

Academic Goal Profiles: A Comparison of Blind and Sighted Students

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Based on academic goal theory, we compared the goals of visually impaired and sighted students. Participants included 171 students affiliated with ONCE (the National Spanish Organization for the Blind) and 163 sighted students, ranging from 8 to 27 years of age, who responded to the Spanish adaptation (González, Torregrosa, & Navas, 2002) of the goals questionnaire created by Hayamizu, Ito, and Yohiazaki (1989) and Hayamizu and Weiner (1991). Factor analysis indicated that goals varied among these students and that new ones arose in this study; furthermore, the model remained invariable regardless of students' status (visually impaired versus sighted). Cluster analysis revealed three distinct profiles in terms of academic goals, while discriminant function analysis suggested these profiles vary as a function of students' status (visually impaired versus sighted). It seems that visually impaired students hold more learning-oriented academic goals.

Keywords: goal orientations, achievement motivation, academic goals, blindness.

A partir de la teoría de las metas académicas, se compararon las metas entre el alumnado con deficiencia visual y el alumnado vidente. Los participantes fueron 171 estudiantes afiliados a la ONCE (Organización Nacional de Ciegos Españoles) y 163 estudiantes videntes, de entre 8 y 27 años, que respondieron a la adaptación española (González, Torregrosa, & Navas, 2002) del cuestionario de metas elaborado por Hayamizu, Ito, y Yohiazaki (1989) y Hayamizu y Weiner (1991). El análisis factorial indicó que las metas varían en estos estudiantes, que otras metas nuevas emergen y que el modelo se mantiene invariante respecto al estatus (con discapacidad visual versus vidente) de los estudiantes. El análisis de conglomerados mostró que hay tres perfiles diferentes en función de las metas académicas y del análisis discriminante se deduce que estos perfiles varían en función del estatus de los estudiantes (con discapacidad visual versus videntes). Parece que los alumnos con discapacidad visual presentan metas académicas más orientadas al aprendizaje.

Palabras clave: orientación a metas, motivación de logro, metas académicas, ceguera.

In recent years, goal orientation models have been devised to take stock of academic achievement motivation. Such models, according to the tradition set in motion by McClelland (1965) and Atkinson (1987), stem from the concept of achievement motivation and propose two classic orientations: success approach and failure avoidance. Currently, that is one of the foremost views aimed at analyzing academic achievement motivation (Covington, 2000; González, 2005, 2008; Valle, Núñez et al., 2009; Valle, Rodríguez et al., 2009).

Dweck (1986) points out two main goal categories that have been assigned different names over time. The first, focusing attention on learning and comprehension, and the second, focusing attention on the self and performance, are the ones that tend to distinguish themselves. Molden and Dweck (2000) describe them as the objective to develop personal abilities and the objective to demonstrate those abilities. From that perspective, students might adopt one of two types of goals when investing effort in an academic task: learning goals and performance goals. Learning goals are characterized by an interest in acquiring and fostering new skills and knowledge. They are more closely associated with a motivational pattern geared toward mastering the learning task and seeking out that which poses a challenge. For students who are learning goal-oriented, knowledge, learning, problem-solving, and developing new cognitive skills are considered ends unto themselves. Performance goals, on the other hand, are characterized by an interest in receiving positive judgments and assessments of one's ability. A student with this type of goal tries to avoid negative assessments of his or her capability, to the point of avoiding learning situations in which success is not certain or guaranteed.

Next, research conducted by Hayamizu et al., (1989) in Japanese, secondary school students and Hayamizu and Weiner (1991) in college students in California, refers to three different goal types. In addition to learning goals, they posit two categories within performance goals: social reinforcement goals and academic advancement goals. Social reinforcement goals reflect a tendency to learn toward the objective of gaining social approval and avoiding social rejection. Academic advancement goals, meanwhile, are characterized by the tendency to learn in order to obtain positive outcomes on tests and advance one's education.

Recently, these different goal orientations have come to be viewed as oblique, from a statistical perspective. In other words, they interact such that at any given time, one might pursue several goals at once (Brophy, 2005; Roberts, 2001; Valle et al., 2008; Valle, Núñez et al., 2009). Accordingly, the intent is to establish motivational profiles as a function of goal orientations. In that vein, research conducted in college students (González-Cabanach, Valle, Piñero, Rodríguez, & Núñez, 1999; Valle, Conzález-Cabanach, Cuevas, & Núñez, 1997) has confirmed the existence of 3 profiles (one has a moderate degree of learning goals, a high level of academic advancement goals, and low social

reinforcement goals; the second has a high level of learning and academic advancement goals and a moderate amount of social reinforcement goals; and the third has a high level of learning goals, moderate academic advancement goals, and is low on social reinforcement goals). In another study of college students, Núñez et al., (2009) observed four distinct profiles (the first combines academic advancement approach goals, academic advancement avoidance goals, and task avoidance goals; the second is a combination of learning goals, academic advancement approach goals, and academic advancement avoidance goals; in the third, learning goals are predominant; and the fourth combines academic advancement avoidance goals and task avoidance goals). In a sample of secondary school students, Valle, Núñez et al. (2009) also isolated 4 profiles (the first oriented toward learning and academic advancement, the second characterized by a general, high level of motivation, a third wherein fear of failure is predominant, and a fourth corresponding to a generalized, low level of motivation).

The present study is interested in the goals visually impaired students pursue, as well as their motivational profiles. Keep in mind, however, that although Goal Orientation Theory constitutes a considerable step toward achievement motivation analysis in educational contexts, and even though these variables have tremendous cognitive importance in explaining motivation in learning situations, our review of the research in this field revealed that hardly any studies have addressed academic goals in students with severe impairment in the visual channel, nor on their motivational profiles (Jover, Navas, & Sampascual, 2008, 2009; Jover, 2009).

Visually impaired students are not only limited by vision loss. They also exhibit greater dependency because they require training in personal autonomy skills (Cantalejo, 2000) and because in order to learn effectively, they need educational resources and materials distinctly adapted to them (Martín-Blas, 2000; Durán, 2000) (for example, thermoform models, Fuser copying, and the Braille system). Nevertheless, research conducted to this point suggests there are no intellectual differences between sighted and visually impaired individuals, demonstrating that "*blind adolescents are capable of solving problems hypothetically and deductively and of thinking in those terms*" (Navas & Castejón, 2009, p. 192). Similarly, visual impairment does not reduce one's ability to process information; rather, it imposes a series of limitations on sensory data channels (Haring & Schiefelbusch, 1967). In that vein, various studies have reported no differences between sighted and blind students in learning problem-solving or verbal tasks (Ochaita et al., 1988; Pozo, Carretero, Rosa, & Ochaita, 1985). It has been suggested that "*Their psychic apparatus adapts its functioning and development to the sensory data available; via different pathways, they acquire a mental, representational system that is qualitatively distinct from, but equally as valid as, the visual system*" (Núñez, 2000, p. 103).

Furthermore, according to Cruickshank (1986), if we take into account all children with some type of impairment, those with visual limitations are the ones most easily integrated into normal classrooms. Adding to this the tremendous advances underway in technological and electronic materials, it follows that the “barriers” associated with visual impairment (Kelly, 1987; Todd, 1986) may be fewer at school.

Given that visually impaired and sighted students differ neither in their mental representations nor level of learning (though to do so, they employ different sensory modalities), as indicated above, and that visually impaired students learn in different ways and by means of different materials to overcome the obstacles posed by their visual limitations, it can be said that visually impaired students are more motivated to learn and hold different goals than their sighted counterparts.

Thus, the present study’s first objective is to gather evidence as to the internal structure of the Achievement Goal Tendencies Questionnaire by Hayamizu et al. (1989) and test the invariance of that structure between blind and sighted students. Second, we aim to establish motivational profiles as a function of academic goals. The third and final objective is to detect any differences between the profiles of students with and without visual impairment.

Method

Participants

Three hundred thirty-four students participated, ranging from 8 to 27 years of age, of whom 171 were affiliated with ONCE and 163 were sighted. In the first group (visually impaired), the average age was 14.63 years ($SD = 3.68$), 54.6% were boys and 45.4% girls, 26.2% were in elementary school, 54.6% compulsory secondary school, 7.1% high school, 2.1% trade school, and 9.9% university. In the sighted group, the mean age was 14.43 years ($SD = 3.95$), 57.9% were boys and 42.1% girls, 29.9% were in elementary school, 52.3% obligatory secondary school, 2.8% high school, 1.9% trade school, and 13.1% university. Those affiliated with ONCE were selected through convenience sampling (based on their availability to fill out the questionnaire). Later, after determining that group’s characteristics in terms of sex, age, level of education, year in school, and number of people residing in their town or city, the sighted group was selected to match those characteristics.

Instrument

To evaluate goal types, the Achievement Goal Tendencies Questionnaire (AGTQ) by Hayamizu et al. (1989) and Hayamizu and Weiner (1991) was employed, which was translated into Spanish by González, Torregrosa, and Navas (2002, p. 85). This questionnaire was adapted for students

with vision problems by either enlarging the font size or transferring it into Braille for blind students. It is made up of 20 items that pose a series of reasons for studying; students are asked to indicate their motives for studying on a graduated scale from 1 to 5 ranging from *never* to *always*. In the studies mentioned above, the questionnaire was found to have an overall reliability between .89 and .71. The instrument consists of three factors (González et al., 2002): Learning Goals (items 1 through 8; $\alpha = .83$), Academic Advancement Goals (items 15 through 20; $\alpha = .82$), and Social Reinforcement Goals (items 9 through 14; $\alpha = .83$).

Variables

The variables studied here are academic achievement goals pursued by students. According to the tenor of prior research, these include social reinforcement goals, academic advancement goals, and learning goals. Also, subjects’ status had two levels: sighted students and visually impaired students.

Procedure

The directors of ONCE’s various Educational Resource Centers were asked to see that students completed the AGTQ by way of the itinerant teachers and case workers that comprise the structure of ONCE’s education teams. They were instructed about how the questionnaire should be filled out (anonymously, in one session, in a normal classroom setting, as honestly as possible, etc.). In short, these professionals were the ones to administer the AGTQ to visually impaired students. A member of our research team administered it to the other students. In both cases, subjects’ right to privacy was safeguarded and they were informed of the voluntary nature of their participation.

Design and Data Analysis

The design includes basic correlational analysis due to the fact that the study’s variables were not intentionally manipulated, nor were subjects randomly selected. Factor analysis (exploratory and confirmatory) was applied to the data, along with cluster and discriminant analysis. In carrying out these analyses, the programs SPSS (version 16.0), PRELIS (version 2.30), and LISREL (version 8.54) were employed.

Results

CFA of the Original Model by Hayamizu and Weiner (1991)

We determined to what extent the original model proposed by Hayamizu and Weiner (1991), in which the first 8 items loaded on Learning Goals, items 15 through 20 on Academic

Advancement Goals, and the other 6 on Social Reinforcement Goals, fit the way in which our sample responded. To do so, CFA was performed using unweighted least squares. The global goodness of fit indices follow: $\chi^2(df = 170; p = .0001) = 957.217$; RMSEA = .12, with a 90% confidence interval between .11 and .13; GFI = .78; AGFI = .72.

In light of these results, we reject the null hypothesis according to which our sample's internal structure matches the one proposed by the original authors. Hence, we decided to analyze the instrument's dimensionality in our sample by means of EFA and CFA.

EFA in the Total Sample

An exploratory factor analysis was carried out utilizing the principal components extraction method and *Varimax* rotation. *Bartlett's test of sphericity* yielded statistically significant results ($\chi^2_{(190)} = 2,495.77; p < .001$), enabling us to reject the null hypothesis that the correlation matrix is an identity matrix, wherein all correlations between different variables equal zero.

Four factors were extracted, together explaining 58.19% of variance. The rotation converged in six iterations and Table 1 displays the rotated factor matrix, leaving out factor loadings under .30 to make it easier to read.

In the first factor, which explains 19.84% of variance, items 1 ("I study because it's interesting to solve problems"), 2 ("I study because I enjoy discovering how much I have improved"), 3 ("I study because I like knowing new things"), 4 ("I study because I like challenging difficult problems"), 5 ("I study because I feel good when I overcome stumbling blocks and failure"), 6 ("I study because I am very curious"), 7 ("I study because I like to use my head"), and 8 ("I study because I am pleased when I can solve a difficult problem") had the largest factor loadings. This factor can be interpreted as encompassing goals related to knowledge acquisition, skill development, and the perception of overcoming challenges, so it was termed the "Learning Goal" factor.

In the second factor, which accounts for 16.40% of variance, elements 9 ("I study because I want to be praised by my professors and parents"), 10 ("I study because I want to be noticed by my friends"), 11 ("I study because I don't want my classmates to make fun of me"), 12 ("I study because I don't want to be disliked by a professor"), 13 ("I study because I want people to see how smart I am"), and 14 ("I study because I wish to get better grades than my peers") had the greatest factor loadings and generally convey wishes to attain sufficient social standing with professors, parents, and friends, seeking to aggrandize oneself compared to others, and ego defense. Therefore, it is labeled "Social Reinforcement Goals."

Items 15, 16, and 17, with expressions such as "I study because I want to get good grades," "I study because I want to be proud of getting good grades," and "I study because I don't want to fail final exams" comprise the third factor,

Table 1
Rotated Factor Matrix Showing Items' Loadings on Each Factor Obtained

Items	Factor I	Factor II	Factor III	Factor IV
1.	.67			
2.	.69		.31	
3.	.74			
4.	.61			
5.	.69			
6.	.71			
7.	.65			
8.				
9.		.57	.44	
10.		.77		
11.		.77		
12.		.69		
13.		.79		
14.		.73		
15.			.79	
16.			.79	
17.			.66	
18.				.74
19.				.79
20.			.36	.67

Factor I: Learning goals; Factor II: Social reinforcement goals; Factor III: Academic performance goals; Factor IV: Success or outcome goals.

which explains 12.28% of variance and is known as "Academic Performance Goals." This is because its elements express ideas associated with high academic achievement and avoidance of low academic achievement.

In the fourth and final factor, items 18 ("I study because I want to be admitted to graduate school"), 19 ("I study because I want to get a good job in the future"), and 20 ("I study because I want to attain status in the future") had the greatest factor loadings. As they all relate to future-oriented ideas and the educational implications of wanting a good job in the future, this factor is labeled "Success or Outcome Goals." It explains 9.66% of total variance.

The four scales' internal consistency was measured by Cronbach's alpha and was found to be adequate: .85, .83, .76, and .70, respectively.

CFA

This model was validated by applying confirmatory factor analysis (CFA), utilizing the matrix of polychoric correlations since the items can be measured on an ordinal scale (Holgado, Moscoso, Barbero, & Vila, 2010).

To evaluate the model's goodness of fit to the data, the *Chi-squared* statistic was used, testing the extent to which residuals were equal to zero (Bollen, 1989; Jöreskog & Sörbom, 1996a, 1996b). The model's completely standardized

solution revealed that the λ_x coefficients were mostly high. This means they were reliable and also confirms the possibility of a general, second-order factor that sums up the variability in the first-order factors obtained. Confirmatory factor analysis (CFA) was again applied to assess this possibility, yielding the following goodness of

fit indices: $\chi^2 = 609.14$ ($df = 163$; $p = .01$), RMSEA = .08, GFI = .97, and AGFI = .96. In other words, they indicate the possible existence of an overarching, second-order factor that encompasses all four of the first-order factors obtained; this is referred to as the “General Achievement Goal Factor” (see Figure 1).

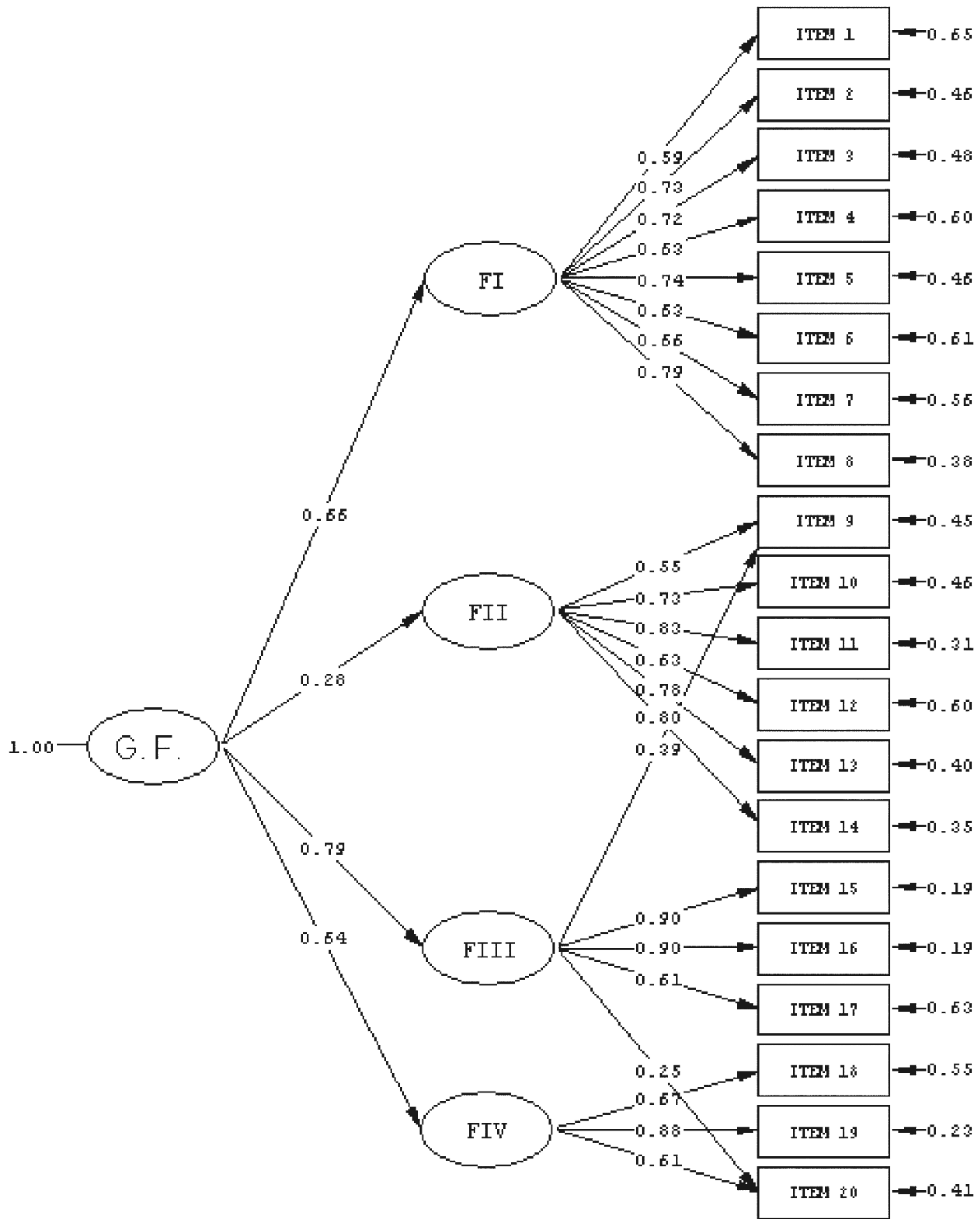


Figure 1. Diagram of General Model with Completely Standardized Solution.

Multi-group CFA

Assessing the Model in the Two Groups

Prior to analyzing invariance across groups, it is first necessary to test the initial model in sighted and visually impaired subjects separately. Evaluating the model's fit to visually impaired subjects' data yielded global goodness of fit indices of: $\chi^2(df = 163; p = .0001) = 688.47$; ECVI = 3.80; RMSEA = .085 with a 90% confidence interval from .068 to .10; GFI = .92; AGFI = .90; CFI = .94; NFI = .88; NNFI = .93; RMR = .10.

For the group comprised of sighted individuals, on the other hand, these indices were: $\chi^2(df = 163; p = .0001) = 578.29$; ECVI = 2.20; RMSEA = .052 with a 90% confidence interval from .035 to .068; GFI = .96; AGFI = .95; CFI = .98; NFI = .95; NNFI = .98; RMR = .084.

In light of these results, we can conclude that the initial model exhibits good fit in both groups when all reported goodness of fit indices are viewed in conjunction. Some of them, however, such as NFI and RMR, had values nearing the limit of what is acceptable without reaching it. Table 2 illustrates the completely standardized solution.

Once verified that the model fit both groups' data reasonably well, it was time to assess its invariance. To do so, as per the recommendations of Jöreskog (1971) regarding multi-group analysis, we went on to test the hypothesis that the structure of the variance matrix is equivalent or equal across groups. This required us to

impose the restriction that the measurement model's and structural model's parameters be equal. If we cannot reject the null hypothesis, it would imply that the factor structure of both groups must be considered.

The Factor Model's Equivalence

The structural and measurement parameters were considered equivalent in the two sub-samples; the goodness of fit indices were the following: $\chi^2 = 1,212.82$ ($p = .0001$; $df = 332$) where GFI = .95; CFI = .98; NFI = .90; NNFI = .97; and RMSEA = .054 with a confidence interval ranging from .039 to .067 (CI = 90%).

Based on these results, we accept the hypothesis that the factor model is invariable regardless of subjects' status (visually impaired or sighted)

Analysis of Profiles

In order to establish homogenous groups of subjects, thereby obtaining different subject clusters or profiles as a function of the goals they reported in the previous study, we proceeded to perform cluster analysis. We utilized a centroid-based method and Pearson's correlation as a measure, honing in on subjects' response patterns (Martínez-Arias, 1999). We constructed the clusters in terms of the various goals that surfaced in the previous study: learning goals, social reinforcement goals, academic performance goals, and success or outcome goals. This resulted in three

Table 2
Completely Standardized Solution in the Two Groups

	Sighted	Blind	Sighted	Blind	Sighted	Blind	Sighted	Blind
1.	.38	.65	—	—	—	—	—	—
2.	.65	.59	—	—	.18	.23	—	—
3.	.63	.79	—	—	—	—	—	—
4.	.71	.73	—	—	—	—	—	—
5.	.89	.73	—	—	—	—	—	—
6.	.45	.65	—	—	—	—	—	—
7.	.66	.73	—	—	—	—	—	—
8.	.84	.80	—	—	—	—	—	—
9.	—	—	.62	.44	.34	.52	—	—
10.	—	—	.90	.67	—	—	—	—
11.	—	—	.73	.93	—	—	—	—
12.	—	—	.64	.67	—	—	—	—
13.	—	—	.87	.82	—	—	—	—
14.	—	—	.88	.88	—	—	—	—
15.	—	—	—	—	.86	.91	—	—
16.	—	—	—	—	.91	.89	—	—
17.	—	—	—	—	.58	.77	—	—
18.	—	—	—	—	—	—	.60	.70
19.	—	—	—	—	—	—	.98	.90
20.	—	—	—	—	.49	.41	.42	.39
GF	.81	.89	.19	.25	.20	.29	.25	.35

distinct student profiles. The results of the ANOVA pertaining to the clustering process are displayed in Table 3, while Table 4 shows each goal's range of values and the final cluster centers.

The range of scores on each goal was used as a criterion to assess each profile's goal makeup. One hundred forty-two subjects were grouped into the first profile, characterized by high levels of learning goals, academic performance goals, and success or outcome goals, and moderate levels of social reinforcement goals. Eighty-two students fit the second profile, exhibiting high levels of academic performance goals,

success or outcome goals, and moderate levels of learning and social reinforcement goals. The third profile fit the 110 subjects presenting with low levels of social reinforcement goals and moderate levels of learning, academic performance, and success or outcome goals. Figure 2 illustrates that the first profile (cluster 1) includes subjects that emphasize learning and academic performance goals, the second profile (cluster 2) subjects that emphasize academic performance and social reinforcement goals, and the third (cluster 3) subjects characterized by a lack of emphasis on any of the four goals.

Table 3

ANOVA to Examine Variables' Relevance in the Clustering Process. A Three-cluster Solution Obtained Through K-means Clustering

	Cluster		Error		F	p
	Quadratic Mean	df	Quadratic Mean	df		
Learning Goals	4,165.43	2	19.62	331	212.26	.01
Social Reinforcement Goals	2,846.31	2	20.66	331	137.08	.01
Academic Performance Goals	930.65	2	10.69	331	87.02	.01
Success or Outcome Goals	114.28	2	6.08	331	18.80	.01

Table 4

Range of Scores by Goal and Final Cluster Centers

	Range	Cluster		
		1	2	3
Learning Goals	8 – 40	32.85	22.80	22.71
Social Reinforcement Goals	6 – 30	17.39	17.98	8.84
Academic Achievement Goals	5 – 25	22.56	21.33	17.19
Success or Outcome Goals	3 – 15	13.59	12.49	11.69

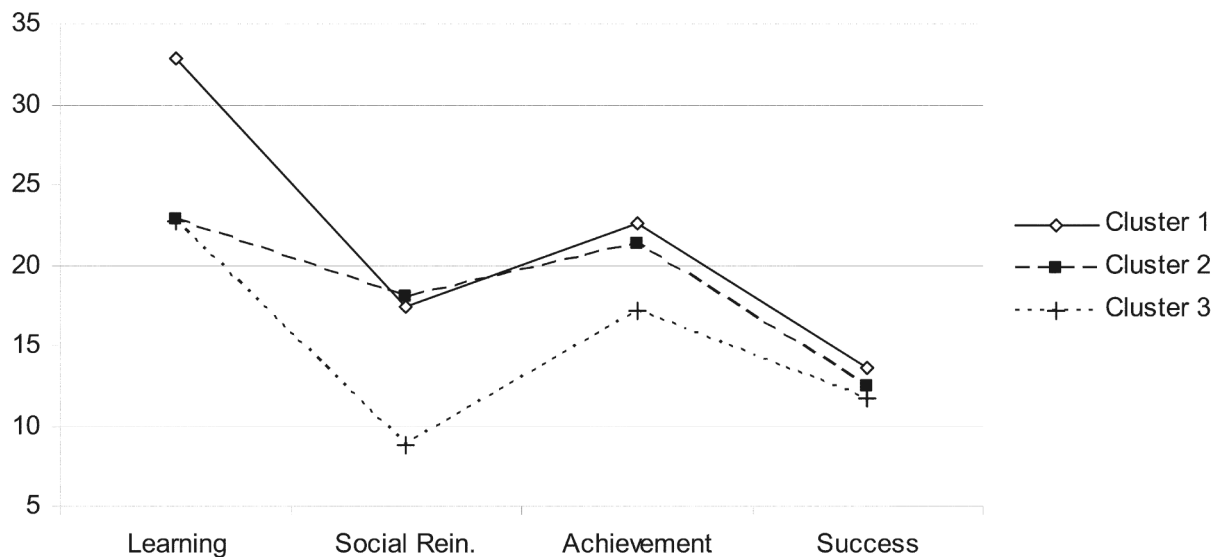


Figure 2. Different Goal Types' Cluster Centers.

Discriminant Function Analysis

Last, a discriminant function analysis was performed to determine which goal was most relevant in classifying subjects into each cluster. In doing so, belonging to a given cluster was considered the dependent variable, while each goal was considered a predictor variable. Discriminant function analysis was carried out according to subjects' status, that is, depending on whether students were visually impaired or sighted.

The upper part of Table 5 depicts sighted students' factor structure matrix. It presents each goal's factor loading and shows how differences between the three student profiles explain some portion of variance. Social reinforcement and academic performance goals were found to be the most relevant variables in the first discriminant function, while learning goals (with negative correlations) were most relevant in the second discriminant function. Visually impaired students' factor structure matrix appears in the lower part of the same table. In their case, learning and academic performance goals were found to be the most relevant variables in the first discriminant function, while social reinforcement goals were most important in the second discriminant function.

The upper portion of Table 6 presents the results of our classification of sighted students and the lower portion our

Table 5
Factor Structure Matrix

Sighted Students	Function	
	1	2
Social Reinforcement Goals	.65*	.62
Academic Achievement Goals	.41*	.22
Success or Outcome Goals	.26*	-.01
Learning Goals	.62	-.78*

Visually Impaired Students	Function	
	1	2
Learning Goals	.76*	-.64
Academic Achievement Goals	.54*	.35
Success or Outcome Goals	.20*	-.08
Social Reinforcement Goals	.47	.73*

* Highest absolute correlation between each variable and any discriminant function.

classification of visually impaired students. In the first group, the discriminant functions correctly classified 97.5% of subjects and in the second, 93%.

Table 6
Results of Classification

	Recount	Profile	Prediction of Group Belonging			
			1	2	3	Total
Sighted Students	Frequency	1	60	0	1	61
		2	3	42	0	45
		3	0	0	57	57
	Percentage	1	98.4	0	1.6	100
		2	6.7	93.3	0	100
		3	0	0	100	100
Correctly classified 97.5% of cases in their original groupings						
	Recount	Profile	Prediction of Group Belonging			
			1	2	3	Total
Visually Impaired Students	Frequency	1	80	0	1	81
		2	5	30	2	37
		3	3	1	49	53
	Percentage	1	98.8	0	1.2	100
		2	13.5	81.1	5.4	100
		3	5.7	1.9	92.5	100
Correctly classified 93% of cases in their original groupings						

Discussion

The first objective of the present research was to collect evidence as to the AGTQ's structure and establish its invariance across students with and without visual impairment. To do so, CFA was employed to test the three-factor model proposed by Hayamizu et al. (1989) and Hayamizu and Weiner (1991). The results led us to reject the null hypothesis according to which the internal structure of the present study's data was the same as the one proposed by the aforementioned, original authors.

Next, EFA and CFA were conducted to determine the scale's factor structure. The results of those analyses led us to conclude we obtained two of the three goal types detected in previous studies of sighted students (González et al., 2002; Hayamizu et al., 1989; Hayamizu & Weiner, 1991; Núñez & González-Pienda, 1994; Núñez, González-Pienda, García, González-Pumariega, & García, 1995; Valle et al., 2000), that is: learning goals and social reinforcement goals. Meanwhile, the academic advancement goals yielded in those earlier studies here were subdivided in two: academic performance goals and success or outcome goals. Their main difference lies in whether success is pursued due to short or long-term motives, respectively; this finding reiterates the results of other studies conducted in sighted students (Alonso-Tapia, 1991; Navas, Hernández, & Sampascual, 2006).

Next, by means of confirmatory factor analysis, a second-order factor was obtained (general achievement goal factor), incorporating each of the four goals mentioned above and suggesting students are able to pursue different goals simultaneously, combining them. This supports the findings of previous studies (Alonso-Tapia, Huertas, & Ruiz, 2010; Wentzel, 1999, 2000).

Our second objective was to establish motivational profiles based on academic goals. Cluster analysis was applied, yielding 3 student profiles. The first is characterized by holding a large amount of learning, academic achievement, and success or outcome goals. The second involves high levels of academic achievement and success or outcome goals. The third profile emphasizes no particular goal type. The first two profiles differ from those obtained in other studies of college students (González-Cabanach et al., 1999; Núñez et al., 2009; Valle et al., 1997), while the third seems to resemble the general, low motivational profile reported in secondary school students by Valle, Núñez, et al. (2009). It is important to consider that students in various stages of their education (elementary school through university) participated in the present study. This could explain the differences between profiles yielded in this study and in others.

Bearing in mind these analyses' results, it seems that the first profile is the most adaptive in that it favors achievement the most. It has been established that learning goals (which students with this profile highlight) lead

students to employ better cognitive strategies, learn more deeply, and use self-regulation strategies to a greater extent while studying. Furthermore, they are negatively associated with lack of task engagement (Valle, Núñez, et al., 2009; Valle, Rodríguez, et al., 2009).

Finally, our third objective was to detect potential differences between the profiles of visually impaired and sighted students. The results of discriminant function analyses indicated the variables with the highest factor loadings among visually impaired students are learning and academic performance goals. In sighted students, meanwhile, social reinforcement and academic performance goals had the strongest factor loadings. The finding that various goals are pursued at once supports the assumptions of goal content theory by showing that subjects can pursue multiple goals (Alonso-Tapia, et al., 2010; Brophy, 2005; Roberts, 2001; Valle et al., 2008; Valle, Núñez, et al., 2009; Wentzel, 1989, 1991a, 1991b, 1991c, 1993, 1996, 1999, 2000; Wentzel & Wigfield, 1998).

Statistically significant differences in learning goals were observed between the two groups. These differences may result from students with visual problems taking a greater interest in learning, that is, as long as they are able to overcome the impediments posed by their impairment and demonstrate they are capable of learning. This may reflect what Cutsforth (1966) calls a pattern of compensation. This pattern involves a personality trait characteristic of the visually impaired, where, in the spirit of reinforcing their self-concept, they try to demonstrate to others and to themselves that their visual impairment does not imply any sort of inadequacy. The tenor of our results suggests that in doing so, they adopt learning and academic performance goals. Furthermore, this provides empirical support for the convergent validity of the results of factor analyses (exploratory and confirmatory). Subjects are classified into one of these three profiles as a function of goals that seem to differ depending on their status.

Evidently, the results indicate visually impaired students differ from sighted students in that they hold more learning-oriented academic goals. It is perhaps for this reason, because blind students are more learning-oriented, that in prior studies (Ochaita et al., 1988; Pozo et al., 1985), differences between sighted and blind students in terms of intellectual development and achievement in problem-solving did not occur. That is not, however, to understate language's developmental role in the blind (Ochaita et al., 1988).

Finally, it is important to bear in mind that the present study has certain limitations that could be addressed in future research. First of all, while sample size is among this study's strengths, its limited age range makes it overly homogenous, bearing on the generalizability of our results. Conversely, sex and age could also have contributed systematic variability to the results, which future studies ought to analyze by means of multi-group and bias analysis.

References

- Alonso-Tapia, J. (1991). *Motivación y aprendizaje en el aula. Cómo enseñar a pensar* [Motivation and learning in the classroom. Teaching to learn]. Madrid, Spain: Santillana.
- 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*, 232–243.
- Atkinson, J. W. (1987). Michigan studies of fear of failure. In F. Halisch, & J. Kuhl (Eds.), *Motivation, intention and volition* (pp. 47–60). Berlin, Germany: Springer.
- Bollen, K. (1989). *Structural equations with latent variables*. New York, NY: John Wiley.
- Brophy, J. (2005). Goal theorists should move on from performance goals. *Educational Psychologist, 40*, 167–176. http://dx.doi.org/10.1207/s15326985ep4003_3
- Cantalejo, J. J. (2000). Entrenamiento en habilidades de autonomía personal [Personal autonomy skills training]. In M. R. Villalba (Dir.), *Aspectos evolutivos y educativos de la deficiencia visual, Vol. II* [Developmental and educational aspects of visual impairment, Vol. II] (pp. 103–141). Madrid, Spain: ONCE.
- Covington, M. V. (2000). Goal theory, motivation, and school achievement: An integrative review. *Annual Review of Psychology, 51*, 171–200. <http://dx.doi.org/10.1146/annurev.psych.51.1.171>
- Cruickshank, W. M. (1986). *Disputable decisions in special education*. Ann Arbor, MI: University of Michigan Press.
- Cutsforth, T. D. (1966). Personality and social adjustment among the blind. *American Foundation for the Blind Research Bulletin, 12*, 53–57.
- Durán, J. M. (2000). Recursos materiales y adaptaciones específicas [Material resources and specific adaptations]. In M. R. Villalba (Dir.), *Aspectos evolutivos y educativos de la deficiencia visual, Vol. II* [Developmental and educational aspects of visual impairment, Vol. II] (pp. 347–446). Madrid, Spain: ONCE.
- Dweck, C. S. (1986). Motivational processes affecting learning. *American Psychologist, 41*, 1040–1048. <http://dx.doi.org/10.1037/0003-066X.41.10.1040>
- González, A. (2005). *Motivación académica. Teoría, aplicación y evaluación* [Academic motivation. Theory, application and assessment]. Madrid, Spain: Pirámide.
- González, A. (2008). Las metas y el futuro: Su importancia para la motivación académica [Goals and the future: Their importance to academic motivation]. *Revista de Psicología General y Aplicada, 61*, 285–299.
- González, C., Torregrosa, G., & Navas, L. (2002). Un análisis de las metas en situación de aprendizaje para el alumnado de primaria y secundaria obligatoria [An analysis of goals in learning situations among elementary and obligatory secondary school students]. *Revista Española de Orientación y Psicopedagogía, 13*, 69–87.
- González-Cabanach, R., Valle, A., Piñero, I., Rodríguez, S., & Núñez, J. C. (1999). El ajuste de los estudiantes con múltiples metas a variables significativas del contexto académico [How students with multiple goals exhibit variables that are meaningful in academic contexts]. *Psicothema, 11*, 313–323.
- Haring, N. C., & Schiefelbusch, R. L. (1967). *Methods in special education*. New York, NY: McGraw-Hill.
- Hayamizu, T., Ito, A., & Yohiazaki, K. (1989). Cognitive motivational processes mediated by achievement goal tendencies. *Japanese Psychological Research, 31*, 179–189.
- Hayamizu, T., & Weiner, B. (1991). A test of Deweck's model of achievement goals as related to perceptions of ability. *Journal of Experimental Education, 59*, 226–234.
- Holgado, F. P., Moscoso, S., Barbero, I., & Vila, E. (2010). Polychoric versus Pearson correlations in exploratory and confirmatory factor analysis of ordinal variables. *Quality and Quantity. The International Journal of Methodology, 44*, 153–166. <http://dx.doi.org/10.1007/s11135-008-9190-y>
- Jöreskog (1971). Simultaneous factor analysis in several populations. *Psychometrika, 36*, 409–426. <http://dx.doi.org/10.1007/BF02291366>
- Jöreskog, K. G., & Sörbom, D. (1996a). *LISREL 8: User's Reference Guide*. Chicago, IL: Scientific Software International.
- Jöreskog, K. G., & Sörbom, D. (1996b). *PRELIS 2: User's Reference Guide*. Chicago, IL: Scientific Software International.
- Jover, I. (2009). *Las metas académicas: Análisis comparativo entre estudiantes videntes y estudiantes con deficiencia visual*. [Academic goals: An analysis comparing sighted and visually impaired students]. (Unpublished doctoral dissertation). Universidad de Alicante, Spain.
- Jover, I., Navas, L., & Sampascual, G. (2008). Metas académicas en alumnos con ceguera y deficiencia visual [Academic goals in blind and visually impaired students]. *Revista Española de Pedagogía, 239*, 49–63.
- Jover, I., Navas, L., & Sampascual, G. (2009). Los estudiantes con discapacidad visual y sus metas académicas [Visually impaired students and their academic goals]. *INFAD Revista de Psicología. International Journal of Development and Educational Psychology, 3*, 203–210.
- Kelly, R. R. (1987). Computers and sensory impaired individuals. In J. D. Lindsey (Ed.), *Computers and exceptional individuals* (pp. 125–146). Englewood Cliffs, NJ: Merrill/Prentice Hall.
- Martín-Blas, A. (2000). El aprendizaje del sistema Braille [Learning the Braille system]. In M. R. Villalba (Dir.), *Aspectos evolutivos y educativos de la deficiencia visual* [Developmental and educational aspects of visual impairment] (Vol. II, pp. 27–62). Madrid, Spain: ONCE.
- Martínez-Arias, R. (1999). *El análisis multivariante en la investigación científica* [Multivariate analysis in scientific research]. Madrid, Spain: La Muralla.
- McClelland, D. C. (1965). Toward a theory of motive acquisition. *American Psychologist, 20*, 321–333. <http://dx.doi.org/10.1037/h0022225>
- Molden, D. C., & Dweck, C. S. (2000). Meaning and motivation. In C. Sansone & J. M. Harackiewicz (Eds.), *Intrinsic and*

- extrinsic motivation and performance*. London, England: Academic Press.
- Navas, L., & Castejón, J. L. (2009). Deficiencia visual [Visual impairment]. In J. L. Castejón & L. Navas (Eds.), *Unas bases psicológicas de la educación especial* [Psychological foundations of special education] (pp. 187-209). Alicante, Spain: ECU.
- Navas, L., Hernández, A., & Sampascual, G. (2006, April). *Las metas de los adolescentes en clase de Educación física: ¿Académicas o deportivas?* [Adolescents' goals in physical education class: Academic or athletic?]. Paper presented at the 13th Congress on Child and Adolescent Psychology. Bilbao, Spain.
- Núñez, J. C., & González-Pienda, J. A. (1994). *Determinantes del rendimiento académico* [Determinants of academic achievement]. Oviedo, Spain: Servicio de Publicaciones de la Universidad de Oviedo.
- Núñez, J. C., González-Pienda, J. A., García, M. S., González-Pumariega, & García, S. I. (1995). Estrategias de aprendizaje en estudiantes de 10 a 14 años y su relación con los procesos de atribución causal, el autoconcepto y las metas de estudio [Learning strategies in students 10 to 14 years-old and how they relate to processes involved in causal attribution, self-concept, and educational goals]. *Revista Galega de Psicopedagogía*, *10-11*, 219-242.
- Núñez, J. C., Valle, A., Cabanach, R. G., González-Pienda, J. A., Rodríguez, S., Muñoz-Cadavid, M. A., & Rosario, P. (2009). Perfiles motivacionales en estudiantes universitarios [College students' motivational profiles]. *Revista de Psicología y Educación*, *1*, 15-30.
- Núñez, M. A. (2000). El desarrollo psicológico del niño ciego. Aspectos diferenciales [Psychological development in blind children. Differential aspects]. In M. R. Villalba (Dir.), *Aspectos evolutivos y educativos de la deficiencia visual* [Developmental and educational aspects of visual impairment]. (Vol. I, pp.63-130). Madrid, Spain: ONCE.
- Ochaíta, E., Rosa, A., Huertas, J. A., Fernández, E., Asensio, M., Pozo, J. I., & Martínez, C. (1988). *Aspectos cognitivos del desarrollo psicológico de los ciegos (II)* [Cognitive aspects of psychological development in the blind (II)]. Madrid, Spain: CIDE.
- Pozo, J. I., Carretero, M., Rosa, A., & Ochaíta, E. (1985). El desarrollo del pensamiento formal en los adolescentes invidentes: Datos para una polémica [The development of formal thought in blind adolescents: Contraversial data]. *Revista de Psicología General y Aplicada*, *40*, 369-394.
- Roberts, G. C. (2001). Understanding the dynamics of motivation in physical activity: The influence of achievement goals on motivational processes. In G. C. Roberts (Ed.), *Advances in motivation in sport and exercise* (pp. 1-50). Champaign, IL: Human Kinetics.
- Tood, J. H. (1986). Resources, media, and technology. In G. T. Scholl (Ed.), *Foundations of education for blind and visually handicapped children and youth: Theory and practice* (pp. 285-296). New York, NY: American Foundation for the Blind.
- Valle, A., González-Cabanach, R., Cuevas, L. M., & Núñez, J. C. (1997). Patrones motivacionales en estudiantes universitarios: Características diferenciales [Motivational patterns in college students: Differential characteristics]. *Revista de Investigación Educativa*, *15*, 125-146.
- Valle, A., González-Cabanach, R., Núñez, J. C., Suárez, J. M., Piñeiro, I., & Rodríguez, S. (2000). Enfoques de aprendizaje en estudiantes universitarios [Learning focuses in college students]. *Psicothema*, *12*, 368-375.
- Valle, A., Núñez, J. C., González-Cabanach, R., Rodríguez, S., González-Pienda, J. A., & Rosario, P. (2009). Perfiles motivacionales en estudiantes de secundaria: Análisis diferencial en estrategias cognitivas, estrategias de autorregulación y rendimiento académico [Secondary school students' motivational profiles: Differential analysis of cognitive strategies, self-regulation strategies, and academic performance]. *Revista Mexicana de Psicología*, *26*, 113-124.
- Valle, A., Núñez, J. C., González-Cabanach, R., Rodríguez, S., González-Pienda, J. A., & Rosário, P. (2008). Capacidad predictiva de las metas académicas sobre el rendimiento en diferentes áreas curriculares [Academic goals' capacity to predict achievement in different academic areas]. *Revista Latinoamericana de Psicología*, *40*, 111-122.
- Valle, A., Rodríguez, S., Cabanach, R. G., Núñez, J. C., González-Pienda, J. A., & Rosário, P. (2009). Metas académicas: Perspectiva histórica y conceptual e implicaciones educativas [Academic goals: A historical and conceptual perspective and educational implications]. *Electronic Journal of Research in Educational Psychology*, *7*, 1073-1106.
- Wentzel, K. R. (1989). Adolescent classroom goals, standards for performance, and academic achievement: An interactionist perspective. *Journal of Educational Psychology*, *81*, 131-142. <http://dx.doi.org/10.1037//0022-0663.81.2.131>
- Wentzel, K. R. (1991a). Relations between social competence and academic achievement in early adolescence. *Child Development*, *62*, 1066-1078. <http://dx.doi.org/10.2307/1131152>
- Wentzel, K. R. (1991b). Social and academic goals at school: Motivation and achievement in context. In M. L. Maehr & P. R. Pintrich (Eds.), *Advances in motivation and achievement: Goals and self-regulatory processes* (pp. 185-212). Greenwich, CT: JAI Press.
- Wentzel, K. R. (1991c). Social competence at school: Relation between social responsibility and academic achievement. *Review of Educational Research*, *61*, 1-24. <http://dx.doi.org/10.2307/1170665>
- Wentzel, K. R. (1993). Social and academic goals at school. Motivation and achievement in early adolescence. *Journal of Early Adolescence*, *13*, 4-20.
- Wentzel, K. R. (1996). Motivation in context: Social relationships and achievement in middle school. In J. Juvonen & K. R. Wentzel (Eds.), *Social Motivation: Understanding children's school adjustment* (pp. 226-247). New York, NY: Cambridge University Press.

- Wentzel, K. R. (1999). Social-motivational processes and interpersonal relationships: Implications for understanding motivation at school. *Journal of Educational Psychology, 91*, 76–97. <http://dx.doi.org/10.1037/0022-0663.91.1.76>
- Wentzel, K. R. (2000). What is it that I'm trying to achieve? Classroom goals from a content perspective. *Contemporary Educational Psychology, 25*, 105–115. <http://dx.doi.org/10.1006/ceps.1999.1021>
- Wentzel, K. R., & Wigfield, A. (1998). Academic and social motivational influences on students' academic performance. *Educational Psychology Review, 10*, 155–175.

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