Assessment of learning goals in university students from the perspective of "*person- situation interaction*": the Situated Goals Questionnaire (SGQ-U)

Jesús Alonso-Tapia*, Carmen Nieto*, Enrique Merino-Tejedor**, Juan A. Huertas* & Miguel Ruiz*

* Universidad Autónoma de Madrid (Spain), **Universidad de Valladolid (Spain)

Abstract

Academic behaviour takes place in a context in which the nature of class activities and interactions can influence the student's motivation to learn. So, in order to study this influence, it is necessary to assess not only the personal variables that can motivate academic behaviour, but also the degree to which students are sensitive to different situational or task characteristics. In this case, the interaction person-situation is analysed using a new tool, the "situated-goal questionnaire" for university students. Data of 770 students were analysed using confirmatory techniques, as well as Anova and regression techniques. According to results, the questionnaire has good psychometric characteristics. Besides, they sowed the effect of the kinds of situation on the degree in which students declare to pursue different goals, as suggested by the person/situation interaction model, as well as the validity of both, goals and sensitivity to situations for predicting engagement and self-estimated mean-grade.

Keywords: learning goals; motivation; engagement; person-situation interaction; bi-factor model.

Introduction

From the multiple perspectives from which achievement motivation has been studied, *achievement goal theory* has been perhaps the most influent. This theory distinguishes three main GO: learning orientation (LO), performance orientation (PO) and avoidance orientation (AO) (Dweck, 1986; Hulleman, Schrager, Bodmann, & Harackiewicz, 2010). This set of orientations defines the "*trichotomous* model" of GO (Elliot, 2005). Besides, achievement goals (AG) and goal orientations (GO) are often considered as personal dispositions affecting academic behaviour (Elliot, 2005).

Nevertheless, academic behaviour takes place in a context in which the nature of class activities, of teachers' teaching practices and of interactions with peers can exert a positive or negative influence on student's motivation to learn (Alonso-Tapia & Pardo, 2006; Meece, Anderman, & Anderman, 2006). Given these facts, in order to know why students devote more or less effort to learn, it is necessary to assess not only the personal variables that can motivate academic behaviour, but also the degree in which students are sensitive to different situational or task characteristics. The interaction between person-situation can be studied using different experimental procedures, but for practitioners – and perhaps also for researchers- it would be better to have questionnaires allowing them to study such interaction directly. The fact that tools designed for the assessment of AG and GO do not take into account the learning situations probably limits their predictive capacity and usefulness. In an attempt to deal with this problem, it was decided to develop a *"situated-goal questionnaire"* for university students. However, what are the theoretical basis on which the questionnaire has been developed?

Theoretical framework
Goal orientations

As previously said, *achievement goal theory* has been perhaps the most influent perspective from which achievement motivation has been studied trying to identify the effect of the different GO referred in the theory.

According to the meta-analyses carried out by Hulleman et al. (2010), most studies support that LO has the best effects on learning and achievement. It manifests when students try to acquire new competencies and skills, as well as to understand and master the subject matter.

As for PO and AO, they have personal and contextual antecedents that are partly shared and partly different, and also different consequences (Linnenbrink-García et al., 2012). Among the internal antecedents proposed are need for achievement, fear of failure, perceived competence, and theories of intelligence (Ames, 1992; Dweck, 1986; Elliot, 2006). In relation to their effects, on one side, AO affects negatively many important academic outcomes –intrinsic motivation, academic self-efficacy, cognitive and behavioural engagement and achievement- and is associated to high test anxiety, avoidance of help seeking and self-handicapping (Hulleman et al., 2010; Linnenbrink-

García et al., 2012; Senko, Hulleman, & Harackiewicz, 2011). On the other side, as it happens with AO, PO is linked to test anxiety, avoidance of help-seeking and cheating (Huang, 2011). In contrast, it supports behavioural and cognitive engagement, interest, and achievement (Hulleman et al., 2010).

In fact, according to the *multiple-goal* perspective, students can pursue different goals at the same time. As a consequence, in some circumstances PO can have positive effects when combined with LO (Harackiewicz, Barron, Pintrich, Elliot, & Thrash, 2002; Senko et al., 2011). This perspective defends that subjects who are characterized by high LO orientation can combine these kinds of goals with PO goals in ways that promote an optimal motivational effect. However, in the meta-analysis published in 2010, Hulleman et al., concluded that this effect is not clear. In any case, given all the facts just described, LO, PO, and AO must be considered different motivational orientations, though PO and AO are usually highly correlated, and though sometimes LO and PO effects seem to converge. Thus, the three GO should be assessed in order to predict goal directed behaviour.

However, GO are not aims directing students' academic behaviour, but "umbrella" concepts embracing more specific AG (Alonso-Tapia, 2005; Alonso-Tapia, Huertas, & Ruiz, 2010; Elliot, 2005). LO involves goals as "learning" and "being useful", goals that are manifested only when the worth of learning is clearly perceived. PO has to do with getting external positive consequences such as social recognition, good grades, and/or external rewards. Finally, AO involves goals as avoiding failure because of fear of others' negative judgments, or "desire to avoid the task because it is not worth it 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 value. Taking into account the structure that GO seems to have, we had better assess not only general GO, but also the specific AG (aims) that configure them. This is the reason because of which, in line with the results of previous studies (Alonso-Tapia, Huertas & Ruiz, 2010), it was considered necessary that a new questionnaire made it possible to assess specific AG as well as GO.

Sensitivity to situations and tasks

Nevertheless, academic motivation and behaviour do not only depend on personal dispositions, but also on classroom/school goal structures (CGS), or classroom motivational climate (CMC) (Alonso-Tapia & Fernández, 2008; Ames, 1992; Linnenbrink-García et al., 2012; Meece et al., 2006). CGS and CMC are defined by teachers' teaching patterns along classroom academic activities. These patterns configure the general situations that interact with students' GO affecting motivation. Their effects are more or less known (Meece et al., 2006). However, what is not known is the effect, not of the general classroom climate or goal structure, but of the specific situations defined by the types of task the students have to realize.

The examination of study programs of different subjects in different types of studies shows that university students have to face at least five types of tasks that can affect the

motivation with which they confront learning: 1) They have to study for realizing and passing *exams*; 2) sometimes they have to realize *extended projects* to deepen the understanding of concepts, and to master different procedural competencies; 3) they have also to realize *exercises* -in class or at home- in order to understand and assimilate the contents given, or to master procedural skills; 4) very frequently, they have to work in teams so as to produce *group work* to be evaluated; 5) sometimes they have to prepare and make *public presentations* -in front of peers and teachers- in order to develop other abilities such as communication skills. Given these situations, which effects can they have on students' motivation? Or, what is the same, how do they affect the activation of different goals and motivational orientations?

It is possible to answer the questions just posed using a questionnaire whose items combined the five described tasks with the three motivational GO described in goal literature –learning, performance, and avoidance- and the six specific goals underlying them. The information provided by this questionnaire can be organized according to the structure that appears in Figure 1. Each observed variable has to do with a type of goal and a type of academic task, both of which can vary. The degree in which each student pursue each goal is estimated from items that deal with the same goal, and the degree in which the student is sensitive to the effect of a particular type of task is estimated simultaneously from items that deal with the same task.

Engagement and Performance

The possibility that goals and types of task influence students' motivation makes possible that not only goals, but also tasks, influence both engagement and performance. So, our study has tried to measure the relative weight that GO and specific goals, as well as sensitivity to different kinds of tasks, have on engagement and performance. *Performance* is a concept related to the quality of learning outcomes, a quality usually estimated from grades, the final criterion habitually employed for assessing the validity of measures of academic motivation. However, in this occasion it was decided to use also the degree of *academic engagement* as a criterion for assessing the validity of the goal and task measures on the base of the following reasons.

Engagement is a concept first related to the labour world. In this context it was considered that it manifested in the person *absorption* (to be wholly concentrated in doing something), *dedication* (pursuing something in a significant way), and *vigour* (to devote time and effort to tasks related to work). When adopted in the educational area, *engagement* has been conceived, not without discussion (Azevedo, 2015; Sinatra, Heddy, & Lombady, 2015), as the set of answers –cognitive, affective, and behavioural- following motivation and preceding performance (Eccles & Wang, 2012; Fredricks, Blumfeld, & Paris, 2004). In a recent study, Wang and Eccles (2013) have shown that the level of school engagement –in its three dimensions, behavioural, cognitive and emotional- seems to depend on students' perceptions of different factors of school context, but also that this effect is mediated by achievement motivation. Renninger and

Bachrach (2015) have shown also the dependence of engagement on motivational variables such as interest and the contextual factors triggering it. According to the results of these and other studies, it seems clear that contextual and motivational variables affect engagement in its different manifestations. So, examining the degree in which variables in our goal by task model predict engagement can be a good way of obtaining information on its predictive validity.
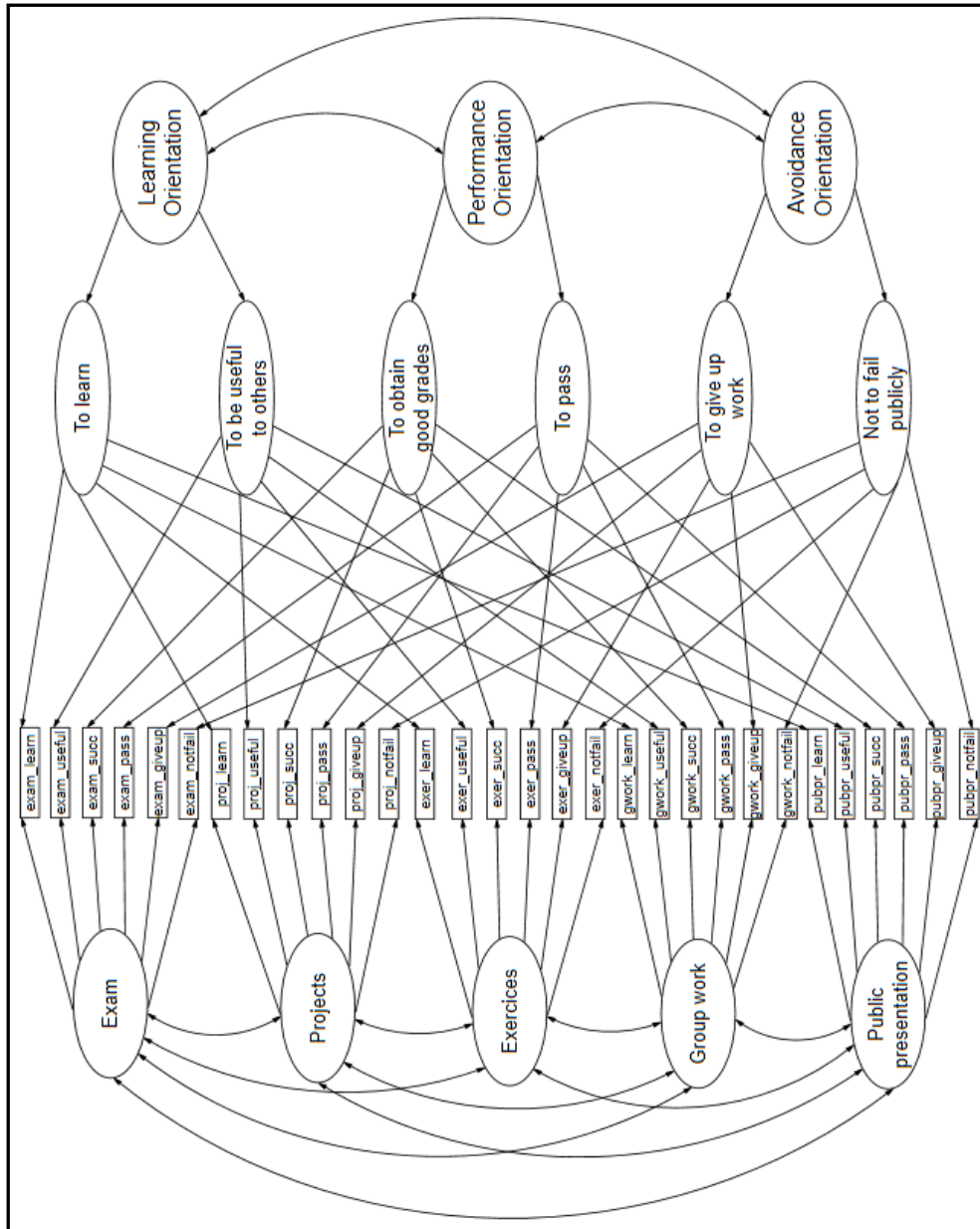

Figure 1. Goal orientation by kind of task interaction: Theoretical model.

Summarizing, the main objectives of this study are: 1) to develop a questionnaire able to assess the degree of students' GO and specific goal profiles, as well as their sensitivity to different types of academic tasks; 2) to study its factorial and predictive validity, in this last case in relation to performance (self-estimated mean grade) and academic engagement.

Our hypothesis in relation to factorial validity is that data will fit adequately to the model shown in Figure 1. As for the predictive validity, on the base of results of previous studies (Alonso-Tapia, 2005; Alonso-Tapia et al., 2010), it is expected that LO and the specific AG connected to it will relate to engagement and performance in a positive way, that AO and the specific AG connected to it will relate negatively to these same variables, and that PO and the specific AG connected to it will not have a significant relation. Besides, though it is expected that differences in sensitivity to each task contribute to predicting engagement and performance, as here are not previous studies of a similar kind carried out with university students, we cannot anticipate specific hypotheses on the sign, degree, and significance of such contribution.

Method

Participants

A convenience sample of 770 University students studying for different degrees, from nine Spanish universities, mainly from faculties of Psychology and Education, participated in the study. Of the students, 607 (78.8%) were females and 163 (21.2%), males. The mean age was 20.7 years ($SD = 8.4$). They belonged to different academic courses (1st: 44.4%; 2nd: 30.4%; 3rd or higher: 25.2%). In order to preserve confidentiality, the questionnaires were anonymous. The sample was randomly divided in two subsamples, one for the initial analyses and the other, for cross validation.

Instruments

"Situated goals" Questionnaire for University Students (SGQ-U)
This questionnaire, specifically developed for this study, contains 30 items which address the interaction between motivational goals and situations, defined by type of task. Each item assesses a specific goal that, according to theory, can affect students' motivation and learning, in a situation defined by a specific task. These goals are: desire to learn, desire to be useful, desire to obtain good grades, desire to pass, desire to give up work, and desire to avoid failure. As for the tasks, they are: to prepare an exam, to carry out projects, to do exercises, to realize group works, and to prepare public presentations. For every specific goal there are 5 items, and for every task, 6 items. Students have to rate their degree of agreement on a 5 point Likert scale from 1 -totally in disagreement- to 5 -totally in agreement-. A sample of the kinds of item referred to is shown in the Appendix.

Engagement Questionnaire (EQ)
It is an adaptation of the *Utrecht Work Engagement Scale (UWES) (*Schaufeli & Bakker, 2003), adaptation carried out by Schaufeli, Salanova, González-Romá & Bakker (2002) to be used with university students. It includes 24 items whose content refers to the characteristics above described of absorption, dedication, and vigour. Reliability indices for the whole scale are quite good: Cronbach-α goes from .67 to .91 in different

samples. Students have to rate their degree of agreement on a 5 point Likert scale from 1 -totally in disagreement- to 5 -totally in agreement-. Examples of items are: "When I am working, I forget everything else around me"; "At my work I always persevere, even when things do not go well".

University performance scale

Due to the difficulty for getting direct information on students' performance scores, students were asked to indicate on a 5 point Likert scale their self-estimated mean grade (SEMG) according to the description given for each point of the scale:

(1) Very insufficient (4 or more subject to be passed in the second or third opportunity)

(2) Insufficient (2 or 3 subjects to be passed in the second or third opportunity)

(3) Normal (Most scores are C and, at the most, one subject to be passed in later occasions).

(4) Good (At least a third of grades are B, and no subjects to be passed in later occasions)

(5) Very good (20% of A, 50% of B and no subjects to be passed in later occasions)

Procedure

Ethics approval for this study was granted by the Research Ethics Committee at the Universidad Autónoma of Madrid, Spain. Data were gathered mainly through the internet. The students, who voluntarily decided to participate, filled in the questionnaires. Those coming from the main author's University answered the questionnaires in 30-minutes sessions. Other students received a link, and answered through the internet.

Data analysis

Factorial Validity

In order to determine the factorial validity of the *SGQ-U*, four confirmatory factor analyses (CFA) were realized. The first analysis (CFA1) was carried out on data coming from the first subsample, using as baseline model the structure derived from the development of the MEVA questionnaire (Alonso-Tapia, 2005). This structure corresponds to the right part of the model shown in Figure 1. It includes six of the nine specific AG included in MEVA –the main ones- and the three general GO to which the AG relate in this questionnaire. In this model situations are not considered. Then, a cross validation analysis (CFA2) was carried out using both subsamples. Third, an extension of bi-factor CFA (CFA3) was carried out on the first subsample to test whether the model shown in Figure 1 could contribute to clarify the role of situations in motivation. This role would vary depending on the pattern and degree in which the measurement weights that link items to situational latent factors are similar or different, and on their magnitude, a fact that could affect the degree of adjustment of the model. Finally, a cross validation

analysis of this model was carried out using both subsamples. These analyses were carried out using the AMOS-22 statistical software. Estimates were obtained using the maximum likelihood method. Absolute fit indexes (χ^2, χ^2/df, GFI), relative fit indexes (IFI) and non-centrality fit indexes (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, Black, Babin, and Anderson (2010) (χ^2/df < 5; GFI, IFI, and CFI > .90; RMSEA <.08).

Analysis of variance

As an additional way of identifying whether situations influence in a systematic and different way the responses to items related to a same motivational goal, five one-way Anovas were carried out, one for each situation.

Reliability

Internal consistency indices of each specific scale and of those corresponding to the GO were calculated using Cronbach's "α" coefficient.

Correlation and Regression analyses.

In order to obtain initial information on the external validity of the SGQ-U, in the first place *correlations* were calculated between, on one side, factor scores in first order goal scales, goal orientations, task sensitivity scales and, on the other side, the two criteria: self-estimated mean grade and engagement.

In the second place, to see the relative weight of each variable for predicting grades *(Self-estimated mean grade*: SEMG) and *engagement*, eight regression analyses were realized, four for each criterion, using as predictors: 1) scores in specific goal scales; 2) scores in specific goal scales plus scores in task sensitivity to each situation; 3) scores in GO; 4) scores in GO plus scores in task sensitivity to each situation. In the analyses it was used the direct method.

Results

Confirmatory Factor Analyses

CFA1 and 2: Basic model and cross validation

Figure 2 shows the standardized estimates of the confirmatory model. All the estimated factor loadings (λ) were significant ($p < .001$), as well as the proposed structural relations (γ, Φ). Table 1 shows the fit statistics of the proposed model. Chi-square was significant, but the ratio χ^2/df and the remaining fit indices were well within the limits that allow the model to be accepted. Only GFI fell slightly short of the standard levels of significance (.89 > .90). As for the cross validation analysis (CFA2), Table 1 shows also the fit statistics of the proposed model. They were practically identical to those of CFA1. Moreover, results of group comparison showed that fit index did not significantly decrease even if restrictions are imposed for measurement weights ($\Delta\chi^2$ = 24.76, p = .42), structural weights ($\Delta\chi^2$ = 31.43, p = .25), and structural covariances ($\Delta\chi^2$ = 40.14, p = .18). Therefore, the model is well estimated.
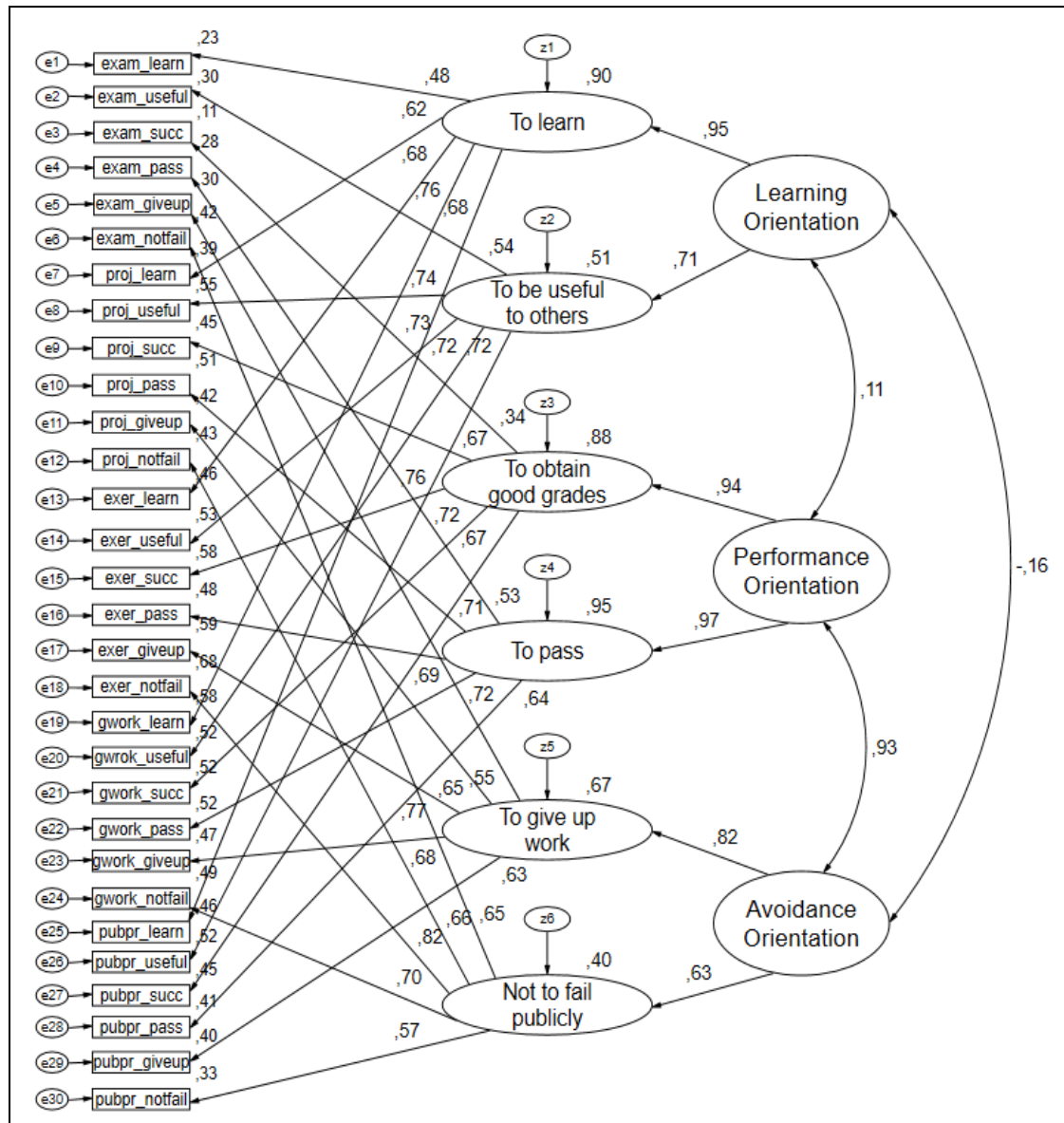
Figure 2. CFA1. MESI-U baseline confirmatory model (standardized estimates).

Table 1 *Situated Goals Questionnaire. Goodness of fit statistics for CFA of basic models and of bi-factor models*

	χ^2	df	p	χ^2/df	GFI	IFI	CFI	RMSEA
CFA-1 (*N*=383)	771.31	396	.000	1.95	.89	.91	.91	.05
CFA-2 Cross Val. (N_1= 383, N_2= 387)	1542.87	796	.000	1.94	.88	.92	.92	.03
CFA-Bi-Factor (BF) (*N*=383)	1088.15	372	.000	2.92	.86	.83	.83	.07
CFA- BF Cross Val. (N_1= 383, N_2= 387)	2258.69	744	.000	3.03	.86	.83	.83	.05

CFA3 and 4. Expanded bi-Factor model and cross-validation

Figure 3 shows the standardized estimates of the confirmatory model (CFA3). All the estimated factor loadings (λ) related to goals and most of those related to situations were significant ($p < .001$), as well as the proposed structural relations (γ, Φ).
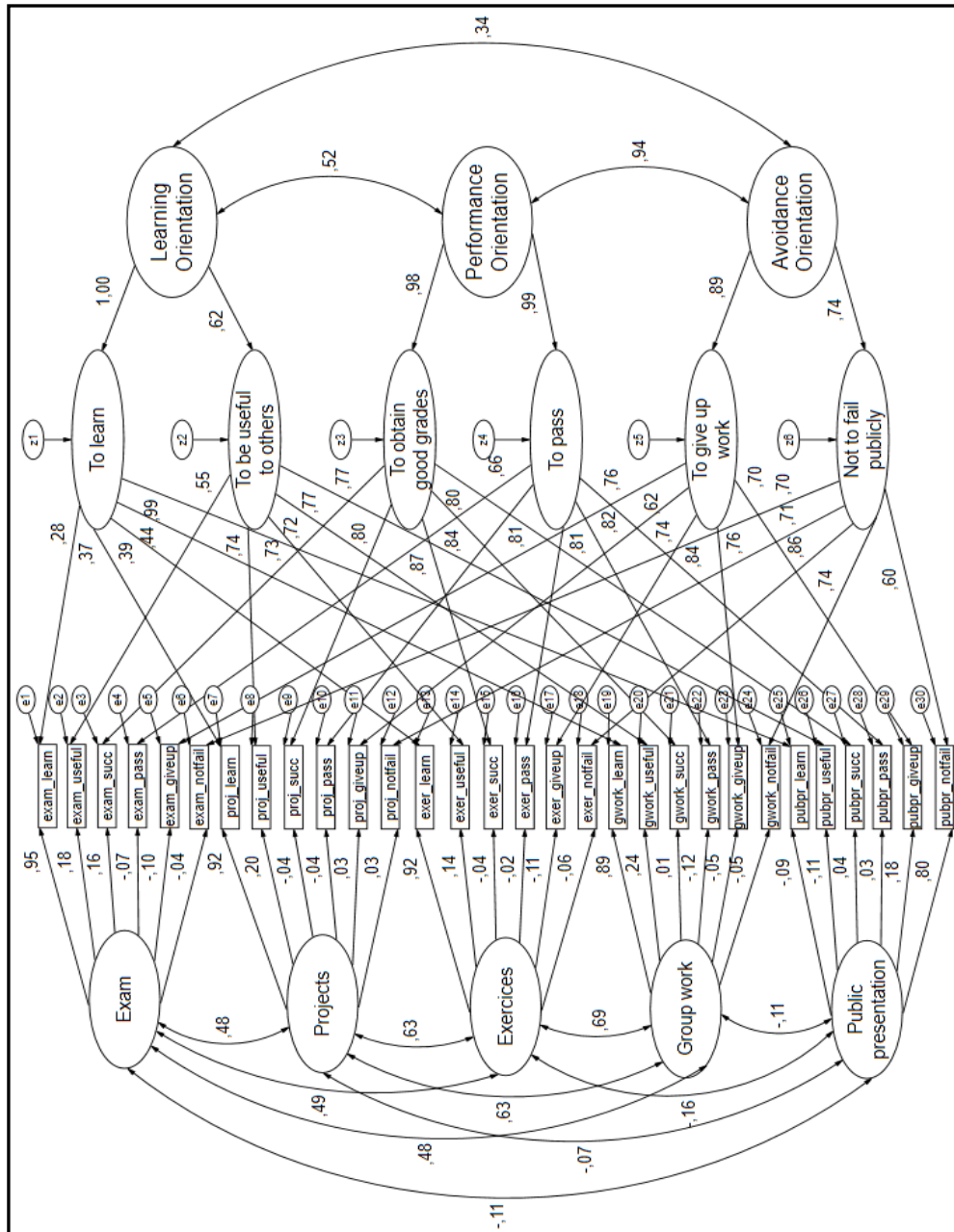

Figure 3. CFA2. SGQ. Nested confirmatory model (standardized estimates).

Table 1 shows the fit statistics of the proposed model. Chi-square was significant, but the ratio χ^2/df and RMSEA were well within the limits that allow the model to be accepted. However, GFI, IFI and CFI fell slightly short of the standard levels of significance (.86, .83, .83, < .90). Again, in the case of cross validation analysis (CFA4), the fit statistics of the proposed model (Table 1) were practically identical to those of CFA3. However, results of group comparison showed that fit index did not significantly

decrease even if restrictions are imposed for measurement weights ($\Delta\chi^2 = 55.02$, $p = .26$), structural weights ($\Delta\chi^2 = 63.12$, $p = .25$), structural covariances ($\Delta\chi^2 = 71.64$, $p = .28$) and structural residuals ($\Delta\chi^2 = 81.83$, $p = .14$). Therefore, this model is also well estimated. Nevertheless, its degree of adjustment is slightly worse than for the basic model. Moreover, the AIC criterion is higher –and so worse- for the bi-factor model (AIC: 1274.15) than for the basic one (AIC: 909.38). As this fact may be due to the differences between answers to items related to the same situation, answers on which differences between measurement weights are based, the next analyses were carried out to test whether they were significant or not

Anovas

Table 2 shows the means and standard deviations of item-scores related to each situation, and Table 3 the results of the Anovas of differences between responses to items related to the same situation. As can be seen, all of them were highly significant, though size effects were small to moderate according to the standard criteria.

Table 2. Means and standard deviations of item-scores related to each situation.

Situations:	Exam		Project		Exercises	
Goals	Mean	SD	Mean	SD	Mean	SD
To learn	4.03	.03	4.11	.02	4.16	.02
To be useful	3.32	.03	3.86	.03	3.61	.03
To get good grades	4.25	.02	3.21	.03	3.41	.03
To pass	3.67	.04	2.99	.03	3.42	.04
To give up work	2.69	.04	2.24	.03	2.81	.04
Not to fail publicly	2.97	.04	2.83	.04	2.81	.04

Situations:	Group work		Public presentation	
Goals	Mean	SD	Mean	SD
To learn	4.09	.02	4.16	.02
To be useful	3.73	.03	3.48	.03
To get good grades	3.59	.03	3.64	.03
To pass	2.96	.04	3.29	.03
To give up work	2.71	.04	2.70	.04
Not to fail publicly	2.67	.04	3.61	.04

Table 3. Anova of differences between item-scores related to each situation. Epsilon correction by Greenhouse-Geisser procedure (N: 770).

Situation	F	p <	η^2
Exam	274.12	.001	.263
Project	431.78	.001	.360
Exercises	229.06	.001	.230
Group work	304.81	.001	.284
Public Presentation	205.72	.001	.211

Post-hoc analysis of differences between each pair of item-means corresponding to each goal showed the following results: a) *Exam:* All differences were significant (p < .001); b) *Project:* All differences were significant at .001%; c) *Exercises:* All differences were significant (p < .001), except between items corresponding to "to get good grades" and "to pass", and between items corresponding to "to give-up work" and "not to fail publicly"; d) *Group work:* All differences were significant (p < .001) except items corresponding to "to give-up work" and "not to fail publicly"; and e) *Public presentation:* All differences were significant (p < .001) except between items corresponding to "to get good grades" and "not to fail publicly".

Reliability analysis

The Cronbach-α internal consistency indexes for the six specific motivational goals and for the tree goal orientations were: Desire to learn; .78; Desire to be useful: .84; Desire to obtain good grades: .77; Desire to pass: .80; Desire to give up: .79; Desire to avoid failure: .81; LO: .86; PO: .87; AO: .82 Thus, the scales have adequate reliability, as good as most motivational scales.

Correlation and regression analyses

First, in order to study the predictive validity of each scale in relation to engagement and self-estimated mean grade, a correlation analysis was made. As can be seen in Table 4, LO and the specific goals related to it –desire to learn and desire to be useful- correlate in a positive and very significant degree with engagement and, in less degree, with SEMG; PO correlates negatively and significantly with "engagement", but not with SEMG, though the specific goal "desire to obtain good grades" related to this orientation correlates positively with SEMG; finally, AO does not correlate in a significant way with any of the criteria, though again, a specific goal "desire to give up", related to this orientation correlates positively with "engagement". As for correlations between sensitivity to different situations scores and the two criteria used, all correlations except one are significant, though of different magnitude.

Table 4. Correlations between predictors and criteria

Criteria	Predictors: Specific goals					
	To Learn	To be useful	To obtain good grades	To pass	To give up work	To avoid failure
Engagement	.421***	.471***	-.012	-.123	.221***	-.028
Estimated mean score	.174***	133***	.121**	-.186	-.037	-.056

Criteria	Predictors: Goal orientations and situational sensitivity							
	LO	PO	AO	Exams	Projects	Exercises	Group project	Public Presentation
Engagement	.477***	-.133***	-.034	.425**	.393***	.382***	.328***	-.087*
Estimated mean score	.188***	-.044	-.060	.295**	.123**	.110**	.089*	-.031

Note. *p < .05; **p < .01; ***p < .001

Second, in order to see the specific contribution of each variable to prediction, eight regression analyses were made. Results are shown in Tables 5 and 6. Table 5 **[INSERT]** shows that specific goals explain 10% of variance of SEMG and 29% of "engagement". These values rise to 14.5% and 30.8% respectively when task sensitivity is added. In this case, the exam situation is the one that contributes more to improve prediction of both, of SEMG and "engagement". An important result is that the specific goals contributing to predicting SEMG and "engagement" are different. On one side, "desire to learn", "desire to be useful" and "desire to give up" are the main predictors of "engagement", the first two with a positive weight and the last, with a negative one. On the other side, "desire of good grades", "desire to pass" and "desire to avoid failures" are the main predictors of SEMG, the first with a positive weigh and the last two, with a negative one. Table 6 **[INSERT],** in which goal orientations are the predictors, shows a similar pattern or results: Variance explained is greater for "engagement" than for SEMG and increases in both cases when task sensitivity is added.

Table 5. *Regression analyses. Predictors: Specific Goals and Situations* [1]

Criterion	Self-estimated mean grade		Engagement	
Predictors	Analysis 1	Analysis 2	Analysis 1	Analysis 2
Desire to learn	.108**	NS	.242***	.238***
D. to be useful	NS	NS	.323***	.381***
D. of good grades	.343***	.293***	NS	NS
D. to pass	-.327***	-.284***	NS	NS
D. to give up work	NS	NS	-.116**	-.157***
D. to avoid failure	-.108**	-.098*	NS	NS
Exam	-	.255***	-	.138***
Project	-	NS	-	NS
Exercises	-	NS	-	NS
Public presentation	-	-.130*	-	NS
Group project	-	NS	-	NS
R	.317***	.381***	.538***	.555***
R^2	.101***	.145***	.289***	.308***

[1] ***$p < .001$; ** $p < .01$; * $p < .05$; NS = Non-significant

Discussion

Two were the objectives of this study, to develop a questionnaire able to assess the degree of students' GO and specific goal profiles, as well as their sensitivity to different types of academic tasks and to study its factorial and predictive validity. What have our results shown in relation to these objectives?

This study has shown, in relation to the *structural validity* of the *SGQ-U,* that it has a valid structure -the basic one-, as this one fits well to the theoretical model. So it is a good questionnaire for assessing the students' academic GO. As for the structure corresponding to the expanded bi-factor model, the fact that this model adjusted well, but worse than the basic model seems to rely on the great differences between the measurement weights

linking items of different motivational goals to a same situation. The Anova of differences between these items has shown that there are significant differences between mean scores of items corresponding to different goals but related to the same situation. Item-scores tend to increase in the situation *exam* if items refer to the goals "to get good grades" or "to learn", in the situation *project* if items refer to the goals "to learn" and "to be useful", in the situation *exercises* if items refer mainly to the goal "to learn", in the situation *group work* if items refer to the goals "to learn" and "to be useful", and in the situation *to prepare a public presentation* if items refer mainly to the goal "to learn". That is, taking together, these results show that the interaction between situation and goal influences items responses, a fact that underlies the importance of assessing the interaction between personal characteristics and type of situation in order to explain the students' motivation in university contexts, as this consideration improves the instrument's predictive capacity and usefulness.

Table 6. *Regression analyses. Predictors: Goal Orientations and Situations* [1]

Criterion	Self-estimated mean grade		Engagement	
Predictors	Analysis 3	Analysis 4	Analysis 3	Analysis 4
Learning Or	.201***	.177*	.490***	.366***
Performance Or	NS	NS	-.131***	-.114**
Avoidance Or	-.084*	-.090*	NS	NS
Exam	-	.274***	-	.161***
Project	-	NS	-	.085*
Exercises	-	NS	-	NS
Public Presentation	-	NS	-	NS
Group Project	-	-.143 *	-	NS
R	.209***	.317***	.503***	.540***
R^2	.044***	.100***	.253***	.292***

[1] ***$p < .001$; ** $p < .01$; * $p < .05$; NS = Non-significant

As for *predictive validity*, results are consistent, first, with the general idea according to which grades and engagement, can be predicted from GO. The relationship between GO and engagement is almost double that between GO and grades. This fact was expected, as Spanish university students have usually acceded to the studies they had chosen, and so they have some degree of intrinsic motivation. Second, results are also consistent with the first prediction, which states that LO and the specific AG connected to it will relate to engagement and performance in a positive way.

Evidence partly gives support also to the second prediction. PO does not correlate in a significant way with engagement and self-estimated mean score, but one of the specific AG connected to it –to obtain good grades- shows a positive and significant correlation, though very low, with this last criterion. This result could be explained on the base of findings from Senko, Durik, Patel, Lovejoy, & Valentiner (2013). According to these authors, students have multiple GO, and under some conditions –for example, how challenging a task is-, PO relates positively with achievement. This effect –significant though low- would be caught by the specific goal linked to PO "to obtain good grades".

As for AO, correlations with both criteria are not significant, an unexpected result according to previous findings. Besides, one of the specific AG connected to AO –to give up work- shows a significant positive correlation with engagement, an even more unexpected result. The lack of significant correlation with self-estimated mean grade could be explained if we consider that, due to the high economical cost of academic taxes that university students had to pay in case they have to take again an exam, many of them increase their effort even if they want to avoid failures or to give up work, because it is not interesting for them. Thus, an external source of motivation would be responsible of difference between the correlation pattern found in this study, and results of previous studies (Alonso-Tapia et al., 2010). This external source of motivation could explain also the positive correlation found between the specific goal "to give up work" and engagement. If engagement does not come only from intrinsic sources of motivation, then the effort it implies would have an aversive component. So, the greater the degree of behavioural engagement, the grater would be the desire of giving up work.

Finally, it was expected that differences in sensitivity to each type of task would contribute to predicting engagement and performance, though it was not possible to anticipate specific hypotheses on the sign, degree and significance of such contribution. Correlation analyses supported the initial expectations, as all sensitivity measures except one –to prepare public presentations- correlated positively and in a significant way with both criteria. Their relative weight on prediction found in regression analyses, however, was significant only in the case of "preparing an exam", what seems logical given the enormous social, economic and work-related significance that passing exams have, at least, for Spanish students. "Preparing a public presentation" adds also a significant though very low negative weight to the prediction of self-estimated mean grade.

In summary, our study provides a brief and adequate questionnaire for assessing university students' specific goals and goal orientations taking into account the different task situations they have to cope with. Besides, it has shown the usefulness of the methodological strategy employed for developing this type of questionnaire, in line with the works of Villasana, Alonso-Tapia and Ruiz (2016), and Alonso-Tapia, Rodríguez-Rey, Garrido-Hernansaiz, Ruiz y Nieto (2016).

Our results have some implications for theory and practice. In order to improve our understanding of GO and specific AG effects on engagement and achievement, it seems important to consider the effect that both, differences in sensitivity to different types of academic tasks and differences in socio-academic context, may have on moderating such effects, as positive or negative incentives, extrinsic to learning and achievement, can modify motivational predictions based on motivational characteristics (Atkinson, 1964). Also, in order deepen the construct validity of the questionnaire, it should be necessary to study its relation with self-regulated learning.

As for practical implications, our results stress the known importance of creating a classroom motivational climate that favours LO. Besides, given the fact that students differ in their sensitivity to the kind of task, our results suggest the importance of showing

the relevance of the kind of task being proposed for academic goals socially valued, as awareness of this relevance can influence engagement and achievement.

Our study has some limitations. First, there were a significant gender difference in the sample, being the number of women greater than the number of men. Second, self-estimated mean grade instead real mean grade was used, a fact that could have some effect on our results. Third, the engagement measure was initially designed for work psychology contexts. So, given the existing discussion in academic context on engagement components and, also, on the way engagement should be assessed (Christenson et al., 2012), it would be possible that a different measure of engagement could produce different results. Thus, new studies dealing with both limitations will be welcome.

References

Alonso-Tapia, J. (2005). Motives, expectancies and value-interests related to learning: The MEVA questionnaire. *Psicothema, 17*(3), *404-411*.

Alonso-Tapia, J. & Fernández, B. (2008). Development and initial validation of the classroom motivational climate questionnaire (CMCQ). *Psicothema, 20*(4), 883-889.

Alonso-Tapia, J., Huertas, J. A., & Ruiz, M. A. (2010). On the nature of motivational orientations: Implications of assessed goals and gender differences for motivational goal theory. *The Spanish Journal of Psychology, 13*, 231–242.

Alonso-Tapia, J. & Pardo, A. (2006). Assessment of learning environment motivational quality from the point of view of secondary and high school learners. *Learning and Instruction, 16,* 1-15. http://dx.doi.org/10.1016/j.learninstruc.2006.07.002

Alonso-Tapia, J., Rodríguez Rey, R., Garrido-Hernansaiz, H., Ruiz, M., & Nieto, C. (2016). Coping assessment from the perspective of the person-situation interaction: Development and validation of the Situated Coping Questionnaire for Adults (SCQA). *Psicothema, 28*(4), 479-486. http://dx.doi.org/10.7334/psicothema2016.19

Ames. C. (1992). Achievement goals and the classroom motivational climate. In D. H. Schunk & J. L. Meece (Eds.), *Students perceptions in the classroom* (pp. 327-348). New York: Lawrence Erlbaum.

Atkinson, J. W. (1964). *An introduction to motivation*. Oxford, England: Van Nostrand.

Azevedo, R. (2015). Defining and measuring engagement and learning in Science: Conceptual, theoretical, methodological, and analytical issues. *Educational Psychologist, 50*(1), 84-94. http://dx.doi.org/10.1080/00461520.2015.1004069

Christenson, S. I., Reschly, A. L., & Wylie, C. (Eds.). *Handbook of research on student engagement.* New York, NY: Springer.

Dweck, C. S. (1986). Motivational processes affecting learning. *American Psychologist, 41,* 1040-1048. Doi: 10.1037/0003-066X.41.10.1040

Eccles, J. S., & Wang, M.-T. (2012). Part I commentary: So what is student engagement anyway? In S. I. Christenson, A. L. Reschly, & C. Wylie (Eds.), *Handbook of research on student engagement* (pp. 133-145). New York: Springer. http://dx.doi.org/10.1007/978-1-4614-2018-7_6

Elliot, A. J. (2005). A conceptual history of achievement goal construct. In A. J. Elliot & C. S. Dweck (Eds.), *Handbook of competence and motivation* (pp. 52-72). New York: Guilford.

Elliot, A. J. (2006). The hierarchical model of approach-avoidance motivation. *Motivation and Emotion*, *30*, 111–116. http://dx.doi.org/10.1007/s11031-006-9028-7

Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research, 74*(1), 59-109. http://dx.doi.org/10.3102/00346543074001059

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis*. Upper Saddle River, NJ: Pearson-Prentice Hall.

Harackiewicz, J.M., Barron, K.E., Pintrich, P.R., Elliot, A.K., & Thrash, T.M. (2002). Revision of achievement goal theory: Necessary and illuminating. *Journal of Educational Psychology, 94*(3), 638-645. http://dx.doi.org/10.1037/0022-0663.94.3.638

Huang, C. (2011). Achievement goals and achievement emotions: a meta-analysis. *Educational Psychology Review*, *23,* 359-388. https://doi.org/10.1007/s10648-011-9155-x

Hulleman, C. S., Schrager, S. M., Bodmann, S. M., & Harackiewicz, J. M. (2010). A meta-analytic review of achievement goal measures: Different labels for the same constructs or different constructs with similar labels? *Psychological Bulletin, 136*(3), 422-449. http://dx.doi.org/10.1037/a0018947

Linnenbrink-García, L., Middleton, M. J., Ciani. K. D., Easter, M. A., O'Keefe, P. A., & Zusho, A. (2012). The strength of the relation between performance-approach and performance-avoidance goal orientations: Theoretical, methodological, and instructional implications. *Educational Psychologist, 47*(4), 281-301. http://dx.doi.org/10.1080/00461520.2012.722515

Meece, J. L., Anderman, E. M., & Anderman, L. H. (2006). Classroom goal structure, student motivation, and academic achievement. *Annual Review of Psychology, 57,* 487-503. http://dx.doi.org/10.1146/annurev.psych.56.091103.070258

Renninger, K. A., & Bachrach, J. E. (2015). Studying triggers for interest and engagement using observational methods. *Educational Psychologist, 50*(1), 58-69. http://dx.doi.org/10.1080/00461520.2014.999920

Schaufeli, W. B., & Bakker, A. B. (2003). *The Utrecht Work Engagement Scale (UWES). Test manual*. Utrecht: The Netherlands: Department of Social & Organizational Psychology.

Schaufeli, W.B., Salanova, M., González-Romá, V., & Bakker, A.B. (2002). The measurement of engagement and burnout: A two sample confirmatory factor analytic approach. *Journal of Happiness Studies, 3,* 71–92.

Senko, C., Durik, A. M., Patel, L., Lovejoy, C. M., & Valentiner, D. (2013). Performance-approach goal effects on achievement under low versus high challenge conditions. *Learning and Instruction, 23*, 60-68. http://dx.doi.org/10.1016/j.learninstruc.2012.05.006

Senko, C., Hulleman, C. S., & Harackiewicz, J. M. (2011). Achievement Goal Theory at the crossroads: Old controversies, current challenges, and new directions. *Educational Psychologist*, *46*(1), 26-47. http://dx.doi.org/10.1080/00461520.2011.538646

Sinatra, G. M., Heddy, B. C., & Lombardi, D. (2015). The challenges of defining and measuring student engagement in science. *Educational Psychologist, 50*(1), 1-13. http://dx.doi.org/10.1080/00461520.2014.1002924

Villasana, M., Alonso-Tapia, J., & Ruiz, M. (2016). A model for assessing coping and its relation to resilience in adolescence from the perspective of "person–situation interaction". *Personality and Individual Differences*, *98*, 250-256. http://dx.doi.org/10.1016/j.paid.2016.04.053

Wang, M.-T., & Eccles, J. S. (2013). School context, achievement motivation, and academic engagement: A longitudinal study of school engagement using a multidimensional perspective. *Learning and Instruction, 28*, 12-23. http://dx.doi.org/10.1016/j.learninstruc.2013.04.002

Appendix: Example of Items of the SGQ-U

Learning Goal Orientation items (LO)

When I am studying to prepare an *exam*, I try very hard because if I am competent, I will be able to help others

When I have to prepare a *project* at home, I try to understand the process that allows to achieve a good result.

When I realize *exercises or practice tasks*, I am mainly interested in learning how to perform them well

When I *work* on the blackboard, *in front of my peers*, I usually try first of all to understand how to do the task

If a teacher asks us to do a *group-work*, I try mainly to understand how to do it well.

Performance Goal Orientation items (PO)

If I have to study to prepare an *exam*, I think first of all on achieving a good grade.

When I have to do a *project work*, I think mainly whether doing it will help me to get a good grade

When I realize *exercises or practice tasks*, I think first of all on passing them.

If I have to *work in front of my peers* on the blackboard, I used to think on the score I can get.

If I have to do a *group-work*, the first thing that comes to my mind is whether it will be of help to get good grades.

Avoidance Goal Orientation items (AO)

If I am preparing an *exam,* my main concern is whether I will do it worse than my peers and that they heard of it.

When I have to do a *project work*, I am afraid of not achieving a good performance and that the other students know it.

If I have to I realize *exercises or practice tasks*, my main interest is on finishing and getting rid of it.

When I have to solve a problem *in front of my peers,* I try to get rid of it as soon as possible.

If I have to do a *group-work*, I am interested first of all in finishing it as soon as possible