regulation, expectations of self-efficacy and perception of academic performance) on the intention to remain on university courses.

**Method:** An ex-post-facto design was used, applying the University Life Questionnaire to a sample of 2,741 first-year students from six Chilean universities. Data were analyzed by path analysis. **Results:** The intention to remain is higher when intrinsic motivation is higher, self-efficacy expectations are higher, the perception of performance is higher and satisfaction with the course is higher. All the variables included in the model explained 26% of the intention to remain. **Conclusions:** The study confirms the suitability of studying this phenomenon through complex models (e.g., structural equation models, multilevel models), since it makes little sense to try to explain dropout only through direct effects (as in most previous research). Secondly, the percentage of variance explained by dropout intention means it is important to continue this kind of research (with better controls, other types of measures, etc.).

**Keywords:** Motivation, self-efficacy, self-regulation of learning, university dropout, intention to remain.

### Resumen

**Variables afectivas y cognitivas implicadas en la predicción estructural del abandono universitario. Antecedentes:** el objetivo del estudio fue analizar la influencia de variables individuales potencialmente importantes (motivación, satisfacción con la carrera, autorregulación, expectativas de autoeficacia y percepción del desempeño académico) sobre la intención de permanecer en los estudios universitarios. **Método:** se ha empleado un diseño de tipo ex post-facto, administrando el Cuestionario de Vida Universitaria a una muestra compuesta por 2.741 estudiantes de primer año de seis universidades chilenas. Los datos fueron analizados utilizando un path análisis. **Resultados:** la intención de permanencia se incrementa cuanto mayor es la motivación intrínseca, mayores las expectativas de autoeficacia, mayor la percepción de desempeño y mayor satisfacción con la carrera. Entre todas las variables consideradas en el modelo, la intención de permanencia fue explicada en un 26%. **Conclusiones:** en primer lugar, se constata la conveniencia del estudio de este fenómeno mediante modelos complejos (por ejemplo, modelos de ecuaciones estructurales; modelos multinivel), pues no tiene sentido intentar explicar el abandono únicamente mediante efectos directos (como se hace en la mayoría de las investigaciones previas). En segundo lugar, el porcentaje de varianza explicada de la intención de abandono aconseja insistir en este tipo de estudios (con mayor control, con otro tipo de medidas, etc.).

**Palabras clave:** motivación, autoeficacia, autorregulación del aprendizaje, abandono universitario, intención de permanencia.

University dropout is a complex problem that has generated a significant body of research owing to its global nature and the economic costs it represents to society, universities, individuals and their families, to a large extent related to the massification of educational institutes (Fonseca & García, 2016). This problem has been noted in over 180 countries, so it is not surprising that universities have included the dropout rate as one of the quality indicators of education and educational management processes (Rodrigo, Molina, & García, 2012). In Chile, for example, it

affects 29% of new students in higher education (Ministerio de Educación de Chile, 2018).

University dropout includes situations such as: short interruptions of a course (up to a year) that the student intends to continue in the future (stopout) (Stratton, O'Toole, & Wetzel, 2008), a change of course or institution (optout) (Montmarquette, Mahseredjian, & Houle, 2001), and definitively leaving the system of higher education (dropout). In all of these situations, from both a descriptive perspective, where the student has dropped out, and from a predictive perspective, where we try to anticipate it, identifying the variables which explain it is fundamental. In this regard, Tinto's (1975) interactionist model has been particularly important. It has led to many studies which have analyzed the phenomenon from an overall perspective (García & Adrogué, 2015), trying to identify the different individual, social, economic and institutional variables that influence the issue, and assessing their importance in the ultimate decision to drop out.

Much of the research in this field has focused on variables such as students' academic and professional expectations (Álvarez, Santiviago, López, Da Re, & Rubio, 2014), integration into their new educational environment (Bernardo, Cervero, Esteban, Fernández, & Núñez, 2016), students' and families' socioeconomic circumstances (Sevilla, Puerta, & Dávila, 2010; Sosu & Pheunpha, 2019), and academic performance. The latter is one of the variables which has demonstrated the greatest direct influence on the processes leading to dropping out or remaining at university (Cerezo, Bernardo, Esteban, Sánchez, & Tuero, 2015; Rodríguez-Muñiz, Bernardo, Esteban, & Díaz, 2019).

Nonetheless, reviewing the research on these variables and their influence on intention to dropout, we see that they do not sufficiently explain the reasons students have for dropping out. Variables related to social integration, for example, have a very small effect ( $\eta^2_p = .01$ ) on the decision to dropout (Esteban, Bernardo, Tuero, Cerezo, & Núñez, 2016). Other research has indicated that expectations about the course ( $\eta^2 = .07$ ), defined as the agreement between prior ideas about the degree and the reality, also have little influence on the decision (González, Álvarez, Cabrera, & Bethencourt, 2007). Similarly, some studies have shown that various levels of predictive family variables have a very small effect in relation to the decision to drop out ( $\eta^2_p = .013$ ), with family socioeconomic situation explaining around 6% of the variance related to this decision (Atal & Hernández, 2017).

Achievement, on the other hand, does have significant weight when it comes to explaining the decision to drop out. Some studies have referred to it as the most influential variable when taking decisions related to dropping out or remaining on a course (Casanova, Cervero, Núñez, Almeida, & Bernardo, 2018). In this study, the neural net analysis of various variables indicated that the number of passed credits during the first academic year was the main predictor of dropout. The remaining variables (time spent on work or other non-academic activities, relationship with teachers and other students, teaching content and methodology, use of study techniques and guidance received, effort, and satisfaction with grades) were less important (compared to achievement), no more than 24% in standardized terms. To put it another way, in most cases these variables have a relative importance when classifying subjects in terms of dropout of less than a quarter of the weight of the achievement variable.

Nonetheless, most research has not examined achievement directly, but rather through related, individual variables, with the aim of understanding how important those variables are in the intention to drop out. This is the case with variables such as academic adaptation ( $d = .55$ ), which is the appropriate response to the academic demands of the course; study time ( $d = .48$ ); and use of study techniques ( $d = .35$ ) (Bernardo et al., 2016).

Other individual variables have been studied to a lesser extent, including motivation, expectations of self-efficacy, self-regulation, and satisfaction (in this case with the course, which is broader than the satisfaction with grades mentioned above). These may also have a direct relationship with the intention to dropout, or may act as mediating variables of academic achievement or adaptation to the course, eventually serving the construction of an explanatory model of dropout or course completion. Analyzing these and other variables related to the intention to drop out will guide courses of action and policies aimed at mitigating it, encouraging student retention (Tuero, Cervero, Esteban, & Bernardo, 2018).

With that in mind, the question this study addresses is how individual variables involved in university students being committed to and remaining on their courses influence their intentions to drop out, whether those variables are cognitive (e.g. self-regulation of learning), affective (e.g. satisfaction), or motivational (e.g. type of motivation, expectations of self-efficacy).

When it comes to academic motivation, students who are steered more by extrinsic motivation (external pressure) tend to have higher dropout rates. The reverse happens with intrinsic motivation, which is more closely related with student retention (Durán-Aponte & Elvira-Valdés, 2015). The mediating role of self-regulation may be of particular interest here, as motivation has been found to significantly and positively influence students' self-regulated learning strategies. Intrinsic motivation explains 32% of the variance in the use of self-regulation strategies (González-Gascón & Palacios, 2011).

Something similar may occur with variables related to students' perceptions of their academic performance. Various studies have indicated their predictive value with respect to the intention to drop out (Donoso & Cancino, 2018), the percentage of variance that expectations of achievement explain in terms of satisfaction with the course is 36% (Pérez, 2015).

When it comes to expectations of academic self-efficacy, there are models which link various variables with the use of self-regulating strategies. Expectations of self-efficacy about these strategies is one which demonstrates most weight (Fernández et al., 2013), explaining 51% of the variance.

Beliefs in self-efficacy do not only increase student motivation, but also the process of self-regulation (Barca-Lozano, Almeida, Porto-Rioboo, Peralbo-Uzquiano, & Brenlla-Blanco, 2012), which is where many students reaching university fail (Klemenčič, 2017). This is an international problem, both in classroom settings and virtual environments (Trevors, Feyzi-Behnagh, Azevedo, & Bouchet, 2016).

In terms of academic satisfaction, five variables have been proposed that explain 58% of the variance of the criterion variable (Bethencourt, Cabrera, Hernández, Álvarez, & González, 2008). The most influential are: perseverance in the face of obstacles to complete the course, motivation and satisfaction with the current course, and a good fit between the student's abilities and the demands of the course.

In previous research, in no case can a single factor completely explain a student's decision to drop out or remain at university. The students themselves report a variety of reasons that influence their decisions (Rumberger & Rotermund, 2012).

From this perspective of the study of individual variables and their interrelationships, the engagement model (Christenson, Reschly, & Wylie, 2012) has become established as the most positive, widespread approach that can tackle the problems facing research into university dropout.

Although there are engagement models with variable numbers of dimensions, in this study we use the model proposed by Fredricks, Blumenfeld, & Paris (2004), which has been broadly accepted and validated (Jelas, Azman, Zulnadi, & Ahmad, 2016). This model is composed of three dimensions. A primary behavioural dimension, referring to the mix of behaviours of a student who is interested in learning and succeeding academically, such as: attending classes, active classroom participation, participating in group work, completing individual work on time. A second, cognitive dimension refers to students' thoughts, beliefs and

perceptions about the importance of academic work and the effort this needs, along with cognitive and metacognitive strategies the student would need to use to achieve significant learning. The third is an affective, or emotional dimension, which includes the student's positive and negative feelings and attitudes towards the educational institution and learning experiences.

In this study we focus on examining the influence of affective and cognitive variables affecting university dropout. We analyze the influence on the intention to drop out of affective variables such as motivation and satisfaction with the course, and cognitive variables such as self-regulation, expectations of self-efficacy, and the perception of academic performance. We propose three objectives:

Firstly, examine whether the intention to remain on the course is greater, the higher the use of self-regulated learning strategies and the higher the level of satisfaction with the course.

Secondly, examine whether the use of self-regulated learning strategies is lower when there is higher extrinsic motivation (external pressure) and whether it is higher with higher intrinsic motivation, greater perception of achievement and greater expectation of self-efficacy.

Thirdly, examine whether the level of satisfaction with the course is lower when extrinsic motivation (external pressure) is higher, and whether it is higher when intrinsic motivation, perception of achievement and expectations of self-efficacy are higher.

The literature review indicates that the intention to remain increases when there are higher levels of intrinsic motivation about academic tasks, and higher expectations of self-efficacy and perception of achievement, which could result in greater use of self-regulating strategies and better satisfaction with the course.

Method

Participants

The sample was composed of 2741 students who, when the instrument was applied, were in the first year of 80 different degree courses in different knowledge areas at six universities that were part of the Council of Rectors of Chilean Universities (CRUCH). These universities are public and have a single admissions system which uses a university selection test (PSU). There was a balanced proportion of men (50.9%) and women (49.1%), with a mean age of 19.52 years old (SD = 2.08) and a median age of 19.

Instruments

In this study, which was part of a wider project looking at university dropout, we used a battery of questions about variables that influence the intention to drop out or remain on the chosen course. We created a single questionnaire called the University Life Questionnaire made up of a series of personal and sociodemographic data (sex, age, whether it is the first time attending university, university, degree course, order of preference, the university year, year started, score in the PSU exam), along with 7-point Likert-type scales. The scales used in this study were as follows:

The academic motivation scale, a Spanish adaptation (Vergara, 2018) of the Self Regulation Questionnaire (SRQ) from Ryan & Connell (1989). This scale comprises 16 items which evaluate reasons to be involved in academic activities, distributed in four factors with four items each, with the following indices of reliability: Intrinsic motivation ( $\alpha = .89$ ), Identified regulation ( $\alpha = .79$ ), Introjected regulation ( $\alpha = .69$ ) and External regulation ( $\alpha = .77$ ) (Vansteenkiste, Soenens, Sierens, Luyckx, & Lens, 2009). It allows intrinsic motivation to be differentiated from external motivation (external pressure).

We included the items from the Inventory of Self-regulated Learning Processes (IPAA) (Rosário, Mourao, Núñez, González-Pienda, Solano, & Valle, 2007), comprising 12 items grouped in the three dimensions of learning self-regulation from Zimmerman (2002): planning, execution and evaluation. It has a high index of reliability for the overall scale ( $\alpha = .87$ ) (Bruna, Pérez, Bustos, & Núñez, 2017).

To evaluate satisfaction we used the Academic Satisfaction Scale (Lent, Singley, Sheu, Schmidt, & Schmidt, 2007), made up of 7 items that measure the extent to which students feel content with their course. It has an alpha of .94.

To evaluate academic self-efficacy, we used the Chilean version of the Academic Self-efficacy Scale (García-Fernández et al., 2016), comprising 10 items measuring university students' expectations of self-efficacy in specific educational contexts. It demonstrates high reliability ( $\alpha = .88$ ).

We used one item for perception of academic performance, with a Likert-type response with 7 points, ranging from 1 = very poor to 7 = outstanding.

To measure the intention to drop out we used the item: *Do you want to continue studying the same course?* With a response on a 7-point Likert-type scale from 1 = completely disagree to 7 = completely agree.

Procedure

The data collection process was carried out in the second semester of the academic year. The instrument was printed on paper, and applied during classes in the various subjects with prior coordination with the responsible teachers. Each questionnaire began with a note of informed consent, which the student signed to show their agreement to participate in the research. The appropriate data protection procedures of the participating universities were followed, and prior authorization was obtained from the ethical committees of the participating universities, and the participating deans and heads of studies.

Data analysis

One important assumption for path analysis is the distribution of any variable must be normal with respect to any value of the

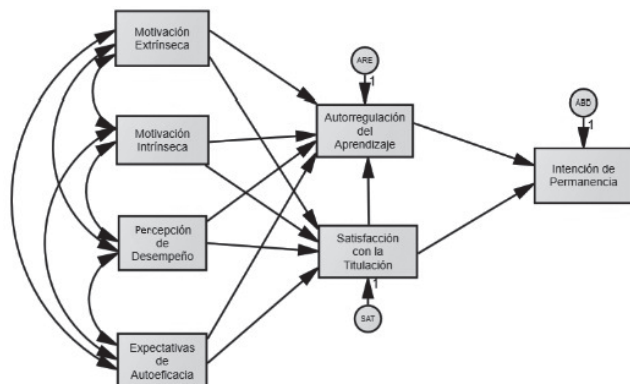


Figure 1. Prediction of the intention to remain

other variables, which means that all of the linear combinations of the variables must be normal. As the maximum likelihood procedure can produce biased results if this assumption is not met (West, Finch, & Curran, 1995), we examined the kurtosis and asymmetry of each variable. Although the values for asymmetry and kurtosis were generally within normal ranges, see Table 1 (according to criteria from Finney & DiStefano, 2006), we used the robust maximum likelihood estimator (RML) which supposes that missing values are random (the number of missing values was small = 0.11%), and provides estimated parameters with standard errors that are sensitive to non-normal distributions. The model was analyzed using AMOS 22.0 software (Arbuckle, 2013). A series of goodness of fit statistics was used to analyze the proposed model. In addition to chi-squared ( $\chi^2$ ) and its associated probability ( $p$ ), we used information from GFI, AGFI, TLI, CFI, SRMR and RMSEA. The model has a good fit when GFI and AGFI > .90, TLI and CFI > .95, and SRMR and RMSEA  $\leq$  .05.

Results

Preliminary analysis

Table 1 gives the descriptive statistics and the correlations between the variables included in the model.

In general, extrinsic motivation (external pressure) was negatively related to the other variables, which were positively related to each other. The values of asymmetry and kurtosis are within the expected parameters of a univariate normal distribution, except for the intention to remain which is borderline. Therefore, the model estimation was performed using the maximum likelihood method.

Model Path Analysis

The initial model of university dropout was not completely satisfactory. As Table 2 shows, while some indices indicated a good fit of the initially proposed model (GFI, AGFI, TLI, CFI, RMR), others suggested poor fit (chi-squared) or moderate fit (RMSEA). Consequently, we examined the residuals and the values of modification indices. We observed a potential improvement to the fit of the model by including two previously unconsidered direct effects on the intention to remain: intrinsic motivation, and

extrinsic motivation. As these effects made sense theoretically, the model was adjusted by including both, one at a time. The results of the re-specified model showed excellent fit (see Table 2). In addition the AIC statistic also indicated the superiority of the re-specified model over the initial, as the value for the final model was significantly lower (AIC for initial model = 113.579; AIC for final model = 54.752).

Bearing in mind the indices of fit, the final model was analyzed. Table 3 gives the statistics. In general terms, the initial objectives were confirmed, as all of the regression coefficients were statistically significant at  $p < .001$ , except the effect of using self-regulation learning strategies on intention to remain ( $p < .01$ ). The relationship between the independent variables was also significant at  $p < .001$ .

Almost all of the relationships were positive, except for the effect of extrinsic motivation (external pressure) on satisfaction ( $b = -.094$ ) and intention to remain ( $b = -.057$ ), as well as the effect of using self-regulation learning strategies on the intention to remain ( $b = -.104$ ). Although all of the regression coefficients are statistically significant, the effect size for most of them are small ( $d < .50$ ). Only two have a medium effect size (self-efficacy on satisfaction:  $d = .661$ ; and satisfaction on intention to remain:  $d = .645$ ), and only one has a large effect size (intrinsic motivation on satisfaction  $d = 2.162$ ). The effect sizes of the correlation coefficients between the variables are large (self-efficacy with intrinsic motivation, and self-efficacy with perception of performance) or medium (intrinsic motivation with perception of performance, and intrinsic motivation with extrinsic motivation (external pressure)). The two remaining correlations were statistically significant but with a small effect size.

In general, we found that the intention to remain on the course of study was positively influenced by both intrinsic motivation ( $b = .156$ ,  $d = .249$ ) and satisfaction with the course ( $b = .395$ ,  $d = .645$ ): Students with greater intrinsic motivation and greater satisfaction also exhibit higher levels of intention to remain on their current courses, while those with low intrinsic motivation and little satisfaction have less intention to remain. In addition, the intention to remain is negatively (although weakly) related to extrinsic motivation (external pressure) ( $b = -.067$ ,  $d = .148$ )

*Table 1*  
Pearson correlation matrix and descriptive statistics

|                                 | 1     | 2    | 3    | 4    | 5    | 6    | 7     |
|---------------------------------|-------|------|------|------|------|------|-------|
| 1. Extrinsic motivation         | –     |      |      |      |      |      |       |
| 2. Intrinsic motivation         | -.292 | –    |      |      |      |      |       |
| 3. Perceived performance        | -.148 | .349 | –    |      |      |      |       |
| 4. Self-efficacy                | -.158 | .457 | .522 | –    |      |      |       |
| 5. Self-regulation strategies   | -.113 | .434 | .368 | .436 | –    |      |       |
| 6. Satisfaction with the course | -.306 | .718 | .418 | .558 | .459 | –    |       |
| 7. Intention to remain          | -.224 | .422 | .190 | .234 | .171 | .488 | –     |
| M                               | 2.57  | 5.46 | 4.88 | 5.17 | 5.06 | 5.71 | 6.33  |
| SD                              | 1.44  | 1.15 | 1.00 | 1.00 | 1.01 | .97  | 1.23  |
| Asymmetry                       | .90   | -.90 | -.85 | -.65 | -.42 | -.97 | -2.32 |
| Kurtosis                        | .12   | .66  | .91  | .67  | -.14 | 1.26 | 5.48  |

\* All of the correlation coefficients are significant at  $p < .001$

*Table 2*  
Results of fit for the model of university dropout (comparison strategy)

|                | Models                             |                                  |
|----------------|------------------------------------|----------------------------------|
|                | University Dropout Model (Initial) | University Dropout Model (Final) |
| NP             | 26                                 | 24                               |
| DF             | 4                                  | 2                                |
| $\chi^2$       | 65.579                             | 2.752                            |
| $\chi^2/DF$    | 16.395                             | 1.376                            |
| P              | .000                               | .253                             |
| GFI            | .993                               | 1.000                            |
| AGFI           | .953                               | .996                             |
| TLI            | .946                               | .999                             |
| CFI            | .990                               | 1.000                            |
| RMSEA (90% CI) | .075 (.060-.091)                   | .012 (.000-.042)                 |
| AIC            | 113.579                            | 54.752                           |

Note: NP (number of parameters); DF (degrees of freedom);  $\chi^2$  (chi-squared); GFI (goodness of fit index); AGFI (adjusted goodness of fit index); TLI (Tucker Lewis Index); CFI (comparative fit index); RMSEA (error of approximation); AIC (Akaike's information criterion)

and the use of self-regulation learning strategies ( $b = -.085, d = .174$ ). The former relationship has been reported in other research (greater extrinsic motivation, less interest in remaining on the current course); however the second is rather new (more use of self-regulated learning strategies, less interest in remaining on the current course). Between all of the effects, 26% of the variance of the intention to remain is explained.

Satisfaction with the current course of study is largely, positively determined by intrinsic motivation ( $b = .547, d = 2.162$ ), to a lesser extent by the perception of self-efficacy (perceived competence) ( $b = .249, d = .661$ ), and to a smaller extent by the perception of performance (achievement) ( $b = .083, d = .220$ ). Satisfaction is weakly, negatively related to extrinsic motivation (external pressure). Overall, satisfaction with current study is 60% determined by these variables (fundamentally by intrinsic motivation and the perception of self-efficacy). At a practical level, satisfaction with current courses of study will be greater the more intrinsically motivated a student is, and the more a student trusts their abilities to tackle their course successfully.

Finally, the use of self-regulated learning strategies is only 29% explained, mainly influenced by the perception of self-efficacy (perceived competence) for the course ( $b = .187, d = .343$ ), by intrinsic motivation ( $b = .188, d = .310$ ), by the perception of performance (achievement) ( $b = .138, d = .277$ ) and by satisfaction with the course of study ( $b = .176, d = .267$ ). This suggests that the use of self-regulated learning strategies is partly influenced by the existence of intrinsic motivation, by perceived competence in their use, by good performance and by high satisfaction with the type of course.

### Discussion

The model proposed in this study shows that students' intention to remain on their current courses is positively influenced by

intrinsic motivation and satisfaction with the course. In addition, the perception of self-efficacy leads to better personal initiative, which means better achievement (Lisbona, Palaci, Salanova, & Fresi, 2018), such that perception of self-efficacy and perception of performance are expected to influence the intention to remain via satisfaction with the course.

A greater requirement to use self-regulation strategies and higher extrinsic motivation (external pressure) are negatively related to the intention to remain. Thus, the first study objective was only partially confirmed, increased use of self-regulation strategies does not ensure greater interest in continuing the course, but instead can even lead to some students intending to drop out. This may be because academic demands require a greater effort in order to successfully complete the course. Nevertheless, it would be interesting to examine the interaction between the level of student self-regulation and the level of contextual regulation. In an unregulated context, for example, students' self-regulated learning strategies may not be particularly adaptive (De La Fuente, López-García, Mariano-Vera, Martínez-Vicente, & Zapata, 2017).

The relationships between the different factors follow similar lines to other studies which have looked at the determinants of remaining in higher education, although they have generally looked for the relationship between two of these dimensions.

We saw that intrinsic motivation directly influenced intention to remain (Parada, Correa, & Cárdenas, 2017), and it may also operate indirectly through variables such as attitude and economic conditions (Velázquez & González, 2017).

The relationship found between performance and satisfaction is also in line with previous research (Zapata, Cabrera, & Velázquez, 2016). A better perception of performance is positively related to the level of satisfaction with the chosen course.

Research is scarce about variables that influence permanence through expectations of self-efficacy and satisfaction with the

Table 3  
Standardized and unstandardized regression weights, standard errors, and associated z and p values for the model of university drop out

|                       |   |                       | SRW   | URW   | SE   | SRW/SE  | p-value |
|-----------------------|---|-----------------------|-------|-------|------|---------|---------|
| Extrinsic Motivation  | → | Satisfaction          | -.063 | -.094 | .009 | -7.393  | .000    |
| Intrinsic Motivation  | → | Satisfaction          | .459  | .547  | .012 | 38.435  | .000    |
| Perceived Performance | → | Satisfaction          | .080  | .083  | .014 | 5.725   | .000    |
| Self-efficacy         | → | Satisfaction          | .241  | .249  | .015 | 16.423  | .000    |
| Extrinsic Motivation  | → | Self-regulation       | .032  | .045  | .012 | 2.651   | .008    |
| Intrinsic Motivation  | → | Self-regulation       | .165  | .188  | .021 | 8.024   | .000    |
| Perceived Performance | → | Self-regulation       | .140  | .138  | .019 | 7.206   | .000    |
| Self-efficacy         | → | Self-regulation       | .188  | .187  | .021 | 8.857   | .000    |
| Satisfaction          | → | Self-regulation       | .184  | .176  | .026 | 6.940   | .000    |
| Self-regulation       | → | Intention to remain   | -.104 | -.085 | .023 | -4.543  | .000    |
| Satisfaction          | → | Intention to remain   | .502  | .395  | .031 | 16.063  | .000    |
| Intrinsic Motivation  | → | Intention to remain   | .167  | .156  | .026 | 6.476   | .000    |
| Extrinsic Motivation  | → | Intention to remain   | -.057 | -.067 | .015 | -3.860  | .000    |
| Extrinsic Motivation  | ↔ | Self-efficacy         |       | -.230 | .028 | -8.177  | .000    |
| Intrinsic Motivation  | ↔ | Self-efficacy         |       | .531  | .024 | 21.772  | .000    |
| Perceived Performance | ↔ | Self-efficacy         |       | .525  | .022 | 24.206  | .000    |
| Intrinsic Motivation  | ↔ | Perceived Performance |       | .405  | .023 | 17.264  | .000    |
| Extrinsic Motivation  | ↔ | Perceived Performance |       | -.214 | .028 | -7.652  | .000    |
| Extrinsic Motivation  | ↔ | Intrinsic Motivation  |       | -.489 | .033 | -14.681 | .000    |

course. However, some studies have found a direct relationship between expectations of self-efficacy and student retention (Figuera, Torrado, Dorio, & Freixa, 2015). In our study, the relationship is not direct, expectations of self-efficacy are related to intention to remain via a mediating variable, satisfaction with the course. Greater expectations of self-efficacy would mean greater satisfaction with the course, as students feel more capable of dealing with the academic challenges their courses present.

The relationship between self-regulation strategies and motivation is important. In line with the results of our model, we suggest that intrinsic motivation is positively associated with the use of various learning strategies, while extrinsic motivation (external pressure) covaries with less use of those strategies (Stover, Uriel, Freiberg, & Fernández, 2015). Students who are led by extrinsic motivation are only committed to learning activities when they bring benefits, such as grades (Capote, Rizo, & Bravo, 2017). They opt for easier tasks, reducing the use of self-regulation strategies which are more effort for them. This may explain our results, that greater need to use self-regulation strategies is associated with lower intention to remain on the course. Although it might seem contradictory, one might interpret this as student retention on courses being higher when learning is more directed, and autonomous learning is not such a great requirement.

The results regarding the relationship between satisfaction and intention to remain agree with research showing their direct relationship (González et al., 2007). Other studies however, have focused on the problem from the other direction, relating dissatisfaction with greater likelihood of dropping out. They have found problems with student choices leading to disappointment with the chosen course, which increases dissatisfaction that,

together with difficulties adapting to new university surroundings, increase the likelihood of dropping out (Lehman, 2014). Similarly, it has also been suggested that high dropout rates during the first year are associated with dissatisfaction with a course that may be due to being on a less-than-desirable course after failing to reach a required entrance grade (Feixas, Muñoz, Gairín, Rodríguez-Gómez, & Navarro, 2015).

In conclusion, our results demonstrate the importance of not limiting research to variables with direct influence on the intention to drop out, but rather addressing all of the cognitive, emotional and behavioral constructs that could also indirectly mediate this phenomenon. Factors such as motivation and self-regulation should be considered when designing study plans and student guidance plans in universities, they should be included in teaching practice as transversal components given their prime importance in student success. Similarly, universities could offer services which encourage student adaptation and satisfaction.

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