

Sociometric types and academic self-concept in adolescents

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Abstract

Background: The aim of this study was to analyze the relationship between sociometric types, behavioral categories, and academic self-concept in a sample of 1,349 (51.7% boys) Spanish adolescents, ranging in age from 12 to 16 years. **Method:** The students' sociometric nomination was performed using the *Programa Socio* (Partner Program), and academic self-concept was measured with the *Self Description Questionnaire* (SDQ-II; Marsh, 1992). **Results:** Results show that academic self-concept was a significant predictor of sociometric types and behavioral categories, as students with high scores on academic self-concept were more likely to be positively rated by their peers (popular, leaders, collaborators and good students) than students with low scores on student academic self-concept. **Conclusions:** These results reinforce the emphasis on academic self-concept research and its relevance to educational practice.

Keywords: Adolescence, sociometric types, academic self-concept, secondary education.

Resumen

Tipos sociométricos y autoconcepto académico en adolescentes.

Antecedentes: el objetivo de este estudio fue analizar la relación entre tipos sociométricos, categorías conductuales y autoconcepto académico (Matemático, Verbal y General) en una muestra de 1.349 (51,7% varones) adolescentes españoles de 12 a 16 años. **Método:** la identificación sociométrica de los estudiantes se realizó mediante el *Programa Socio* y para el análisis del autoconcepto académico se administró el *Self Description Questionnaire* (SDQ-II; Marsh, 1992). **Resultados:** los resultados muestran que el autoconcepto académico resultó una variable predictora significativa de los tipos sociométricos y categorías conductuales, puesto que los estudiantes con altas puntuaciones en las dimensiones del auto-concepto académico presentaron mayor probabilidad de ser nominados positivamente por sus compañeros (populares, líderes, colaboradores y buenos estudiantes) que los estudiantes con bajas puntuaciones en autoconcepto académico. **Conclusiones:** estos resultados confirman la importancia concedida al autoconcepto académico en la investigación y su relevancia en la práctica educativa.

Palabras clave: adolescencia, tipos sociométricos, autoconcepto académico, educación secundaria.

There is no doubt about the importance of peer social interactions, as they are ideal informers of the behavior of classmates, allowing the observation of situations that only occur in the context of peer relations (Martínez-Arias, Martín, & Díaz-Aguado, 2009).

Sociometric techniques assess relationships between classmates, with high validity and in a short time, providing information about the level of adaptation of all the children and the contexts in which they develop (Martínez-Arias et al., 2009).

Popularity and sociometric status in the peer group have been studied with regard to psychosocial adjustment (e.g., Ato, Galián, & Fernández-Villar, 2014), school adaptation (e.g., Martín, 2011) and self-concept. Accordingly, prior empirical evidence in foreign and Spanish populations clearly underlines the existing relationship between self-concept and social acceptance (e.g.,

Donders & Verschueren, 2004; McElhaney, Antonishak, & Allen, 2008; Mpofo & Thomas, 2006).

Garaigordobil et al. (2003) analyzed the relationships between self-concept and various personality factors in a sample of 174 Spanish adolescents. The correlational analyses showed that adolescents with high global self-concept presented self-control, leadership, prosocial, assertive, and self-assertive behaviors, few behaviors of social anxiety-shyness and withdrawal, a good level of social adjustment, few academic, psychopathological, psychosomatic, or anxiety problems, few irrational beliefs, a low level of state-trait anxiety and impulsivity, and they had many choices of friends and prosocial classmates and few rejections.

In a similar vein, Donders and Verschueren (2004) analyzed the relation between positive self-concept and social acceptance in a sample of 164 Norwegian children aged 9 to 12 years, concluding that peer acceptance is related to self-esteem and feelings of social acceptance.

The study by Mpofo and Thomas (2006) analyzed the relation between self-concept and social competence in a sample of 372 adolescents in Zimbabwe, using a multidimensional measure of self-concept and different sociometric measures to assess social competence. The results showed a positive and significant

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relation between high scores in self-concept and higher social competence.

Years later, the study of McElhaney et al. (2008) analyzed the relation between self-perception of social acceptance and sociometric popularity status in a sample of 164 adolescents from the USA, aged between 13 and 14. The results revealed that the adolescents who felt positively about their social acceptance presented a high popularity index.

Lastly, the investigation of Piciullo (2010) also showed the relation between parents' perceptions of academic achievement, academic self-concept, school adjustment, teacher-student relation, peer relations, and academic achievement in a sample of adolescents from the USA. The results showed that academic self-concept was the most powerful predictor of academic achievement, along with peer rejection.

Although prior empirical evidence has revealed some parallelism between diverse cognitive-motivational variables involved in the academic and social areas (for example, academic self-concept and social status), such that success or failure in the academic context tends to covary with success or failure in the social context and vice versa (Chen, Chang, & He, 2003), there is a lack of research that specifically examines the relation between the academic dimensions of self-concept and sociometric types in Spanish adolescents in Compulsory Secondary Education.

Therefore, this work aims to provide new data to research the relation between sociometric types and the academic dimensions of self-concept in Spanish students, expanding the number of sociometric types examined (popular-preferred, rejected-aggressive, rejected-shy, and ignored-forgotten) and behavioral categories that may appear within a contained classroom (leader, nice, collaborator, quarrelsome, obedient, and good student).

Accordingly and, contrary to previous studies that analyze the relation between variables by means of correlations and differences of means, we used binary logistic regression to explain or predict variables, and analysis of differences of means to estimate the effect size of the magnitudes. An aspect that does not seem to have been analyzed previously is the relation between academic self-concept and the different behavioral categories that may appear within the classroom, such as leader, nice, collaborator, quarrelsome, obedient, and good student. Likewise, the categorization of rejected-aggressive and rejected-shy provides new evidence of the self-concept profiles that rejected students may present as a function of their social interaction style.

Specifically, the present study has the following goals: (a) to analyze the differences in the *Mathematical*, *Verbal* and *General* academic dimensions of Spanish adolescents' self-concept as a function of the above-mentioned sociometric types and behavioral categories; and (b) to confirm whether academic self-concept is a predictive and statistically significant variable of the sociometric types and behavioral categories.

Method

Participants

Random cluster sampling was carried out (geographical areas of the Region of Murcia and the province of Alicante: center, north, south, east, and west). In order to ensure that all the geographic areas were represented, we randomly selected between 1 and 3 schools per area depending on the population, computing a total

of 20 rural and urban areas (14 public and 6 private schools). After selecting the schools of the study, we randomly selected four classrooms, calculating about 120 subjects per school.

A total of 1594 students participated in this work, from 1st to 4th grade of Compulsory Secondary Education (CSE) with a sampling error of .02. Of these students, 76 (4.77%) were excluded because of errors or omissions in their responses, 40 (2.51%) were excluded because they did not obtain their parents' informed consent to participate in the investigation, and 129 (8.09%) were excluded because they were aliens with important deficits in the Spanish language. Therefore, the final sample was made up of 1349 students (697 boys and 652 girls), with an age range of 12 to 16 years ($M = 13.81$, $SD = 1.35$). Of them, 86.30% were not repeating the course. The ethnic composition of the sample was: 88.9% Spaniards, 6.34% Latin American, 3.37% rest of Europe, .75 Asian, and .64% Arab. The distribution of the subjects by sex and academic year was as follows: 386 in 1st grade of CSE (203 boys and 183 girls), 325 in 2nd grade of CSE (173 boys and 152 girls), 318 in 3rd grade of CSE (172 boys and 146 girls), and 320 in 4th grade of CSE (149 boys and 171 girls). Using the chi-square test to confirm the homogeneous distribution of frequencies, we confirmed that there were no statistically significant differences among the eight groups by Sex x Grade, $\chi^2_{(3, 1349)} = 4.53$, $p = .21$.

Instruments

Sociometric Nomination Test

The sociometric test is an instrument that reveals group structure and shows how individuals interact within groups, identifying preferred, rejected, and ignored people, as well as leaders, and cooperative and conflictive people, etc. The sociometric nomination method is based on the measurement of attraction and repulsion toward the members of a group (Moreno, 1934), identified from the choices and rejections reported by the students, who are classified by the dimensions of social preference and social impact, proposed by Peery (1979). Taking into account these two orthogonal dimensions and by means of technical statistical, the subjects can be identified as preferred, rejected, ignored, controversial, and average.

This work focused on the analysis of preferred-popular, rejected (rejected-aggressive and rejected-shy), and ignored-forgotten subjects because they include the largest number of students and, at the same time, they represent the best (preferred) and worst (rejected and ignored) social adaptation in the academic context (García-Bacete, 2007).

The sociometric identification of the students was carried out by means of the "*Programa Socio*" (González, 1990), which provides the upper and lower limits of positive and negative nominations received for a group or class of students. This procedure obtained high discriminant validity in students of 4th grade of Primary Education, finding an 80% agreement between behavioral and sociometric identification (García-Bacete, 2006).

In addition, we analyzed the different behavioral categories that may emerge within a social group: leader, nice, collaborator, quarrelsome, obedient, and good student. We used the probabilistic nomination procedure with three inter-gender choices, considered the most adequate and precise of the sociometric nomination tests (García-Bacete, 2007).

Self-Description Questionnaire-II, (SDQ-II; Marsh, 1992)

The SDQ-II is an 102-item instrument designed to assess the self-concept of adolescents aged 12 to 18 years on three academic scales (Mathematical, Verbal and General) and eight non-academic scales (Relation with parents, Physical Skill, Physical appearance, Relation with people of the same sex, Relation with people of the opposite sex, Emotional stability, Sincerity-Truthfulness and Self-esteem). The items are rated on a 6-point response scale, ranging from 1 (*false*) to 6 (*true*), and each scale contains 8 or 10 items. High scores indicate a high self-concept in each area, whereas low scores indicate a low self-concept in that area. The present study focused on the relation of the three academic scales with the different sociometric types and behavioral categories.

The Spanish adaptation of the SDQ-II was performed by Inglés et al. (2012) in a representative sample of Spanish adolescents. These authors replicated the structure of 11 correlated first-order factors, supporting the structure proposed by Marsh (1992). The results also indicated that the scores of the Spanish version of the SDQ-II had estimates of internal consistency and test-retest reliability within an acceptable range. The Cronbach alpha coefficients found in the sample of this study for the academic dimensions of the *SDQ-II* were: .94 (Mathematical), .86 (Verbal), and .92 (General).

Procedure

First, the headmasters and guidance counselors of the schools were interviewed to present the goals of the investigation, describe the assessment instruments, request permission, and promote their collaboration. Subsequently, a meeting was held with the parents of the participants to explain the study and request their explicit informed consent, authorizing their children to participate in the investigation.

The questionnaires were completed collectively and voluntarily in the classroom, previously assigning an identification number to the response sheets delivered to each adolescent, which were subsequently corrected by computer. 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 and verify the independent administration by the participants.

Data analysis

The sociometric identification of the students was carried out by means of the *Partner Program* (González, 1990) which provides lower and upper limits of the positive nominations received [LL (Np) and UL (Np)] and the negative nominations received [LL (Nn) and UL (Nn)] for a group of students. These limits are obtained by calculating the binomial probability to determine the t-test value associated with a certain skewness and level of probability < .05 (Salvosa's tables). Identification is achieved by the following criteria: Preferred = Np ≥ LS (Np) and Nn < M (Nn), Rejected = Nn ≥ LS (Nn) and Np < M (Np), and Ignored = Np ≤ 1 and Nn < M (Nn).

In order to analyze the relation between the sociometric types and the academic dimensions of self-concept, we performed analysis of differences of means to determine possible differences between students belonging to a category and those who do not (e.g., popular vs. unpopular) and analysis of variance (*ANOVA*) to assess the inter-category differences in self-concept. To identify between

which categories differences were produced, we performed *post hoc* comparisons for homogeneous variances (Scheffé's test).

Due to the large sample size of the study, Student *t*-tests and the *F*-ratio could incorrectly detect statistically significant differences. Therefore, we included the *d* index (mean standardized difference) proposed by Cohen (1988), which estimates the magnitude or effect size of the differences found. The interpretation of the effect size is simple: values lower than or equal to 0.20 indicate a very small or nonsignificant effect size; values between 0.20 and 0.49 indicate a small effect size; values between 0.50 and 0.79 indicate a moderate effect size; and values higher than 0.80 indicate a large effect size.

The establishment of predictor equations from the sociometric types was done by means of forward stepwise logistic regression, based on the Wald statistic because the variables assessed in the study are categorical and do not comply with the assumptions of the general linear model. We used Nagelkerke's *R*² to assess the fit of the models. Logistic regression analysis presents the coefficients of each variable in the regression equation and the statistics achieved by the models when classifying subjects as a function of their group (e.g., popular, rejected-aggressive, rejected-shy, ignored, leader, nice, collaborator, quarrelsome, obedient, and good student). Logistic modeling estimates the probability of the occurrence on an event or outcome (e.g., rejected aggressive sociometric type) versus its non-occurrence, in the presence of one or more predictors (e.g., low General Academic Self-concept).

This probability is estimated through the *odds ratio* (OR) statistic, whose interpretation is: OR > 1 indicates that the probability of event occurrence increases in the presence of this variable; OR < 1 indicates that the probability of event occurrence decreases when the variable is present; values approaching 1 indicate that this variable exerts little or no influence on the prediction of the event (De Maris, 2003).

*Results**Sociometric types, behavioral categories, and academic self-concept*

Table 1 presents the differences between students as a function of the sociometric types and behavioral categories in relation to academic self-concept (*Mathematical, Verbal and General*).

The results showed significantly higher mean scores in Mathematical Academic Self-concept in the group of non-rejected-shy students versus the rejected-shy students, in the group of not-ignored versus the ignored, in the group of leaders versus non-leaders, in the group of collaborators versus non-collaborators, and in the group of good students versus poor students. The effect size of these differences was small in all cases ($d < 0.50$), except for the groups of collaborators and good students, where the effect size was moderate ($d \geq 0.50$). However, we found significantly higher mean scores in Verbal Academic Self-concept in the group of leaders versus non-leaders, in collaborators versus non-collaborators, in the group of non-quarrelsome students versus the quarrelsome ones, and in the group of good students versus poor students. The effect sizes of these differences they were moderate ($d \geq 0.50$) in the groups of collaborators and good students, and small ($d < 0.50$) in the groups of leaders and non-quarrelsome students. Lastly, we found significantly higher scores in General Academic Self-concept in the group of popular students versus unpopular students, in the non-rejected-aggressive students versus

the rejected-aggressive ones, in the non-rejected-shy students versus the rejected-shy ones, in the group of leaders versus non-leaders, in the group of collaborators versus non-collaborators, in the non-quarrelsome students versus the quarrelsome ones, and in the group of good students versus poor students. The effect size of these differences was small ($d < 0.50$) in the groups of popular, rejected-shy, leaders, and collaborators. In the group of rejected-aggressive students, the effect size of this difference was moderate ($d \geq 0.50$), and in the group of collaborators and good students, the magnitude of these differences was large ($d \geq 0.80$).

The ANOVA shows that, regarding the Mathematical Academic Self-concept, the group of good students obtained significantly higher mean scores than the group of leaders ($p < .05$), with a large effect size ($d \geq 0.80$) and than the obedient students ($p < .05$), with a moderate effect size ($d \geq 0.50$). With regard to the Verbal Academic Self-concept, the group of collaborators presented significantly higher mean scores than the groups of nice students, leaders, and quarrelsome students ($p < .05$), with a moderate effect size in all cases ($d \geq 0.50$). With regard to the General Academic Self-concept, the group of popular students presented significantly higher mean scores than the rejected-aggressive ($p < .05$) and rejected-shy students ($p < .05$), with a moderate effect size ($d \geq 0.50$). In addition, the group of collaborators presented significantly higher mean scores than the groups of nice and obedient students ($p < .05$), with a moderate effect size of the differences ($d \geq 0.50$), and also significantly higher mean scores than the groups of leaders and quarrelsome students ($p < .05$), with a large effect size ($d \geq 0.80$). The group of good students presented significantly higher mean scores than the groups of nice students, leaders, obedient, and quarrelsome students ($p < .05$), with a large effect size in all cases ($d \geq 0.80$).

Prediction sociometric types and behavioral characteristics

The binary logistic regression analysis showed that academic self-concept was a statistically significant predictor of the sociometric types and the behavioral categories.

On the basis of the sample analyzed, we created eight logistic models that predicted the probability of being chosen as popular, rejected-aggressive, rejected-shy, ignored, leader, collaborator, quarrelsome, and good student through the dimensions of the academic self-concept. Thus, the academic dimensions of the self-concept (*Mathematical, Verbal and General*) were included as predictor variables in all the logistic models created, although not all of them were significant.

The proportion of cases correctly classified by the logistic models varied as a function of the sociometric type analyzed. Thus, the model that identified popular students correctly estimated 85.1% of the cases (Nagelkerke's $R^2 = .01$), the model that identified rejected-aggressive students correctly estimated 97.4% of the cases (Nagelkerke's $R^2 = .04$), the model that identified rejected-shy students estimated 98.4% of the cases (Nagelkerke's $R^2 = .02$) and the model that identified ignored students estimated 94.9% of the cases (Nagelkerke's $R^2 = .01$).

Regarding the behavioral categories, the model that identified leaders correctly estimated 73.8% of the cases (Nagelkerke's $R^2 = .02$), the model that identified collaborators estimated 77.2% of the cases (Nagelkerke's $R^2 = .25$), the model that identified quarrelsome students estimated 74.4% of the cases (Nagelkerke's $R^2 = .04$), and the model that identified good students estimated 78.5% of the cases (Nagelkerke's $R^2 = .30$).

The OR of the logistic models for the prediction of the sociometric types (see Table 2) showed that: (a) for each point of

Table 1
Differences in students' scores of academic self-concept as a function of sociometric types and behavioral categories

Sociometric type	Academic Mathematical Self-concept		Statistical significance and magnitude of the differences			Academic Verbal Self-concept		Statistical significance and magnitude of the differences			Academic General Self-concept		Statistical significance and magnitude of the differences		
	M	(SD)	t	p	d	M	(SD)	t	p	d	M	(SD)	t	p	d
Unpopular	33.63	13.05				38.79	10.23				41.25	10.85			
Popular	33.30	12.56	.34	.73	-	39.75	9.92	-1.23	.21	-	43.08	11.39	-2.18	.02	-0.17
Non-Rejected-aggressive	33.68	12.94				38.98	10.20				41.69	10.87			
Rejected-aggressive	29.92	14.12	1.69	.09	-	37.39	9.75	.91	.36	-	35.33	12.28	3.40	.00	0.58
Non-Rejected-shy	33.67	12.98				38.99	10.18				41.61	10.93			
Rejected-shy	28.01	11.56	2.03	.04	0.44	35.60	9.89	1.55	.12	-	36.43	11.43	2.20	.02	0.47
Not ignored	33.75	12.96				38.93	10.23				41.60	11.02			
Ignored	30.55	13.06	1.99	.04	0.25	39.01	9.43	-0.06	.94	-	40.20	9.50	1.03	.30	-
Non-Leader	33.31	12.70				38.28	10.02				41.04	10.62			
Leader	35.29	13.23	-2.37	.01	-0.15	40.68	10.45	-3.64	.00	-0.24	43.64	11.40	-3.69	.00	-0.24
Not Nice	33.85	13.25				39.10	10.20				41.96	10.77			
Nice	33.81	11.96	.04	.96	-	38.45	10.03	1.00	.31	-	40.97	11.24	1.41	.15	-
Non-Collaborator	31.72	12.54				37.26	9.93				39.24	10.43			
Collaborator	38.72	12.59	-8.54	.00	-0.56	43.84	9.27	-10.34	.00	-0.67	48.81	8.73	-14.66	.00	-0.96
Non-quarrelsome	33.94	13.12				39.79	10.03				42.74	10.84			
Quarrelsome	33.73	12.63	.23	.81	-	36.88	10.37	4.36	.00	0.47	38.91	10.73	5.39	.00	0.35
Disobedient	33.87	13.12				38.93	10.22				41.73	11.05			
Obedient	33.33	12.39	.65	.51	-	38.74	10.08	.28	.78	-	41.31	10.60	.59	.55	-
Poor student	31.88	12.77				37.19	9.90				38.91	10.43			
Good student	39.39	11.88	-9.16	.00	-0.60	44.07	9.12	-10.87	.00	-0.71	49.84	7.63	-17.09	.00	-1.12

increase in Mathematical Academic Self-concept, the students were 2% less likely to be rated as ignored and 2% more likely to be rated as collaborators and quarrelsome; (b) for each point of increase in Verbal Academic Self-concept, the students were 3% more likely to be rated as collaborators; and c) for each point of increase in General Academic Self-concept, the students were 2% more likely to be rated as popular, 5% less likely to be rated as rejected-aggressive, 4% less likely to be rated as rejected-shy and quarrelsome, and 3, 9, and 14% more likely to be rated as leaders, collaborators, and good students, respectively.

Discussion

The results of this study reveal statistically significant differences between the academic dimensions of the self-concept and the sociometric types and behavioral categories because the students positively rated by their classmates (popular, leaders, collaborators and good students) presented significantly higher scores in the dimensions of academic self-concept, thereby confirming the first goal of this study. These results are consistent with the findings of previous studies in foreign and Spanish population, which highlight the relation between self-concept and social acceptance (Donders & Verschuere, 2004; Garaigordobil et al., 2003; González-Pianda et al., 2002; McElhaney et al., 2008). In addition, the analysis of variance carried out revealed statistically significant differences in some academic dimensions of self-concept as a function of sociometric types and behavioral categories. The effect sizes proposed by Cohen (1988) confirmed that the magnitude of the differences found was moderate and large in most cases.

With regard to the second goal, academic self-concept was found to be a significant predictor of sociometric types because, as the scores in the academic dimensions of the self-concept

(Mathematical, Verbal, and General) increase, the students are more likely to be rated positively by their classmates (as popular, leaders, collaborators, and good students) and less likely to be rated negatively (as rejected-aggressive, rejected-shy, ignored, and quarrelsome).

This investigation is not without limitations. Future research should confirm whether the results found in Compulsory Secondary Education differ or are maintained at other educational levels, and in other cultures and ethnic groups. It would be inappropriate to establish generalizations of the findings to Spanish students of Compulsory Secondary Education diagnosed with learning or psychopathological disorders, aspects that can clearly alter their social and academic behavior. It would be interesting for future works to include different sources of assessment of social behavior (self-reports, academic staff) to analyze inter-source agreement. It would also be relevant to use longitudinal designs in order to provide more conclusive data of the influence among these variables, as analysis of variance and logistic regression are not predictive statistical techniques but analyze instead the relation between constructs at a certain time point, not the causality between them. Lastly, in the present study, we proposed to determine the capacity of the academic dimensions of the self-concept to predict sociometric types and behavioral characteristics and not vice versa. Although it is logical to think is that there is a reciprocal effect, future research could analyze this issue by developing two structural equation models to determine which hypothesis is the most sustainable or, in any event, the strength of the associations in both models.

Even taking into account the aforementioned limitations, the present investigation provides new and highly relevant information for the study and comprehension of sociometric types and their relation with the students' academic self-concept. On the one hand, it focuses on little studied sociometric types (leader, nice,

Table 2
Results of the binary logistic regression of the probability to be peer-rated as a function of academic self-concept

Dependent variables	Independent variables	B	SE	Wald	p	OR	95% CI
Sociometric type							
Popular	General academic	.02	.01	4.72	.03	1.02	1.00-1.03
	Constant	-2.40	.32	57.14	.00	.09	
Rejected-aggressive	General academic	-.05	.01	11.02	.00	0.95	0.92-0.98
	Constant	-1.71	.56	9.39	.00	.18	
Rejected-shy	General academic	-.04	.02	4.71	.03	0.96	0.93-0.99
	Constant	-2.52	.72	12.36	.00	.08	
Ignored	Mathematical	-.02	.01	3.92	.05	0.98	0.96-0.99
	Constant	-2.30	.32	51.05	.00	.10	
Leader	General academic	.02	.01	13.31	.00	1.02	1.01-1.04
	Constant	-1.99	.27	52.44	.00	.14	
Collaborator	Mathematical	.02	.01	5.91	.01	1.02	1.00-1.03
	Verbal	.02	.01	7.49	.01	1.03	1.01-1.04
	General academic	.08	.01	56.93	.00	1.09	1.06-1.11
	Constant	-6.23	.43	206.43	.00	.00	
Quarrelsome	Mathematical	.02	.01	7.65	.01	1.02	1.00-1.03
	General academic	-.04	.01	34.47	.00	.96	0.95-0.97
Good student	Constant	.07	.26	.07	.78	1.07	
	General academic	.13	.01	192.98	.00	1.14	1.12-1.61
	Constant	-6.97	.45	235.59	.00	.00	

Note: B = coefficient; SE = standard error; p = probability; OR = odds ratio; CI = 95% confidence interval

collaborator, quarrelsome, obedient, and good student). On the other hand, it facilitates the description of students' academic self-concept profile as a function of their sociometric type, thereby improving the efficacy of preventive strategies.

At the practical level, the results of this investigation indicate, firstly, that a positive self-concept should be promoted in the school setting. This is important at any life stage, but much more so in adolescence because the development of interpersonal relations has a strong impact on self-perceptions (Molero, Ortega-Álvarez, Valiente, & Zagalaz, 2010). Secondly, the support and feedback provided by significant others is especially relevant to foster adolescents' self-concept (González-Pianda et al., 2002). Therefore it is important to develop adolescents' social competence within the framework of the class. Thirdly, the importance granted to the academic self-concept in educational research is very relevant because school behavior cannot be understood without considering the students' self-perceptions and, in particular, their self-perceptions of their academic competence (Goñi &

Fernández, 2007). It is necessary to work with the faculty and the administrations to create educational environments that facilitate learning, thereby improving students' self-concept. Lastly, the results of this study highlight the usefulness of sociometric methods in the research carried out in schools due to their easy application and their empirical validity (Muñoz-Tinoco, Moreno-Rodríguez, & Jiménez-Lagares, 2008) and also to the relationship of the sociometric types with different cognitive-motivational (e.g., self-concept) and social variables.

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References

- Ato, E., Galián, M. D., & Fernández-Villar, M. A. (2014). Gender as predictor of social rejection: The mediating/moderating role of effortful control and parenting. *Anales de Psicología*, 30(3), 1069-1078.
- Chen, X., Chang, L., & He, Y. (2003). The peer group as a context: Mediating and moderating effects on relations between achievement and social functioning in Chinese children. *Child Development*, 74(3), 710-727.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.
- De Maris, A. (2003). Logistic regression. In J. A. Schinka & W. F. Velicer (Eds.), *Research methods in psychology* (pp. 509-532). Hoboken, NJ: John Wiley & Sons.
- Donders, W., & Verschuere, K. (2004). Zelfwaardering en acceptatie door leeftijdsgenoten. Een longitudinaal onderzoek bij basisschoolkinderen [Self-esteem and peer acceptance: A longitudinal study among primary-school children]. *Kind en Adolescent*, 25, 74-90.
- Garaigordobil, M., Cruz, S., & Pérez, J. I. (2003). Análisis correlacional y predictivo del autoconcepto con otros factores conductuales, cognitivos y emocionales de la personalidad durante la adolescencia [Correlational and predictive analysis of self-concept with other behavioral, cognitive and emotional factors of personality during adolescence]. *Estudios de Psicología*, 24, 113-134. doi:10.1174/021093903321329102
- García-Bacete, F. J. (2006). La identificación de los alumnos rechazados. Comparación de métodos sociométricos de nominaciones bidimensionales [Identification of rejected students: Comparing two-dimensional nomination sociometric methods]. *Infancia y Aprendizaje*, 29(4), 437-451.
- García-Bacete, F. J. (2007). La identificación de los alumnos rechazados, preferidos, ignorados y controvertidos en el aula [The identification of rejected, favorite, ignored and controversial students in the classroom]. *Revista de Psicología General y Aplicada*, 60, 25-46.
- González, J. (1990). *Sociometría por ordenador* [Computer sociometry]. Valencia: Conselleria de Cultura, Educació i Ciència.
- González-Pianda, J. A., Núñez, J. C., Álvarez, L., González-Pumariega, S., Roces, C., González, P., Muñoz, R., & Bernardo, A. (2002). Inducción parental a la autorregulación, autoconcepto y rendimiento académico [Parental inducement of self-regulation, self-concept, and academic achievement]. *Psicothema*, 14(4), 853-860.
- Goñi, E., & Fernández, A. (2007). Los dominios social y personal del autoconcepto [Social and personal domains of self-concept]. *Revista de Psicodidáctica*, 12(2), 179-194.
- Inglés, C. J., Torregrosa, M. S., Hidalgo, M. D., Núñez, J. C., Castejón, J. L., García-Fernández, J. M., & Valle, A. (2012). Validity evidence based on internal structure of scores on the Spanish version of the Self-Description Questionnaire-II. *The Spanish Journal of Psychology*, 15, 388-398.
- Marsh, H. W. (1992). *SDQ II: Manual*. Sydney, Australia: Self Research Centre, University of Western Sydney.
- Martín, E. (2011). The influence of diverse interaction contexts on students' sociometric status. *The Spanish Journal of Psychology*, 14, 88-98.
- Martínez-Arias, R., Martín, J., & Díaz-Aguado, M. J. (2009). Los métodos sociométricos en la psicología del desarrollo y educativa [Sociometric methods in developmental psychology and education]. Madrid: FOCAD. Retrieved from <http://www.cop.es/focad/pdf/010-FOCAD-02.pdf>
- McElhaney, K. B., Antonishak, J., & Allen, J. P. (2008). "They like me, they like me not": Popularity and adolescents' perceptions of acceptance predicting social functioning over time. *Child Development*, 79(3), 720-731.
- Molero, D., Ortega-Álvarez, F., Valiente, I., & Zagalaz, M. L. (2010). Estudio comparativo del autoconcepto físico en adolescentes en función del género y del nivel de actividad físico-deportiva [Comparative study based on the physical self-concept in teenagers regarding gender and physical activity]. *Revista Retos, nuevas tendencias en Educación Física, Deportes y Recreación*, 17, 38-41.
- Moreno, J. L. (1934). *Who shall survive? A new approach to the problem of human relations*. Washington, DC: Nervous and Mental Disease Publishing.
- Mpofu, E., & Thomas, K. R. (2006). Classroom racial proportion: Influence on self-concept and social competence in Zimbabwean adolescents. *The Journal of Genetic Psychology: Research and Theory on Human Development*, 167(1), 93-111.
- Muñoz Tinoco, V., Moreno Rodríguez, M. C., & Jiménez Lagares, I. (2008). Las tipologías de estatus sociométrico durante la adolescencia: contraste de distintas técnicas y fórmulas para su cálculo [Sociometric typologies during adolescence: Contrasting different scoring techniques and formulas]. *Psicothema*, 20, 665-671.
- Peery, J. C. (1979). Popular, amiable, isolated, rejected: A reconceptualization of sociometric status in preschool children. *Child Development*, 50, 1231-1234.
- Piciullo, T. J. (2010). School membership, parent academic expectations, peer relationships, student-teacher relationships, academic self-concept, and academic achievement among ninth grade students from low, average, and high schools. *Dissertation Abstracts International Section A: Humanities and Social Sciences*, 70(7), 2450.