

## Willingness to Study, Self-Efficacy and Causal Attributions in Chilean University Students

### Disposición al estudio, autoeficacia y atribuciones causales en estudiantes universitarios chilenos

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## Summary

The aim of this study is to analyze the relationship between (1) willingness to study strategies, (2) causal attributions (to effort, ability and external causes) and (3) student's perception of self-efficacy about their ability to self-regulate their processes of willingness to study. Method: An instrument built by the researchers called Willingness to the Study Self-Regulation Questionnaire was applied to a non-probabilistic convenience sample of 695 Chilean university students from 5 universities of the Province of Concepción. Outcomes: Strong correlations were found between self-efficacy for the willingness to study self-regulation and the willingness to study strategies ( $r=0.54$  to  $r=0.55$ ). the willingness to study strategies had positive and moderate correlations ( $r=0.38$  to  $r=0.42$ ) with causal attributions for success to effort, weak correlations ( $r=0.15$  to  $r=0.28$ ) with causal attributions for success to ability and to external factors, and negative weak to moderate correlations ( $r=-0.19$  to  $r=-0.38$ ) with causal attributions for failure to effort, ability, and external factors. Conclusions: Students with high levels of willingness to study strategies show positive beliefs about their own ability to self-regulate their processes of willingness to study, they make causal attributions for their success mainly to effort, and they attribute their academic failure less and less to ability and external factors.

**Keywords:** Self-regulated learning, willingness to study, self-efficacy, causal attributions, higher education.

## Resumen

El objetivo de este estudio es: analizar la relación entre (1) Las estrategias disposición al estudio, (2) atribuciones causales (al esfuerzo, capacidad y causas externas) y (3) la percepción de autoeficacia que tienen los estudiantes sobre su capacidad de autorregular sus procesos de disposición al estudio. Método: Se aplicó un instrumento construido por los investigadores denominado Cuestionario de Autorregulación de la Disposición al Estudio

a una muestra no probabilística por conveniencia de 695 estudiantes universitarios chilenos de 5 universidades de la provincia de Concepción. Resultados: Se encontraron correlaciones fuertes entre la autoeficacia para la autorregulación de la disposición al estudio y las estrategias de disposición al estudio ( $r=0.54$  a  $r=0.55$ ). Las estrategias de disposición al estudio presentan correlaciones positivas y moderadas ( $r=0.38$  a  $r=0.42$ ) con las atribuciones causales de éxito al esfuerzo, débiles ( $r=0.15$  a  $r=0.28$ ) con las atribuciones causales de éxito a la habilidad como a las atribuciones causales de éxito a causas externas, y correlaciones negativas, de débiles a moderadas ( $r=-0.19$  a  $r=-0.38$ ), con las atribuciones causales de fracaso al esfuerzo, a la habilidad y a causas externas. Conclusiones: Los estudiantes con altos niveles de estrategias de disposición al estudio presentan creencias positivas acerca de la propia capacidad para autorregular sus procesos de disposición al estudio, realizan atribuciones causales de sus éxitos principalmente al esfuerzo y disminuyen las explicaciones de fracasos académicos a su esfuerzo, su capacidad y a causas externas.

**Palabras clave:** Aprendizaje autorregulado, disposición al estudio, autoeficacia, atribuciones causales, educación Superior.

## Introduction

Self-regulation learning processes in university students are important for the self-monitoring of goals, motivations and emotions in the development of academic tasks (Garello & Rinaudo, 2012) the student constructs significant learning and usually obtains good academic performance. Self-regulated learning implies a social aspect that includes interactions with peers and teachers who act as co-regulators of learning. The teachers would be the persons in charge of constructing social support inside the classroom, for example creating opportunities for peer collaboration in the accomplishment of the tasks. The notion of distributed cognition allows us to express that we do not think or learn alone, but by collaborating with other people and using cultural tools. We proposed to study self-regulated learning processes and distributed cognition in university students by means of the implementation of two studies of design where 172 students from the Universidad Nacional de Osorno participated in 2007 and 2008. Across the activities and implemented protocols we could analyze the aspects of tasks that favor the students' processes of self-regulation of their performances and their participation in collaborative processes with their partners. Such aspects would be: demands for reflection on problems that they can find in their professional role, tasks that imply some level of control and evaluation, collaborative work, instances of integration of previous knowledge, out-of-school tasks, instances of feedback on the tasks, tasks of metacognitive and motivational reports and tasks with possibilities of review. (English. They play an important role in academic success (Tauber, Dunlosky, Rawson, Wahlheim, & Jacoby, 2012; Zimmerman, Kitsantas, & Campillo, 2005), favoring the achievement of academic goals and preventing the academic failure (Schober et al., 2015). The inability to manage and self-direct the own learning process has been identified as one of the main reasons for failure in students of all levels (Vives-Varela, Durán-Cárdenas, Varela-Ruiz, & Fortoul, 2014). This lack of processes for learning self-regulation is a main factor of

the academic failure, especially in Higher Education students (Carranza & Apaza, 2015; Tuckman, 2003; Tuckman & Kennedy, 2011).

Learning self-regulation implies an active willingness of the student from the execution of a series of skills like observe, monitor and control their own thoughts, behaviors and motivations to achieve an effective learning (Vives-Varela et al., 2014). To be a competent apprentice, it is necessary to be a self-regulated participant, that is, intentioned and active, able to start and direct their own learning and not a reactive apprentice (Vives-Varela et al., 2014).

There are different self-regulation models with theoretical and empirical support (Monique Boekaerts & Corno, 2005; Hadwin & Oshige, 2011; Pintrich, 2000; Winne & Hadwin, 1998; Zimmerman, 2000). All the authors coincide with the fact that learning self-regulations is a cyclical process. Generally, three phases are considered: *willingness, performance and evaluation* (Panadero, 2017). The first phase, willingness or preparation, implies an activation process, task analysis, planning, objective and goal setting. The performance phase considers the task development. The third phase, evaluation, considers that the student regulates and adapts themselves for future actions (Puustinen & Pulkkinen, 2001).

The importance of the willingness or preparation phase lies in the fact that following phases of the process are implemented and executed in this phase. Studying requires that the student has academic skills, but also it is necessary their willingness to study (Barrera, Donolo, & Rinaudo, 2008). It is necessary that apprentices are aware of the way of addressing a learning activity, and how they can take benefits from them, for example, managing their time better or incorporating new strategies to achieve the academic success (Durán-Aponte & Pujol, 2013). The willingness to study integrates several strategies and beliefs about attitude generation, emotional state, motivation and planning for a task to be carried out with success (Pérez, Valenzuela, Díaz, González-Pienda, & Núñez, 2011, 2013; Yan, Khanh-Phuong, & Bjork, 2014).

Strategies and beliefs about willingness to study helps to generate proper motivation, emotional attitude and emotional state for learning tasks resolution (Pérez et al., 2011). Willingness to study strategies include: (1) academic objective setting, (2) academic time management and (3) organization of material and environmental resources. Beliefs of willingness to study include: (1) self-efficacy for self-regulation of the willingness to study and (2) causal attributions in the self-regulation of the willingness to study (Elvira-Valdéz & Pujol, 2014; M. Pérez et al., 2011; Rosário et al., 2007; Zimmerman, 2008).

In the willingness to study strategies, the objective setting is intended to specify a behavior purpose to achieve learning results within a specific period of time (Bloom, 2013; Cleary, Callan, & Zimmerman, 2012). The academic time management is the knowledge and use of temporary spaces required to develop a task, and the organization of these spaces in order to achieve the learning objectives (Oettingen, Kappes, Guttenberg, & Gollwitzer, 2015) we asked students to apply MCII to a pressing academic problem and assessed how they scheduled their time for the upcoming week. MCII participants scheduled more time than control participants who in their thoughts either reflected on similar contents using different cognitive procedures (content-control group; and the organization of material and environmental resources is the ordering of material resources necessary to address the learning task, and the ordering of environmental resources for adapting the environmental conditions with those available to perform the learning task. y (García-Ros & Pérez-González, 2011).

Regarding beliefs, causal attributions in self-regulation of the study are understood as a set of beliefs and causes perceived as factors responsible for the self-regulation of the study. They inform about the representations of the subjects with respect to the effort made and the result achieved in a task, establishing a causal relationship between them (A. Fernández, Arnaiz, Mejía, & Barca, 2015); and the self-efficacy for the willingness to study is defined as the beliefs about the own ability to use study

strategies in a specific domain (Bandura, 2012; Wang, Shannon, & Ross, 2013)

This study seeks to understand how strategies and beliefs of the willingness to study phase are related. Although a study about relationships between willingness variables and learning variables has been conducted, for example, the relationship between strategies of willingness to learning and learning approaches (Pérez et al., 2011), or the relationship among time management, effort regulation, incentives and academic performance (Broc, 2011), a study that links each one of the strategies and beliefs of the willingness to study phase to each other in university students has not been found yet. Apparently, they are focused on the relationship between strategies or beliefs of the self-regulation process, but not on both of them. The studies that have analyzed the relationships between self-regulation strategies and beliefs have not focused only on the willingness phase, or specifically on the processes of one of the self-regulation phases, but they have considered different self-regulation strategies and beliefs, in general. The literature recommends the analysis of relationships that contribute to the specific self-regulated learning processes (Pool-Cibrián & Martínez-Guerrero, 2013).

The study is aimed at analyzing the relationship between strategies of willingness to study (academic objective setting, academic time management and organization of material and environmental resources), casual attributions (to effort, ability and external causes) and the self-efficacy perception of students about their ability to self-regulate their willingness to study processes. The importance of knowing the relationship between these variables is justified, since they contribute to the understanding of specific self-regulated learning processes (Pool-Cibrián & Martínez-Guerrero, 2013), which has demonstrated to be a key variable in the academic success of the students, specially, in the first years of university studies. This can be used to implement interventions in higher education students who wants to improve their competences for learning self-regulation.

## Method

### Design

To study the relationship between strategies of willingness to study, self-efficacy beliefs for self-regulation of the willingness to study and causal attributions in the study self-regulation, a descriptive-correlational and cross-sectional study was used.

### Participant

A total of 694 students were surveyed. They were selected by a probabilistic convenience sampling, from 14 programs of 5 universities of the Province of Concepción in Chile.

The surveys were conducted in courses of the first semester of different levels: 22.05% of first year, 37.03% of the second year, 15.13% of the third year, 19.60% of the fourth year and 6.20% of the fifth year. The average age of the students was 21.18 ( $DE=2.78$ ), 17 as a minimum age and 36 as a maximum age. Regarding gender, 353 were men (50.79%) and 340 were women (48.92%).

### Instrument

A self-report questionnaire composed of 3 scales was applied: (a) strategies of willingness to study, (b) casual attributions and (c) self-efficacy for the willingness to study. Each one of these scales were built based on other instruments previously available (García-Ros & Pérez-González, 2011; Inglés, Rodríguez-Marín, & González-Pienda, 2008; Pérez & Delgado, 2006) they were validated in the context of this research following the guidelines of design, construction and adaptation of scales of study and self-regulation strategies (Castañeda, Pineda, Gutierrez, Romero, & Peñaloza,

2010; Muñiz, Elosua, & Hambleton, 2013). The whole questionnaire has evidences of content and process validity, obtained from the review made by expert judges, and cognitive interview, respectively.

The Willingness to Study Scale was built based on the instrument Time Management Behavior Questionnaire (García-Ros & Pérez-González, 2011; Macan, Shahani, Dipboye, & Peek, 1990). The scale, composed of 31 items, measures the use of strategies through three subscales: academic objective setting (10 items, Cronbach's  $\alpha = 0.82$ ), academic time management (11 items,  $\alpha=0.82$ ), and organization of material and environmental resources (10 items,  $\alpha=0.70$ ). The question made is "how often did you use the following strategy" the answer is given according to the Likert scale, where 1 is "never" and 5 is "always."

The Scale of Casual Attributions in the Self-regulation of the Willingness to Study is an adaptation of the Sydney Attribution Scale (Inglés et al., 2008; Marsh, 1984)508 college students. Factor analysis identified six factors: Success/Ability, Success/Effort, Success/External Causes, Failure/Ability, Failure/Effort, and Failure/External Causes. Success and failure factors accounted for an adequate percentage of the variance. Internal consistency was acceptable, similar in the success scales and in the failure scales, and higher in the internal scales than in the external scales. The results also showed a clear predictable pattern of relationships between dimensions of self-attribution, and between these dimensions and several measures of general self-efficacy, intrinsic motivation, extrinsic motivation, satisfaction with the studies, satisfaction with performance, and satisfaction with knowledge, which supports the construct validity of the SAS. (English. It evaluates the trend or style of the students when making self-attributions for success or failure to certain causes in the study self-regulation process. In total, it has 30 items, and it is subdivided in 6 subscales with 5 items each: attributions for success to effort ( $\alpha=0.84$ ), ability ( $\alpha=0.81$ ) or external factors ( $\alpha=0.35$ ); and casual attributions for failure to effort ( $\alpha = 0.82$ ), ability ( $\alpha=0.78$ ) or external factors ( $\alpha=0.59$ ). The question made is "to what extent does it happen to

me” and the answer given is according to the Likert scale, where 1 is false and 5 is true.

The Self-efficacy for the Study Self-Regulation Scale is an adaptation of the Self-efficacy for Study Inventory (Pérez & Delgado, 2006). It measures the beliefs of the student about their own ability to self-regulate their study process. It is single-dimensional and has 9 items. The question made is “I think I can use the following strategy” and the answer given is according to the Likert scale, where 1 is not sure and 5 is very sure. It shows a Cronbach’s alpha of  $\alpha=0.84$ .

### **Procedure**

The instrument was applied the first semester of 2016. Several authorities of the five universities were contacted and they indicated which courses can participate in the research. The teachers of such courses were contacted to coordinate the way of application of the instruments. The teachers informed the students about the research in advance. On the day scheduled for each survey, informed consents were given to the students and a questionnaire was given to those who accepted to participate in this research. The questionnaire length did not exceed 30 minutes per person.

Once the information was collected, the database in Microsoft Excel was completed and the data analyses were conducted. This research was approved by the Committee on Ethics and Bioethics of the Psychology department of the Universidad de Concepción, Chile.

### **Data Analysis**

A descriptive study of the sample was conducted, and mean statistics and standard deviations were obtained for each variable. Then, the relationship between each pair of variables was graphed to verify the linearity of the relationship. Once it was verified, the Pearson correlations between study

variables was calculated. The relationship between dimensions of different scales was analyzed. All the analyses were conducted by using the statistical software R, version 3.3.1.

## Outcomes

Table 1 shows the statistics of the Willingness to Study Questionnaire Scales. When analyzing the means, it can be observed that the use of willingness strategies is in the range of “sometimes” (Academic time management,  $M=2.94$ ) and “many times” (Organization of material and environmental resources,  $M=3.67$ ). In general, there is more agreement with the statements about causal attributions for success than those for failure. The average is higher in attributions to effort with respect to both attributions ( $M=3.2$  for success,  $M=2.72$  for failure). The statements the students consider less related to their beliefs are causal attributions for failure to ability ( $M=1.79$ ) and external factors ( $M=1.97$ ). The self-efficacy scale for study self-regulation has a high average of 3.92, close to the answer “pretty sure.” Asymmetry and kurtosis of all the variables, except for the causal attribution for failure to ability, are within the range from -1 to +1, which indicates variables with distribution close to normal.

**Table 1.***Descriptive data of the scales of the Willingness to Study Questionnaire.*

Scales	M	DE	Min	Max	asymmetry	kurtosis
Willingness to study strategies						
EOA	3.34	0.58	1.50	5.00	-0.20	0.16
GTA	2.94	0.67	1.18	4.91	0.14	-0.32
ORMA	3.67	0.57	1.50	5.00	-0.43	.00
Causal attributions for success						
Effort	3.22	0.82	1.00	5.00	-0.18	-0.32
Ability	2.98	0.73	1.00	5.00	0.10	-0.19
External factors	2.65	0.54	1.00	4.60	0.20	0.18
Causal attributions for failure						
Effort	2.72	0.94	1.00	5.00	0.24	-0.79
Ability	1.79	0.73	1.00	4.60	1.02	0.59
External factors	1.97	0.64	1.00	4.40	0.50	-0.16
Self-efficacy	3.92	0.65	1.56	5.00	-0.57	0.35

*Note: n=694. EOA: Academic objective setting. GTA: Academic time management. ORMA: Organization of material and environmental resources. All the scales are within the range from 1 to 5.-*

Table 2 shows the correlations between scales of the Willingness to Study Questionnaire. All the correlations are statistically significant, except for the one between attributions for success to external factors and attribution for failure to ability ( $r=-.01$ ).

The different types of willingness to study strategies, as well as the types of attributions for success and failure are positively related to each other. In particular, the strongest relationship is between academic time management and academic objective setting ( $r=0.67$ ); followed by the relationship between the organization of material and environmental resources and academic objective setting ( $r=0.55$ ), and academic time management ( $r=0.61$ ). Causal attributions for failure show moderate to strong relationships (between  $r=.45$  and  $r=.66$ ), while causal attributions for success are moderately related to each other (between  $r=0.41$  and  $r=.32$ ).

There are negative, from insignificant to strong, relationships in attributions for success and failure. Although the strongest correlations are

found between attribution for success and attributions for failure of the same type, causal attributions for success and failure to effort ( $r=-.64$ ), and causal attributions for success and failure to ability ( $r=-.49$ ), the relationship between attributions for success and failure to external causes is insignificant ( $r=.08$ ). There are moderate relationships between causal attributions for success to ability and the rest of attributions for failure to effort, while there are weak or insignificant relationships between causal attributions for success to effort and external factors.

Willingness to study strategies have positive and strong correlations with causal attributions for success to effort (between  $r=0.48$  and  $r=0.42$ ) and positive but weak correlations, with causal attributions for success to ability and external factors (between  $r=0.15$  and  $r=0.28$ ). The relationship between willingness strategies and causal attributions for failure are negative, between weak and moderate (between  $r=-0.19$  and  $r=-0.38$ ).

Self-efficacy shows strong and positive correlations with different willingness to study strategies (between  $r=0.54$  and  $r=0.55$ ); positive weak-to-moderate correlations with causal attributions for success to effort, ability and external factors (between  $r=0.13$  and  $r=0.32$ ). Finally, self-efficacy shows weak and negative correlations with causal attributions for failure to effort, ability and external factors (between  $r=-0.24$  and  $r=-0.25$ ).

**Table 2.***Correlations between scales of the Willingness to Study Questionnaire.*

Scale	GTA	ORMA	AEE	AEH	AEFE	AFE	AFH	AFFE	AE
EOA	0.67**	0.55**	0.38**	0.28**	0.21**	-0.31 **	-0.19**	-0.22**	0,54**
GTA	1**	0.61**	0.42**	0.23**	0.18**	-0.38**	-0.19**	-0.23**	0,55**
ORMA		1**	0.42**	0.21**	0.15**	-0.33**	-0.25**	-0.23**	0,55**
AEE			1**	0.41**	0.41**	-0.62**	-0.21**	-0.11**	0,32**
AEH				1**	0.32**	-0.43**	-0.49**	-0.34**	0,22**
AEFE					1**	-0.16**	-0.01**	0.08*	0,13**
AFE						1**	0.48**	0.45**	-0,24**
AFH							1**	0.66**	-0,23**
AFFE								1**	-0,25**

Note: N=694. EOA: Academic objective setting. GTA: Academic time management. ORMA: Organization of material and environmental resources. AEE: Causal attributions for success to effort. AEH: Causal attributions for success to ability. AEFE: Causal attributions for success to external factors. AFE: Causal attributions for failure to effort. AFH: Causal attributions for failure to ability. AFFE: Causal attributions for failure to external factors. AE: Self-efficacy in willingness to study self-regulation.

\*\* p<.01 \* p<.05

## Discussion

This study is aimed at analyzing the relationship between willingness to study strategies (academic objective setting, academic time management and organization of material and environmental resources), causal attributions (to effort, ability and external factors) and self-efficacy perception of the students about their ability to self-regulate their willingness to study processes.

The study about the relationship between willingness to study strategies showed a positive, strong and significant relationship between academic objective setting, academic time management and the organization of material and environmental resources. This outcome, like in previous research works, strengthens the fact that students who set objectives of study, also manage the time spent to study and prepare their materials and the place for study (Fernández et al., 2013).

The relationship between the attribution for success to effort and the attribution for failure to effort is negative and strong, and there is no significant relationship between attributions for failure to ability and external factors, that is, the students who agree on the fact that their success is due to effort, will also say that their failure is not due to the lack of effort, so failure can be attributed to ability and external factors. In contrast, although the attribution for success to ability is mainly associated with less attribution for failure to ability, it is also related to less attribution for failure to effort and external factors. This implies that any statement related to failure tends to be considered false, which could explain that failure is not an alternative. There are very weak relationships between attribution for success to external factors and attributions for failure: a students who agrees on the fact that their success is due to external factors, it is not possible to predict what he will attribute their failure to. These outcomes are similar to those found in previous research works carried out with university students in first year (Fernández et al., 2015).

Regarding willingness to study strategies and causal attributions for success to effort, there are moderate and positive correlations, while regarding causal attributions for success to ability and external factors, there are weak correlations. That is, students who are willing to study and to set academic objectives, manage their time and organize the material and environmental resources and the place of study, they attribute their success in the self-regulation of their study to effort, and to a lesser extent to the ability and external factors (Heikkila, Niemivirta, Nieminen, & Lonka, 2011). A study showed similar outcomes, demonstrating that the use of willingness strategies are associated with the suitable attribution of the causes of the academic outcomes, where the students attribute their failures to internal and controllable causes (Pérez et al., 2013).

The relationship between self-efficacy for self-regulation of the willingness to study and willingness to study strategies is strong and positive, outcome that is consistent with other research works that have shown that

there is a relationship between self-efficacy perceived and learning self-regulation strategies (Alegre, 2014; Pool-Cibrián & Martínez-Guerrero, 2013; Sevari & Kandy, 2011; Yusuf, 2011; Zimmerman, Bandura, Martinez-pons, Zimmerman, & Martinez-pons, 1992). The relationship between self-efficacy for the self-regulation of willingness to study and causal attributions for success is positive and moderate, and the relationship between self-efficacy for the self-regulation of willingness to study and causal attributions for failure is negative and weak, which is consistent with the outcomes available in the literature in university students and high school students (Becerra-González & Reidl, 2015; García-Fernández et al., 2016).

A strength of this study is that it explores the relationships between causal attributions for failure and causal attributions for success, the use of strategies and self-efficacy. Although the relationship between attributions for success and for failure with self-efficacy and performance has been studied in the literature, in general, only attributions related to success are studied. (Erten & Burden, 2014).

This study shows some limitations. The design does not allow another analysis between study variables. Since it is a correlational-cross sectional research, it is not possible to establish causality conclusions between the variables studied. In the future, it would be interesting to consider the development of longitudinal and prospective studies that allow the use of models of structural equations to analyze causality. Another limitation of the study is the exclusive use of self-report measures. Therefore, these studies are based on the statement of use of strategies and beliefs the student informs about.

These findings are relevant for the future research in the development of programs in the interaction in the classroom that seek to help students to be self-regulated and to achieve the academic success, promoting the use of strategies to set academic objectives (Chi-Tung & Ruey-Gwo, 2011; Hadwin & Webster, 2013), to manage academic time (Gaeta & Cavazos, 2016), organize their material and environmental resources in higher education

institutions (Alvarado, Vega, Cepeda, & Del Bosque, 2014). Willingness strategies, unlike the attributions for success and failure and self-efficacy for the regulation of the study can be directly trained by using different didactic or methodological strategies (Torrano, Fuentes, & Soria, 2017). Therefore, focusing on construction and application of intervention programs that seek to improve willingness strategies is justifiable, since according to the outcomes of this study and to the previous literature, they are associated with self-efficacy in a positive way in order to self-regulate willingness to study processes and with causal attributions for success to effort and, to a lesser extent, to ability and/or external factors. These willingness to study strategies must be promoted by teachers in the classroom to facilitate the development of learning self-regulation competences (Chilca, 2017).

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