



## Assessment of Goal Orientations from the “Person-Situation Interaction” Perspective

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### ABSTRACT

The objective of this study is twofold: to analyze the role of different task situations in the activation of goals and goal orientations and, to make it possible to achieve such an objective to support theoretically, develop, and previously validate the Situated Goals Questionnaire for secondary and high school students (SGQ-SHS). A total of 1,010 Secondary and High School Students from Madrid (Spain) participated in the study. Data analysis using confirmatory techniques, as well as ANOVA and regression techniques, showed the effect of the type of task on the degree to which students declare to pursue different goals – as suggested by the person-situation interaction model –, the relationship between goals, expectancies, and self-regulation styles, as well as the validity of the measures developed for predicting achievement (self-estimated mean grade).

### Evaluación de las orientaciones a metas desde la perspectiva de la “interacción persona-situación”

### RESUMEN

El objetivo de este estudio es doble: estudiar el papel de las situaciones definidas por las diferentes tareas en la activación de metas y de orientaciones a metas por objetivos y, para hacer posible la consecución de dicho objetivo, apoyar teóricamente, desarrollar y validar previamente el Cuestionario de Metas Situadas para Estudiantes de Secundaria y Bachillerato (MESI-SB). Un total de 1,010 estudiantes de Secundaria de Madrid (España) participaron en el estudio. Los datos analizados mediante técnicas confirmatorias, así como técnicas de ANOVA y regresión, pusieron de manifiesto que el efecto del tipo de tarea influye en el grado en que los estudiantes declaran perseguir diferentes objetivos –como sugiere el modelo de interacción persona-situación–, la relación entre los objetivos, las expectativas y los estilos de autorregulación, así como la validez de las medidas desarrolladas para predecir el logro (calificación media autoestimada).

### Problem and Theoretical Framework

Motivation has often been considered a personal disposition whose measurement would allow to explain and predict behavior (Elliot, 2005). However, motivation occurs in a context that can stimulate or inhibit it (Alonso-Tapia & Fernández, 2008; Alonso-Tapia et al., 2018; Bardach et al., 2019; Meece et al., 2006; Mensah & Ata, 2015; Urdan & Turner, 2005; Vandewalle et al., 2019). Therefore, to know why students work with more or less interest and effort to learn it would be worth assessing not only the personal variables that affect motivations, but also the degree to which students are sensitive to the situation characteristics and, therefore, the extent to which such characteristics can influence the type and degree of

motivation shown by them. Nevertheless, tools for assessing the motivation of secondary and high school students are not usually designed for assessing the interaction between person and situation. This fact probably limits the predictive power of such tools as well as the understanding of the theoretical and practical meaning of the mentioned interaction. However, Alonso-Tapia et al. (2018) designed a questionnaire for university students from the perspective of person-situation interaction. It offers a way of dealing with the above-pointed limitation of motivational questionnaires. Therefore, it was decided to develop and test the validity of an instrument that allows the assessment of students' goal orientations (GO) and the specific goals underlying them with a structure that allows studying how the activation of these motivational characteristics

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is moderated by different situations related to learning. However, which assumptions support this study?

### Achievement Goals and Goal Orientations

Achievement goal theory is one of the most widely accepted theories to explain achievement motivation in learning contexts. According to this theory, people respond to situations in different ways according to their own goals or purposes (Bardach et al., 2019; Elliot 2005; Hulleman et al., 2010). There are different models of goal orientation (GO), being the most studied the 2x2 model, resulting from crossing the dimension mastery vs. performance, with the dimension approach and avoidance (Elliot & McGregor, 2001), and the “trichotomous model” (Dweck & Elliot, 1983; Elliot & Church, 1997). This last model considers only the Mastery (MO), Performance (PO), and Avoidance (AO) dimensions (Alonso Tapia, 2005; Elliot, 2005; Hulleman et al., 2010), due to the correlations often found between avoidance goals (Alonso-Tapia et al., 2010) and to the similarities between antecedents and consequences of performance-avoidance goals (Elliot, 2005, p. 64; Vandevaille et al., 2019). Mastery orientation manifests when students focus on mastering the subject matter, on acquiring new skills, or on developing abilities that favor learning processes. In the case of performance orientation, students focus on demonstrating and getting positive judgments of competence, while in the case of avoidance orientation, students focus on avoiding negative judgments of competence (Hangen et al., 2019; Vandevaille et al., 2019).

In general, motivational orientations manifest regularly and steadily in each person (Elliot, 2005), and each motivational orientation has its effects. Most evidence shows that the greater the mastery orientation, the greater the benefits on learning, as processes and strategies that take place when students face a task involve deeper processing, greater integration of learning contents, and more effort and participation in learning activities (Alonso-Tapia, 2005; Senko et al. 2011; Mensah & Ata, 2015; Vandewalle et al., 2019). Performance orientation involves behaviors aimed at demonstrating competence or getting a positive social judgment. Subjects that pursue these goals will try to preserve and improve their self-image based on these criteria. Performance orientation has also been associated with low levels of effort, efficiency, and interest (Vandevaille et al., 2019). Nevertheless, there is evidence showing that under certain circumstances performance orientation could have positive effects, since students often have great self-confidence and show better task performance and results when activities are interesting and challenging (Senko et al., 2011; Senko et al., 2013). Finally, avoidance orientation has not shown any positive effect in any situation. It is related to disorganized study habits, rejection of help from others, high levels of anxiety when facing a task and, in most cases, a lack of interest and effort (Elliot, 2005; Van Yperen et al. 2014; Vandevaille et al., 2019).

The existence of three-goal orientations does not imply that people act based only on one or the other. The “multiple-goal” perspective considers that students can pursue different goals at the same time and that, in some circumstances, as already said, “performance orientation” can have positive effects when combined with “mastery orientation” (Harackiewicz et al., 2002; Senko et al., 2011). This perspective defends that subjects who are characterized by high “mastery orientation” can combine this kind of goals with “mastery orientation” goals in ways that promote optimal motivational effect. However, in a meta-analysis, Hulleman et al. (2010) concluded that this effect is not clear. It depends on the kind of scale used for measuring goal orientations: some of the scales correlate positively with performance results – when social comparison goals are activated by item language referred to a kind of situation –, while others correlate negatively – when goals related to evaluative aspects

are activated by item language referred to other situations. This fact underlines the importance of assessing “person x situation” effects on motivation in a more systematic way.

Other reasons point in the same direction. Goal orientations are umbrella concepts that embrace more specific achievement goals (Alonso-Tapia, 2005; Alonso-Tapia et al., 2010). According to these authors, mastery orientation involves goals such as “learning” and “being useful” goals which are manifested only when the worth of learning is perceived. Performance orientation has to do with getting external positive consequences, such as social recognition, good grades and/or external rewards. Finally, avoidance orientation involves goals as “fear of failure” because of fear of others’ negative judgments, or “desire to avoid the task because it is no worth to do it”. In this case, there is a concern about the own worth and/or capacity to face the task, and about the task worth. These goals, due to their specificity, could be more easily activated or inhibited depending on changes in environmental characteristics and interactions between them.

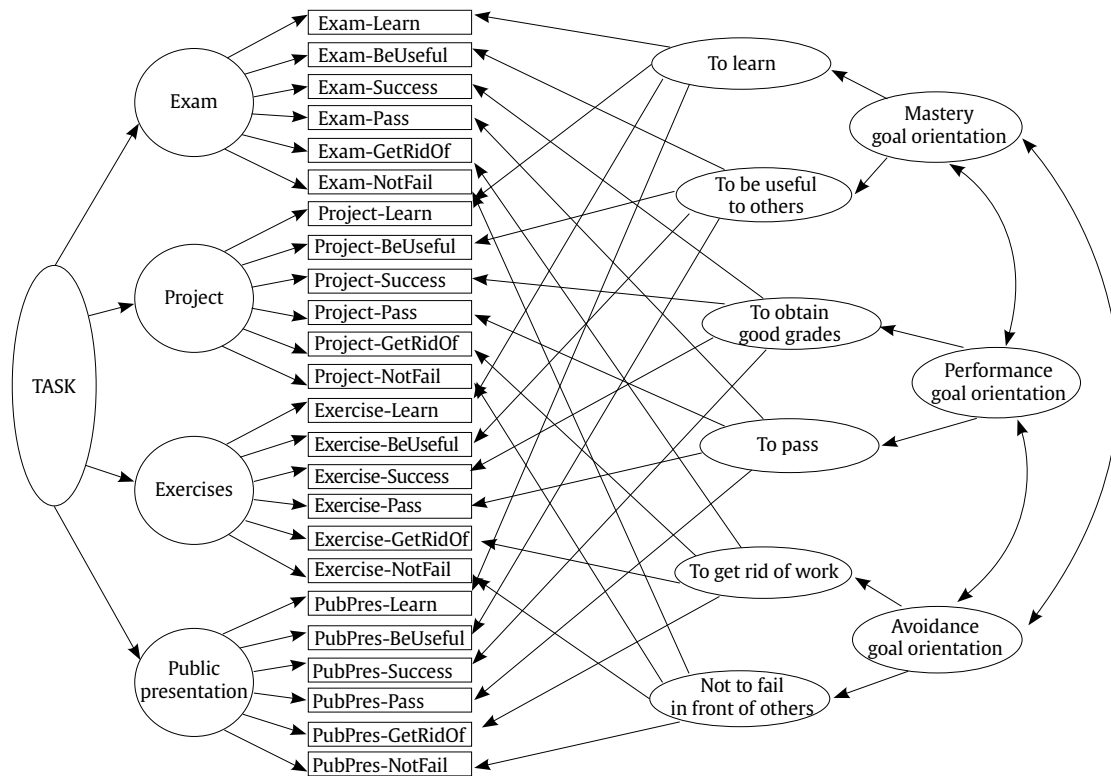
In any case, no matter the isolated or combined effect of motivational orientations and specific goals, the fact is that context could affect the degree to which a specific goal or a set of goals is activated in a situation and influences a student’s behavior. The work by Bardach et al. (2019) suggests this possibility concerning general classroom goal structures. The meta-analysis carried out by these authors on the relationships between these structures and students’ achievement goals over 62 studies ( $N = 47,975$  students) showed that the type of classroom goal structure (mastery, performance, and avoidance) contributes mainly to the activation of the corresponding achievement goal. In the same way, the works by Alonso-Tapia (2016), Alonso-Tapia et al. (2020), and Schweder et al. (2019) examining, among other things, the interaction between classroom motivational climate and achievement goals, point in the same direction. However, no study analyzes the relationship between the types of tasks that the secondary and high school students have to cope with, and the activation of specific goals and goal orientations. Therefore, following the model suggested by Alonso-Tapia et al. (2018), we decided to develop a questionnaire that could be of help for this purpose.

### Situational Sensitivity

In secondary and high school, students had to confront, at least, four types of situations that can influence their motivation. First, students have to perform “exercises” – in class or at home – to understand and assimilate the contents given. Second, they have to perform also “extended projects” (works carried out over several days or even weeks) to deepen the understanding of concepts and to master different procedural competencies. Third, students have to make “public presentations” – in front of peers and teachers – to develop other abilities such as communication. Finally, students have to realize “exams”. Given these situations, which effects can they have on students’ motivation? Is each goal activated to a different degree no matter the academic situation? Does each situation activate different achievement goals to a different degree? If the answer to this last question were positive, as far as some situations did not activate mainly the goals underlying the mastery orientation, researchers and teachers would have to look for ways of coping with this problem, as the main motivational objective of the educational endeavor is to promote mastery motivation.

### Theoretical Working Model

To answer the stated question it is necessary, first, to describe the theoretical model on which the questionnaire that has to be developed will be based. The structure of the model appears in



**Figure 1.** Model for Assessing Situation x Person Motivational Interaction.

Figure 1. Each observed variable has to do with a type of goal and a situation, both of which can vary. This structure allows, in a first step, to measure students' goal and goal orientations and, in a second step, to analyze the effect that perceiving a task as demanding some kind of effort may have on students' motivation. However, there is not a unique type of such task, but several. Because of this reason, the model suggests that task effect on achievement motivation is exerted at least through four types of more specific tasks and allow assessing the different degree in which the academic situations to which the items refer affect students' answers. Such differences would be an index of students' sensibility to the consequences of trying or not in each situation.

Assuming that the model is correct, it is important, in the first place, to establish the predictive validity of the questionnaire scores in each goal and goal orientation measure. It is expected that they will relate to self-regulation style (SR), expectancies, and performance, in line with the results reported in the literature (Alonso-Tapia et al., 2010; Schweder et al., 2019). According to these authors, when talking about motivational orientations, they should be considered as inclusive concepts that embrace different specific motives – goals – and psychological processes – expectancies, self-regulation, and volitional processes. So, being high or low in one of these orientations seems to imply a different kind of expectancies and self-regulation processes (Schweder et al., 2019). This study also shows that all these variables correlate in a significant way with mean grade. Mastery orientation correlates positively and significantly with performance – mean grade –, expectancies, and learning-oriented SR style. Performance orientation does not correlate significantly with performance nor expectancies, but it does with performance-oriented SR style. Finally, avoidance orientation correlates negatively with performance, and positively with avoidance-oriented SR style, and does not correlate with expectancies. It is expected that scores in the new questionnaire will show similar relations as far as goals and goal orientations are concerned.

In the second place, regarding the fact that items vary systematically concerning the situation students have to cope with, we expect that each situation will activate motivational orientations to a different degree and that these differences will be reflected in the degree to which students will accept to act according to the content of each item.

First, the “exam” situation might focus students' attention on evaluation, and so it would activate goals characterizing performance orientation, as the “desire to get positive grades” (success) or the “desire to pass”. Eventually, if exam scores were to be known by other people, the exam situation would activate avoidance orientation. However, if exams are considered as occasions for testing their learning, mastery orientation could be activated.

Second, the “project” situation might focus attention on the learning process when teachers' messages make explicit the importance of learning, even if the realization of the project involves a numerical mark. However, students could perceive to carry out a project for several days or weeks as demanding too much effort, a perception that can activate the desire to get rid of it, a goal that has to do with avoidance orientation.

Third, the effect of the “exercises” situation is less predictable since students could perceive its fulfillment in different ways. On one side, it can activate goals as “desire of learning” or “desire of being useful” if students consider its realization useful for this purpose. On the other side, it can activate goals as “to take a weight off one's shoulders, and to leave the task” if exercises are perceived as repetitive and boring, or “avoiding failure” (not to fail in front of others) if students focus their attention on the possible negative consequences that might follow if a failure occurs and the result is made public.

Finally, “doing a public presentation” of one's work might focus attention on the possible social judgment. This fact could result, on one hand, in the activation of goals related to performance orientation if a student anticipates positive outcomes and if these outcomes are in line with a student's “desire of public success” goals. On the other

hand, it can activate goals related to avoidance orientation such as “avoiding failure”, if a student is concerned with avoiding social judgments of competence. In summary, situations can interact with goals in determining the final achievement motivation, and this interaction might manifest in the way students answer the different types of items.

The effects suggested can be of two types. Task situations can affect the students as a group, producing differences in the degree to which they activate achievement goals. This effect can be tested through ANOVA techniques. Second, task situations can have a different effect on the degree to which they activate achievement goals in particular students, depending on their differences in sensitivity to the implications of the situation. If this is the case, the slopes of the relationship between observed and latent variables corresponding to each situation would be significant.

The possibilities just described are only an example of how and why academic situations can influence the activation of students' goals and goal orientations in different degrees and the manifestation of such differences when students answer the items of questionnaires like the one we are intending to validate. This study is only a first exploration of the possibilities suggested.

Summarizing, the objectives of this work are:

- 1) To study the structural and predictive validity of the Situated Goal Questionnaire for secondary and high school students.
- 2) To study the role of academic situations in the activation of different goals.

## Method

### Participants

A convenience sample of 1,010 secondary and high school students, from three different public secondary schools of Grand Madrid, participated in the study. They were large schools -with about 800 students- invited at random to participate in the study. As for sex, 510 were females and 500, males. The mean age was 14.34 years ( $SD = 1.6$ ). They belonged to six different year levels (1<sup>st</sup>, 181; 2<sup>nd</sup>, 221; 3<sup>rd</sup>, 256; 4<sup>th</sup>, 239; 5<sup>th</sup>, 56, and 6<sup>th</sup>, 54). To preserve confidentiality, the questionnaires were anonymous.

### Materials

To test our hypothesis, the following instruments were used.

**Situated Goals Questionnaire for Secondary and High School Students** (SGQ-SHS; MESI-SB in Spanish). This questionnaire, specifically developed for this study, contains 48 items that address the interaction between motivation and situation. Each item assesses a specific goal that, according to theory, can affect students' motivation and learning in a specific situation. For every situation, 12 items are referring to 6 different goals, 2 items per goal. Students have to rate their degree of agreement on a 5 point Likert scale. The questionnaire is included in the [Appendix](#).

**Emotion and Motivation Self-regulation Questionnaire** (EMSR-Q; [Alonso-Tapia et al., 2014](#)). To assess the psychological processes related to motivational orientations and validate our hypotheses, the EMSR-Q was used. This questionnaire contains 20 items including five types of general self-messages or mental verbalizations through which students self-regulate (adequately or not) the positive and negative emotions which can favor or interfere with their learning activities, and also with motivation itself. The items are grouped in five basic scales: negative self-regulation of stress (example: “I am getting nervous... I'm not able to do it”) ( $\alpha = .79$ ), positive self-regulation of motivation (example: “Calm down... do not hurry, do not stop... you will get it”) ( $\alpha = .70$ ), avoidance oriented SR (example: “This is not worth my time... let's try to finish

it as soon as possible”) ( $\alpha = .69$ ), performance oriented SR (example: “What a tiring task! Well, I have to pass ... let us continue”) ( $\alpha = .72$ ), and process-oriented SR (example: “Here was the mistake! Great! Next time I will know how to do it”) ( $\alpha = .70$ ), and two general scales referring to second-order factors: avoidance oriented self-regulation style (ASRS) ( $\alpha = .77$ ) and learning-oriented self-regulation style (LSRS) ( $\alpha = .84$ ).

**Control Expectancies Scale** (CES; [Alonso-Tapia, 2005](#)) ( $\alpha = .80$ ). For assessing students' control expectancies related to their learning success, the CES was used. This scale has 10 items, which assess, on a 5 point Likert scale, students' degree of agreement with statements on expectations of success or failure linked to the effort a student is willing to spend. An item example is “If I try hard, I expect to be able to improve a lot my writing capacity”.

**School Performance Items**. Three items were included at the end of the questionnaire to address students' school performance in Language, Mathematics, and Social Science. Students should indicate on a 5-point Likert scale the approximate grades they got on the first term in these subjects.

### Procedure

Data collection was carried out after gathering the approval from the Research Ethics Committee. To avoid students' tiredness, instruments were divided into two groups, and each group was used with a subsample, according to the distribution shown in [Table 1](#). The sample was randomly separated into two subsamples, with an almost equal number of groups in each academic course. The first sample answered the first group of instruments and the other the second group. The whole sample was used for carrying out the initial analyses and each subsample for completing validation analyses. The students filled in the instruments in one 50-minutes session.

**Table 1.** Groups of Instruments

| Group 1<br>Subsample $n = 526$ |                            | Group 2<br>Subsample $n = 484$ |                            |
|--------------------------------|----------------------------|--------------------------------|----------------------------|
| Items                          | Scale                      | Items                          | Scale                      |
| 1-48                           | SGQ <sup>1</sup>           | 1-48                           | SGQ                        |
| 49-58                          | CES                        | 49-68                          | EMSR-Q                     |
| 59-61                          | Items for assessing grades | 69-71                          | Items for assessing grades |

Note. <sup>1</sup>SGQ = Situated Goals Questionnaire; CES = Control Expectancies Scale; EMSRQ = Emotion and Self-regulation Questionnaire.

### Data Analyses

Before carrying out the analyses, each pair of items designed for assessing each goal in a particular situation were combined in one variable (parcel), reducing the number of variables to 24, after calculating the correlations between them (mean correlation: .45; maximum: .65; minimum: .19). Item parcels were used since this procedure has known advantages such as fewer parameters to estimate and fewer chances for residuals to be correlated or dual loadings to emerge ([MacCallum et al., 1999](#)). Therefore, this procedure allows for specifying a clear latent construct ([Little et al., 2002](#)). Besides, the whole sample was randomly divided into two subsamples to allow for cross-validation. Then, several analyses were realized.

### Analyses related to the first research objective

First, the SGQ hypothesized “basic factorial structure” was derived from the model proposed by [Alonso-Tapia et al. \(2018\)](#). This structure corresponds to the right part of the model above shown in [Figure 1](#). In these analyses, situations are not considered. To determine

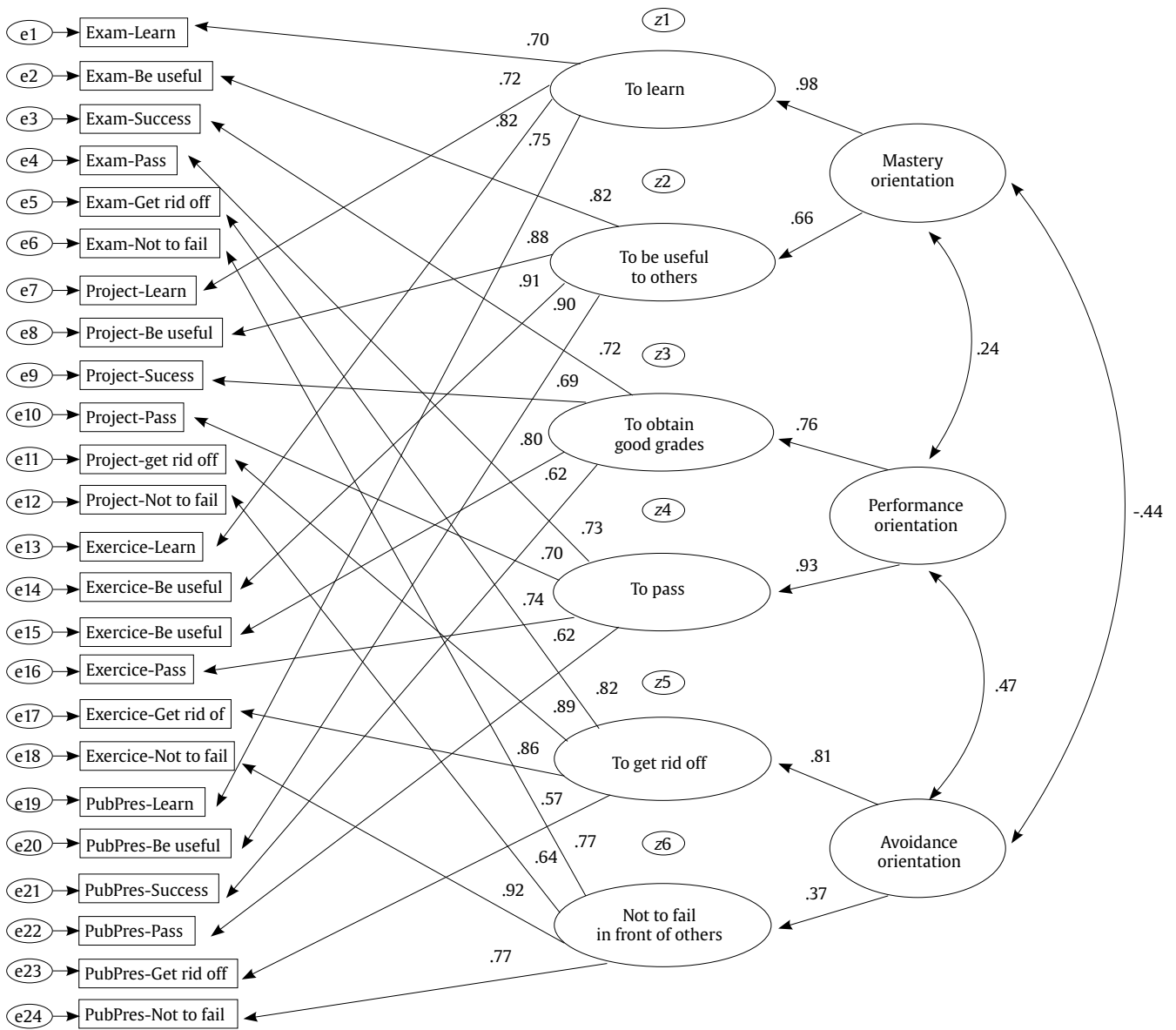


Figure 2. CFA1. SGQ Baseline Confirmatory Model (Standardized Estimates).

its factorial validity, four confirmatory factor analyses (CFA) were realized: CFA1, initial analysis using as the first subsample; CFA2, cross-validation analysis using both subsamples; CFA3, multi-group analysis by academic level (level 1: first and second year of secondary education; level 2: third and fourth year of secondary education; level 3: first and second year of high school); CFA4, multi-group analysis by sex. These analyses were carried out using the AMOS-20 statistical software. Estimates were obtained using the maximum likelihood method. Absolute fit indices ( $\chi^2$ ,  $\chi^2/df$ ) and non-centrality fit indices (TLI, CFI, RMSEA) were used to assess model fit, as well as criteria for acceptance or rejection based on the degree of adjustment described by Hair et al. (2010) ( $\chi^2/df \leq 5$ ; TLI and CFI  $\geq .90$ ; RMSEA  $\leq .08$ ).

Second, the internal consistency of the SGQ scales was calculated using the  $\omega$  index (McDonald, 1999).

Third, to obtain initial information on the external validity of the SGQ, the following kinds of analyses were made:

a) To test whether SGQ relates to expectancies and self-regulation, correlation analyses were carried out using the SGQ scales and

the scales of the other questionnaires included in each group of instruments: a) SGQ, CES and b) SGQ, EMSRQ.

b) In order to see the relative weight of each variable for predicting grades (self-estimated mean grade, SEMG), several regression analyses were realized varying the predictors and the sample: 1) using the whole sample and the SGQ scales as predictors; 2) using the first subsample, and the SGQ and CES scales as predictors; and 3) using the second subsample, and the SGQ and EMSRQ scales as predictors.

Fourth, to determine the role of the academic situation in activating the different achievement goals, in a first step, four ANOVAs of repeated measures were carried out. In these analyses, task situations were the independent variables and achievement goals were the dependent variables. The objective of this analysis was to determine whether significant differences existed in the degree to which each task activate the achievement goals in the whole group. In a second step, a confirmatory factor analysis of the whole model shown in Figure 1 – hierarchical and multi-trait at the same time – was carried out (CFA5) using the same estimation

method, fit indices, and adjustment criteria as in previous CFAs. Our interest, however, focuses mainly on the left part of the model. In this regard, several considerations have to be borne in mind. First, we do not expect that all observed variables corresponding to the same situational latent variable have a similar or even significant load ( $\lambda$ ). The reason is that, if our general hypothesis is correct, the same situation will not activate the different goals to the same degree. However, to know these differences is precisely what we are interested in. Only when students differ in their sensitivity to a particular situation concerning an achievement goal, the load ( $\lambda$ ) of a variable on the factor identifying such situation will be significant. Second, this fact will probably decrease the reliability of scores in each situational factor. However, we are not interested in developing situational scales, but in identifying the differences just mentioned.

## Results

### Results Related to the First Research Objective

#### Confirmatory factor analyses

**CFA1: Basic model.** Figure 2 shows the standardized estimates of the confirmatory model. All the estimated factor loadings ( $\lambda$ ) were significant ( $p < .001$ ), as well as the proposed structural relations ( $\gamma$  and  $\Phi$ ). Table 2 shows the fit statistics of the proposed model. Chi-square was significant, probably due to the sample size. However, the ratio  $\chi^2/df$  and the remaining fit indexes were well within the limits that allow the model to be accepted.

**Table 2.** SGQ. Goodness-of-fit Statistics for Each Confirmatory Factor Analysis (CFA)

|  | $\chi^2$ | df  | p     | $\chi^2/df$ | TLI | CFI | RMSEA |
|--|----------|-----|-------|-------------|-----|-----|-------|
| CFA-1 basic model ( $n = 505$ )                            | 782.16   | 244 | <.000 | 3.20        | .91 | .92 | .066  |
| CFA-2 cross validation ( $n_1 = 505, n_2 = 505$ )          | 1655.94  | 520 | <.000 | 3.18        | .91 | .92 | .047  |
| CFA-3 MG by S. level ( $n_1 = 405, n_2 = 495, n_3 = 110$ ) | 2185.83  | 815 | <.000 | 2.68        | .90 | .90 | .041  |
| CFA-4 MG by sex ( $n_{female} = 510, n_{male} = 500$ )     | 1700.89  | 488 | <.000 | 3.48        | .90 | .91 | .050  |
| CFA-5 Hierarchical multi-trait model ( $n = 1010$ )        | 694.20   | 219 | <.000 | 3.17        | .96 | .97 | .046  |

**CFA2: Cross-validation.** Table 2 shows the fit statistics of the cross-validation. As in the previous case,  $\chi^2$  was significant, probably due to the sample size. However, the ratio  $\chi^2/df$  and the remaining fit indexes were well within the limits that allow the model to be accepted. Besides, results of group comparison show that fit does not decrease if restrictions of equality between parameters are imposed for "measurement weights" ( $\Delta\chi^2 = 19.02, p = .39$ ), "structural weights" ( $\Delta\chi^2 = 19.72, p = .54$ ), "structural covariances" ( $\Delta\chi^2 = 28.62, p = .38$ ), and "structural residuals" ( $\Delta\chi^2 = 32.78, p = .43$ ). Therefore, the model is well estimated.

**CFA3: Multi-group analysis by school level.** Table 2 shows the fit statistics for this analysis. Again,  $\chi^2$  was significant, probably due to the sample size. However, the ratio  $\chi^2/df$  and the remaining fit indexes were well within the limits that allow the model to be accepted. Besides, results of group comparison show that fit does not decrease if restrictions of equality between parameters are imposed for "measurement weights" ( $\Delta\chi^2 = 16.30, p = .57$ ), "structural weights" ( $\Delta\chi^2 = 26.46, p = .19$ ), and structural covariances ( $\Delta\chi^2 = 36.92, p = .10$ ). That is, measurement invariance is generalized across school levels.

**CFA4: Multi-group analysis by sex.** Table 2 shows the fit statistics for this analysis. Once more,  $\chi^2$  was significant, probably due to the sample size. However, the ratio  $\chi^2/df$  and the remaining fit indexes were well within the limits that allow the model to be accepted. Nevertheless, fit decreases if restrictions of equality between

parameters are imposed. Therefore, it was decided to calculate Clogg et al.'s (1995) Z statistic to test which differences between regression weights were significant. The result of this analysis showed that only in two cases differences between females and males were significant ( $Z \geq 1.96$ ), and in both cases factor loadings (1) were greater for females: 1) to be useful  $\rightarrow$  exercise item (difference = .14,  $Z = 2.41$ ), and 2) to pass  $\rightarrow$  project item (difference = .25,  $Z = 2.02$ ).

#### Reliability

McDonald's  $\omega$  coefficients, computed for the scales of this questionnaire, are shown in Table 3. The indexes for the specific goals are quite good (average = .90). Coefficients for goal orientations are also good except for avoidance orientation, which fell slightly short of the standard limit of acceptance.

**Table 3.** Internal Consistency (McDonald's  $\omega$ )

| DL  | DU  | DGG | DP  | DGU | DAF | Mastery | Performance | Avoidance |
|-----|-----|-----|-----|-----|-----|---------|-------------|-----------|
| .93 | .95 | .89 | .91 | .90 | .85 | .85     | .86         | .64       |

#### Correlation Analysis

Table 4 shows correlations between scores on motivational orientations and specific goals, on one side, and the variables assessed to obtain information about the external validity of the SGQ-SHS: expectancies, emotional and motivational strategies and styles, and self-estimated mean grade. As can be seen, correlations with SEMG are all significant and in the expected direction in line with the literature, except for "avoidance orientation". Correlations with expectancies are also significant except in the case of the specific goal "desire to pass". Correlations with emotional and motivational self-regulation strategies are in general in line with what could be expected, except in the case of "performance-oriented self-regulation".

#### Regression Analyses

Table 5 shows the results of regression analyses in which predictors of SEMG are specific goals (1), specific goals and control expectancies (2), goal orientations (3), and goal orientations and control expectancies (4). As can be seen comparing analyses 1 and 3, if predictors are specific goals, the amount of variance explained is greater than if they are goal orientations.  $R$  rises from .363 up to .499 if control expectancies and specific goals are used as predictors (analysis 3), and from .228 up to .463 if control expectancies are added to goal orientations as predictors, but in this case none of the goal orientations has a significant weight as a predictor of SEMG.

Table 6 shows the results of regression analyses in which predictors of SEMG are (1) specific goals, and emotional and motivational self-regulation strategies, and (2) goal orientations, and emotional and motivational self-regulation styles. Again, as can be seen, comparing analyses 1 and 2, if predictors are specific goals and emotional and motivational self-regulation strategies, the amount of variance explained is greater than if they are goal orientations and emotional and motivational self-regulation styles. Besides, only the positive SR of motivation strategies and learning SR style contribute to predicting SEMG in a significant way.

### Results Related to the Second Research Objective

**ANOVA analyses.** Differences in the degree to which each considered academic situation activates students' goals are shown in Figure 3. The four ANOVAs of such differences were significant: 1) exam:  $F = 665.38, p < .0001$ , partial  $\eta^2 = .40$ ; post-hoc analyses showed that all differences between groups, except groups 1 and 3, were significant; 2) project:  $F = 151.90, p < .0001$ , partial  $\eta^2 = .13$ ; post-hoc analyses showed that all differences between groups, except groups 1, 3, and 4, were significant; 3) exercises:  $F = 486.05, p < .0001$ , partial  $\eta^2 = .33$ ; post-hoc analyses showed that all differences between groups were significant; and 4) public presentation:  $F = 540.76, p <$

**Table 4.** Correlation Analysis between Motivational Orientations, Specific Goals, Control Expectancies, Emotion, and Motivation Self-regulation Strategies and Styles, and Self-estimated Mean Grade.

|       | Mastery  | Performance | Avoidance | DL       | DU        | DGG       | DP        | DGR       | DAF       | SEMG      |
|-------|----------|-------------|-----------|----------|-----------|-----------|-----------|-----------|-----------|-----------|
| SEMG  | .209***  | -.150**     | <i>ns</i> | .181**   | .202**    | .147**    | -.108**   | -.104**   | -.144**   |           |
| CES   | .430***  | .131***     | -.307***  | .439***  | .292***   | .239***   | <i>ns</i> | -.206***  | -.131***  | .455***   |
| NSSR  |          |             |           | -.180**  | -.162**   | <i>ns</i> | .194**    | .334**    | .315***   | -.137**   |
| AOSR  |          |             |           | -.387*** | -.538***  | <i>ns</i> | .202**    | .521***   | .132**    | -.102*    |
| PEOSR |          |             |           | .117*    | <i>ns</i> | .222***   | .305***   | <i>ns</i> | <i>ns</i> | <i>ns</i> |
| PMSR  |          |             |           | .449***  | .366***   | .179**    | <i>ns</i> | -.270***  | <i>ns</i> | .271***   |
| PROSR |          |             |           | .516***  | .391***   | .136**    | <i>ns</i> | -.319***  | <i>ns</i> | .207***   |
| ASRS  | -.265*** | .253***     | .396***   |          |           |           |           |           |           | <i>ns</i> |
| LSRS  | .414***  | .197**      | -.160**   |          |           |           |           |           |           | .227***   |

Note. DL = desire to learn; DU = desire to be useful; DGG = desire to obtain good grades; DP = desire to pass; DGR = desire to get rid of; DAF = desire to avoid failure; SEMG = self-estimated mean-grade; CES = control expectancies; NSSR = negative stressful self-regulation; AOSR = avoidance oriented self-regulation; POSR = performance-oriented self-regulation; PMSR = positive self-regulation of motivation; PROSR = process-oriented self-regulation; ASRS = avoidance self-regulation-style; LSRS = learning self-regulation-style. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ , *ns* = non-significant.

**Table 5.** Regression Analyses. Predictors: 1) Specific gGoals and Control Expectancies; 2) Goal Orientations and Control Expectancies. Criterion: Self-estimated Mean Grade (SEMG)

| <i>R</i>   | <i>R</i> <sup>2</sup> | Desire to learn           | Desire to be useful          | Desire to obtain good grades | Desire to pass       | Desire to give up | Desire not to fail | Control expectancies |
|------------|-----------------------|---------------------------|------------------------------|------------------------------|----------------------|-------------------|--------------------|----------------------|
| (1).363*** | .132***               | .059                      | .135***                      | .298***                      | -.255***             | .042              | -.189***           |                      |
| (2).499*** | .249***               | <i>ns</i>                 | .120***                      | .161***                      | -.147**              | <i>ns</i>         | -.107**            | .414***              |
|            |                       | Learning goal orientation | Performance goal orientation | Avoidance goal orientation   | Control expectancies |                   |                    |                      |
| .228***    | .053***               | .166***                   | .040                         | -.112**                      |                      |                   |                    |                      |
| .463***    | .215***               | <i>ns</i>                 | <i>ns</i>                    | <i>ns</i>                    | .447***              |                   |                    |                      |

Note. \*\* $p < .01$ , \*\*\* $p < .001$ , *ns* = non-significant.

**Table 6.** Regression Analyses. Predictors: 1) Specific Goals and Emotional and Motivational (EM) Self-regulation Strategies; 2) Goal Orientations and EM Self-regulation Styles. Criterion: Self-estimated Mean-Grade (SEMG)

| <i>R</i> | <i>R</i> <sup>2</sup> | DL                   | DU                      | DGG                   | DP                 | DGR               | DAF      | NSSR      | AOSR      | PEOSR     | PMSR    | PROSR     |
|----------|-----------------------|----------------------|-------------------------|-----------------------|--------------------|-------------------|----------|-----------|-----------|-----------|---------|-----------|
| .408     | .167***               | <i>ns</i>            | .133**                  | -.296***              | .191***            | .114*             | -.164*** | <i>ns</i> | <i>ns</i> | <i>ns</i> | .191*** | <i>ns</i> |
|          |                       | Learning orientation | Performance orientation | Avoidance orientation | Avoidance SR-style | Learning SR-style |          |           |           |           |         |           |
| .267     | .071                  | .150**               | <i>ns</i>               | <i>ns</i>             | <i>ns</i>          | .166***           |          |           |           |           |         |           |

Note. DL = desire to learn; DU = desire to be useful; DGG = desire to obtain good grades; DP = desire to pass; DGR = desire to get rid of; DAF = desire to avoid failure; NSSR = negative stressful self-regulation; AOSR = avoidance oriented self-regulation; POSR = performance-oriented self-regulation; PMSR = positive self-regulation of motivation; PROSR = process oriented self-regulation.

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ , *ns* = non-significant.

.0001, partial  $\eta^2 = .35$ ; post-hoc analyses showed that all differences between all groups were significant.

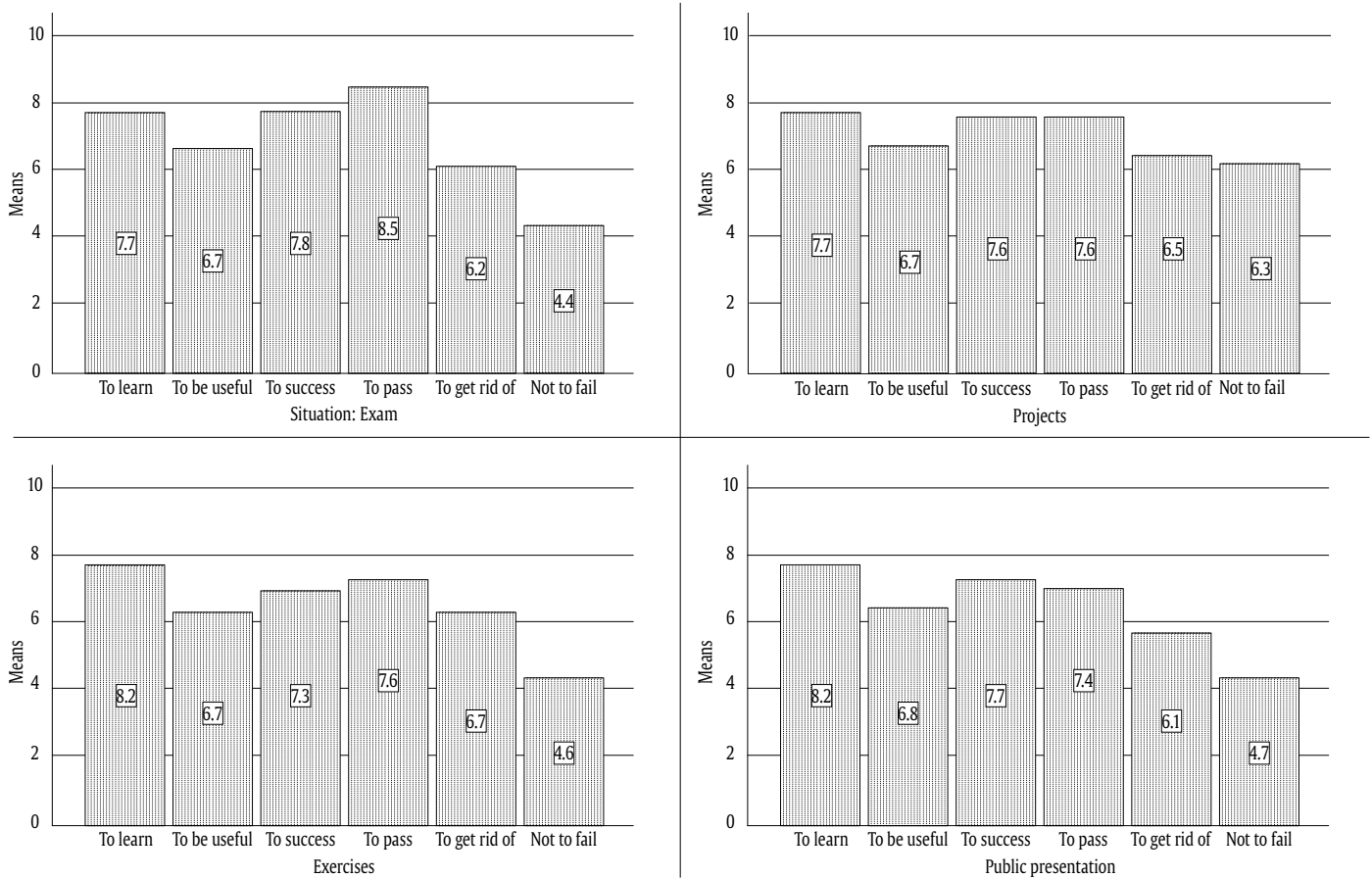
**Hierarchical multi-trait confirmatory factor analysis.** CFA5. Figure 4 shows the standardized estimates of the confirmatory model, and Table 2 (CFA5) shows the fit statistics of the proposed model. All the estimated factor loadings ( $\lambda$ ) were significant ( $p < .001$ ), except for the one which links "to obtain good grades" latent variable and "public presentation-success" observed variable, and those that link "exam", "projects", and "exercises" situational variables with observed variables related to the "desire of giving up work" goal. It deserves to be pointed that there are great differences between factor loadings ( $\lambda$ ) in latent situational factors – though most of such loads are significant –, a fact that corresponds to our expectancies. As for adjustment indices in Table 2, they fit better than those of the basic model, chi-square being significant, probably due to the sample size. However,  $\chi^2/df$  ratio and the remaining fit indexes were well within the limits that allow the model to be accepted. These same conclusion is supported by the Akaike information criterion:  $AIC_{CFA1} = 894.15 > AIC_{CFA5} = 856.20$ .

## Discussion

The goal of this study was twofold. First, to develop and validate the Situated Goals Questionnaire for Secondary and High School Students (SGQ-SHS; MESI-SB in Spanish), a questionnaire for assessing the students' academic goal orientations and the specific goals underlying them. Second, to study the degree and way in which the activation of these motivational characteristics is moderated by different learning situations, thus testing the perceived effect of the "person x situation" interaction on the activation of specific goals and goal orientations. What kind of contributions has our study made concerning this objective?

### First Research Objective: Validation of the SGQ-SHS Questionnaire

First, our results had provided evidence supporting our initial expectancies on the structure of the SGQ-SHS related to goals and goal-orientations, and on the reliability of its scales. Results support the theory according to which students face academic tasks following



**Figure 3.** Degree of Specific Goal Activation as a Function of the Academic Situation to Confront.

in different degree three motivational orientations, “learning goal orientation” (LG), “performance-approach goal orientation” (PO), and “performance-avoidance goal orientation” (AO) (Alonso-Tapia et al., 2018; Hulleman et al. 2010).

Second, the fact that each “goal orientation” relates to several more specific goals and specific self-regulation processes and expectancies suggests that “goal orientations” are not aims but inclusive concepts, according to Alonso-Tapia et al. (2010).

Third, our results, in line with results of previous research, suggest that it is better to use scores corresponding to specific goals instead of scores corresponding to “goal orientations” because the first group of scores has greater predictive power. Besides, due to their greater specificity, to study the contextual factors from which they depend can help teachers to decide how to act to activate the pursuit of goals favoring mastery orientation.

Fourth, correlations found between goal orientations and self-regulation styles, and regression weights also found from these variables to self-estimated mean-grade support the idea that both types of variables support each other during the learning process. However, they must not be confounded, as shown by Kuhl (2000). Therefore, teachers should pay attention to teaching strategies that positively affect each of such variables.

### Second Research Objective: To Study Personal Goals-Academic Tasks Interaction

Concerning “personal goals-academic tasks” interaction, there are two types of results to discuss: results yielded by the analyses of variance and results yielded by the multi-trait analysis.

In the first place, the analysis of variance showed that the means of observed variables corresponding to different goals in the same situation are significantly different. This fact means that students “as a group” differ systematically when they answer the items related to a particular situation pointing to the degree to which they pursue the particular goal mentioned. For example, the mean of the observed variable of “PubPres-To learn” in the situation of “public presentation” is 8.2, whereas the mean of the “PubPres-Not fail (publicly)” observed variable in the same situation is 4.7. This difference means that when answering the two items forming the first observed variable, the situation influences positively the answer given, as students may be sensitive to the importance of the situation for learning, whereas when answering the two items forming the second variable the situation does not seem to be perceived as an occasion to be worried about failing.

In the second place, situations have not only an effect on the activation of goals in the students as a group. In the hierarchical multi-trait analysis, the variance explained is divided between goals and situations. A greater load ( $\lambda$ ) of observed variables in each of the two interacting factors indicates which of them is most important. Besides, factor loadings ( $\lambda$ ) of observed variables corresponding to different goals in the same situation, even if most of them are significant, are very different. This fact is possible because individual students differ in their sensitivity to the situation mentioned in the item and these differences become manifest in their answers. For example, when students have to do a “project”, on one side they differ in the sensitivity to its implications for their public image or esteem, a difference that is recognized in their answers to the “project-not to fail” item. On the other side, however, they scarcely differ in their perception of its implications for getting rid of it.



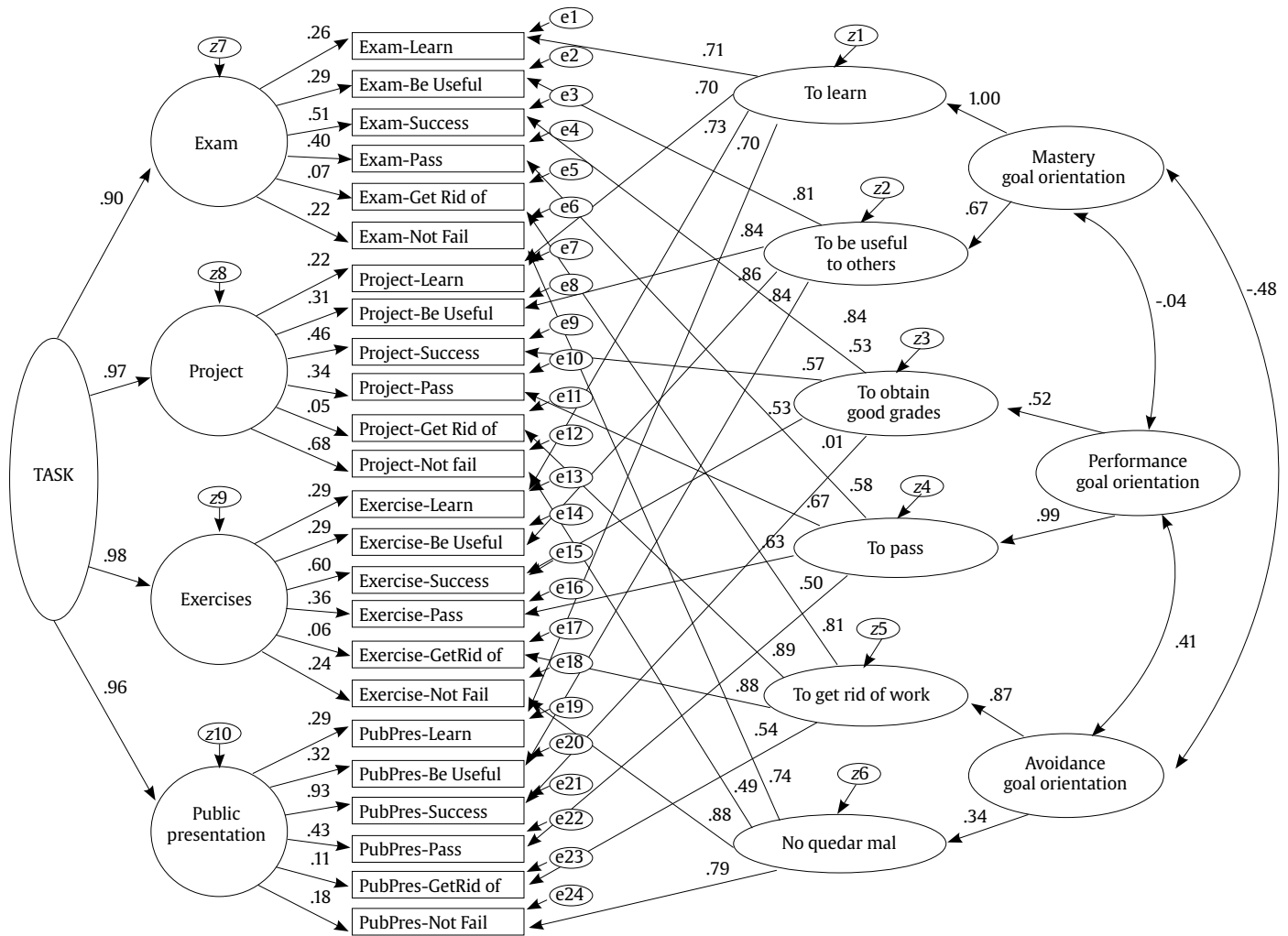


Figure 4. CFA5. SGQ Hierarchical Multi-trait Model (Standardized Estimation)

The differences just commented have theoretical and practical implications. From a theoretical point of view, they help us to understand which types of tasks (situational factors) affect the way students answer the items designed for measuring psychological characteristics in general and, in parallel, how students' motivation may be affected by the situation in real contexts. Goal and goal orientations influence students' strivings, but this influence is moderated by the nature of tasks and by the different sensitivity of students to their implications for getting specific goals. However, as shown by studies on classroom goal structures (Bardach et al., 2019) and classroom motivational climate (Alonso-Tapia et al., 2020), task perception depends on how teachers contextualize them through the way they introduce them, the extent to which they make the learning objective of the task explicit, the instructions for carrying them out, the kind of feedback, the tasks used for assessing learning, and the use made of assessment information for helping students to progress. Therefore, it is worth going on trying to deepen our knowledge of the interaction between students' achievement goals (and goal orientations), the nature of the academic tasks they have to cope with, and the way they activate students' motivation, and characteristics of classroom motivational climate.

As for practical implications, concerning how to deal with students' motivation while teaching, there is a great amount of evidence about

ways of improving students' motivation (Lazowski & Hulleman, 2016). In particular, as pointed out in the previous paragraph, it is known that a learning-oriented classroom motivational climate affects motivation positively, even if students are performance or avoidance oriented (Alonso-Tapia & Fernández, 2008; Alonso-Tapia et al., 2020; Bardach & al., 2019; Schweder et al., 2019; Villasana & Alonso-Tapia, 2015). This fact means that, for example, if a teacher asks a student to realize a public presentation, according to the results of the present study (Figure 3), the nature of this task does not activate in enough the desire to be useful in the generality of students, even though this desire is an important educational objective for its own sake that contributes to enhancing mastery motivation (Alonso-Tapia, 2005). Besides, there are great differences in the degree to which students are sensitive to the implications of this type of tasks for obtaining good grades (success) (Figure 4), a goal that in general, according to research evidence (Vandewalle et al., 2019), does not favor deep learning. However, if teachers contextualize the task in the way above suggested, for example introducing the activity with a comment like "Let's see what we can learn from the presentation, what suggestions can we do to X (the student) so that he/she can improve his/her learning, and in which way what we learn even from errors help us to help other people. Remember that errors are occasions for learning", students' motivation could change, focusing on mastery even in these

situations. Similarly, according to this study, when students have to realize exercises, they focus on learning, but also more on passing and getting good grades than on being able to help others. Therefore, when teachers prepare their classes, they should consider ways of focusing on students' motivation also on this goal that, together with learning desire, favors mastery motivation. This can be achieved, for example, if teachers make suggestions similar to the one described in the above example.

Before finishing, it must be said that this study has some limitations. First, the number of situations included in the questionnaire was rather limited. For example, according to Bonk (2016), the learning context is changing, making learning increasingly collaborative, global, mobile, modifiable, open, online (e-learning), blended, visually based, hands-on, etc., and these changes imply different types of tasks. Second, self-estimated mean grade instead of the real mean grade was used, a fact that could have some effect on our results. Third, data have not been analyzed from a longitudinal perspective. It may occur that as a result of experience with different kinds of academic problems the "person x situation" interaction varies when the academic situation varies. Finally, practical implications of our results in the "person x situation" interaction for teaching – not for predicting grades – are only hypotheses that deserve also to be explored.

Summarizing, this study shows the effect of the type of task on the degree to which students declare to pursue different goals – as suggested by the person-situation interaction model –, the relationship between goals, expectancies, and self-regulation styles, as well as the validity of measures developed for predicting achievement (self-estimated mean grade), and the directions for focusing teachers' activities that can adequately improve goal orientations in the context of specific learning tasks.

### Conflict of Interest

The authors of this article declare no conflict of interest.

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## Appendix

### "Situated Goals" Questionnaire for Secondary and High School Students (SGQ-SHS)

#### Instructions

Below you will find a series of statements about yourself with which you can more or less agree. Answer on the answer sheet choosing the value that represents your degree of agreement with each statement, according to the following scale:

- 1 = *Strongly disagree*
- 2 = *Disagree*
- 3 = *Neutral*
- 4 = *Agree*
- 5 = *Strongly disagree*

1. If I have to study to prepare for an exam, I think first of all about achieving a good grade.
2. If the teacher asks to do a homework assignment, I seek above all to understand how to do it well.
3. When I do homework or class problems, what I think about most is passing.
4. If I have to do a problem with my colleagues, what interests me the most is to finish as soon as possible.
5. When I am studying to prepare for an exam, I try very hard because if I am competent, I will be able to help others
6. When I do a class assignment alone, I think especially if my grade is going to be one of the highest.
7. When I realize exercises or practice tasks, I am mainly interested in learning how to perform them well.
8. When I do a task in front of others, I think first of all if it will help me to pass.
9. When I prepare for an exam, what worries me the most is doing it worse than others and that everyone knows it.
10. When I do a work-project I usually push myself because if I learn by doing it, I know that I will be able to help others.
11. When I try to do homework and class problems, I think more than anything about getting a good grade.
12. The normal thing is that if I go to the blackboard to do a task, I try above all to understand how to do it.
13. If I have to prepare for an exam, what interests me the most is to be able to finish studying as soon as possible.
14. When I do a work-project, I am very concerned about doing it worse than others and that everyone finds out.
15. When I do homework or class problems, I make an effort because, if I know, I will be able to help others.
16. If I have to do an assignment in front of the rest of the class, I think above all about getting a good evaluation.
17. When the teachers give us an exam, I think mainly in passing while preparing it.
18. If I have to do a work-project, what interests me the most is to be able to finish it as soon as possible.
19. When I do homework or class problems, I worry about doing worse than others and being known.
20. If I have to do a problem on the board, I make an effort because, knowing, I will be able to help others.
21. Even if I study to prepare for an exam, what interests me the most is to understand what I study.
22. The first thing I think about if I have to do a work-project at home is whether it will help me to pass.
23. If I have to carry out tasks or problems, what interests me the most is being able to finish them as soon as possible.
24. If I have to do an assignment in front of the rest of the class, I worry about doing it wrong and that others see it.
25. If I have to study for an exam, I think above all that my grade is among the best.
26. If I have to do a work-project, first of all, I try to understand each step to learn how to do it well.
27. If I have to carry out problems or tasks, I do them seeking to ensure first of all that I am going to pass.
28. When I make a problem in front of my peers, I try above all to get rid of it as soon as possible.
29. The normal thing is that when I prepare for an exam, I am interested above all in learning to be useful to others
30. If I have to do a work-project, I think mainly about whether doing it will help me to get a high grade
31. The normal thing is that if I do problems or tasks, I am especially interested in understanding how to do them.
32. If I have to do a task in front of others, I want the teacher to take it into account when he/she gives me the grade.
33. If a teacher announces an exam, the first thing I think is that, if I fail, I will look bad in front of others.
34. The normal thing is that if I do a work-project, I am above all interested in learning to be useful to others.
35. When I have to carry out problems or class assignments, I think above all that my grade stands out.
36. When I work on the blackboard, in front of my peers, I usually try first of all to understand how to do the task
37. When studying to prepare for an exam, what I am looking for above all is to finish it as soon as possible.
38. If the teacher asks us to do a work-project, the first thing I think is that, if it goes wrong, I'm going to look bad.
39. Normally, when I do problems or tasks, I am especially interested in learning so that to be useful to others.
40. If I have to do a task in front of everyone, I seek above all to demonstrate my knowledge and ability.
41. If I have to study to prepare for an exam, I do it seeking to ensure first of all that I am going to pass.
42. When I have to do a class assignment, I mainly try to finish it as soon as possible.
43. If I have to do a task or a problem, I immediately think that if I do them wrong, I'm going to look bad.
44. Normally, if the teacher takes me out to do a problem, I am interested in learning for being useful to others.
45. The normal thing is that, when I prepare for an exam, I am above all interested in understanding what I study.
46. If a teacher asks me to do a work-project, I think about how to make sure I pass.
47. When I do tasks or problems, what I look for above all is to get rid of them as soon as possible.
48. When I go to the board to do a task or a problem, I immediately think that I am going to look bad.

Pairs of items combined to form each variable to be measured.

