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Team Potency and Cooperative Learning in the University Setting

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Abstract

There were two goals to this investigation, on the one hand, to construct the "Learning Team Potency Questionnaire" in the university setting and to analyze its psychometric characteristics. The second goal was to show how teamwork with cooperative learning techniques influences team potency. In this work, participants were 375 students aged between 18 and 44 years, randomly selected from a total of 1680 students of the Faculty of Teacher Training of Cáceres (Spain). The Learning Team Potency Questionnaire has very acceptable psychometric characteristics, good internal consistency and temporal reliability. Analysis using structural equations showed that the latent variables in the two factors found are well defined and, therefore, their assessment was adequate, reaffirming the good psychometric characteristics of the questionnaire. Regarding the second goal, we verified that teamwork with cooperative learning techniques influences team potency, that is, confidence in the team increases when students work as a team, using cooperative learning techniques.

Keywords: team potency, team efficacy, motivation, cooperative learning, university students.

Resumen

En esta investigación se plantean dos objetivos, por un lado construir un "Cuestionario de Potencia de Equipos de Aprendizaje*"* y analizar sus características psicométricas. En un segundo objetivo nos hemos propuesto demostrar como el trabajo en equipo con técnicas de aprendizaje cooperativo influye en la potencia de equipo. En este trabajo de investigación participan 375 estudiantes de edades comprendidas entre los 18 y 44 años, seleccionados al azar de un total de 1680 estudiantes de la Facultad de Formación del Profesorado de Cáceres (España). El Cuestionario de Potencia de Equipos de Aprendizaje posee unas características psicométricas muy aceptables, buena consistencia interna y fiabilidad temporal. El análisis mediante ecuaciones estructurales mostró que las variables latentes en los dos factores están bien definidas y, por tanto, la forma en que se han evaluado es adecuada, reafirmando las buenas características psicométricas de la escala. En cuanto al segundo objetivo, se verificó que el trabajo en equipo con técnicas de aprendizaje cooperativo influye en la potencia de equipo, es decir, la confianza en el equipo aumenta cuando los estudiantes trabajan en equipo, utilizando técnicas de aprendizaje cooperativo.

Palabras clave: potencia de equipo, eficacia de equipo, motivación, aprendizaje cooperativo, estudiantes universitarios

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Introduction

The first investigations on applications of cooperative learning appeared in the 1960s (Slavin, 1991). Since then, cooperative learning has been the object of numerous studies. Most of the investigations have focused on analyzing the consequences and results of the application of cooperative learning techniques on academic, social, and affective variables (Johnson, Johnson, & Maruyama, 1983; Johnson, Maryuama, Johnson, Nelson, & Skon, 1981). In the opinion of Elices, Del Caño and Verdugo (2002), it is a positive methodology for students. Along these same research lines Johnson, Skon and Johnson (1980) and Skon, Johnson and Johnson (1981) compared three types of interaction and organization: cooperative, competitive, and individualistic, revealing better academic social and social performance in cooperative situations.

Within this majority group of investigations, some studies in Spain have analyzed the results and positive consequences of the use of cooperative learning (Del Caño & Mazaira, 2002; Díaz-Aguado & Andrés, 1999; León, Felipe, Gozalo, Gómez, & Latas, 2009; León, Gozalo, & Polo, 2012; Ojea, López Cid, & Fernández, 2000; Sales, 1998).

Few investigations have focused mainly on solving issues related to the efficacy of cooperative learning and the mediating mechanisms involved. The goal of these investigations revolves around two axes. The first one focuses on the nature and quality of the interactive process (Bennet & Dunne, 1991).

The second axis refers to prior factors that condition the efficacy of cooperative learning (León, 2006; León, Gozalo, & Vicente, 2004; Monereo, Castelló, & Martínez-Fernández, 2013**;** O'Donnell et al., 1990; Rewey, Dansereau, Dees, Skaggs, & Pitre, 1992).

In Spain, there are very few investigations related to factors that mediate the efficacy of cooperative learning. Although in the university setting, we underline the work of León et al. (2004), who analyzes how the character of the participants—introvert, extrovert, independent, gregarious, shy—affects the success and failure of cooperative learning**.** The influence of training in social skills and group dynamics on performance and on the interactive processes in cooperative learning situations has been corroborated (León, 2006). The more the resources of social interaction are consolidated in the group, the better is performance and the efficacy of cooperative systems.

Within the sphere of organizations, the Input-Processes-Output (IPO) model (Gil, Alcover, & Peiró, 2005; Goodwin, Burke, Wildman, & Salas, 2009; Kozlowsi & Ilgen, 2006) has mainly been used for the analysis of the efficacy of work teams, and variables such as team composition, homogeneity-heterogeneity, the competences contributed by team members, task design and interdependence, the team's mental models, transactional memory, group learning, group climate, team potency, cohesion, conflicts, emotional processes, communication, and coordination have been studied.

However, the IPO model is insufficient, in addition to the processes, there are many mediators involved which transmit the influence to the results. IPO implies a linear trajectory of one single cycle of entries through results, eliminating the feedback cycle in the sequence. As an alternative model, we use the term IMOI (input-mediator-output-input). Substituting "M" for "P" reflects the broader range of variables with explanatory power for variability in team performance and its viability (Ilgen, Hollenbeck, Johnson, & Jundt, 2005).

Regardless of the theoretical model, there are three good indicators that determine the efficacy of a workteam: the level of group development—that is, group maturity—, the members' identification with the team, and team potency (Navarro, Quijano, Berger & Meneses, 2011).

Many researches have focused on the analysis of how team composition, processes and the organizational setting determine team efficacy, but not until the 1990s did researchers consider the importance of the collective beliefs in the team's capacity. Two types of team beliefs were the center of the research: team potency and team efficacy (Collins & Parker, 2010). Both constructs refer to the beliefs of the team members about the team's capacity to be effective. According to Jung and Sosik (2003), both terms have been used indistinctively. The concept of team potency was originally defined by Guzzo, Yost, Campbell and Shea (1993**)** in reference to a group's collective beliefs in its effectiveness, and it is an essential construct related to group motivation. The concept of collective self-efficacy is related to team potency (Bandura, 1997). Self-efficacy refers to a team member's individual beliefs and it underlines individual actions required to perform a specific task. The meta-analyses of Stajkovic, Lee and Nyberg (2009) indicated that group potency was related to group performance (.29) and more so to collective efficacy (.65).

According to Collins and Parker (2010), there is solid evidence of the importance of team potency. In a meta-analysis of 67 studies, positive and moderate relations were shown (r = .37) between team potency and group performance (Gully, Incalcaterra, Joshi, & Beaubien, 2002). On the one hand, team potency is the most relevant variable to predict performance and group efficacy when compared with other variables such as group composition, interdependence, work design, and organizational setting (Campion, Papper, & Medsker, 1996). Other investigations relate team potency to leadership and its influence on group performance (Lester, Meglino, & Korsgaard, 2002; Sivasubramaniam, Murry, Avolio, & Jung, 2002). In Spain, studies of team potency are practically nonexistent, although we note the investigations of Mena, Barrasa and Gil (2012), who analyze the influence of team potency and its variation on work team efficacy in health settings.

According to Gil et al. (2005), the benefits of team potency on work teams are independent of the context in which they take place; hence, our interest in this construct within the context of cooperative learning in the university setting. Currently, when the process of adaptation to the European Space of Higher Education has culminated in all the Spanish universities, teaching processes and the teacher's work in presential teaching are no longer as interesting as the learning processes by which students achieve the proposed goals in each subject (Palacios, 2004).

In this new learning-focused approach, the use of methodologies, like cooperative learning, has established itself as a practical alternative to traditional teaching, and has proven its effectiveness in hundreds of studies throughout the world (Slavin, 2011). It is important that students learn to interact effectively in situations of cooperation, strengthening and facilitating independent learning (Johnson & Johnson, 1994).

Cooperative learning is an efficacious methodology to develop critical sense and tolerance, when the task is complex or the learning objectives are very important, and when what is intended is the social development of the students (Macpherson, 2009). Cooperative learning transcends the strictly academic aspect and facilitating the practice of habits of cooperation, solidarity and teamwork (the transversal Competence of our titles). The latter are key aspects in most business organizational schemes. According to Colás (1993), between 70 and 80% of jobs require a complex coordination of ideas and efforts, a capacity that can only be experienced and learnt through situations of cooperative learning.

Within this new teamwork context in situations of cooperative learning in the university setting, we are interested in the students' beliefs in the capacity of their work team. We think that team potency is one of the most relevant motivational variables

related to group efficacy, which improves team members' attitudes and the perception to successfully perform a task and their capacity to solve problems that may arise while performing the teamwork. There were two goals to this investigation, on the one hand, to construct a "Learning Team Potency Questionnaire" in the university setting and to analyze its psychometric characteristics. It is important to design instruments to assess and delimit this construct within the university setting in a situation of cooperative learning. The second goal was to show how teamwork using cooperative learning techniques influences team potency. We believe that confidence in the team and their ability to successfully complete the tasks increases when the students learn together, help each other mutually, and solve team problems satisfactorily.

Method

Participants

In this research, 375 students, aged between 18 and 44 years, participated. Of them, 80% were less than 22 years old, and the mean was 21.3 (*SD* = 4.6) years. Sixty-six percent of them were female. The participants were selected randomly using a cluster sampling where 6 classes were randomly selected from a total of 16 (1680 licentiate students) of the Faculty of Teacher Training of Cáceres (Spain), Primary Education Teachers, and Social Education. With these 375 students, 125 teams of three members were formed. The members of each tem were systematically and randomly selected. The procedure consisted in assigning numbers to all the participants of the same classes and through random computer-generated numbers.

It is important to underline why we selected students from Primary Education and Social Education for our study. If we take into account the academic guidelines of these degrees, which present a large quantity of contents and activities related to teamwork as well as the competences related to such contents and activities, which the students should carry out throughout their training process, along with the high percentage assigned to their assessment, we can get an idea of the importance of teamwork for the participants in the study.

Instruments

Learning Team Potency Questionnaire, LTPQ. We designed this questionnaire in order to assess students' perception of their work team's capacity to successfully perform the activities carried out in the different subjects. It is made up of 8 items rated with a Likert format ranging from 1 (strongly disagree) to 10 (strongly agree). Example items are: "It is easy for my team to carry out any activity proposed in the different subjects", "The teamwork carried out by my team is very high quality." The intention was that the items appropriately showed the most relevant contents of the construct that is being assessed, according the definition by Guzzo et al. (1993) in reference to a group's collective beliefs in its effectiveness and the group's motivation.

Design

We used a quasi-experimental methodology with a pretest-posttest intergroup design, with a nonequivalent control group, in which participation is not random because the groups are constituted naturally and, therefore, cannot be formed randomly. We wished to maintain the classroom reality and conditions. A quasi-experimental

design applies experimental designs to real situations (educational, family, social, etc.). The two main strategies to palliate the defects of quasi-experimental methodology are: (1) the inclusion of a control group; (2) Taking a measurement before and after applying the treatment. These two measurements are called pretest and posttest. The experimental group is divided into 5 subgroups, all with the same experimental condition, that is, receiving an intervention with cooperative learning techniques. The different subgroups belonging to the experimental group are: Subgroup 1 (1st-A Primary Grade), Subgroup 2, (1st-B Primary Grade), Subgroup 3 (3rd-B Primary Grade), Subgroup 4 (3rd-C Primary Grade), and Subgroup 5 (1st Grade Social Education). The control group (2nd-A Primary Grade) did not receive the experimental condition treatment. In the experimental subgroups and the control group, work teams of 3 randomly chosen members were formed, and they were maintained during the entire semester. 75 students (25 teams) formed the control group versus the 300 students from the experimental group (100 teams in 5 classes).

All the experimental subgroups and the control group carried out the regular group tasks corresponding to their respective grades—learning tasks in which they were required to perform and hand in activities such as: organizing and relating the contents of the topics dealt with in class; differentiating, clarifying, and defining concepts; reviewing, strengthening, and discovering contents; critical analyses, decision-making, and oral presentations. Although both groups (experimental and control) dedicated a total of 40 hours to working in groups throughout the semester—at the rate of 2 hours per week—group differences in task performance are observed, particularly in the fact that experimental groups carried out the tasks using the most adequate cooperative learning techniques to learn the concepts, and that allow greater flexibility, when adapting to the needs of numerous classroom groups (Cooperative Maps and Tables, Jigsaw), for example, organization by means of Cooperative Maps (10 hours), consolidation using the Jigsaw technique (20 hours), and discrimination of concepts by means of Cooperative Tables (10 hours). These cooperative learning techniques guarantee students' responsibility (putting out maximum effort) and interdependence (depending on each other to achieve the goal). In the control group, however, these tasks of organization, consolidation, and discrimination of concepts are carried out autonomously in the group, that is, without having received guidelines about cooperative learning techniques, without guaranteeing their interdependence and responsibility—essential elements in situations of cooperative learning.

For both groups, experimental and control, the assessment consisted of completing the Cuestionario de Potencia de Equipos de Aprendizaje [Learning Team Potency Questionnaire] at pretest and posttest. The study took place during the second semester of academic year 2012-13. The teams were formed during the first week of February, which was when the pretest was also conducted. The intervention lasted 15 weeks. Then, during the last week in May, the posttest assessment was conducted.

Procedure

This research is included in a larger Project called “Skills Development Working in cooperative teams in Educational Settings”. In 2013, it was approved by the Bioethics Committee of the University of Extremadura. The Project began with a training period for the participating teachers through a workshop (12 hours) taught by experts in Cooperative Learning (CP) on contents related to this methodology, and particularly, the theoretical basis of CP, the implementation process in the classroom, the application of the different CP techniques, the role of the teacher in CP and the assessment thereof.

There is no doubt that university teachers must know and apply cooperative learning in university classrooms (León & Latas, 2007).

In intervention three cooperative learning techniques were used: Jigsaw, Cooperative Maps, and Cooperative Tables. Each one was administered five times per subject (Educational Psychology, Personality and Individual Differences, Physical Education in Primary Education) during a semester.

The coordinator previously explained the study and asked participants (university students between 18 and 44 years old) if they had any questions. Students gave oral consent for taking part in the investigation. The data were obtained through the administration of the Learning Team Potency Questionnaire, (LTPQ), ensuring the anonymity of the responses, the confidentiality of the data and their exclusive use for research purposes. We followed the ethical guidelines of the American Psychological Association (2009**)**.

Results

Psychometric Properties of the LTPQ

The original sample (N = 375) was divided into two randomly extracted subsamples. The first one (n_1 = 188) was used to carry out the exploratory factor analysis (EFA) and the second (n_2 = 187) was used for the confirmatory factor analysis (CFA). According to Kline (2005), the ideal sample for confirmatory analysis should have between 150 and 200 subjects.

To calculate the construct validity of the instrument, we carried out exploratory factor analysis. The Kaiser-Meyer-Olkin sample adequacy measurement was .894 and Bartlett's sphericity test was significant**,** $\chi^2 = 807.91$, $p < .001$. Both values, KMO and Bartlett, indicate the suitability of factor analysis. We used principal components with oblimin rotation to extract the factors. The data revealed two factors that conjointly explain 70% of the total variance (Table 1). The first factor, called *confidence*, explained 46% of the variance and referred to the students' general expectations of efficacy of their own team. The second factor, called *performance*, explained 24% of the variance and assessed the students' perception of their work teams' capacity to successfully perform a series of academic activities and tasks. These two factors are correlated with .751 ($p < .001$).

Table 1

Exploratory Factor Analysis of the LTPQ

M	*SD*	Communalities	Items	Factor1	Factor2
7.33	1.41	.665	It is easy for my team to carry out any proposed activity	.800	
7.52	1.47	.749	My team is very motivated to work as a group	.866	
7.81	1.33	.754	My team has a high degree of efficacy	.867	
8.09	1.40	.600	My team is self-confident	.749	
8.98	1.36	.822	My team can hand in the works requested by the teacher punctually		.906
7.99	1.20	.715	The collective works carried out by my team are of good quality		.744
7.26	1.77	.706	My team is one of the best in my class		.688
7.86	1.36	.560	We satisfactorily solve any conflicts that arise while performing the activities		.538
				Factor 1	Factor 2
			Percentage of explained variance (Total 70%)	46%	24%
			Alpha (Total .900)	.853	.814

Internal consistency of the questionnaire, measured by means of Cronbach's alpha, was .900, very acceptable. For the factor *confidence* the internal consistency was acceptable (Cronbach's alpha = .853). The factor performance had a Cronbach's alpha of .814. The internal consistency of the latent constructs was calculated using the Compound Reliability (CR) and Average Variance Extracted (AVE). For the research, the values of CR should be equal or higher than .70 and for AVE, equal or higher than .50. The *confidence* factor yielded values for CR = .899 and AVE = .69. In terms of *performance*, the values were .87 for CR and .63 for AVE.

Regarding temporal reliability, the correlation between the scores was .810 ($p < .001$). For the *confidence* factor .827 ($p < .001$) and for the *performance* factor .832 ($p < .001$).

According to Henson and Roberts (2006), in the psychometric study of a questionnaire, it is a good practice to confirm the factor structure found in exploratory factor analysis with confirmatory factor analysis. Since the EFA was not designed to prove hypothesis or theories, the data was subjected to a CFA to ascertain the following prior hypotheses: (a) the number of factors; (b) which factors are related and which are not; and (c) with which factor or factors (weights) are each of the variables related to. It will not be necessary to propose models for two models, if the results confirm the acceptance of the unidimensional model.

The assumptions of linearity and normal distribution of all the variables observed in the model should be met to be able to use the maximum likelihood method to estimate the variables (Jöreskog & Sörbom, 1996). The residual dispersion graphics showed linearity among the estimated variables. To determine whether the sample meets the normality criterion, we examined atypical values by applying Mahalanobis' distance, using the Tests for Normality and Outliers option of the AMOS program. After eliminating the atypical scores, the data of the sample did not meet the normality criterion, and Mardia's coefficient had a value of 3.409. Therefore, as an alternative

method to estimate the parameters, we used the weighted least squares method, which is included in the asymptotic distribution-free estimation method of the AMOS program.

Goodness of fit was assessed by the following fit indexes: chi square (values (higher than .05 indicate an acceptable fit); $\chi 2/df$ (values below 2 are considered indicators of good fit, and values below 5 are considered acceptable- (Hu & Bentler, 1999); the comparative fit index (CFI; values of .95 or greater indicate that the model adequately fits the data); the Tucker-Lewis Index (TLI; values higher than .90 are acceptable- Bentler, 1995), the root mean squared error of approximation (RMSEA; values of .06 or less indicate that the model adequately fits the data).

Table 2 presents the goodness-of-fit indexes of the three models: a one-factor model, a model with two independent factors, and a model with two correlated factors.

Table 2

Goodness-of-Fit Indexes of the Proposed Models

Models	χ^2	χ^2/df	CFI	TLI	RMSEA
One Factor	$p = .222$	1.730	.668	.763	.096
Two Independent factors	$p = .000$	2.443	.343	.531	.135
Two related factors	$p = .981$	1.436	.902	.965	.059

We ruled out the model with two independent factors because it had a significant chi square value ($p < .01$). The CFI and TLI fit indexes should be equal to or higher than .95, a value that was not achieved in this model. Nor was the RMSEA value, which should be lower than .06, achieved. In the one-factor model, the CFI, TLI and the RMSEA fit indexes did not achieve optimal values. The model with two related factors presented the best fit index values (see Figure 1).

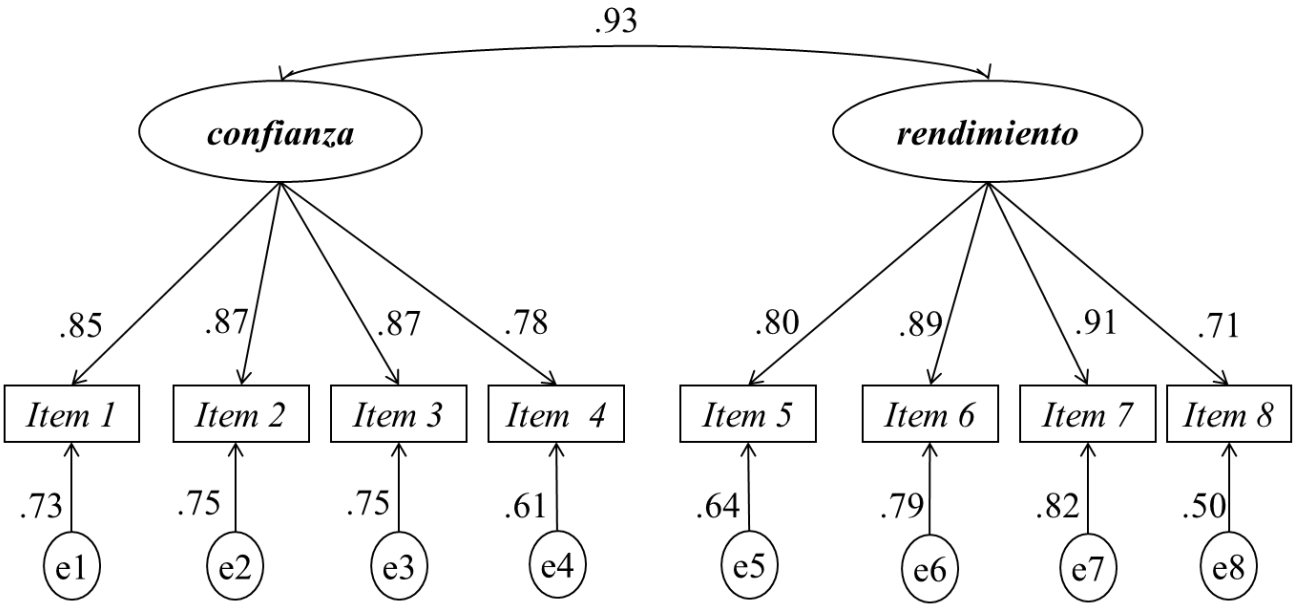

Figure 1. Model of the LTPQ with two related factors.

The results of the model indicate that the factors *confidence* and *performance* are correlated (β = .93). However, the indicators of latent factors show factor loadings ranging between λ = .78 and λ = .87 for the factor *confidence* and between λ= .71 and λ= .91 for the factor *performance*. This indicates that the factors are well defined and, therefore, the way they were assessed is adequate.

Intervention in cooperative learning techniques

We analyzed the data with the Kolmogorov-Smirnov test to analyze normal distribution and to determine the use of parametric or nonparametric tests for the comparison of related means (pretest-posttest) and independent means (experimental group-control group). We found $p < .05$ for the scores in the two factors, which justified the use of nonparametric tests to contrast the pretest and posttest means of the experimental and control groups (Wilcoxon's rank, *Z*) and the posttest scores between the experimental and control groups (Mann-Whitney's *U)*.

Table 3 presents the results obtained, showing significant differences due to the intervention in cooperative learning techniques in the two LTPQ factors. To improve and complete the information contributed by the administration of the significance tests and to determine which factor was most influenced by the intervention, we calculated the within-group (pre-posttest) and between-group (experimental-control) effect sizes, using Cohen's d (1977), probably the most frequently employed test to calculate effect size. Both the within-group (pre-posttest) and between-group (experimental-control) effect sizes were medium for the experimental group, and very low--almost irrelevant--in the within-group (pretest-posttest) comparisons for the control group. No significant differences were found in the pretest comparison between the experimental and control groups: *confidence* factor $p = .252$; *performance* factor $p = .544$.

Table 3

Mean Comparison Statistics and Effect Size (Cohen's d)

LTPQ Factors	Experimental group (pretest-posttest)		Control group (pretest-posttest)		Groups (Experimental-Control). Pretest		Groups (Experimental-Control)	
	Z	*d*	*Z*	*d*	U	d	*U*	*d*
confidence	-3.809**	.29	-1.197	-	-1,147	-	-2.766**	.25
performance	-3.220**	.21	-0.149	0.03	-0,606	-	-1.797*	.15

Note. For related samples, the nonparametric the Wilcoxon rank (*Z*), was used. For independent samples, the nonparametric Mann-Whitney test (*U*) was used. *$p < .05$. **$p < .01$.

Discussion

Regarding our first goal, we can state that the *Learning Team Potency Questionnaire* has very acceptable psychometric characteristics, good internal consistency and temporal reliability. The measures of factorial adequacy of Kaiser-Meyer-Olkin and the Bartlett test confirm that factor analysis is suitable. The analysis carried out has shown the existence of the two solid and well-defined factors on which we based the construction of the scales, which conjointly explain 70% of the total

variance. The factor loadings of the items that define the two factors have values higher than .50. According to Costello and Osborne (2005), when a factor is defined by 4-5 items with loadings above .50, it is a solid factor with practical relevance.

Lastly, the questionnaire was analyzed with confirmatory factor analysis, in which three factor structures were tested. The first one, made up of 8 items grouped into a sole factor, the second with two independent factors, and the third with two correlated factors. The values that presented the best fit were those of the model with two related factors. Through analysis with structural equations, we verified that the latent variables in the two factors are well defined and, therefore, their assessment was adequate, reaffirming the good psychometric characteristics of the scale.

Team potency and *team efficiency* have been used interchangeably (Jung & Sosik, 2003). For Ilgen et al. (2005) the confidence of the team members (*team potency*) depends on their ability to complete the tasks (*team efficacy*). In our questionnaire, we found two related factors. On the one hand, the *confidence* factor refers to the students' general expectations about the efficacy of their own team. The second factor, *performance*, assesses students' perception about their team's capacity to successfully perform a series of academic tasks. These results would indicate that the team potency refers both to the collective assessment on the ability of the team in general (*team potency*) and to the team's confidence to perform a specific task or a set of tasks (*team efficacy*).

Regarding our second goal, we verified that teamwork with cooperative learning techniques influences team potency, that is, confidence in the team increases when the students work as a team using cooperative learning techniques. Moreover, according to the circular models of group efficacy, this increase in team potency will improve the group's efficacy in future cooperative work situations. This refers to models like the THEDA (Team Holistic Dynamic Activity) and the IMOI (Input-Mediator-Output-Input) (Rico, Alcover, & Tabernero, 2010), which overcome the critiques to the Input-Processes-Output model. These models are circular in the sense that a result can become an input, work well done and the success achieved (result) may affect students' confidence in the team (input).

Why did teamwork with cooperative learning techniques increase team potency? Different explanations could be given based on prior research on cooperative learning that explain the results that we will develop below. Firstly, we think that the consequences on academic, affective, and social variables of the situations of cooperative learning increased the collective beliefs already existing in the group, and this may be effective. With regard to the academic variables, cooperative learning increases performance and the productivity of all the participants (Johnson et al., 1981).

Secondly, students become aware that depend on one another and they must make the maximum effort. All the team members share the responsibility for learning. When the students perceive their team's responsibility, they think that the team has worked more efficaciously. According to Gil, Rico and Sánchez-Manzanares (2008), interdependence is the degree to which team members depend on each other and interact to reach a mutual goal. This interdependence stimulates cohesion and trust among the members. The students are successful if their team is successful. Each team member commits to carrying out his or her part of the work and the team is considered responsible for achieving the goals. No doubt, these mechanisms of interdependence and responsibility will increase confidence in the efficacy of the team.

Likewise, with regard to our second goal, the within-group (pre-posttest) and between-group (experimental-control) effect sizes indicate that the significant differences found are mostly medium-low. Within the setting of educational research,

values found are usually lower than those reported in other disciplines. Concerning the application of innovative methodologies, effect size values between 0.30 and 0.33 are considered relevant (Borg, Gall, & Gall, 1993; Valentine & Cooper, 2003). A recent report Hattie (2009) found a medium value of the effect size (d = 0.40) in an analysis of 500,000 interventions in the educational context and stated that effect sizes higher than 0.60 could be considered large. Our results show that the between-group effect size was medium for the factor *confidence* (d = 0.25) and low for the factor *performance* (d = 0.15). Why these results? We think that the cooperative learning techniques used are more oriented towards the acquisition of knowledge and skills, and provide a lower variety of learning experiences. Therefore, the significant differences found are mostly medium-low and are more relevant in the case of the factor *confidence*, which assesses the students' general expectations about the efficacy of their own team. In future research, it would be interesting to use techniques like Group Investigation (Sharan & Sharan, 1976), which reflects the philosophy of cooperative teams and provides a greater variety of learning experiences than the other techniques, where students can satisfactorily experience team interdependence and responsibility, mutual help, and problem-solving.

The main limitations of the research are those arising from the utilisation of self-reports as a method for gathering information, since these are not very robust against the possible biased answers introduced by the subjects themselves, such as social desirability bias. There are also the limitations typical of the quasi-experimental designs where there is no total control over the variables and, therefore, the results must be interpreted with caution. Nevertheless, despite these limitations, this type of research is a necessary resource, which provides information in real life contexts, devoid of artificial situations.

Lastly, we think that university teachers should create the conditions to guarantee optimal team potency in cooperative learning teams. To achieve this implies teachers' effort and interest and accepting that their role not only determines good team functioning and goal achievement, but also the satisfaction of all the students who participate in the diverse teams. To achieve the many advantages of cooperative learning in the university classroom requires the teachers to carefully design a program and to perform interventions throughout the process to resolve conflicts, and subsequently to analyze the teamwork.

Cooperation is a characteristic of the human being that differentiates us from other species. In fact, cooperation has allowed us to adapt constantly to new environmental situations, making human development possible. According to Pinker (2003), there are many evolutionary reasons for the members of an intelligent species to try to live in peace. Many computer simulations and mathematical models have demonstrated that cooperation is profitable from the evolutionary viewpoint. As stated by Krishnamurti (1993, p. 9) "Ideologies, principles, and beliefs not only separate human beings into groups, they actually prevent cooperation; however, what we need in this world is to cooperate, collaborate, act together and not that you do it differently because you belong to one group and I belong to another."

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