Motivational profiles Spanish students of Compulsory Secondary Education: Differential analysis of academic self-attributions

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Título: Perfiles motivacionales en estudiantes españoles de Ecuación Secundaria Obligatoria: Análisis diferencial en autoatribuciones académicas.
Resumen: Las metas académicas y las autoatribuciones académicas que realizan los estudiantes son variables relevantes en el contexto escolar. El objetivo de este estudio es identificar si existen combinaciones de múltiples metas que dan lugar a diferentes perfiles motivacionales, así como comprobar si existen diferencias significativas entre los grupos obtenidos respecto de las autoatribuciones de éxito y fracaso (capacidad, esfuerzo o causas externas) en la asignatura de matemáticas, lengua y literatura y con respecto al rendimiento académico general. El *Achievement Goal Tendencies Questionnaire* (AGTQ) y la *Sydney Attribution Scale* (SAS) fueron administrados a una muestra de 2022 estudiantes de Educación Secundaria Obligatoria de 12 a 16 años (*M* = 13.81; *DT* = 1.35). El análisis de conglomerados ha identificado cuatro perfiles motivacionales: un grupo de alumnos con un perfil de alta motivación generalizada, un grupo de estudiantes con un perfil de baja motivación generalizada, un grupo de alumnos con un predominio de metas de aprendizaje y metas de logro y un último grupo de estudiantes con predominio de metas de reforzamiento social. Los resultados revelaron diferencias estadísticamente significativas entre los perfiles obtenidos con respecto a las autoatribuciones académicas.
Palabras clave: Metas académicas; perfiles motivacionales; autoatribuciones académicas; adolescencia; educación secundaria.

Abstract: Academic goals and academic self-attributions are relevant variables in school settings. The objective of this study is to identify whether there are combinations of multiple goals that lead to different motivational profiles and to determine whether there are significant differences between the groups obtained regarding causal attributions of success and failure (ability, effort, or external causes) in Mathematics and Language and Literature, and in overall academic performance. The *Goal Achievement Tendencies Questionnaire* (AGTQ) and the *Sydney Attribution Scale* (SAS) were administered to a sample of 2022 students of compulsory secondary education, ranging in age from 12 to 16 years (*M* = 13.81, *SD* = 1.35). Cluster analysis identified four motivational profiles: a group of students with a high generalized motivation profile, a group of students with low generalized motivation profile, a group of students with predominance of learning goals and achievement goals, and a final group of students with predominance of social reinforcement goals. Results revealed statistically significant differences between the profiles obtained in academic self-attributions.
Key words: Academic goals; motivational profiles; academic self-attributions; adolescence; secondary education.

Introduction

One of the most important variables in motivational research is the type of academic goals pursued by students. There are many motives that can guide students' study and learning behaviors. However, the most traditional theoretical approaches have distinguished two main goals: learning goals and performance goals (Dweck, 1986; Elliott & Dweck, 1988). Students with learning goals are interested in the acquisition of new abilities and improving their knowledge, even if they commit some errors, whereas students with performance goals are usually interested in obtaining positive ratings of their ability and trying to avoid the negative judgments of significant others. Subsequently, Hayamizu and Weiner (1991) divided the performance goals into social reinforcement goals (SRG) and achievement goals (AG). The former, SRG, refers to students' tendency to learn in order to gain approval and avoid rejection by parents and teachers, whereas AG reflects students' tendency to

learn in order to achieve good academic grades and advance in their studies.

Conventionally, theories about academic goals considered learning goals and performance goals to be mutually exclusive. However, the new perspective of multiple goals maintains that students can pursue more than one goal in their learning process (Barca, Peralbo, Porto, Marcos, & Brenlla, 2011; Harackiewicz, Barron, Tauer, Carter, & Elliot 2002; Linnenbrink, 2005; Printrich, 2003; Pintrich & García, 1991; Suárez, Cabanach, & Valle, 2001; Valle et al., 2003; Wormington, Henderlong, & Anderson, 2012). In the same vein, research of multiple goals has empirically shown that, instead of adopting an exclusive goal, many students choose various goals when they engage in learning a task or content. Thus, in situations in which the learning activity is not very stimulating or interesting, it could be useful to motivate their action with reasons other than intrinsic interest in the task. In these cases, the possibility of choosing different reasons (gaining others' approval, winning rewards and reinforcement, etc.) could become a powerful incentive to promote and maintain academic commitment. Thus, the students' choice of combinations of goals in concrete academic situations is usually an option that provides the most academic benefits (Berger, 2012; Daniels et al., 2008; Pintrich, 2000; Suárez, Cabanach et al., 2001; Valle et al., 2003, 2009;

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Wentzel, 2000). In addition, the theory of multiple goals also attempts to synthesize the divergences of some of the results found regarding the advantages and disadvantages of adapting certain types of goals.

Another important theoretical perspective in the study of motivation is the theory of causal attributions of Weiner (1986), which represents an interesting conceptual framework to analyze students' explanations of situations of academic success and failure (see Weiner, 2004, for a review). According to Weiner (1986, 2004), among other aspects, the factors that determine students' motivation in academic activities are their different interpretations and ratings of their own results, in which cognitive (expectations) and affective reactions act as mediators. Thus, the motivational sequence begins with a result and the subject's immediate affective reaction. If the result is unexpected, negative, or important, the subject will wonder about the causes that determined this result; ability , effort, luck, or task difficulty are the most important causal factors used by students to explain their academic results. However, from this perspective, the most important aspect is not the cause itself but the different properties and characteristics of each cause. Accordingly, Weiner proposes three attributional dimensions to classify the different causal factors: (a) *internal versus external*: according to whether the cause that provoked the result is inside or outside of the subject, respectively; (b) *stable versus unstable*: depending on the persistence and modifiability of the cause; and (c) *controllable versus uncontrollable*: as a function of the individual's degree of control to modify its consequences or effects. As a function of each one of these dimensions, the psychological consequences will be different, both at the cognitive and the affective level. This will also lead to behavioral consequences such as increase or decrease of achievement behavior. Therefore, making a certain type of attributions will have important effects on students' future expectations of success and failure and on their self-concept, self-esteem, and academic performance (Caso-Niebla & Hernández-Guzmán, 2007; Weiner, 1986, 2004).

Empirical evidence has shown that causal attributions are closely related to students' type of goals. Thus, students with learning goals tend to attribute their successes to internal causes such as competence and effort, whereas subjects with performance goals tend to attribute their successes to external and uncontrollable causes such as luck or task difficulty (Elliot & McGregor, 2001). This association was found when these goals were considered to be mutually exclusive. However, within the proposals of multiple goals, it has been observed that students with high scores in the different types of goals more frequently reflect a tendency to attribute success to ability and effort, and failure to external causes, thus presenting a more adaptive pattern (Valle et al., 2003, 2010). However, research on this aspect is scarce and, in addition, most of the existing research focuses on university population. Thus, although numerous investigations have examined the theory of multiple goals and its association with diverse variables (self-efficacy, learning strategies,

task persistence, academic performance, etc.) in university students, there are currently very few works carried out to determine the existence of combinations of multiple goals leading to different motivational profiles in Spanish students from secondary education (e.g., Valle et al., 2009). Moreover, to our knowledge, there are currently no studies published on the differences in causal attributions of academic success and failure among different motivational profiles in secondary education students.

This work has basically two goals. Firstly, in a sample of Spanish students from Compulsory Secondary Education (SCE), we intend to verify whether there are combinations of multiple goals leading to different motivational profiles, which could be defined as a function of the higher or lower weight of each goal within each profile. Secondly, after finding and defining the motivational profiles, we will attempt to determine whether there are significant group differences with regard to the causal attributions of success and failure (ability, effort, or external causes) in the subjects of Mathematics, and Language and Literature, as well as with regard to general academic performance. This second part of the study is, in a sense, the criterial validation of the profiles and of their utility when planning educational practices.

Therefore, on the basis of prior empirical evidence, we expect that: (a) the combinations of multiple goals will lead to different motivational profiles and (b) there will be statistically significant differences among the profiles obtained with regard to academic self-attributions.

Method

Participants

Random cluster sampling was carried out (geographical areas of the province of Alicante and the Region of Murcia: center, north, south, east, and west), selecting 24 schools from rural and urban areas, 16 public schools and 8 private schools, so that each geographical area was at least represented by two schools. In each school, four classrooms were randomly selected, on average, 94 participants per school.

A total of 2267 students participated in this work, from 1st to 4th grade of Compulsory Secondary Education (CSE). Of these students, 116 (5.12%) were excluded because of errors or omissions in their responses, or because they did not obtain their parents' informed consent to participate in the investigation, and 129 (5.69%) were excluded because they were aliens with important deficits in the mastery of the Spanish language.

The final sample comprised 2022 students (1,033 boys and 989 girls): from 1st grade of CSE (309 boys and 267 girls), 2nd grade of CSE (251 boys and 254 girls), 3rd grade of CSE (260 boys and 242 girls), and 4th grade (213 boys and 226 girls) of CSE. Age ranged between 12 and 16 years ($M = 13.81$, $SD = 1.35$). Age range by grade was: 1st grade of SCE: 12-13 years ($M = 12.36$, $SD = .61$), 2nd grade: 13-14 years ($M = 13.34$, $SD = .60$), 3rd grade: 14-15 years ($M = 14.49$, $SD = $

.68), and 4th grade: 15-16 years (*M* = 15.52, *SD* = .75). The ethnic composition of the sample was: 88.9% Spaniards, 6.34% Latin American, 3.37% European, 0.75 Asian, and 0.64% Arab. Using the chi-square test to check for homogeneous distribution of frequencies, we confirmed that there were no statistically significant differences among the eight groups of Gender x Grade (χ^2 = 3.15, *p* = .368).

Instruments

- *Achievement Goal Tendencies Questionnaire* (AGTQ; Hayamizu & Weiner, 1991). This questionnaire is made up of 20 items rated on a 5-point scale, ranging from 1 (*never*) to 5 (*always*). The AGTQ allows the analysis of three tendencies or goal orientations: (a) *Learning Goals* (LG; 8 items) assess students' tendency to engage in academic tasks with the goal of learning, acquiring new knowledge, and increasing their competence; (b) *Achievement Goals* (AG; 6 items) reflect students' tendency to learn in order get good grades in the exams and to advance in their studies; and (c) *Social Reinforcement Goals* (SRG; 6 items) analyze students' tendency to learn in order to gain approval and avoid rejection by parents and teachers.

The questionnaire employed in this study was analyzed and refined by Hayamizu and Weiner (1991) in a sample of university students from the USA, confirming the existence of the three above-mentioned factors and obtaining moderate reliability coefficients. In Spanish population, this questionnaire was employed by García et al. (1998) and by Navas, González and Torregrosa (2002) in adolescent samples, obtaining similar reliability coefficients to those reported by the original authors. In a later study, Inglés et al. (2009) replicated the three-factor structure proposed by the original authors, confirming the existence of acceptable temporal stability (.59 to .67) and adequate internal consistency coefficients for all the subscales. Recently, Inglés, Marzo et al. (2011) confirmed the factor invariance of the questionnaire scores as a function of sex and academic grade in adolescent population. In the present study, the internal consistency coefficients (Cronbach's alpha) were adequate for all the subscales (.79 for LG, .71 for AG, and .74 for SRG).

- *Sydney Attribution Scale*, SAS; Marsh, Cairns, Relich, Barnes, & Debus, 1984). The aim of this scale is to assess students' perceptions of the causes of their academic successes and failures. The SAS 24 presents situations that include two academic areas (mathematics, verbal), three types of causes (ability, effort, external causes), and two results with opposite valence (situations of success and failure). Thus, the scale is made up of 72 items that respondents rate on a 5-point scale, ranging from 1 (*false*) to 5 (*true*).

The 72 items are distributed in 12 scales (6 items per scale) that are the result of the combination of the three dimensions: *academic contents*, *result* and *perceived cause*. The twelve scores obtained provide information about the at-

tribution of success and failure to three possible causes (ability, effort, external causes) in two main academic materials (reading, mathematics). Moreover, the SAS offers the possibility of obtaining the following six global scores: success attributed to capacity/ability, success attributed to effort, success attributed to external causes, failure attributed to capacity/ability, failure attributed to effort, and failure attributed to external causes.

The psychometric properties of the SAS show that the scale is an excellent instrument to assess academic self-attributions in Primary and Secondary Education. Specifically, the SAS presents a multidimensional and interrelated factor structure, which is coherent with the initial theoretical postulates, and very satisfactory internal consistency coefficients (see Inglés, Rodríguez-Marín, & González-Pienda, 2008, for a review).

In this study, we used the six global scores of the SAS, which were identified and empirically supported through factor analysis in samples of Spanish students of CSE (Redondo & Inglés, 2008) and of higher education (Inglés et al., 2008). The internal consistency coefficients (Cronbach's alpha) in this study were: .83 (Success/Ability), .84 (Success/Effort), .71 (Success/External causes), .78 (Failure/Ability), .73 (Failure/Effort), and .70 (Failure/External causes).

Procedure

First, the headmasters of the schools were interviewed to present goals of the investigation, describe the assessment instruments, request permission, and promote their collaboration. Subsequently, we requested the parents' written informed consent to authorize their children to participate in the investigation. The questionnaires were completed anonymously and collectively in the classroom. The sets of questionnaires were handed out with instructions and a response sheet for computer correction. Next, the instructions were read out loud, emphasizing the importance of answering all the questions. The investigators were present during the administration of the tests in order to clear up any doubts that could arise. The average application time was 20-30 minutes (SAS) and 10 minutes (AGTQ).

Data Analysis

We used cluster analysis (quick cluster analysis method) to identify the motivational profiles of the students who participated in the investigation. Within the two categories of cluster analysis —hierarchical and nonhierarchical methods— the former are more frequently used for this type of studies. The main difference between the hierarchical and nonhierarchical methods is that, in the latter, the investigator must specify a priori the groups that should be formed. In this case, we used the quick cluster analysis, which, besides being a nonhierarchical method is also a reassignment method; that is, it allows an individual assigned to a group at a

certain step of the process to be reassigned to another group in a later step if this optimizes the selection criterion. This cluster analysis is not only the most appropriate procedure to establish profiles in a broad sample of subjects (Hair, Anderson, Tatham, & Black, 1998), it is also one of the most recommended solutions to identify multiple goals (Pastor, Barron, Davis, & Miller, 2004). Motivational profiles were defined from the different combinations of the three types of goals —LG, AG, and SRG— assessed by the AGTQ (Hayamizu & Weiner, 1991), and which correspond to the three classes of above-mentioned goals. To eliminate the effect due to differences in the measurement of the goals (given that the number of items of each goal subscale is different), we carried out cluster analysis after standardizing the raw scores.

The criterion used to select the number of clusters was maximization of the inter-cluster differences in order to obtain the greatest possible number of groups with different combinations of goals. In addition to this criterion, we considered the theoretical feasibility and psychological meaning of each one of the groups that represented the different motivational profiles.

After establishing the different groups through cluster analysis, we performed analysis of variance (ANOVA) to analyze the statistical significance of the group differences in the dependent variable (causal attributions). As the factor is integrated by more than two levels or groups, we used Scheffé's multiple comparison post-hoc test. The statistical analyses were performed with the SPSS 20.0 program.

Results

Identification of Motivational Profiles

We used the following procedure to make decisions concerning the appropriate number of clusters for our data. Firstly, we observed whether the convergence of the solution is achieved before the 10 predetermined iterations. The results obtained show that only the solutions of two, three, and four clusters meet this criterion. Figures 1, 2, and 3 present the groupings of these solutions.
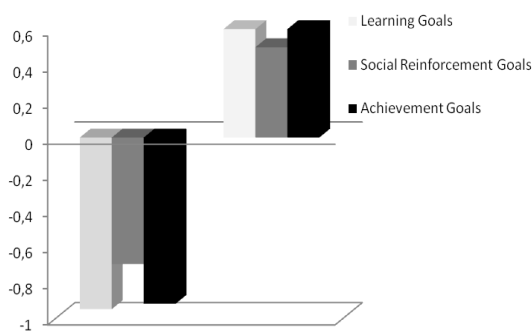

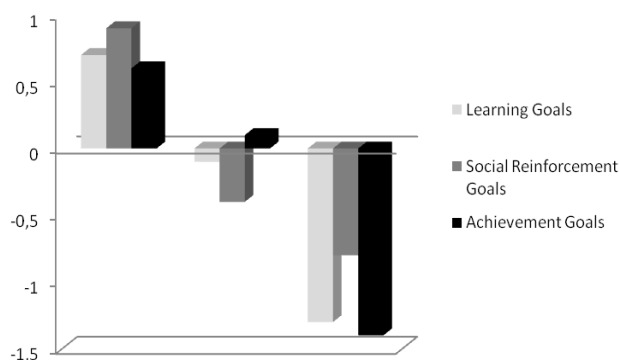**Figure 1.** Graphic representation of the two-cluster solution.

Figure 2. Graphic representation of the three-cluster solution.
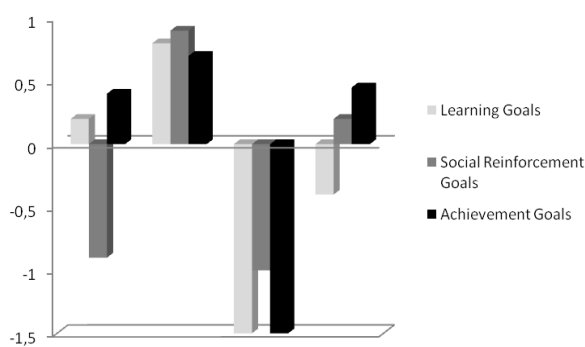

Figure 3. Graphic representation of the four-cluster solution.

The two-cluster solution differentiates a group of students (Cluster 1) with predominance of high multiple goals and a group (Cluster 2) with low multiple goals. The three-cluster solution includes a group of students (Cluster 1) with predominance of high multiple goals, a group (Cluster 2) with predominance of low multiple goals, and a group (Cluster 3) with predominance of AG. Lastly, the four-cluster solution is made up of a group of students (Cluster 1) with predominance of high multiple goals, a group of students (Cluster 2) with predominance of low multiple goals, a group of students (Cluster 3) with predominance of LG and AG, and a final group of students (Cluster 4) with predominance of SRG.

Thus, although the two-cluster solution is the simplest solution, it is not very descriptive. However, the four-cluster solution reflects a more coherent scenario that is characteristic of secondary education students. Consequently, we think that the four-cluster solution is the most useful with a view to studying the relationship between motivational profiles and the dependent variable considered in this study. Thus, the four-cluster solution is made up of a first group comprising 740 students (36.60% of the participants), characterized by high scores in all the goals assessed. This group is defined by a high generalized motivation profile (HGM Group). The second group, made up of 274 students (13.55% of the participants), is characterized by low predominance of all the

goals analyzed. This group was defined by a profile with low generalized motivation (LGM Group). The third group, made up of 455 students (22.50% of the participants), is characterized by predominance of LG and AG (LG/AG Group). This group is defined by a motivational profile oriented toward learning and obtaining high academic achievement. The fourth group, comprising 553 students (27.35% of the participants), is characterized by predominance of SRG (SRG Group). This group is defined by a motivational profile oriented toward gaining approval and avoiding parents' and teachers' rejection.

Inter-group Differences in Academic Self-attributions

There were differences in attributions for success to ability among the four groups or clusters, $F(3, 2018) = 55.80$, $p < .001$ ($\eta^2 = .077$) (see Table 1). The post-hoc contrasts show that students from the HGM ($M = 7.20$) and the SRG Groups ($M = 7.13$) obtained significantly higher scores ($p < .001$ in attributions of success to ability than students from the LGM ($M = 6.47$) and the LG/AG Groups ($M = 6.05$), with effect sizes ranging from low to moderate ($d = .44 - .73$). Likewise, the students from the LG/AG Group ($M = 6.05$) obtained significantly higher scores ($p < .001$) in attributions of success to ability than the students from the LGM

Group ($M = 6.47$), with a small effect size ($d = .27$). No statistically significant differences were obtained between the HGM and SRG Groups.

Group differences were also found in attributions of success to effort, $F(3, 2018) = 87.68$, $p < .001$ ($\eta^2 = .115$). In this case, the post-hoc contrasts showed that students from the HGM ($M = 7.49$) and SRG Groups ($M = 7.28$) obtained significantly higher scores ($p < .001$) in attributions of success to effort than students from the LGM ($M = 6.80$) and the LG/AG Groups ($M = 6.03$). The effect sizes ranged from small to large ($d = .35$ to $.98$). Likewise, students from the LG/AG Group ($M = 6.03$) obtained significantly higher scores ($p < .001$) in attributions of success to effort than students from the LGM Group ($M = 6.80$), with a moderate effect size ($d = .54$). No statistically significant differences were found between the HGM and the SRG Groups (see Table 1).

With regard to the attributions of success to external causes, here too, group differences were found $F(3, 2018) = 11.80$, $p < .00$, $\eta^2 = .017$. Students from the SRG Group ($M = 6.50$) obtained significantly higher scores in attributions of success to external causes than the HGM ($M = 6.19$), the LGM ($M = 6.04$), and the LG/AG Groups ($M = 6.22$) ($p < .05$). However, the size effects of these differences were small ($d = .22$ to $.38$). The remaining comparisons were not statistically significant (see Table 1).

Table 1. Means and Standard Deviations obtained by the four Groups and the Eta Square Values (η^2) for each Causal Attribution

	HGM Group		LGM Group		LG/AG Group		SRG Group		η^2
	M	SD	M	SD	M	SD	M	SD	
Attribution of success to ability	7.20	1.59	6.47	1.53	6.05	1.56	7.13	1.49	.077
Attribution of success to effort	7.49	1.47	6.80	1.37	6.03	1.52	7.28	1.27	.115
Attribution of success to external causes	6.19	1.31	6.04	1.19	6.22	1.24	6.50	1.25	.017
Attribution of failure to ability	4.49	1.53	5.02	1.45	5.20	1.42	4.40	1.39	.046
Attribution of failure to effort	5.47	1.27	5.73	1.17	5.79	1.23	5.43	1.26	.015
Attribution of failure to external causes	6.40	1.29	6.37	1.07	6.56	1.12	6.61	1.08	.008

Note. HGM = High generalized motivation; LGM = Low generalized motivation; LG/AG = Learning goals and achievement goals; SRG = Social reinforcement goals.

Group differences were also observed in attributions of failure to ability, $F(3, 2018) = 32.47$, $p < .001$, ($\eta^2 = .046$). Students from the LG/AG Group ($M = 5.20$) obtained significantly higher scores ($p < .001$) in attributions of failure to ability than students from the HGM ($M = 4.49$) and the SRG Groups ($M = 4.40$), with a small to moderate effect size ($d = .48$ to $.57$). Likewise, students from the LGM Group ($M = 5.02$) obtained significantly higher scores ($p < .001$) in attributions of failure to ability than students from the SRG ($M = 4.40$) and the HGM Groups ($M = 4.49$); in this case, the effect size of the differences was small ($d = .36$ to $.44$). The differences between the HGM and SRG Groups and between the LGM and LG/AG Groups were nonsignificant (see Table 1).

Group differences in attributions of failure to effort were also found, $F(3, 2018) = 10.31$, $p < .001$, $\eta^2 = .015$. Students from the LG/AG Group ($M = 5.79$) presented significantly higher scores in attributions of failure to effort than students

from the HGM ($M = 5.47$) and SRG Groups ($M = 5.43$) ($p < .005$), with a small effect size ($d = .25$ to $.29$). In addition, the LGM Group ($M = 5.73$) obtained significantly higher scores ($p < .005$) in attributions of failure to effort than the HGM ($M = 5.47$) and the SRG Groups ($M = 5.43$), also with a small effect size ($d = .21$ to $.25$). The correlations between the HGM and the SRG Group and between the LGM and the LG/AG Groups were nonsignificant (see Table 1).

Lastly, group differences in attribution of failure to external causes were also obtained between the four clusters, $F(3, 2018) = 5.32$, $p < .001$, $\eta^2 = .008$. Students from the SRG Group ($M = 6.61$) obtained significantly higher scores in attributions of failure to external causes than the HGM ($M = 6.40$) and the LGM Groups ($M = 6.37$) ($p < .05$). In this case also, the effect size was small ($d = .17$ to $.22$). The remaining comparisons were not statistically significant (see Table 1).

Inter-group Differences in Self-attributions in the Subject of Language and Literature

Group differences were found in attributions of success to ability in the subject of Language and Literature $F(3, 2018) = 44.78$, $p < .001$, $\eta^2 = .062$ (see Table 2). The post-hoc contrasts showed that students from the HGM Group ($M = 3.97$) scored significantly higher ($p < .001$) in attributions of success to ability in Language and Literature than the LGM ($M = 3.61$) and LG/AG Groups ($M = 3.38$), with small to moderate effect sizes ($d = .40$ to.67). Students from the SRG Group ($M = 3.94$) also obtained significantly higher scores in attributions of success to ability in this subject than students from the LGM ($M = 3.61$) and LG/AG Groups ($M = 3.38$) ($p < .001$). The effect size these differences was small to moderate ($d = .37$ to .67). Students from the LGM Group ($M = 3.61$) presented higher scores in attribution of success to ability than the LG/AG Group ($M = 3.38$) and these differences were significant ($p < .005$), albeit with a small effect size ($d = .25$). No significant differences were found between students from the HGM and SRG Groups.

Group differences were also found in attributions of success to effort, $F(3, 2018) = 58.84$, $p < .001$, $\eta^2 = .080$. As before, students from the HGM Group ($M = 3.77$) obtained significantly higher scores ($p < .001$) in attributions of success to effort than the LGM ($M = 3.49$) and the LG/AG Groups ($M = 3.09$), with effect sizes ranging between small and large ($d = .34$ to.81). Students from the Group SRG ($M = 3.70$) scored significantly higher ($p < .001$) in attributions of success to effort in this subject than students from the LGM ($M = 3.49$) and the LG/AG Groups ($M = 3.09$), with small to moderate effect sizes ($d = .27$ to .77). Lastly, students from the LGM Group ($M = 3.49$) presented significantly higher scores ($p < .001$) in attribution of success to effort than the LG/AG Group ($M = 3.09$), with a moderate effect size ($d = .49$). No statistically significant differences were observed between students from the HGM and SRG Groups (See Table 2).

Regarding attributions of success to external causes in Language and Literature, again group differences were found, $F(3, 2018) = 15.95$, $p < .001$, $\eta^2 = .023$. Students from the SRG Group ($M = 3.48$) obtained significantly higher scores ($p < .01$) in attributions of success to external causes than students from the HGM ($M = 3.32$), the LGM ($M = 3.19$), and the LG/AG Groups ($M = 3.19$), and these differences had a small effect size ($d = .21$ to .40). Students from the HGM Group ($M = 3.32$) scored higher in attributions of success to external causes than the LGM Group ($M = 3.19$), and these differences were significant ($p < .05$), with a small effect size ($d = .18$). No differences were observed between the HGM and LG/AG Groups or between the LGM and LG/AG Groups (see Table 2).

There were also group differences, $F(3, 2018) = 19.46$, $p < .001$, $\eta^2 = .028$, in attributions of failure to ability in Language and Literature. Students from the LG/AG ($M = 2.38$) and LGM Groups ($M = 2.24$) obtained significantly higher scores ($p < .001$) in attributions of failure to ability in this subject than students from the HGM ($M = 2.02$) and SRG Groups ($M = 1.98$), with a small effect size ($d = .24$ to .47). No statistically significant differences between students from the HGM and SRG Groups, or from students from the LGM and LG/AG Groups were found (See Table 2).

Table 2. Means and Standard Deviations obtained by the four Groups and the Eta Square Values (η^2) for each Causal Attribution in Language and Literature.

	HGM Group		LGM Group		LG/AG Group		SRG Group		η^2
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	
Attribution of success to ability	3.97	.88	3.61	.94	3.38	.88	3.94	.80	.062
Attribution of success to effort	3.77	.83	3.49	.80	3.09	.85	3.70	.74	.080
Attribution of success to external causes	3.32	.76	3.19	.72	3.19	.76	3.48	.74	.023
Attribution of failure to ability	2.02	.88	2.24	.91	2.38	.88	1.98	.83	.028
Attribution of failure to effort	2.68	.75	2.79	.69	2.81	.69	2.66	.72	.007
Attribution of failure to external causes	3.30	.74	3.29	.65	3.38	.65	3.39	.65	.004

Note. HGM = High generalized motivation; LGM = Low generalized motivation; LG/AG = Learning goals and achievement goals; SRG = Social reinforcement goals. ·

Group differences were also found in attributions of failure to effort, $F(3, 2018) = 5.08$, $p < .005$, $\eta^2 = .007$. Only the students from the LG/AG Group presented mean values ($M = 2.81$) that were significantly higher ($p < .05$) that those of the students from the SRG Group ($M = 2.66$). However, the effect size was small ($d = .21$). No statistically significant differences were found in the rest of the groups analyzed (see Table 2).

Lastly, with regard to the attributions of failure to external causes in Language and Literature, although group differences were observed, $F(3, 2018) = 1.87$, $p < .001$, $\eta^2 = .004$, they were not statistically significant (see Table 2).

Inter-group Differences in the Subject of Mathematics

Group differences were found in the attributions of success to ability in the subject of Mathematics, $F(3, 2018) = 26.53$, $p < .001$, $\eta^2 = .038$ (see Table 3). Students from the HGM ($M = 3.22$) and SRG Groups ($M = 3.18$) obtained significantly higher scores ($p < .001$) in attributions of success to ability in Mathematics than students from the LGM ($M = 2.86$) and LG/AG Groups ($M = 2.67$), with small to moderate effect sizes ($d = .30$ to .51). The differences between the HGM and SRG Groups and between the LGM and the LG/AG Groups were not statistically significant.

Regarding attributions of success to external causes in Mathematics, again group differences were found, $F(3, 2018) = 71.56$, $p < .001$, $\eta^2 = .096$. As before, students from the HGM ($M = 3.71$) and the SRG Groups ($M = 3.58$) presented significantly higher means ($p < .001$) than students from the LGM ($M = 3.30$) and LG/AG Groups ($M = 2.94$) in attributions of success to effort in Mathematics. The effect

sizes ranged between small and large ($d = .35$ to $.90$). Moreover, the LGM Group ($M = 3.30$) obtained a significantly higher mean score ($p < .001$) than the LG/AG Group ($M = 2.94$) in this attribution, with a small effect size ($d = .43$). No statistically significant differences were found between the HGM and SRG Groups (see Table 3).

Table 3. Means and Standard Deviations obtained by the four Groups and the Eta Square Values (η^2) for each Causal Attribution in Mathematics.

	HGM Group		LGM Group		LG/AG Group		SRG Group		η^2
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	
Attribution of success to ability	3.22	1.13	2.86	1.07	2.67	1.07	3.18	1.09	.038
Attribution of success to effort	3.71	.84	3.30	.82	2.94	.89	3.58	.78	.096
Attribution of success to external causes	2.86	.77	2.85	.70	3.02	.70	3.01	.74	.012
Attribution of failure to ability	2.46	1.04	2.77	1.01	2.81	.94	2.41	.99	.029
Attribution of failure to effort	2.78	.71	2.94	.68	2.98	.72	2.76	.69	.016
Attribution of failure to external causes	3.10	.72	3.08	.62	3.18	.65	3.22	.60	.008

Note. HGM = High generalized motivation; LGM = Low generalized motivation; LG/AG = Learning goals and achievement goals; SRG = Social reinforcement goals.

Group differences were found in attribution of success to ability in the subject of Mathematics, $F(3, 2018) = 8.00$, $p < .001$, $\eta^2 = .012$. In this case, the LG/AG Group ($M = 3.02$) obtained significantly higher scores ($p < .005$) than students from the HGM ($M = 2.86$) and LGM Groups ($M = 2.85$) in attributions of success to external causes in this subject. Nevertheless, the size effects of these differences were small ($d = .21$ and $d = .24$, respectively). Likewise, students from the SRG Group ($M = 3.01$) presented significantly higher mean scores ($p < .001$) than students from the HGM ($M = 2.86$) and LGM Groups ($M = 2.85$), with a small effect size ($d = .20$ and $d = .22$, respectively). No statistically significant differences were found between the HGM and LGM Groups, or between the LG/AG and SRG Groups (see Table 3).

Group differences were also observed, $F(3, 2018) = 19.77$, $p < .001$, $\eta^2 = .029$, in attributions of failure to ability in Mathematics. Students from the LG/AG ($M = 2.81$) and LGM Groups ($M = 2.77$) obtained significantly higher scores ($p < 0.001$) in attributions of failure to ability in Mathematics than students from the HGM ($M = 2.46$) and from SRG Groups ($M = 2.41$), with a small effect size ($d = .30$ to $.41$). The correlations between the HGM and the SRG Groups and between the LGM and the LG/AG Groups were nonsignificant (see Table 3).

Group differences were observed in attributions of failure to effort in Mathematics, $F(3, 2018) = 11.17$, $p < .005$, $\eta^2 = .016$. As before, students from the LG/AG ($M = 2.98$) and LGM Groups ($M = 2.94$) presented significantly higher scores ($p < .005$) in attributions of failure to effort in Mathematics than students from the HGM ($M = 2.78$) and SRG Groups ($M = 2.76$). Again, the effect size of these differences was small ($d = .23$ to $.31$). The differences between the HGM and SRG Groups and between the LGM and LG/AG Groups were statistically nonsignificant (see Table 3).

There were also group differences, $F(3, 2018) = 5.34$, $p <$

$.001$, $\eta^2 = .008$, in attributions of failure to external causes in Mathematics. Students from the SRG Group ($M = 3.22$) obtained significantly higher scores ($p < .05$) in attributions of failure to external causes in Mathematics than students from the LGM ($M = 3.08$) and HGM Groups ($M = 3.10$), with a small effect size ($d = .18$ and $d = .23$, respectively). No statistically significant differences were found in the rest of the groups analyzed (see Table 3).

Discussion

The main goal of this work was to analyze the different combinations of goals and to define the motivational profiles in a sample of Spanish students from Compulsory Secondary Education. Subsequently, we determined whether there were significant group differences in causal attributions of success and failure (ability, effort, or external causes) in the subjects of Mathematics and Language and Literature and with regard to general academic performance. The results revealed the existence of motivational profiles with a single predominant goal and motivational profiles with various predominant goals. Thus, by means of cluster analysis, we identified four different motivational profiles, corroborating the first hypothesis. A first group with a profile of high generalized motivation (HGM), a second group with a profile of low generalized motivation (LGM), a third group with a motivational profile of learning goals and achievement goals (LG/AG), and lastly, a group with a profile oriented towards social reinforcement goals (SRG).

These results are consistent with the research carried out on different motivational profiles (Daniels et al., 2008; Pintrich, 2000; Suárez, Cabanach, Abalde et al., 2001; Valle et al., 2003, 2009; Wentzel, 2000). Thus, most of the studies have found a common profile: students oriented towards multiple goals. That is, instead of adopting an exclusive goal, students choose various goals to engage in learning. The results of this study also coincide with other investigations

finding profiles of students with high scores in all the goals, profiles of students with low scores in all the goals, and profiles where one of the goals predominated (Suárez, Cabanach, Abalde et al., 2001; Valle et al., 2010).

However, the results reveal statistically significant group differences in causal attributions of academic success and failure, thus confirming the second hypothesis. These data not only provide validity to the existence of different motivational profiles, they also contribute relevant aspects to comprehend the relationship between students' goals and attributional style. With regard to the attributions for all the curricular subjects, we note that students with from the HGM Group and students from the SRG Group attribute their successes to ability and effort to a greater extent than students from the LGM Group and students with a combined LG/AG profile. The same results emerge for success attributed to ability and effort in the subjects of Language and Literature and Mathematics. Likewise, the LG/AG Group attributes their successes to ability and effort to a greater extent than students with low generalized motivation (LGM) in all the curricular subjects. However, the opposite results are found for the subject of Language and Literature, where students from the LGM Group attributed their successes to ability and effort to a greater extent than students from the LG/AG Group.

Students from the SRG Group attributed success to external causes to a greater extent than students from the HGM and LGM Groups and than students with the combined LG/AG profile in all the curricular subjects and in Language and Literature. In Mathematics, the same result was obtained with students from the HGM and LGM Groups. In the subject of Language and Literature, students from the HGM Group attributed their success to external causes more than did students from the LGM Group. In the subject of Mathematics, students with a combined LG/AG profile attributed success to external causes to a greater extent than students from the HGM and LGM Groups.

With regard to attributions of failure, the results are similar both at a general level and in the subjects of Language and Literature and Mathematics: students with a combined LG/AG profile and students from the LGM Group attributed failure to ability and effort more than did students from the HGM and SRG Groups, except for Language and Literature, where students with the combined LG/AG profile only attributed failure to effort more than students from the SRG Group. Lastly, students from the SRG Group attributed failure to external causes to a greater extent than students from the HGM and LGM Groups at a general level and in the subject of Mathematics.

To conclude, the results generally indicate that students with high generalized motivation (HGM) present a more adaptive attributional pattern, attributing their success to ability and effort to a greater extent than the other groups. The same results were found by Valle et al. (2003) in a sample of university students. Moreover, attribution of success to internal, stable, and uncontrollable causes (ability) gener-

ates feelings of competence, self-confidence, pride, and satisfaction, in addition to high expectations of future success and responsibility for success. And the attribution of success to internal, unstable, and controllable causes (effort) provokes affective reactions of pride, responsibility for success, and feelings of control.

These investigations have also found that students who are guided by learning and performance goals perceive high ability, which could explain their attributions of success to ability and effort. Likewise, within the proposals of multiple goals, it has been confirmed that students with high scores in both orientations reflect higher levels of self-efficacy, higher values assigned to tasks, more positive affect following failures, less use of avoidance strategies (Lau & Lee, 2008; Pintrich, 2000), greater adaptation of study strategies to task and context demands, and better levels of school performance (Valle et al., 2003). Thus, diverse studies have stated that the combined and interactive use of the different types of goals has a positive effect on academic performance (Fuente-Arias, 2002; Schwinger, Steinmayr, & Spinath, 2012; Valle et al., 2003).

The SRG Group also attributed their successes to ability and effort to a greater extent than students from the LGM Group and students with a combined LG/AG profile. Although this is also very adaptive for the students, these results indicate that the SRG Group attributes its failures to external causes so as to protect their self-esteem, but they also attribute their successes to external causes to a greater extent than the rest of the groups, and this may not be so adaptive. In fact, some investigations have corroborated the maladjustments these students may present. In the same vein, two predictive studies carried out recently state that the students more oriented towards approval and social recognition (SRG) are less likely to perform prosocial and adapted behavior in the classroom (Inglés, Martínez-González, Valle, García-Fernández, & Ruiz-Esteban, 2011), because they are more concerned about their personal image than about helping their classmates (Inglés et al., 2009; Inglés, Martínez-González et al., 2011). However, students from secondary education who present high reinforcement social goals are less likely to achieve high grades in Mathematics and Language or a general high performance than students with a low orientation towards social approval (Inglés et al., 2009).

With regard to failure, in general, it was confirmed that students from the LGM Group and the combined LG/AG profile attributed their failures to ability and effort to a greater extent, and this attributional pattern is highly maladaptive. According to several investigations, this type of motivational pattern may negatively affect students' academic self-concept and self-esteem (Valle et al., 2003; Weiner, 2004) as well as their academic performance (Ruthig, Perry, Hall, & Hladkyj, 2004).

The results of this work not only confirm other investigations finding an attributional pattern with simultaneous predominance of multiple goals, which guarantees some degree of flexibility for students to effectively adapt to differ-

ent environmental situations at school, but also, the use of these multiple goals as a function of the situation optimizes the teaching-learning process, because students who attribute their successes to effort are ultimately attributing them to internal and controllable causes. This implies a high degree of responsibility for their academic results.

The present investigation also reveals that, in order to analyze goals, it is necessary to focus on the different motivational profiles found and not on the study of students' supposed mutually exclusive goals. This provides a more objective and accurate view of the reality of the classroom. As stated by Marsh et al. (1984), it is also necessary to pay attention to the differentiation of attributions according to the academic results (success or failure), the implied cause (ability, effort, external causes) and the academic content (verbal or mathematic) and we conclude that dispositional tendencies in attributional processes are specific to the result, the perceived cause, and the academic content or curricular subject.

Nevertheless, although prior investigations have underlined this observation, especially in the university setting, it is difficult to compare the different investigations, partly because they used different measurement instruments, which provide different motivational profiles. Moreover, there are multiple terms generally to refer to the same concept, which

further hinders the comparison of results. In any event, in spite of these limitations, the present work offers a more complete view of the motivational profiles of Spanish students of CSE, and this information can be used for the development of preventive strategies or interventions in the classroom. It is necessary to promote the use of multiple goals in students, because this pattern leads to a more adaptive attributional style. Furthermore, training in adaptive causal attributions of successes and failures is beneficial for students' academic adjustment because it improves their academic performance, reduces the number of hours of truancy, and decreases test anxiety (Ruthig et al., 2004). In contrast, maladaptive attributional styles can become a vulnerability factor to develop emotional disorders such as depression, in part due to a low rate of social reinforcement (Johnson, 1991). Therefore, a future objective is to continue investigating the relation between students' goals and their attributional styles.

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