

## DEVELOPMENT OF A QUESTIONNAIRE FOR ASSESSING THE PSYCHOSOCIAL COMPETENCES OF PSYCHOLOGY STUDENTS PRIOR TO COLLABORATIVE LEARNING EXPERIENCE

### *Desarrollo de un cuestionario para evaluar las competencias psicosociales de los estudiantes de psicología previas a una experiencia de aprendizaje colaborativo*

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**SUMMARY:** The purpose of this research is to develop a questionnaire that evaluates the psychosocial competencies that students who attend social psychology expect to acquire as a result of a collaborative project-based learning process. Its compilation responds to the need to measure psychosocial constructs that have barely been studied in the teaching of social psychology in an environment of collaborative learning. Moreover, it responds to the need of brief scales development to avoid redundancies and fatigue when responding. Socio-cognitive and affective

studies were used as the basis for drafting a questionnaire that was administered to second-year undergraduates in Psychology. The sample consists of 203 students studying the compulsory subject Social Psychology. The average age of 20 years old. The questionnaire's psychometric properties were studied by combining the perspective of the classic approach of the theory of tests and exploratory factor analysis with confirmatory factor analysis and biplot geometry. The items were specifically drafted for this research, taking into account a review of the literature on competencies among university students, the specific characteristics of the situation of practicals based on group projects. Psychometric analyses confirmed a multidimensional structure made up of six factors with high overall internal consistency: attitude toward social psychology, self-perception as a student, expectations on competencies, practical self-efficacy and emotional state. The questionnaire provides a reliable measure of the cognitive, attitudinal and affective-emotional competencies perceived by the students themselves that will significantly underscore their academic achievements and their professional careers. The questionnaire helps lecturers to understand what students think about their own level of competencies in order to manage a hands-on teaching project that responds to the subject's purpose.

*Key words:* competencies; self-efficacy; attitude; emotions; self-perception.

**RESUMEN:** El propósito de este estudio es elaborar un cuestionario que evalúe las competencias psicosociales que esperan adquirir los estudiantes que cursan psicología social como resultado de un proceso de aprendizaje colaborativo por proyectos. Su creación obedece a la necesidad de medir constructos psicosociales que apenas han sido estudiados en el aprendizaje de la psicología social en un contexto de aprendizaje colaborativo. También responde a la necesidad de elaborar escalas breves que eviten redundancias y fatiga a la hora de responder. Partiendo de modelos sociocognitivos y afectivos se elaboró un cuestionario que se aplicó a estudiantes de segundo curso de Psicología. La muestra está formada por 203 estudiantes que cursan la asignatura obligatoria de Psicología Social. La media de edad es de 20 años. Las propiedades psicométricas del cuestionario se estudiaron combinando la perspectiva del enfoque clásico de la teoría de los tests y el análisis factorial exploratorio con el análisis factorial confirmatorio y la geometría biplot. Los ítems fueron específicamente creados para este estudio, teniendo en cuenta la revisión de la literatura sobre competencias de estudiantes universitarios, las características específicas de la situación de prácticas basada en proyectos grupales. Los análisis psicométricos confirmaron una estructura multidimensional conformada por seis factores con una alta consistencia interna total: actitud hacia la psicología social, autopercepción como estudiante, expectativas de competencias, autoeficacia práctica y estado emocional. El cuestionario mide de forma fiable competencias cognitivas, actitudinales y afectivo-emocionales percibidas por los propios estudiantes que van a determinar de forma significativa sus logros académicos y su futuro profesional. El cuestionario ayuda al docente a conocer qué piensan los estudiantes sobre su propio nivel de competencias para así gestionar un proyecto de enseñanza práctica que responda a la finalidad de la materia.

*Palabras clave:* competencias; autoeficacia; actitud; emociones; autopercepción.

## 1. CONSTRUCTIVIST MODEL OF COMPETENCIES LEARNING

The management of university teaching promoted by the European Higher Education Area (EHEA) is based on the principles of the 1999 Bologna Declaration, regarding the design, development and evaluation of teaching-learning methods focusing on the specific and mainstream professional competencies that students need to acquire. Competencies are defined as the knowledge, attitudes, aptitudes and behaviours that need to be assimilated in the degree course, and which enable the students to pursue a professional career (Rué, 2007). Thus, competency-based learning focuses on students' holistic education, as besides expertise (knowledge) and instrumental capabilities (know-how), it works on personal attitudes (knowing how to conduct oneself) and metacognitive skills (knowing how to learn). Acquiring attitudes, values and behaviours therefore has the same importance as learning knowledge and skills.

The EHEA considers a student-focused constructivist model of learning (Rocard, Csermely, Jorde, Lenzen, Walberg-Henriksson & Hemmo, 2007). It places specific stress on the integrated application of innovative and traditional teaching methods to higher education's new context, along with instructional models that facilitate the transfer of theoretical knowledge to practice and enable students to learn to learn, with this latter aspect being especially important as it permits students to adapt to the changing demands of the job market.

Educational practices in this model focus on the acquisition of competencies, on the one hand, based on a lecturer's approach as mentor and, on the other, student self-study. The aim is for the undergraduates to acquire knowledge, skills, attitudes and responsibilities by themselves, and be capable of applying them to the workplaces in which they may subsequently pursue their professional career. Likewise, students are encouraged to take centre stage by playing a leading and participatory role in the acquisition of competencies (Barrachina, Sanz & Serrat, 2009).

Students in this constructive process are the active recipients of information, with the ability to accept their share of the responsibility in it (Dochy, Segers, Den Bossche & Struyven, 2005). Prior expertise and experiences are significant because students construct new knowledge, mindsets and conceptions based on them. They build up their knowledge and skills through two processes: the reorganisation of their mental structures and interaction with the environment. Therein lies the importance of creating what is referred to as a «powerful learning environment» (Duarte, 2003), an educational scenario that fosters a learning process in which knowledge is actively built up by assigning significant research tasks and reinforcing the assessment of the actions and experiences undertaken. Mastache (2009) points out that competencies and capabilities are not taught or learnt, but instead are built up, developed and informed through practice based on situations that require achieving a goal, resolving a problem, or making a decision that is specific to the professional world.

The learning process based on group projects (collaborative learning) follows constructivist premises promoting student autonomy, academic self-regulation, and

practical application. It involves students creating, innovating, and developing the projects they have proposed in order to respond to a broad range of academic tasks or to complex problems that need to be resolved. To do so, they are required to interact with their peers, share content with them, and build up knowledge for themselves with the support of other group members and the lecturer (Boekaerts & Cascallar, 2006). They therefore need to integrate different knowledge, experiences, aptitudes and skills (use of new technologies, time management, and group relationships).

These continuous learning activities generate a high level of intrinsic motivation and commitment to learning given that the goals are set in the work. This means that students are highly involved in dealing with the challenges posed by a complex and significant project (Cheong, 2008), and they acquire greater confidence in themselves and in their own ability to go on to achieve their goals in their professional careers. The study by Cañabate, Aymerich, Falgàs and Gras (2014) stresses that psychology students believe that this learning method significantly helps them to develop professional skills. It involves learning by doing, as a self-guided learning process that leads to significant changes in the individual and in their environment. The result is that students develop reflexive skills, their mindsets, and the desire to continue learning.

The attitude toward learning a subject conditions academic results, and should be taken into account as a competency to be acquired and improved. González contends that despite its importance, few studies analysis the relationship between attitudes and performance among undergraduates. In a 2010 study grouping students across different degree courses into clusters according to attitude, González found a significant relationship between attitudes to learning and academic performance: those students with the best attitudes recorded the best outcomes.

According to Kassin, Fein and Markus (2001), self-concept is the set of beliefs and feelings that individuals have of themselves in situations of achievement; people have different self-concepts as regards aspects of both their present lives (what they are like as students within the university ambit) and future ones (achieving professional status as a psychologist). Falanga, De Caroli and Sagone (2014) find that the belief in self-efficacy among Italian first-year psychology students has a significant impact on their academic and professional self-concept, whereby greater self-efficacy means a higher self-concept.

As Gross and Latham (2009) affirm, little is known about how undergraduates conceptualise their academic experiences. The same happens with the initial expectations psychology students, and especially the ones studying social psychology, have on academic competencies, and particularly what they can learn. The research conducted from the perspective of social psychology has highlighted the predictive role played by individuals' expectations and perceptions about themselves and their capabilities in everyday life situations, and specifically in undergraduate learning processes and academic activities (Paoloni & Bonetto, 2013). As the personal expectations on the learning outcomes expected in each subject are representative of future capabilities, they affect performance because they impact

upon self-established goals, on the effort made, and on the deployment of strategies (Bandura, 1993). Furthermore, they condition the attitude toward learning and more active participation (Vicario & Smith, 2012).

Back in 1938, Dewey stated that a quality university education is what makes a person increasingly more self-sufficient, whereby the educational purpose will be, among other competencies, to ensure that students develop personal confidence. A lack of confidence in their own capabilities determines the failure of the learning process (Moffat, McConnachie, Ross & Morrison, 2004). Therefore, a belief in the efficacy of their own skills or self-efficacy is a cognitive competency that conditions academic performance when undergraduates have to tackle tasks they find difficult to perceive. Bandura (1993) defines this expectation as the judgements on their own capabilities for organising and undertaking future courses of action that lead to the desired performance. More specifically, refers to it as the mindsets on the efficacy for regulating their own learning and mastering the sundry elements that impact upon performance within a specific context.

Bandura (1993) posits that this belief conditions the real ability to undertake academic activities, whereby the best results among students with similar capabilities faced with the same difficulties will correspond to those that feel more confident about their personal capabilities because they will apply more appropriate strategies, more interest, and greater dedication (Serra, 2010). If a student does not feel capable of undertaking certain tasks that are required for passing a subject, they will have low expectations regarding the outcome, and will refrain from performing the task because they do not feel capable of achieving it, or if they do decide to do so, they will not dedicate the necessary time or effort. Their interest in the subject will wane, they will succumb to the difficulties and give up because they underestimate their personal and social resources, exaggerate their shortcomings, giving way to feelings of hopelessness and frustration that will trigger negative emotions.

Review studies such as the one by Richardson, Abraham and Bond (2012) report that self-efficacy is linked to learning outcomes. González (2010), for example, points out that undergraduates with a high level of self-efficacy, compared to those with a low level, seek tasks that pose a challenge and thrive in the face of adversity. Salanova, Martínez, Bresó, Llorens and Grau (2005) have found a significant association between the self-efficacy of undergraduates and academic profit, whereby those that perform better are the ones with higher self-efficacy; in other words, they have greater trust in their skills and capabilities for achieving a given level of performance.

Self-efficacy also impacts upon cognitive processes and the self-regulation strategies that students put into practice, conditioning the learning process and their performance. As regards the first aspect, Ferla, Valcke and Cai (2009) report that academic self-efficacy is significantly related to academic self-concept. Sagone and De Caroli (2014) report that academic self-efficacy in psychology and medical students predicted their present and future self-concept.

As regards the mediating role that self-efficacy plays in the self-regulation strategies of first-year psychology undergraduates in Belgium, Neuville, Frenay, and Bourgeois (2007) report that it impacts upon the self-regulation strategies applied, and these in turn upon the learning process and performance. Fernández, Bernardo, Suárez, Cerezo, Nuñez and Rosario (2013) use a cohort of first-year students at Oviedo University to report that self-efficacy for applying self-regulation strategies in learning and the expectations on their usefulness determine their application.

There are few cases of empirical research into the influence that academic emotions have on success in higher education (Niculescu, Tempelaar, Leppink, Dailey-Hebert, Segers & Gijsselaers, 2015). In their theory on the control value of achievement emotions, Pekrun, Goetz, Frenzel, Barchfeld and Perry (2011) contend that the psychological wellbeing of undergraduates (academic emotions) predict the behaviours linked to learning (learning strategies), which determine successful outcomes. When analysing the centrality of academic emotions in achievements, they note that the correlation between emotions and individual performance falls within a range of 0.30 to 0.50.

As Mastache (2009) reports, a competent student is one that not only has technical skills and knowledge, but also the practical, social and emotional capabilities required for dealing with the situations they will have to face in a job market that is increasingly competitive and diverse. The research by Niculescu, Tempelaar, Leppink, Dailey-Hebert, Segers and Gijsselaers (2015) on emotional experiences in the classroom and their relationship with successful outcomes highlights the fact that positive and negative emotional experiences (enjoyment, anxiety, boredom, and hopelessness) have an impact on the performance of first-year undergraduates reading for a degree in mathematics, economics, statistics and international trade. Hopelessness was the emotion with the greatest predictive power on the final marks. These results were extended to the next three academic years. The study by Fernández, González and Trianes (2015) reports that optimism among psychology students is associated with fewer emotional expressions of stress.

## 2. PURPOSE

The aim here is to design a questionnaire for evaluating expected psychosocial competencies (EPC) in psychology students as a result of a collaborative project-based learning process. This measuring instrument analyses the cognitive competencies (expectations of competencies, self-efficacy), attitudinal ones (attitude toward social psychology), affective-emotional ones (situational emotions, self-perception) perceived by students during practicals in the subject Social Psychology that will play a significant part in determining their academic achievements and their professional future. Their creation is due to the need to measure constructs that intervene in the learning process, as they have barely been studied within the ambit of higher education in social psychology, and there are no specific instruments for rating undergraduates' academic activities in a classroom environment.

### 3. METHOD

#### 3.1. *Participants*

The sample consists of 203 students studying the compulsory subject Social Psychology on the Psychology degree at the University of Salamanca. The sample accounts for 93% of the students enrolled on the course.

The participants' age ranged between 19 and 32 (mean of 20); 78.3% were females and 21.7% males.

#### 3.2. *Measures*

The preparation of the EPC involved the design of 41 items that are representative of the cognitive-affective constructs under study. The items were specifically drafted for this research, taking into account a review of the literature on competencies among university students, the specific characteristics of the situation of practicals based on group projects, and in the case of self-efficacy the criteria on the construction of self-efficacy scales formulated by Bandura (2001).

##### 3.2.1. Attitude toward social psychology (OP)

This refers to the students' opinion on the relevance and usefulness of social psychology in their professional careers. It reflects the students' predisposition toward studying the subject. Four items were drafted. They used a scale of 0 to 4 to rate their degree of agreement with the statements (not at all in agreement to fully in agreement).

##### 3.2.2. Self-perception as students (SOY)

This covers the undergraduates' perception of what they are like and how they behave as students. This therefore involves student's thoughts about themselves as an active subject, their dedication to the learning process, and their responsibility for it. Ten items were used. The response choices ranged from not at all in agreement to fully in agreement (0 to 4).

##### 3.2.3. Expectation on competencies (UT)

This refers to the students' perception of future learning outcomes and the skills they hope to acquire or hone in the practicals. It measures what they expect to learn in terms of expertise (knowledge), performance (know-how), and behaviour (knowing how to conduct oneself). Learning outcomes refer to what students know how to do after completing the process of practicals in the subject.

The measuring instrument's twelve items are based on the selection of specific and mainstream core competencies that are addressed in the practicals. They refer to the analysis and assimilation of information, teamwork, and problem-solving. The students were asked to what extent they thought the group project would help them to acquire the target skills. Their answers were provided on a Likert-type scale of 0 to 10 (not at all useful to completely useful).

#### 3.2.4. Practical self-efficacy (CAP)

This is the perception students have of their ability to undertake the actions required for tackling and overcoming the difficulties that arise as the subject develops. It includes the individual actions that typify a self-regulation process, such as «making the necessary effort», group-related actions, such as «clearly conveying my ideas to the group», and beliefs about the subject, such as «passing this subject with ease». The scale consisted of seven items referring to the extent to which the students felt capable of achieving the specified aspect. The Likert-type scale ranged from 0 (not at all capable) to 4 (fully capable).

#### 3.2.5. Emotional state (AHO)

This reflects the perception the students have of their emotional experience on the first day of practicals in the subject. A selection was made of those activity emotions that tend to be more common on the first day of class and which accompany the learning process. The eight items used referred to the positive and negative emotions that the students might feel in class at that moment (e.g., motivated, optimistic, grumpy). The students rated the extent to which they felt each one of these emotions on a Likert-type scale that ranged from 0 (not at all) to 4 (completely).

### 3.3. Procedure

On the first day of class, the students were told that the practicals were to be used to pursue an audiovisual group project in which they had to produce a video whose content addressed a social issue that was explained from the perspective of social psychology. The video was to be aimed at pupils in their last year at secondary school for the purpose of encouraging them to enrol on the degree in psychology.

On this first day, the students were invited to take part in this research, were informed of the study's objectives, of the confidentiality of their answers, and of the voluntary nature of their involvement, and they were also thanked for their cooperation.

The data were collected by administering an online self-report questionnaire to the students, which they accessed via the university's Moodle platform. The



methodological design followed a longitudinal perspective; that is, at the end of the practicals a second measurement was made, although given the purpose of this article only the data for the first wave are shown.

The questionnaire had two parts: the first one gathered sociodemographic data, and the second one used different sections to present the statements that measured the psychosocial constructs. Each section began with a question that introduced the construct to be measured: what is your opinion of social psychology? What are you like as a student? What do you expect from the project? To what extent do you feel capable of...? How do you feel at this moment?

#### 3.4. *Statistical methods for data analysis*

The questionnaire's psychometric properties were studied by combining the perspective of the classic approach of the theory of tests and exploratory factor analysis (EFA) with confirmatory factor analysis (CFA) and biplot geometry. EFA and CFA involved the use of IBM SPSS Statistics software and AMOS version 23.0. The biplot analysis was run with the MultBiplot program (Vicente-Villardón, 2015).

The first step involved analysing the homogeneity indices of the items making up each theoretical construct and calculating Cronbach's alpha in order to rule out those with low homogeneity, optimise internal consistency, and increase reliability. The criterion applied was to discard those items with a homogeneity of less than .40. The results of the Kaiser-Meyer-Olkin test ( $KMO = .121$ ) and the Bartlett's test ( $\chi^2 = 2454.72$ ,  $gl = 378$ ,  $p < .000$ ) were satisfactory, so the second step involved conducting an EFA to examine the data's underlying structure without imposing a theoretical structure, and thus know its construct validity. The results were interpreted using the principal components extraction method and Varimax rotation.

The third step involved a CFA, as it overcomes the restrictions of the exploratory mode because it is an estimation procedure that provides guarantees over and above subjectivity by enabling the researcher to introduce robustly based restrictions (García, Gallo & Miranda, 1998). The stage involving the diagnosis of the goodness-of-fit assesses the precision of the assumptions of the specified model for deciding whether it is correct, and identify its predicting power. The hypothesis to be verified is whether the model is sound, and how much a lower value obtained for the Chi-square statistic in comparison with the degrees of freedom will lead to a better fit. According to Wheaton, Muthén, Alwin and Summers (1975), a value equal to or lower than five is a «reasonable start» for accepting the model.

The absolute measures of fit were the Chi-square ( $\chi^2$ ) test, the  $\chi^2/gl$  ratio, where  $gl$  are the degrees of freedom, the Root Mean Square Error of Approximation (RMSEA) and the Root Mean Square Residual (RMR) index. The overall goodness-of-fit indices involved calculating the Comparative Fit Index (CFI), which compares the estimated model and the null or independent model and the Incremental Fit Index (IFI) that selects, between two models with the same Chi-square values, the one with fewer parameters. According to Marsh, Hau and Wen (2004), for a good fit to

the model, the RMSEA index should have values lower than or equal to .05, and the CFI should record values higher than .95.

A multivariate analysis by GH-Biplot was used to determine the joint association of the variables. A biplot graphically plots three or more variables in the same way a scatter diagram shows the joint distribution of two variables (Gabriel, 1971). According to Galindo (1986), it is a way of jointly depicting a matrix's individuals and variables. A biplot normally plots the variables by vectors, which point toward the place where there is a greater variability for each one; individuals are represented by points on the plane.

#### 4. RESULTS

##### 4.1. *Internal consistency and exploratory factor analysis*

Thirteen of the 41 items that originally made up the EPC were discarded. There now follows an explanation of the reasons for their removal by dimension. A discriminatory analysis of the items in the construct of attitude toward social psychology revealed that one item had low homogeneity: social psychology is important for understanding other subjects. An analysis of its content showed that it was expedient to remove it because it referred to its relationship with other subjects, whereas all the other statements referred to the subject itself.

As regards the variable of self-perception as a student, six items were deleted for theoretical reasons and low homogeneity. It is theoretically noted that two items refer to lectures, and not to their personal reflection on their individual conduct as students (I find the classes tiring and boring; the lectures make me anxious), and the item «I tend to participate in class» does not help the students to define them as such. The formulation of the following items: I accept group contributions; I know how to listen; I fulfil the tasks I'm assigned, may have been ambiguous because they refer to general aspects, and are not specific to the classroom.

In the case of expectations on competencies, three statements were discarded because of their low homogeneity (manage bibliographic data gathered from different sources, produce audiovisual presentations, and think more creatively and innovatively). On a theoretical level, this low homogeneity may be because these competencies have been addressed in previous subjects.

In the construct of practical self-efficacy, the item «Group work» recorded low homogeneity because it was the sole statement that referred to the group and not to the specific individual, as is the case with all the other items for this variable.

Finally, the items in emotional state referring to pride and restlessness recorded lower homogeneity. Pride is an emotion that arises when someone achieves something, and restlessness normally appears when someone has something else to do; the students have perceived both emotions as being inappropriate for the first day of practicals, which explains the decision to delete them.

The psychometric properties of the theoretical constructs that make up the questionnaire are contained in Table 1. The internal consistency of each one of them, exceeds the value of .70, indicating that the items used form reliable measurement scales and have internal validity. The Cronbach's alpha for the whole questionnaire was .89.

TABLE 1  
 Psychometric properties of the measurement scales

MEASUREMENT SCALES	NO. ITEMS	MEAN	SD	ALPHA
Attitude toward social psychology	3	3.37	.57	.73
Self-perception as a student	4	2.88	.73	.82
Expectations on competencies	9	7.82	1.04	.87
Practical self-efficacy	6	3.38	.41	.74
Emotional state	6	2.24	.39	.84

The 28 items with suitable homogeneity were used to conduct the EFA, with the extraction of a structure in which the variability absorbed with the six axes was 61.75 %. The number of factors was selected bearing in mind Kaiser's rule and the Cattell scree test on the sedimentation graph. It is thus noted that there were seven factors that recorded initial self values higher than one, and that the sedimentation graph also recorded a sharp drop in the slope as of the seventh factor. Finally, the decision was made to construct a six-factor model (see Table 2) for the following reasons: 1) in the seventh factor, items UT6 and UT7 had negative and low factor loadings; by contrast, these same items in the third factor had positive loadings with higher factor weight. The items had more theoretical meaning integrated in the expectation dimension than in a separate dimension; 2) in the seventh factor, the factor loading of item AH05 weighed higher in the fifth factor, and it was theoretically more consistent to keep it in the dimension of emotional state; 3) the items in factor seven lacked the theoretical analogy that may be justified for our purpose here.

Table 2 shows that the first factor consists of six items for the dimension of emotional state, and explains 23.77% of the variance. The second and third factors are made up of items referring to expectations on competencies such that this variable is structured into two clearly differentiated sub-dimensions: factor two, comprising five items, which explains 10.46% of the variance, and factor three, comprising four items, which accounts for 9.38% of the variance. Factor two, with  $\alpha = .88$ , was called practical expectations, and factor three was called understanding expectations due to the content of its items ( $\alpha = .87$ ).

TABLE 2  
 Factor loadings of the proposed questionnaire

ITEMS IN THE QUESTIONNAIRE ON COMPETENCIES	X±SD	F1	F2	F3	F4	F5	F6
OP2-Social psychology will be of use to my professional career	3.41±.71						.76
OP3-I think that Social Psychology is an interesting subject	3.61±.62						.82
OP4-Social Psychology is a subject that I find motivating	3.11±.79						.72
SOY1-I try not to miss any classes	3.31±.87				.72		
SOY2-I consider myself to be a responsible student	3.20±.79				.82		
SOY3-I try my hardest in my studies	2.99±.91				.78		
SOY5-I'm usually up-to-date with my studies	2.03±1.07				.78		
UT1-Better understand the subject's core concepts	7.36±1.54			.77			
UT2-Apply the knowledge acquired to reality	7.77±1.54			.76			
UT3-Understand the social dimension of human beings	7.53±1.64			.75			
UT4-Analyse and organise the information that the group is steadily gathering	7.45±1.55			.64			
UT6-Work and collaborate effectively with my fellow group members	8.18±1.33		.75				
UT7-Considers my peers' points of view and accept new ideas	8.30±1.38		.77				
UT9-Effectively resolve any difficulties that may arise in the group	8.04±1.38		.74				
UT11-Look for suitable information to help us resolve problems	7.74±1.47		.56				
UT12-Make the right group decisions at any given moment	8.01±1.41		.73				
CAP1-Pass this subject with ease	3.47±.58					.61	
CAP2-Get a good mark in this subject	3.14±.67					.70	
CAP3-Become actively involved in this subject's practicals	3.36±.62					.64	

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ITEMS IN THE QUESTIONNAIRE ON COMPETENCIES	X±SD	F1	F2	F3	F4	F5	F6
CAP4-Make the necessary effort to pass this subject	3.61±.58					.58	
CAP5-Tackle the difficulties that arise in this subject's practicals	3.46±.55					.74	
CAP6-Clearly express my ideas to the group	3.23±.75					.55	
AHO1-Motivated	2.99±.90	.65					
AHO2-Excited	2.71±.96	.68					
AHO3-Optimistic	3.16±.80	.70					
AHO4-Happy	3.11±.82	.75					
AHO5-Grumpy	0.69±.97	-.70					
AHO8-Downhearted	0.80±1.04	-.82					

The fourth factor refers to the dimension of self-perception as a student, and its four component items account for 6.85% of the variance. The fifth factor involves six items referring to academic self-efficacy, and they explain 6.11% of the variance. Finally, factor six consists of three statements on the dimension of attitude toward social psychology, and they explain 5.17% of the construct. An analysis of the content of the items that make up each one of these factors reveals a structure that is consistent with the initial theoretical approach.

All the items that make up the dimension of attitude record similar mean scores, with the same applying to the dimensions of expectations on comprehension competencies and practical self-efficacy. Nevertheless, the mean scores the students have given for item SOY5 on the attitude dimension and item UT11 on the dimension of expectations on practical competencies are lower than all the other items that make up each one of the dimensions. Items AHO5 and AHO8 have lower mean scores than those recorded by all the items in the dimension, as they allude to negative emotional states.

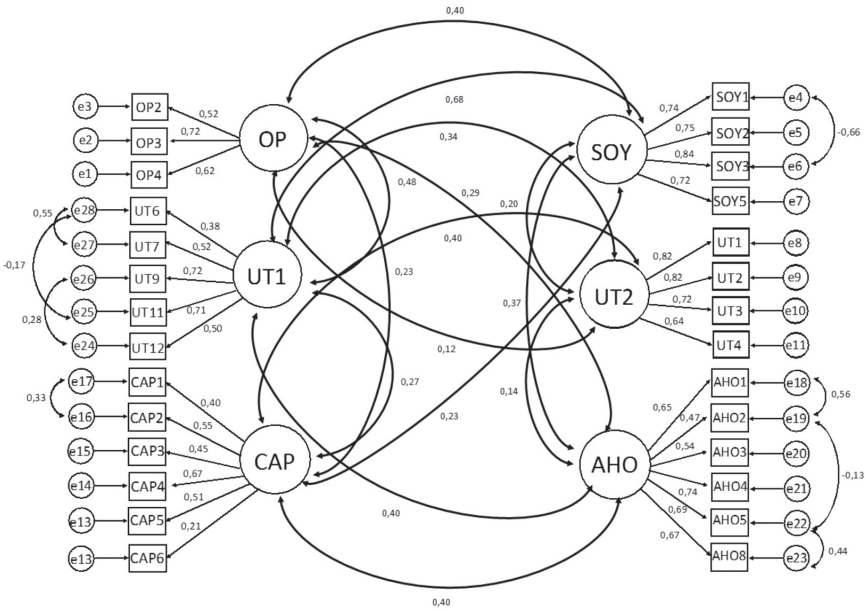
The resulting factor structure provides evidence of the construct's validity, showing that the previously constructs have behaved empirically in the expected manner, with the exception of the variable of expectations on competencies. It has been noted in this case that when responding to the items the subjects discriminate between two aspects: theoretical or comprehension aspects and those of a practical or applied nature.

4.2. *Confirmatory Factor Analysis*

Based on the six-factor model, a CFA was conducted according to the theoretical structure used in the questionnaire. The parameters were estimated using the maximum likelihood (ML) method because it provides estimations that are consistent, efficient and unbiased with overly small sample sizes.

In the CFA, a variance of one was assigned in at least one of the connections between the latent variable (represented by circles) and the observable variables (represented by rectangles), providing the theoretical model shown in Figure 2. The arrows indicate the relationship between each one of them. The covariances between the errors were added individually, and the p-values were checked to ensure they were significant, building a recursive model. Finally, the errors were correlated, such that  $\chi^2 = 420.17$ ,  $gl = 327$  and  $p = .000$ .

FIGURE 1  
The questionnaire's final theoretical model



NOTE. OP=attitude toward social psychology; UT1=expectations on practical competencies; CAP=practical self-efficacy; SOY=self-perception as a student; UT2=expectation on comprehension competencies; AHO=emotional state.

With a view to validating a theoretical model, researchers recommend using more than one measure of goodness-of-fit (Browne & Cudeck, 1993), so besides considering the chi-square (it may be sensitive to the size of the sample), the CFI and

RMSEA fit indices have been calculated. Table 3 shows the results for these indices. The column for the recorded value indicates whether these values are higher or lower than the expected values, confirming that the data fit the theoretical model.

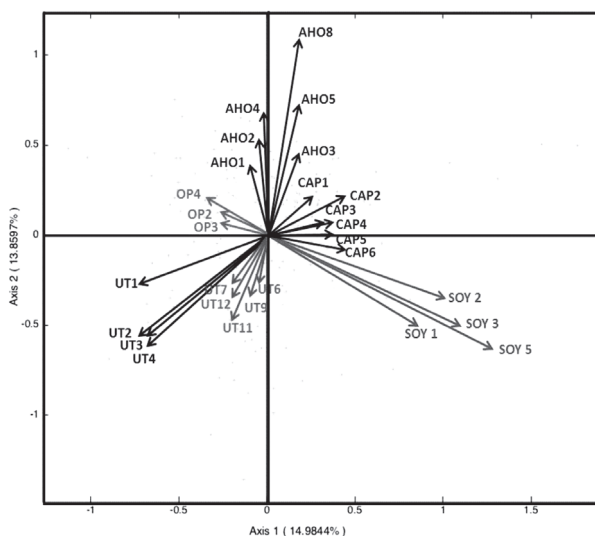
TABLE 3  
 Fit indices for the Confirmatory Model

INDICATOR	EXPECTED VALUE	RECORDED VALUE
RMR	<.80	.07
CFI	>.95	.96
IFI	>.90	.96
RMSEA	<.05	.04

#### 4.3. Geometry of the bi-plot

Finally, the variables' covariance structure was determined through the model's graphic depiction with a GH\_Biplot. Figure 3 plots the first and second axes, with an inertia absorption of close to 30%. The graph's vectors show each one of the items that make up the questionnaire's theoretical constructs.

FIGURE 2  
 Vector structure of covariance between the theoretical constructs



The biplot's covariance structure shows that the six component items of the dimension of emotional state are highly and positively correlated, as they form narrow angles between them. It is also noted that they are not correlated with all the other items because their angles are not so narrow, and in some cases they are even close to 90°. The graph shows that this is the case for each one of the six dimensions in the questionnaire proposed. The graph also shows that the items in the sub-dimensions of the construct of expectations on the outcome have close vectors and clearly differentiated angles, which proves that the items belong to the same construct, albeit to qualitatively different dimensions.

## 5. DISCUSSION

The results reported here confirm that the EPC fulfils its purpose as a useful, valid, and reliable instrument for measuring the level of the cognitive, attitudinal, emotional and behavioural competencies that the undergraduates perceive they have or expect to acquire and improve by taking part in the practicals involved in a project-based learning process. Specifically, the measurement scales have high internal consistency, which is an important aspect when considering they have few, albeit sufficient, items for measuring each construct. These types of measures avoid redundancies and fatigue when responding, besides meeting the need for brief scales with good psychometric properties.

The CFA and biplot provide empirical evidence to show that the questionnaire on competencies is structured into six separate but related factors. It is worth mentioning that the participants split the construct of expectation on the outcome into two dimensions: 1) a comprehensive (cognitive) one focused on knowing and understanding in order to apply this to reality, and 2) another practical (behavioural) one focused on doing, performing relevant actions in order to pursue and effectively complete the group practicals project.

It should also be noted that the measurement scale on practical self-efficacy responds to the call made by scholars such as Bandura (2001) for instruments that are sensitive to the differences that students show in their belief in self-efficacy in different domains, dismissing the assumption that undergraduates have a single overall perception of their competency within all these contexts.

An examination of the mean scores attributed to each variable shows that the students have a very positive attitude toward social psychology; in fact, they consider it to be an interesting and useful tool for their professional careers. These aspects are a reflection of motivated learning. Furthermore, they view themselves positively as students of the subject, affirming they are responsible and try not to miss a class, but they seem to find it difficult to keep abreast of the subject's workload.

The students have higher expectations on competencies for the results applied, above all for those related to group cooperation, although their comprehension expectations are also high; in other words, they expect the practicals to help them



understand reality in order to implement the knowledge acquired in the subject. Along these lines, Green, Conlon and Morrissey (2016) find that psychology students value their practicals the most, followed by theory, and finally research. As regards the scores given to research-focused items (finding suitable information or analysing and organising data...) it may be inferred that the undergraduates in this cohort make a similar evaluation of the items on knowledge and research, while rating more highly those involving practical interpersonal behaviour (taking their peers' points of view into account, working and cooperating in an effective manner, etc.). It also noted, bearing in mind the items' content, that the students expect to acquire more mainstream competencies than specific ones, and more cognitive competencies than affective-emotional ones.

As regards practical self-efficacy, the mean score indicates that they feel fairly capable of undertaking the tasks required for effectively carrying out the project and passing the subject. The activities in which they have a greater perception of capability are those referring to self-regulation behaviours: making the necessary effort or tackling difficulties.

Concerning the students' emotional experience on the first day of classroom practicals, they record a medium intensity, with a high score in optimism, happiness, motivation and enthusiasm, and a low one in feelings of hopelessness. This emotional state favours good learning because, as noted by Londoño, Hernández, Alejo and Pulido (2013), optimism reflects a person's readiness to persevere when they face difficulties in achieving their goals.

## 6. CONCLUSIONS

The EPC responds to the need to create instruments for assessing the extent to which the activities programmed by a lecturer lead to the achievement of a subject's goals and to an understanding of the way in which students perceive and manage their educational process.

The questionnaire's component dimensions permit measuring competencies, such as attitude, the expectations on learning outcomes, and emotional state, which despite their relevance in the learning process have yet to receive systematic attention as competencies that underpin the higher education of social psychologists, better teaching quality, and professional qualification. In this vein, scholars such as Duschl (1990) contend that the learning of competencies in higher education should not simply be restricted to the conceptual dimension, as it should also consider epistemological and emotional dimensions, among others.

Knowing whether the students' expectations on learning outcomes are overstated, underestimated or apt enables lecturers to provide learning contexts that temper, maintain or foster them, as appropriate, so they fall in line with the teaching goals, the students' own experiences, and enhance the quality of the learning process. Knowing the students' initial attitude toward the subject enables the lecturer to plan learning methods that enhances their association between meeting their

academic requirements, employability, and their ability to deal with the challenges they will have to face in their future jobs.

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