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## Teacher self-efficacy and its relationship with students' affective and motivational variables in higher education

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During the past few decades, researchers have proposed that teacher self-efficacy influences student achievement and motivation. The main aim of this work is to identify possible teacher self-efficacy profiles and to determine possible differences in some affective-motivational variables of students. 95 teachers and 1924 students from five Spanish public Universities took part in this study. Using cluster analysis, three distinctive profiles of teachers were generated: high self-efficacy, medium self-efficacy, and low self-efficacy. ANOVA results suggest that teachers with intermediate self-efficacy perception have more learning-oriented students than teachers with high self-efficacy. Students of teachers who are overconfident of their teaching capacity seem to engage less in studying to learn, they are more indifferent to the subjects, and they value the contents of the subject less. These students could also be less confident about the results of their efforts, showing a low perception of self-efficacy, greater academic work avoidance, and more anxiety than students of teachers with a moderate perception of self-efficacy. The results are discussed in light of the hypothesis of overconfidence.

**Keywords:** Teacher self-efficacy, student motivation, higher education.

*La autoeficacia docente y su relación con las variables afectivas y motivacionales de estudiantes universitarios.* Durante las últimas décadas los investigadores han propuesto que la autoeficacia docente influye en el rendimiento estudiantil y en la motivación. El objetivo principal de este trabajo es identificar perfiles de autoeficacia del profesor y determinar las posibles diferencias en algunas variables afectivo-motivacionales de los estudiantes. 95 profesores y 1.924 estudiantes de cinco universidades públicas españolas participaron en este estudio. Mediante el análisis de conglomerados, se generaron tres perfiles distintivos de autoeficacia como docentes: alta, media y baja. Los resultados aportados por el ANOVA sugieren que los profesores con la percepción de autoeficacia intermedia tienen alumnos más orientados al aprendizaje que los profesores con alta autoeficacia. Los estudiantes de los profesores con alta autoeficacia de su capacidad docente parecen participar menos en estudiar para aprender, muestran más indiferencia ante las asignaturas y valoran menos los contenidos de las mismas. Estos estudiantes también tienen menos confianza en los resultados de sus esfuerzos, mostrando una baja percepción de autoeficacia, una mayor evitación del trabajo académico y más ansiedad que los estudiantes de los profesores con una percepción moderada de autoeficacia. Los resultados se discuten a la luz de la hipótesis de sobreconfianza.

**Palabras clave:** Autoeficacia docente, motivación, educación superior.

The construct of self-efficacy evolved from Bandura's social cognitive theory. Bandura (1977) defined self-efficacy as the "*belief in one's capabilities to organize and execute the courses of action required to produce given attainments*" (p. 3). These perceived capabilities are believed to influence behavior (Czerniak & Chiarelott, 1990) so that, when people believe that their behavior can lead to a desired outcome, they perform the behavior required to achieve that outcome.

As the concept of self-efficacy is applied to the teaching profession and the teacher's role in the classroom, self-efficacy is defined as the belief that one's capabilities can bring about desirable changes in students' behaviors and achievement (Gibson & Dembo, 1984). Tschannen-Moran, Woolfolk, and Hoy (1998, p. 233) defined teacher efficacy as, "*the teacher's belief in his or her capability to organize and execute courses of action required to successfully accomplish a specific teaching task in a particular context*".

According to Gibson and Dembo (1984), teacher self-efficacy can influence certain behavioral patterns that are known to affect student achievement. Thus, Ashton and Webb (1986) observed that teachers with a high perception of self-efficacy seemed to use a pattern of strategies that minimized negative effects, promoted performance expectations, and provided warmer interpersonal relationships and academic work situations. From these first observations, diverse studies confirmed that the perception of self-efficacy was associated with the planning and organizing of teaching (Allinder, 1994) and with activity-based learning (Enochs, Scharmann & Riggs, 1995) focused on the student (Czerniak & Schriver, 1994).

Teachers who are confident about their capacity to teach and who believe that efficacious teaching influences students' learning show more persistence, focus more on the academic aspects of their activity, spend more class time in academic activities, use more complex instructional methods, provide more help and orientation for the students, and praise their academic achievements more than teachers with low expectations about their capacity to influence their students' learning (Gibson & Dembo, 1984). Higher levels of self-efficacy allow teachers to be less critical of their students when they make mistakes (Ashton & Webb, 1986), to work more with students who have difficulties (Gibson & Dembo, 1984) and to be less inclined to send a difficult student to alternative or special classrooms (Meijer & Foster, 1988; Podell & Soodak, 1993; Soodak & Podell, 1993).

As a matter of fact, in line with works that have linked perceived self-efficacy to the quality of planning and control of teaching activity (Allinder, 1994; Cousins & Walker, 1995, 2000; Guskey, 1988; Stein & Wang, 1988), a recent work carried out in our country with university teachers suggests that preparing classes, periodic improvement of the contents, and continued formation are more important for teachers than high perception of efficacy (Rodríguez, Núñez, Valle, Blas & Rosário, 2009).

Continued assessment in the classroom of the students' progress and constant adjustment of the instructional sequences to the students' needs requires a high degree of confidence in one's teaching skills. In general, the perception of efficacy will influence teachers' persistence and their capacity to recover when dealing with difficulties (Rodríguez *et al.*, 2009).

Some studies suggest that teachers' self-efficacy beliefs play a crucial role in their commitment to teaching and their motivation (Bamburg, 2004; Caprara, Barbaranelli, Borgogni & Steca, 2003; Caprara, Barbaranelli, Borgogni, Petitta & Rubinacci, 2003; Rodríguez *et al.*, 2009). In this regard, it is observed that intrinsic reasons such as a sense of duty or the enjoyment of students' learning may be significantly more important for teachers with a perception of high efficacy than for teachers with intermediate or low levels of self-efficacy. Similarly, a lack of motivation and disappointment with the job could be more evident among teachers who do not consider themselves to be effective at motivating their students, improving their teaching activity, and controlling the classroom (Rodríguez *et al.*, 2009).

Teachers' beliefs about their capacity have been observed to be a powerful construct related to motivation (Midgley, Feldlaufer & Eccles, 1989) and to students' sense of efficacy (Anderson *et al.*, 1988), in addition to being associated with their efforts devoted to teaching, their goals or intentions and levels of aspirations, expectations about their students, and their actions in the classroom (Bamburg, 2004).

Taking into account the research on teacher's thinking, this work focuses on the three elementary pillars of teacher self-efficacy: self-confidence in one's capacity to design teaching tasks, perceived capacity to manage the classroom, and perceived capacity to engage students in learning. No doubt, the main novelty is the verification of the existence of subgroups of teachers with similar belief profiles and of differences in their students' academic motivation.

This change in the perspective of the study of teacher self-efficacy is grounded on research of achievement goals, which has meant shifting from a variable-centered approach that studied each achievement goal individually to a person-centered approach, consisting of the study of differences among subgroups of students with different goal profiles (e.g., Barron & Harackiewicz, 2001; Bouffard, Boisvert, Vezeau & Larouche, 1995; Ng, 2008; Valle *et al.*, 2003, 2010, in press). Although both approaches have contributed important advances to motivational knowledge, some authors (e.g., Schwinger & Wild, 2012) consider that the person-centered approach is a more realistic view of what students do motivationally in school settings.

Like other studies (e.g., Luque & Carrión, 2013), this will contribute to the understanding of the reality of the educational activities with an analysis of the degree of satisfaction denoted. Following these proposals, this work aims to identify possible

teacher self-efficacy profiles in a sample of Spanish university professors and to determine possible differences in some affective-motivational variables of their students.

## METHOD

### *Participants*

The sample is comprised of 95 teachers (58.9% men and 41.1% women) and 1924 students (17.6% men and 82.4% women) from 16 degree programs of five public Spanish universities. Concerning the teachers, 66.3% taught in the first cycle and 33.7% in the second cycle. With regard to the age distribution, 21.1% were younger than 40 years, 35.7% were between 40 and 50, 33.7% were between 50 and 60, and 9.5% were older than 60. The sample of students was aged between 18 and 46 years, with a mean age of 21.15 years. Of them, 32.7% were first-year students, 34% were in the second year, 20% in the third year, 9.5% in fourth year, and 3.8% were fifth-year students.

### *Measures*

*Teacher Self-efficacy Scale.* To assess teacher self-efficacy, we used a Spanish translation of the long form of the *Teachers' Sense of Efficacy Scale* of Tschannen-Moran and Woolfolk (2001). With this scale, we measured teachers' perception of self-efficacy in three dimensions: (a) efficacy in instructional strategies, (b) efficacy in classroom management, and (c) efficacy in student engagement. This scale has been shown to be very reliable and to have excellent validity (Klassen *et al.*, 2009). The reliability of the total scale is high ( $\alpha=.92$ ), and the reliability of the three subscales (efficacy in instructional strategies,  $\alpha=.81$ ; efficacy in classroom management,  $\alpha=.86$ ; and efficacy in student engagement,  $\alpha=.81$ ) is also excellent.

To assess students' goal orientation, we used the *Academic Goals Questionnaire* proposed by Skaalvik (1997), which differentiates four types of goals: learning or mastery goals, performance-approach goals (ego-improvement orientation), performance-avoidance goals (ego-defense orientation), and academic work avoidance goals. The factor structure of the scale in our sample is congruent with the original studies, allowing us to differentiate these four factors that conjointly explain 65% of the total variance.

To assess students' affective-motivational beliefs, we used the Motivation Scale of *Motivated Strategies Learning Questionnaire*, created by Pintrich, Smith, Garcia and McKeachie (1991). From this scale, we selected the following dimensions: *task value*, *self-efficacy beliefs*, *control beliefs*, and *test anxiety*.

### *Procedure*

The data concerning the variables studied were collected in each one of the universities and in a single session by specialized staff that collaborated in the investigation.

*Data analysis*

To determine the participant teachers' self-efficacy, we used the *quick cluster analysis method* to establish the diverse groups as a function of their levels in each dimension. This allowed us to define different profiles of teacher self-efficacy based on the possible combinations of the assessed self-efficacy dimensions. The criterion used to select the number of clusters was maximization of the inter-cluster differences in order to obtain the greatest possible number of groups with different combinations of the assessed dimensions of teacher self-efficacy. In addition to this criterion we considered the theoretical feasibility of each one of the groups that represented the diverse profiles of teacher self-efficacy. After defining the profiles of teacher self-efficacy through cluster analysis, we attempted to determine possible significant group differences in the goal orientations and affective-motivational beliefs of their students. For this purpose, we used one-factor analysis of variance (ANOVA). As the factor had more than two levels or groups, we used the post-hoc Scheffé test as a multiple comparison to determine between which means there were significant differences.

**RESULTS***Initial data analysis*

Table 1 presents the descriptive statistics and the correlations among the variables analyzed in this work. In the student variables, significant and positive correlations were found between task value, their self-efficacy expectations, and their control beliefs, whereas the relation between all these dimensions and their self-reported test anxiety was negative.

We also found significant correlations between this set of student beliefs and their goal orientations. Thus, perception of task value and control beliefs and self-efficacy all correlated positively with learning goals and performance approach goals and negatively with work avoidance goals. Test anxiety correlated positively with all the goal orientations except for the learning goal orientation. We also found a positive correlation between the mastery goal orientation and performance-approach goals and a negative correlation with work avoidance goals.

Teachers' perceived efficacy to engage their students in learning and to implement different instructional strategies correlated negatively with their students' control beliefs and self-efficacy beliefs, and positively with their test anxiety. Teachers' perceived self-efficacy to manage the classroom also correlated negatively with students' perception of self-efficacy. Students' work avoidance had negative correlations with teachers' perception of efficacy to manage the classroom and to teach, but it was not significantly correlated with their perception of self-efficacy to engage the students in learning. Lastly, all three dimensions of teacher self-efficacy correlated positively.

Table 1. Means, standard deviations, skewness, kurtosis, and Pearson correlations matrix

|  | 1       | 2       | 3       | 4      | 5       | 6      | 7      | 8       | 9      | 10     | 11     |
|--|---------|---------|---------|--------|---------|--------|--------|---------|--------|--------|--------|
| 1. Task value                            | —       |         |         |        |         |        |        |         |        |        |        |
| 2. Control beliefs                       | .539**  | —       |         |        |         |        |        |         |        |        |        |
| 3. Self-efficacy beliefs                 | .538**  | .643**  | —       |        |         |        |        |         |        |        |        |
| 4. Test anxiety                          | -.048*  | -.147** | -.375** | —      |         |        |        |         |        |        |        |
| 5. Learning goals                        | .809**  | .449**  | .508**  | -.004  | —       |        |        |         |        |        |        |
| 6. Performance approach goals            | .082**  | .073**  | .207**  | .087** | .161**  | —      |        |         |        |        |        |
| 7. Performance avoidance goals           | -.022   | -.003   | -.084** | .320** | .018    | .300** | —      |         |        |        |        |
| 8. Work avoidance goals                  | -.258** | -.101** | -.079** | .105** | -.270** | .258** | .299** | —       |        |        |        |
| 9. Efficacy in student engagement        | .038    | -.075** | -.152** | .097** | .005    | -.018  | .054   | -.013   | —      |        |        |
| 10. Efficacy in instructional strategies | .012    | -.056*  | -.150** | .077** | .002    | -.019  | .026   | -.081** | .830*  | —      |        |
| 11. Efficacy in classroom management     | .001    | -.052   | -.115** | .027   | -.013   | -.002  | .010   | -.145** | .587** | .697** | —      |
| <i>M</i>                                 | 3.681   | 3.654   | 3.382   | 3.047  | 3.610   | 2.005  | 2.321  | 2.546   | 3.684  | 3.860  | 3.761  |
| <i>SD</i>                                | 0.965   | 0.794   | 0.762   | 0.870  | 0.837   | 0.881  | 1.044  | 0.735   | 0.551  | 0.537  | 0.613  |
| Skewness                                 | -0.688  | -0.565  | -0.415  | -0.065 | -0.539  | 0.728  | 0.485  | 0.208   | 0.163  | -0.100 | -0.183 |
| Kurtosis                                 | -0.067  | 0.469   | 0.160   | -0.272 | 0.142   | -0.005 | -0.616 | -0.130  | -0.752 | -1.067 | -0.953 |

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

Table 2. Raw and standardized means of the variables in the groups of teacher self-efficacy

|         | Efficacy in student engagement |          | Efficacy in instructional strategies |          | Efficacy in classroom management |          |
|---------|--------------------------------|----------|--------------------------------------|----------|----------------------------------|----------|
|         | <i>M</i>                       | <i>Z</i> | <i>M</i>                             | <i>Z</i> | <i>M</i>                         | <i>Z</i> |
| GROUP 1 | 3.127                          | 1.070    | 3.264                                | 1.082    | 3.125                            | 1.263    |
| GROUP 2 | 3.511                          | -0.272   | 3.639                                | -0.345   | 4.021                            | 0.265    |
| GROUP 3 | 4.053                          | 0.856    | 4.278                                | 0.909    | 4.245                            | 0.648    |

GROUP 1: Teachers with low perceived efficacy in student engagement, instructional strategies, and classroom management. GROUP 2: Teachers with intermediate perceived efficacy in student engagement, instructional strategies, and classroom management. GROUP 3: Teachers with high perceived efficacy in student engagement, instructional strategies, and classroom management.

### Profiles of teacher self-efficacy

The teachers were grouped as a function of the different combinations of the three dimensions measured by the *Teacher's Sense of Efficacy Scale* (Tschannen-Moran & Woolfolk, 2001). To select the number of clusters, we followed the habitual criterion of considering as valid the solutions that converge before the 10 predetermined iterations. Taking into account that only the two- and three-cluster solutions met this requirement, we chose the latter because it differentiated the groups in accordance with the theoretical and empirical contributions to the topic. Therefore, in addition to the statistical criterion for choosing this cluster solution, we also considered the criterion of theoretical feasibility of each one of the groups that represented the diverse profiles of teacher self-efficacy. Table 2 shows the mean scores (raw and standardized) of all three variables (efficacy in student engagement, efficacy in instructional strategies and efficacy in classroom management) in each one of the clusters.

The results of the cluster analysis (see figure 1) allowed us to identify three groups characterized by different levels of teacher self-efficacy in each of the three dimensions assessed.

Thus, Group 1 ( $N=27$ ) is characterized by low levels of teacher self-efficacy in the three dimensions. Within this group, 70.4% are men and 29.6% are women, 70.3% teaches the first cycle (first, second, and third course), and 29.7% teaches the second cycle (fourth and fifth course). Regarding age, 14.8% are younger than 40 years, 37%

are between 40 and 50, 37% are between 50 and 60, and 11.2% are older than 60. Concerning teacher experience, 3.7% have less than 5 years teacher experience, 14.8% have between 5 and 10 years, 40.7% between 10 and 15 years, 22.2% between 15 and 20 years, and 18.6% have more than 20 years teacher experience.

Figure 1. Graphic representation of the groups of teacher self-efficacy identified by means of cluster analysis

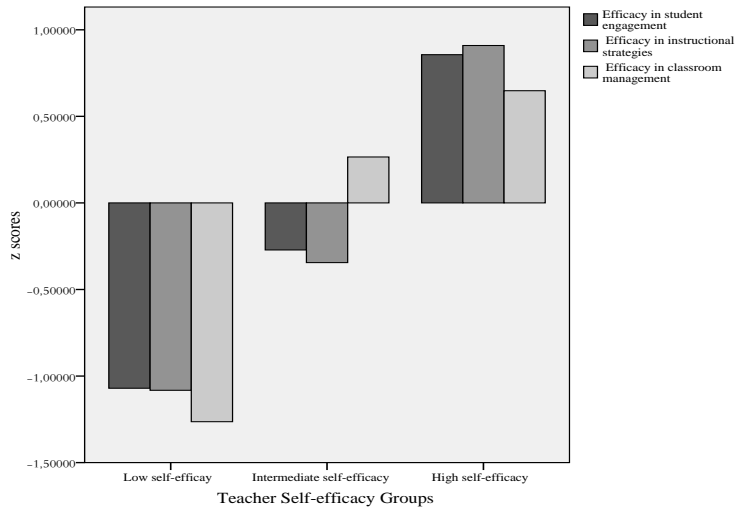


Table 3. Means and standard deviations of students' affective-motivational variables for each teacher self-efficacy profile

|                             | Group 1  |           | Group 2  |           | Group 3  |           |
|-----------------------------|----------|-----------|----------|-----------|----------|-----------|
|                             | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> |
| LEARNING GOALS              | 3.62     | 0.86      | 3.73     | 0.85      | 3.56     | 0.81      |
| PERFORMANCE APPROACH GOALS  | 2.03     | 0.93      | 2.01     | 0.88      | 1.98     | 0.84      |
| PERFORMANCE AVOIDANCE GOALS | 2.30     | 1.05      | 2.31     | 1.03      | 2.34     | 1.04      |
| WORK AVOIDANCE GOALS        | 2.64     | 0.76      | 2.35     | 0.68      | 2.53     | 0.72      |
| TASK VALUE                  | 3.63     | 0.99      | 3.91     | 1.10      | 3.65     | 0.93      |
| CONTROL BELIEFS             | 3.69     | 0.82      | 3.82     | 0.74      | 3.56     | 0.77      |
| SELF-EFFICACY BELIEFS       | 3.50     | 0.76      | 3.58     | 0.76      | 3.21     | 0.72      |
| TEST ANXIETY                | 3.02     | 0.86      | 2.86     | 0.92      | 3.13     | 0.84      |

Statistically significant differences between the following groups (Scheffé test): Learning goals: 2-3; work avoidance goals: 1-2, 2-3; task value: 1-2, 2-3; control beliefs: 1-3, 2-3; self-efficacy beliefs: 1-3, 2-3; test anxiety: 1-2, 2-3.

GROUP 1: Teachers with low perceived efficacy in student engagement, instructional strategies, and classroom management. GROUP 2: Teachers with intermediate perceived efficacy in student engagement, instructional strategies, and classroom management. GROUP 3: Teachers with high perceived efficacy in student engagement, instructional strategies, and classroom management.

Group 2 ( $N=26$ ) is characterized by intermediate (although below the mean) efficacy in student engagement in learning and improvement of their teaching, and also intermediate (but higher than the mean) levels in perceived self-efficacy in classroom management. Within this group, 53.8% are men and 46.2% are women, 69.3% teaches the first cycle and 30.7% teaches the second cycle. Regarding age, 19.2% are younger than 40 years, 42.3% are between 40 and 50, 26.9% are between 50 and 60, and 11.6%



are older than 60. Concerning teacher experience, 7.7% have less than 5 years teacher experience, 11.5% have between 5 and 10 years, 19.2% between 10 and 15 years, 26.9% between 15 and 20 years, and 34.7% have more than 20 years teacher experience.

Lastly, Group 3 ( $N=42$ ) is characterized by high levels of teacher self-efficacy in all three dimensions assessed. Within this group, 54.8% are men and 45.2% are women, 61.9% teaches the first cycle and 38.1% teaches the second cycle. Regarding age, 26.2% are younger than 40 years, 31% are between 40 and 50, 35.7% are between 50 and 60, and 7.1% are older than 60. Concerning teacher experience, 2.4% have less than 5 years teacher experience, 23.7% have between 5 and 10 years, 31% between 10 and 15 years, 11.9% between 15 and 20 years, and 31% have more than 20 years teacher experience. The group with the most teachers (44.2%) is characterized by a high perception of efficacy in all three aspects of teaching activity considered. An important number of teachers (27.4%) had intermediate —below the mean— levels of self-efficacy in student engagement in learning and in improving their instructional activities, and intermediate —higher than the mean— levels of self-efficacy in classroom management. Lastly, 28.4% of the sample of Spanish university professors surveyed is characterized by their low perceived self-efficacy.

#### *Teacher self-efficacy and student motivation*

According to our data, teachers' perception of efficacy could be related to: (a) the value attributed by students to the subject taught by that teacher ( $F_{(2,1921)}=9.70$ ,  $p<.001$ ,  $\eta_p^2=.009$ ), the adoption of learning goals ( $F_{(2,1921)}=4.61$ ,  $p<.05$ ,  $\eta_p^2=.005$ ) and work avoidance goals ( $F_{(2,1921)}=17.68$ ,  $p<.001$ ,  $\eta_p^2=.018$ ), (b) students' control beliefs ( $F_{(2,1921)}=14.16$ ,  $p<.001$ ,  $\eta_p^2=.015$ ) and perception of self-efficacy for that subject ( $F_{(2,1921)}=42.44$ ,  $p<.001$ ,  $\eta_p^2=.042$ ) and (c) students' self-reported test anxiety ( $F_{(2,1921)}=11.20$ ,  $p<.001$ ,  $\eta_p^2=.012$ ). No significant differences were found in students' performance orientation or in their approach or avoidance orientation as a function of teachers' levels of perceived self-efficacy (see table 3 and figure 2).

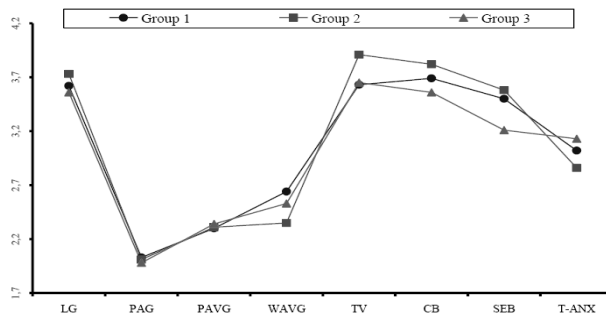
The post hoc analyses revealed that teachers with an intermediate perception of self-efficacy in classroom management, student engagement, and improvement of their instructional strategies would have students more oriented towards learning than teachers with a high perception of self-efficacy, and their students seem to value the contents and tasks they perform more than the students of teachers with high and low levels of self-efficacy. No significant differences in learning orientation were found among the students of teachers with a low generalized perception of teacher self-efficacy and the students of teachers who were highly confident about their teaching experience.

Control beliefs were significantly lower among students of teachers with high perceived self-efficacy than among students of teachers with low and intermediate levels of self-efficacy. The perception of self-efficacy was significantly higher among students of teachers with moderate perceived self-efficacy than among students of teachers with

high and low rates of self-efficacy. Students of teachers who perceive themselves as being very efficacious and of teachers who perceive themselves as not at all efficacious both report higher work avoidance and more test anxiety than students of teachers who are moderately efficacious (see table 3 and figure 2).

The analysis of these results suggests that students of teachers with moderate levels of self-efficacy are more motivated to learn and more interested in learning the subjects taught by these teachers, they have a more adaptive pattern of affective-motivational beliefs, and are less likely to limit their dedication to study.

Figure 2. Mean values in students' affective-motivational variables for each group of teacher self-efficacy



## DISCUSSION

In the university context, more than 40% of the teachers surveyed believed they were capable of making themselves understood, encouraging their students to be critical and creative, and so it might benefit metacognitive skills (e.g., Sanz de Acedo Lizárraga & Sanz de Acedo Baquedano, 2013), motivating them to perform academic tasks, making them value their subject, and feeling capable of correctly performing the activities assigned. They also believe they are capable of dealing with the questions formulated in the classroom, proposing questions and challenges that are appropriate to their students' level and adequately estimating their students' level of comprehension, adopting diverse assessment strategies, and providing explanations or examples when their students seem confused. These university teachers do not seem to have problems with classroom management or dealing with students who may interfere with the habitual class dynamics. In spite of the fact that in prior works, high levels of belief in teacher self-efficacy were associated with commitment to teaching, optimism about teaching, and motivation (Bamburg, 2004; Caprara, Barbaranelli, Borgogni & Steca, 2003; Caprara *et al.*, 2003; Rodríguez *et al.*, 2009) as well as with better planning and control of the teaching activity (Allinder, 1994; Cousins & Walker, 1995, 2000; Guskey, 1988; Rodríguez *et al.*, 2009; Stein & Wang, 1988), the students of this majority group

of teachers with high beliefs in self-efficacy are more indifferent to learning new things, improving their own capacities, learning to solve problems and work hard, and they also take less responsibility for their own results in the subject.

In contrast, almost 30% of the university teachers do not feel capable of making themselves understood, especially in the case of students with difficulties, or really getting these students to commit to their academic work. Teachers who report low self-esteem and low intrinsic motivation to engage in teaching are the ones who spend the least time planning their classes and who supervise their classroom activity the worst (Rodríguez *et al.*, 2009); their students do not value the contents they teach, they are not very capable of understanding the subject, they prefer to do as little as possible, avoiding difficult contents, tasks that require more work and additional tasks, and they have high levels of test anxiety.

Lastly, our results differentiate a group of teachers (27.40%) with intermediate levels of self-efficacy in student engagement, in improving their instructional strategies, and in classroom management. Compared with teachers with higher beliefs in self-efficacy, in prior works, this group of teachers was shown to have an important lack of motivation and to be more discouraged with teaching; they also had more difficulties performing continued assessment of the students in the classroom and adapting their instructional sequences to the students' needs (Rodríguez *et al.*, 2009). However, it seems that these teachers' students show high preference for learning goals, they value the contents more and consider them more useful, they are confident they will understand the concepts and master the topics of the subject taught by their teachers, and they display less academic work avoidance and less test anxiety.

#### *Teacher overconfidence and student motivation*

Summing up, in spite of the fact that research has positively associated perceived teacher self-efficacy with greater motivation towards teaching and a more strategic instructional work, the results of this study cast doubts on whether this pattern is associated with students' better academic motivation. Students of teachers who are overconfident of their teaching capacity seem to engage less in studying to learn, they are more indifferent, and they value the contents of the subject less. These students could also be less confident about the results of their efforts, showing a low perception of self-efficacy, greater academic work avoidance, and more anxiety than students of teachers with a moderate perception of self-efficacy.

The negative effects of overconfidence, understood as an overestimation of the results one can achieve and/or the quality of one's actions, were experimentally demonstrated by Neale and Bazerman (1983) in conflict resolution, finding that overconfidence reduces the quality and quantity of agreements. According to these authors, failure in negotiators with high overconfidence in conflict management is due to their inability to analyze the conflict from the opponent's viewpoint. This phenomenon

was explained by Lim (1997) using the theory of double standards. One of this author's findings is that overconfident negotiators had high self-interest and little interest in the adversary. Negotiators' overconfidence can lead them to focus on their own interests and to devalue the needs and interests of the adversary. We underline the study carried out by León-Pérez, Medina and Munduate (2008), which found that, in negotiation situations, as subjects' confidence in their efficacy increases, their results improve. Nevertheless, there comes a time when overconfident subjects begin to achieve worse results.

Research literature has also pointed out that the negative effect of self-efficacy in situations of decision-making under uncertainty. Whyte, Saks, and Hooks (1997) draw from the paradigm of escalation of commitment—the degree of perseverance in a course of action despite the external evidence of the error of such action—to explain that overconfident subjects are so self-centered that it is hard for them to analyze their context with accuracy. Thus, individuals with high levels of self-efficacy could be more prone to persisting in ineffective behaviors than those with more moderate levels of self-efficacy. In parallel, one can estimate the negative effects of overconfidence in settings where there is a long-term interaction, that is, where the relationship between the parties and the long-term consequences of the actions are at stake (Lim, 1997).

To sum up, overconfidence in teaching capacities, which leads to overestimating the possibilities of influencing the students' learning and the appropriateness of one's instructional interaction in the classroom, could explain students' maladaptive motivation and lack of commitment. In contrast to the literature on self-efficacy, university teachers with high expectations of self-efficacy may have a biased view of the process of teaching-learning and especially of the quality of their instruction in the classroom and its impact on students' learning. Despite possible positive results on other personal teacher variables (Rodríguez *et al.*, 2009), this could negatively affect the students' academic commitment.

As suggested by Guo, Piasta, Justice and Kaderavek (2010), the potential contribution of teacher self-efficacy to student performance will depend on the classroom conditions because high levels of self-efficacy in a context of low emotional quality may not only fail to contribute to the students' improvement but may also limit their performance. If teachers with high levels of self-efficacy establish very high expectations for their students in the absence of a positive emotional climate in the classroom, this could promote a goal orientation characterized by fear of failure.

#### *Limitations of the study*

In any event, the results obtained should be interpreted with caution because in the current study, we only used an individual measure of self-efficacy, and teachers' perceptions of the capacity of the team of teachers or of the faculty to promote student performance were not taken into account (Bandura, 1997; Chan, 2008; Goddard, Hoy & Woolfolk, 2000, 2004).

However, it is important to point out that the results of this study are correlational, so the associations observed between the perception of teacher efficacy and student motivation cannot be assumed to be causal. Future research should propose experimental designs to determine whether, in effect, high levels of perceived self-efficacy have negative effects on university students' motivation.

Lastly, given that a high sense of teacher self-efficacy has been associated with more adaptive actions, both by teachers and by students, and with better quality education, in the future, it would be interesting to explore the development of teachers' efficacy beliefs.

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