Peralta Sánchez, Francisco Javier; Sánchez Roda, María Dolores
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Relationships between self-concept and academic

achievement in primary students

Francisco Javier Peralta Sánchez
María Dolores Sánchez Roda

Secondary School Guidance Counselors

Almeria, Spain

franperas@terra.es

Francisco Javier Peralta Sanchez & Maria Dolores Sanchez Roda

ABSTRACT:

Introduction. Self-concept, as the perception each person has of himself or herself, is a component of personality development. The objectives we propose are based on verifying the degree of association and prediction between self-concept and academic performance, as well as determining the psychometric properties of the SDQ questionnaire.

Method. The sample was formed of 245 primary school students currently studying in public or subsidized schools in Almeria province (Spain). We obtained data regarding the subjects' self-concept through use of the SDQ, and regarding their scholastic performance through marks assigned by their teachers. After verifying the scale's factorial structure, we established levels of association and prediction between self-concept and academic performance.

Results. We obtained a factorial structure for the scale similar to that obtained by Elexpuru, and adequate reliability indexes. We found a close relationship between academic self-concept and measures of academic perfomance. Additionally we demonstrate that total self-concept and academic self-concept are good predictors of general performance.

Discussion. Our results, for the age of our subjects and in this particular study, support the idea that total self-concept predicts academic performance, the facts being that non-academic self-concept negatively predicts school achievement (and that of language arts and of mathematics), while academic self-concept powerfully and positive predicts both general achievement as well as that in language arts and in mathematics. We feel it is necessary to give adequate and sufficient attention to self-concept and self-esteem and that teachers should be offered methodological guidance in order to work on these throughout the educational process.

KEYWORDS: self-concept, academic achievement

INTRODUCTION

The study of self-concept has awakened growing interest in psychological research of recent years. Despite the profusion of studies devoted to it, it is difficult to find a unanimous, accepted definition of the term self-concept, given that it has been approached from different theoretical perspectives. Nonetheless, there does exist agreement among the different authors in that the term self-concept has a multi-dimensional nature. Self-concept is considered to comprise various dimensions, areas or facets, some of which are more related to certain personality aspects (physical, social, emotional), while others appear to be more linked to academic achievement (in different areas and subjects).

Self-concept *"is the set of perceptions or reference points that the subject has about himself; (...) the set of characteristics, attributes, qualities and deficiencies, capacities and limits, values and relationships that the subjects knows to be descriptive of himself and which he perceives as data concerning his identity"* (Hamachek, 1981, quoted by Machargo, 1991: 24). It is the set of knowledge and attitudes that we have about ourselves; the perceptions that the individual assigns to himself and characteristics or attributes that we use to describe ourselves. It is understood to be fundamentally a descriptive assessment and has a cognitive nuance.

The importance of self-concept stems from its notable contribution to personality formation. Self-esteem has to do with social competence, since it influences how the person feels, how he or she thinks, learns, values himself or herself, relates to others, and ultimately, how he or she behaves (Clark, Clemes & Bean, 2000; Clemes & Bean, 1996).

In order to reach a common definition of self-concept, we opted to take the theoretical model and definition proposed by Shavelson, Hubner and Stanton (1976) as our reference. These authors define the term self-concept as the *perception that each one has about himself, formed from experiences and relationships with the environment, where significant people play an important role.*

Self-concept, as a component of human personality development, has its own nature and peculiarity. Several authors (Shavelson et al.; 1976; quoted by Garma and Elexpuru,

1999) have tried to specify the nature of the term self-concept. To this end, they look at it as a compendium of seven characteristics or fundamental aspects: self-concept constitutes a *psychological dimension;* it is *multidimensional*; it has a *hierarchical organization* (a general self-concept and specific self-concepts); it is *stable,* but as we go lower on the hierarchy, self-concept becomes more *specific* and more *susceptible to change*; the different *facets* of self-concept *become more differentiated* among themselves with age and experience; self-concept includes both *descriptive as well as evaluative aspects*; self-concept *can be differentiated from other constructs* which it is related to, such as academic performance.

Some authors, like Harter (1986), make interesting contributions, such as that general or global self-concept will be determined by the degree of importance that we assign to each of its specific components. If, when describing ourselves, our value judgments are satisfactory, then we obtain a positive global self-concept; in the opposite case we generate negative feelings and thus produce a negative global self-concept.

Self-concept and performance

Educational psychology has been concerned with analyzing different types of relationships, both associative and predictive, that exist between self-concept and academic performance (González-Pienda, Núñez, González-Pumariega, Álvarez, Roces, García, González, Cabanach, Valle, 2000; Núñez, González-Pienda; García, González-Pumariega, Roces, Álvarez, González, 1998). Despite the abundance of studies, however, there are no conclusive studies that clearly identify the direction of the link which joins these two variables. In results obtained, one perceives different extraneous variables that can alter the results to differing degrees (Núñez & González-Pienda, 1994). These authors indicate the need to differentiate four possible patterns or causal models between self-concept and academic performance.

1) *Academic performance determines self-concept.* Academic experiences of success or failure significantly affect the pupil's self-concept and self-image more than vice versa, this being explained by the role of evaluation by significant others, or by the theory of social comparison (Tajfel & Turner, 1986).

Given that the influencing variable is academic performance, psycho-pedagogic interventions should give priority to modifying the students' level of achievement, since this will contribute to changing the level of self-concept.

2) Levels of *self-concept determine the degree of academic achievement.* Likewise for this causal relationship model, there are implications for applying important educational decisions. Given that self-concept is what determines levels of academic achievement, and self-concept in turn can be strongly influenced by contingencies provided by the pupil's significant others, among whom we must not underestimate teachers (Pygmalion principle), we can infer that it would be possible to increase levels of school performance by previously optimizing levels of self-concept and very specifically levels of perceived competence.

3) The third model of causal relationship postulates that *self-concept and academic performance influence and determine each other mutually*.

4) Other authors who support this model postulate the existence of *additional variables that may be the cause of both self-concept and of academic performance,* among which we might find personal and environmental variables, academic and non-academic variables.

In addition, the beneficial effects produced by a good level of self-concept have been substantiated. In studies (Hay, Ashman and Van-Kraayenoord 1998) where subjects with a high self-concept were compared with other subjects with low self-concept, teacher reports show that they consider the high self-concept students as more popular, cooperative, persistent in classwork, with lower anxiety levels, more supportive families and higher expectations of future success.

Research objectives

We approached this research keeping three objectives in mind:

1   Determine whether the questionnaire's factorial structure and other psychometric indices, with subjects in sixth year of primary school, are similar to those obtained in other studies.

2   Verify the degree of association that may exist between academic self-concept and general academic performance or performance specific to critical areas.

3   Verify the degree of predictive ability by taking measurements of self-concept as the fixed factor and measurements of academic performance as dependent variable.

METHOD

Participants

A total of 245 pupils participated in this study, all of them in sixth year of Primary Education. From this total, 122 are male and 123 are female. Age ranged from 11 to 13 years, with an average age of 11.19 (standard deviation .45). All of them came from five public schools and from one subsidized school in Almeria's Alpujarra region.

Materials and Instruments

Measurements of self-concept and of academic performance were taken for this investigation:

1. *Measuring self-concept.* This was accomplished using the SDQ scale by Marsh, Parker & Smith, in its Spanish adaptation prepared by Elexpuru (1992). This questionnaire has been used for the evaluation of self-concept on a multitude of occasions (Hay, 1997; Marsh & Seeshing, 1997; Marsh, 1992; Marsh, 1994; Pérez, Díaz, Núñez, & González-Pienda 1998; Plucker, Taylor, Callahan, & Tomchin 1997; Watkins & Akande 1992; Watkins & Mpofu 1994), both by the authors themselves as well as by other relevant persons in the field of psychology.

The SDQ comprises subscales of Academic Self-concept, Non-academic Self-concept, and Total Self-concept of the scale.

A) The Academic Self-concept subscale contains the following factors:

F1: *Self-concept in mathematics and general school subjects (cognitive dimension).*

F6: *Self-concept in mathematics and general school subjects (affective dimension).*

F3: *Reading self-concept.*

F4: *Self-concept in relationship with parents*.

Total of Academic Self-concept: the sum of the four previous scales.

B) The Non-academic Self-concept subscale contains the following factors:

F2: *Self-concept in physical appearance*.

F5: *Self-concept in physical ability and sports*.

F7: *Self-concept in relationship with classmates*.

Total of Non-academic Self-concept: the sum of the three previous scales

C) The last subscale is *Total Self-concept*: the sum of the seven scales or factors of self-concept.

In order to complete this questionnaire, subjects must repond to a series of affirmations (items) on a scale with five intervals, lickert type, going from completely false to completely true. Scores on the SDQ are based on 72 items. The instrument is designed to measure four factors of non-academic self-concept, three factors of academic self-concept and three total measures.

2. *Measuring level of school performance*. Based on marks given to each student by their teacher, an average mark was calculated to be used as a global score. Scores are adapted to a scale from 1 to 5, where 1 = fail, 2 = pass, 3 = good, 4 = very good and 5 = outstanding. We preferred to define Academic Performance, as done in other studies (González-Pienda, Núñez & Valle 1992), using the teachers' evaluations or average mark given, rather than turn to other performance tests.

There is empirical evidence to support that teacher evaluations are a sufficiently valid and reliable criterion of student performance. Marsh, Parker & Barnes (1984); Marsh, Smith & Barnes (1985) have used teacher evaluations as a criterion of school performance, obtaining high coefficients of consistency between different evaluations at different points in time.

Hypotheses

Since the sample we used differs in age from that used by Elexpuru (1992) -- our students are in sixth year of primary education -- we formed the following hypotheses:

H$_1$ The factorial structure and the reliability indices agree with those found with samples of students from lower grade levels than we used, demonstrating the multi-dimensional and hierarchical nature of the self-concept construct.

We proposed two associative hypotheses:

H$_2$ Academic self-concept (TAC) will be more associated with general academic performance (RACAGRAL), with academic performance in language (RACALEN) and with academic performance in mathematics (RACAMAT) than the Non-academic Self-concept (TNAC) or Total Self-concept (TTOTAL).

H$_3$ We expect to find that certain specific factors of each scale are more strongly associated with areas of school performance, where they directly deal with such. Thus, we expect to find that *Factor 1* (Self-concept in mathematics and school subjects in general, cognitive dimension) has a high degree of association with *academic performance in mathematics* (RACAMAT) and with *general academic performance* (RACAGRAL). Conversely, we expect to find that *Factor 3* (reading self-concept) is more highly associated with *academic performance in language* (RACALEN).

Finally, we proposed a prediction hypothesis:

H$_4$ *Total self-concept* (TTOTAL) should predict *general academic performance* (RACAGRAL), while *total non-academic self-concept* (TNAC) should negatively predict *general academic performance* (RACAGRAL).

Procedure

Tests were carried out in the students' own classrooms, since in no case do groups exceed 25 students in number, and the classrooms offer ideal conditions for a collective application. The testing act was arranged previously with the students' main teacher.

The examination team consists of a single person, with ample experience in applying psychological tests (12 years as guidance counselor for the region where these schools are located, as a member of the Educational Guidance Team), therefore behavior was uniform throughout all testing sessions.

The subjects' participation was voluntary; they were given the chance to leave the room if they so wished before beginning the testing process. Students completed the questionnaire individually and without any time limit. Whenever a student asked for clarification about a certain term it was given to him.

Statistical treatment and analysis was performed using the statistical software package SPSS, version 10.0.

Results

Results following are based on three objectives that directed this research:

First Objective:

Determine whether the factorial structure and other psychometric indices are similar to those obtained in other studies, in this case using subjects from sixth year of primary education.

Elexpuru (1992, p.142) reported obtaining a coefficient alpha of .92 for students in 5th year of primary. *Reliabilities* of the academic and non-academic totals ranged from .74 to .91. Other authors, González-Pienda et al (2000), report adequate reliability and validity of the measuring instrument, as well as satisfactory validity of the construct and its predictive validity for academic performance.

In our investigation, we obtain an alpha coefficient of .8524 for the total scale. Reliability of the academic and non-academic totals are .8730 and .8075, respectively. In factors, the alpha coefficients obtained vary from .6757 as lowest, to .8790, as highest, with an average of .7773.

As for the factorial structure, using the method of principal components and varimax rotation, and requiring 7 factors in the scale, the results we obtained show a very similar structure to that obtained by Elexpuru (1992), inasmuch as factors are concerned, also agreeing fully in second order analyses, since we obtain two dimensions (non-academic self-concept and academic self-concept). Kaiser-Meyer-Olkin's measure of sample suitability was 0.794 and Bartlett's test for sphericity was statistically significant [^{2} (2556)=10400.853; p =

.0001]. Percentage of accumulated variance obtained by the seven factors explains a total of 48.921% of the variance of the data. Percentages of variance found for the seven factors varied between 11.27% for the highest and 3.59% for the lowest. We took into consideration saturation indices above .35. Synthesizing, these results demonstrate once again the multidimensional and hierarchical nature of self-concept.

Second Objective:

Verify to what degree academic self-concept or specific areas of it are associated with general academic performance or with performance in essential subject matters (language or mathematics).

In the second hypothesis we proposed that academic self-concept should be more associated with general academic performance, with academic performance in language, and with academic performance in mathematics, than with the Non-academic Self-concept or the Total Self-concept.

Table 1. *Pearson correlation coefficients between dimensions and factors of the SDQ scale and the three averages of academic performance used (language arts, mathematics and general).*

Self-concepts	RLg	Rmat	RGr	F1	F3	F4	F6	F2	F5	F7
Total Acad. (TAC)	.37**	.35**	.35**	.78**	.70**	.43**	.84**	.17**	.15*	.31**
F1: Cognitive	.41**	.43**	.42**		.30**	n. s.	.72**	.20**	.15**	.21**
F3: reading	.25**	.19**	.23**	.30**		.22**	.30**	n. s.	n. s.	.17**
F4: parent relations	n. s.	n. s.	n. s.	n. s.	.22**		n. s.	.18**	.20**	.42**
F6: Affective	.24**	.26**	.22**	.72**	.35**	.17**		n. s.	n. s.	.16**
Total Non-Acad.	n. s.	-.12*	n. s.	.22**	n. s.	.29**	.13*	.90**	.83**	.82**
F2: phys. appear.	-.12*	-.16*	-.11*	.20**	n. s.	.18**	n. s.		.60**	.62**
F5:phys. ability, sports	n. s.	n. s.	n. s.	.15*	n. s.	.20**	n. s.	.60**		.56**
F7: classmates	n. s.	n. s.	n. s.	.21**	.17**	.42**	.16**	.62**	.56**	
Total Self-concept	.19**	.17**	.18**	.67**	.54**	.47**	.66**	.63**	.57**	.68**
* p<.05 **p<.01										

As we can observe in the above table, results regarding the second hypothesis show that in effect academic self-concept (TAC) maintains a close, positive and significant

association with the three measures of academic performance used in this study, with quite similar correlation coefficients. In contrast, the non-academic self-concept subscale (TN-AC) does not correlate significantly with measures of academic performance, and when it does, it is in a negative sense, and not very significant; for example, between non-academic self-concept and academic performance in mathematics.

The third hypothesis predicted that certain specific factors of each subscale should be more strongly associated with performance areas they directly deal with. The association analyses enable us to affirm that factor 1 (self-concept in mathematics and school subjects in general, cognitive dimension) has a moderate degree of association, positive and significant, with the three performance areas, being somewhat higher in mathematics. Regarding factor 3 we obtain somewhat lower correlation coefficients than in the previous case, but at any rate significant and positive, with a higher association in the area of language arts. Factor 4, still pertaining to the academic scale, did not significantly correlate with any of the three measures of academic performance, but does so with the three factors pertaining to the non-academic scale. Factor 6 (self-concept in mathematics, affective dimension) obtains a slightly higher coefficient in mathematics performance than in language arts or performance in general.

We also expected that the factors in each subscale would correlate with the rest of the factors in the same subscale more than with those in another subscale. We found it to be so, for example, factor 1 gives correlation indices from moderate to high, significant and positive with the rest of the factors in the same subscale, and, with respect to the three factors in the non-academic scale, it obtains low correlation coefficients, although significant. Factor 3 only correlated significantly with the factors of its own scale, but not with those of the non-academic scale. Factor 6 holds to the line of our expectations, correlating more with the factors in its own scale than with those in the other. Factor 4 (self-concept in relation to parents) has an irregular behavior since it is more associated with factors in the non-academic scale than with those of its own scale.

In the non-academic self-concept subscale, we found that the three factores (2, 5 and 7) obtain higher correlation coefficients (from moderate to high) with respect to factors in their own scale and low coefficients with those in the academic scale.

Third Objective:

Verify to what extent the dimensions of the SDQ scale (academic self-concept and non-academic self-concept) and the seven factors are able to predict both general academic performance, as well as academic performance in language arts and in mathematics.

The fourth hypothesis expected that *total self-concept* (TTOTAL) should predict *general academic performance* (RACAGRAL), while *total non-academic self-concept* (TN AC) should negatively predict *general academic performance* (RACAGRAL). Results can be observed in table 2.

Predicting Variable	Criterion Variable	R^2	F	Standardized Coefficient
Table 2. Predicting the three measures of academic performance (general, language arts and mathematics) from dimensions and factors of the SDQ scale				
Total Self-concept		0.034	(1.243)=8.599***	0.18 (t= 2.932)**
Acad. Self-concept				0.406 (t= 6.726)****
Non-Ac Self-concept		0.161	(2.242)=24.45****	-0.210 (t= -3.484)***
F1: SC cogn. math.				0.612 (t= 7.442)****
F2: Physical appear.				not significant
F3: SC reading lectura				0.138 (t= 2.270)****
F4: SC parents				0.141 (t= 2.251)*
F5: Phys/sport ability				not significant
F6: SC math. affec.				-0.245 (t= -2.955)***
F7: AC classmates	Gen. Ac. Perform	0.279	(7.237)=13.10****	-0.160 (t= -1.967)*
Acad. Self-concept				0.422 (t= 7.022)****
Non-Ac Self-concept		0.179	(2.242)=26.372****	-0.210 (t= -3.495)***
F1: SC cogn. math.				0.571 (t= 6.924)****
F2: SC Phys. appear.				-0.149 (t= -1.920)*
F3: SC reading				0.157 (t= 2.575)**
F4: SC parents				0.153 (t= 2.448)**
F5: Phys/sport ability				not significant
F6: SC math. affec.				-0.211 (t= -2.531)**
F7: AC classmates	Ac. Perf. Lang Art	0.274	(7.237)=12.793****	-0.165 (t= -2.027)*
Acad. Self-concept	Acad. Perf. Math			0.413 (t= 6.869)****
Non-Ac Self-concept		0.177	(2.242)=25.961****	-0.227 (t= -3.771)****
F1: SC cogn. math.		0.284	(7.237)=13.447****	0.598 (t= 7.298)****
F2: SC Phys. appear.				-0.235 (t= -3.251)****
F4: SC parents				0.128 (t= 2.056*
F6: SC math. affec.				-0.177 (t= -2.144)*
* p<.05 **p<.01 ***p<.001 ****p<.0001				

Regarding the first part of the predictive hypothesis, we found precisely that total self-concept and academic self-concept are measures that predict a subject's general academic

performance, while non-academic self-concept predicts a subject's academic performance negatively. That is, for higher non-academic self-concept, the model predicts that subjects will attain lower general academic performance. Thus, these results confirm conjectures we had formed regarding the predictive power of self-concept.

In addition to results that we were seeking from our predictive hypothesis, we found another series of statistical effects that we present next. Taking each of the factors of the SDQ scale, we found several significant statistical effects with regard to general academic performance. *Factor 1* (self-concept in mathematics and school subjects in general, cognitive dimension) acts as a positive predictive variable for *general academic performance*. In the same sense, *factor 3* (reading self-concept) also predicts positively and significantly *general academic performance*. The predictive power of factor 4 (self-concept in relation to parents) is positive in nature regarding general academic performance, but less significantly. Factor 6 is especially striking (self-concept in mathematics, affective dimension), in that it shows a negative predictive behavior regarding general academic performance, that is, the higher the subjects score themselves in mathematic competence, the lower general academic performance they obtain. Factor 7 (self-concept regarding classmates), like factor 6, demonstrates a negative predictive behavior, though not very significant.

Regarding academic performance in language arts, we can say that the academic self-concept scale and factor 1 predict academic performance in language arts positively and very significantly. Factors 3 and 4 also show the same behavior, but with lower levels of significance. Factor 6, also pertaining to the academic scale, shows a negative predictive effect regarding language arts performance. The non-academic self-concept scale, and factors 2 and 7 which belong to it, show a very significant negative predictive behavior.

Finally, prediction of academic performance in mathematics also has differential effects when using as criterion variables the academic scale and its factors, or the non-academic scale and its factors. The academic scale and factor 1 have a very significant, negative predictive power of the performance that a subject can attain in mathematics. Factor 4 predicts mathematics performance positively, but with little significance, and factor 6 predicts it negatively and with little significance. The non-academic self-concept scale and factor 2 belonging to it predict mathematics performance negatively and very significantly.

DISCUSSION

The first objective of this research consisted of determining whether the factorial structure of the questionnaire would be similar to that obtained, for example, by Elexpuru (1992), a matter we have cleared up satisfactorally, having demonstrated the construct's multi-dimensional nature by means of a first order factorial analysis, and its hierarchical organization by means of a second order factorial analysis. The second objective was to analyze the degree of association existing between general self-concept or specific dimensions (academic self-concept and non-academic self-concept), as well as the factors of the SDQ scale and academic performance, taken in three aspects: general academic performance, language arts academic performance and mathematics academic performance. The third objective was to determine the predictive value possessed by self-concept, or its dimensions and factors, with regard to general academic performance or academic performance that students may obtain in language arts and mathematics.

Association between measures of self-concept and those of academic performance

In order to verify the second objective we set forth the second and third hypotheses. In this sense we have seen how the academic dimension of self-concept (academic self-concept) is associated with the three measure of academic performance used, correlation coefficients nearing a moderate level. We have also substantiated that the non-academic self-concept scale does not correlate with the measures of school achievement. If, in addition to measures of school achievement, we had used measures in other types of extra-scholastic, leisure, or free-time activities, the non-academic dimension of self-concept would probably show a high and positive association. Several recent studies could confirm this prognostic (INCE, 2000 a; 2001 b), where it is indicated that, besides playing at home or with friends, the extra-scholastic activity most pursued by sixth-year primary students in our country is practicing sports, an activity pursued by 59% of subjects. This percentage of activity is somewhat higher (79%) when the information source is the parents (INCE, 2000 b).

The third hypothesis expected that specific factors of self-concept (in matemáticas, in reading) would be more closely associated to specific areas of learning. We found that self-concept in mathematics (cognifive and affective dimensions) has very similar levels of

association to the three measures of achievement. The same can be said of self-concept in reading. It seems, then, that the subjects' self-concept, be it in reading or in math, is associated to a similar degree with academic performance that the subjects obtain in the areas of language arts, mathematics and in general. We observe that measures of self-concept with parents do not correlate with areas of academic achievement. This is probably due to a majority of the students' parents in this sample having different expectations from their children's studies, or because they have a considerable degree of dissatisfaction regarding the results that their children are attaining.

Results found regarding indices of correlation between factors of the two dimensions is in line with other studies (Elexpuru, 1992), confirming that the specific factors of each of the dimensions become agglutinated, giving consistency to the dimension they belong to. It is also notable that self-concept in physical and sports abilities does not correlate with general academic achievement. We interpret this fact asserting that school disciplines, including physical education, involve an academic component of dedication and of effort (including intellectual) that the children do not develop in their leisure and free-time activities, with some exceptions (federations, club players, etc).

Several studies ratify our results. Alexander (1997) studies the relationship between academic performance and intelligence, learning strategies and academic performance. Data from this study showed a high degree of positive, significant association between global self-assessment and academic self-concept, as well as between academic performance and academic self-concept. Another study similar to the previous one reports that academic self-concept proves itself favorably associated with academic performance (Castor, 1997).

A study carried out by Mboya (1998) found significant differences as a function of the subject's age and his or her academic performance in English, sciences and history, though not in mathematics. Villarroel (2001) reports several interesting results, they found: (1) a linear association between self-concept and academic performance; (2) reciprocal influences between teacher expectations, students' academic performance, and students' self-concept, (3) effects of students' academic performance on teachers' perception.

The third objective (and fourth hypothesis) was intended to analyze the predictive value of self-concept on general academic performance. In our literature review we found studies that analyze existing relationships among similar variables (Clemente, Albinana & omenech, 1997): intelligence, socialization, school maladaptation, self-concept and personality. Studies by Acosta (2001) also stand out, where he examines relationships between the school climate, academic self-concept and academic performance. Acosta affirms that multiple regression analyses gave indices where the predicting variables explained as much as 18% of the variance in academic achievement, though only the variance explained by self-concept was statistically significant. Boulter (2002) uses self-concept as a predictor of academic adjustment or performance.

Our results, with the age of our subjects and in this particular study, support the idea that total self-concept predicts academic performance, the facts being that non-academic self-concept negatively predicts school achievement (and that of language arts and of mathematics), while academic self-concept powerfully and positively predicts both general achievement as well as that in language arts and in mathematics. The predictive value of factors 1 and 3 (mathematics and reading) make us see the importance of perceiving oneself competent in those areas in order to improve academic performance, both generally and specifically in language arts and mathematics. The statistical effect found in factor 6 (mathematics, affective dimension) perhaps influences the fact that students tend to overestimate their own ability and for that reason they make a lesser effort, while those who most underestimate themselves are those who make the most effort.

Self-concept in relationship to classmates (factor 7) proves itself a negative predictor of general school achievement. Perhaps starting at this age, students who perceive themselves as having low academic competency try to compensate for this deficit by social relationships, often understood erroneously (unintentional reinforcement by their classmates and by adults), through behaviors which are against the rules (Fernández, 2001; Kazdin & Buela-Casal, 2002).

Our results show that self-concept in relationship to parents acts as a positive predictor of general academic performance (as well as achievement in language arts and achievement in mathematics). This gives us an idea of the importance of family support and

other psychosocial variables in the academic performance of offspring (Morvitz & Motta, 1992; Fantuzzo, Tighe & Childs, 2000; Fantuzzo, Davis & Ginsburg, 1995; Castejón & Pérez, 1998).

Regarding the predictive ability of self-concept (or its dimensions and factors) regarding school achievement specific to language arts and mathematics we found similar behavior. That is, on one hand the academic dimension of self-concept (academic self-concept) and factors included in it have the capacity to predict both general academic performance as well as that of language arts or that of mathematics. On the other hand, the dimension of non-academic self-concept and the factors associated with it negatively predict general academic achievement as well as that of language arts and that of mathematics.

These results agree with those obtained in other studies. Marsh (1990) found that average marks in students of 16-17 years of age were influenced significantly by academic self-concept measured the previous year. The relationship between academic self-concept and performance becomes stronger with age, at least in the developmental period studied by Marsh (1990). However, it is posible that the causal order of these variables may vary with age.

We found studies (Miujs, 1997) in the literature which analyze and find significant predictive relationships between the constructs of self-concept and academic performance. Our study agrees with others that affirm that affective and motivational variables strongly influence students' academic performance, if possible even more than the subject's own aptitudes (González-Pienda, Núñez, González-Pumariega, 2002). This last study shows a uni-directional model in which the influence of self-concept on academic achievement is statistically significant. Results found by González-Pienda *et al* (2002) may be in line with other research (for example, Shavelson & Bolus, 1982; Valle, Cabanach, Núñez & González-Pienda., 1998; Patrikakou, 1996). As claimed by González-Pienda *et al* (2002), the type of strategy used in collection of data, be it a transversal or longitudinal type, may have conditioning effects on results obtained. In fact, researchers who use a longitudinal strategy (Helmke & van Aken, 1995; Marsh, 1990; Marsh & Yeung, 1997; Marsh, Hau & Kong 2002; Valentine, 2002) show evidence of reciprocal relationships between self-concept and academic achievement.

González-Pienda *et al* (2002) report from the International Conference on Motivation: 6th Workshop on Achievement and Task Motivation, held in Greece, that results presented from several investigations (for example, Núñez, González-Pienda, García, González-Pumariega, Roces, Cabanach, & Valle, 1998) where the relationship between self-concept and academic achievement was measured by a longitudinal strategy (with an interval of one year between the pretest and the posttest), confirmed reciprocal relationships. Not only so, but results indicate that self-concept is the immediate cause of academic achievement, considering that the influence or relevance of achievement would be at the base of a long-term relationship. They therefore consider academic self-concept as a powerful motivating force that responds to the students' immediate achievement. Nonetheless, this level of achievement does not affect students' self-concept immediately, but seems to be an important source of information that has repercussions in self-concept in the long term (an interval of one year in this study). This seems reasonable from the point of view of personal stability (González-Pienda, Núñez, González-Pumariega & García, 1997).

It is needful to continue doing research in the line of other studies (García, 1998; Fantuzzo, Tighe & Childs 2000; Fantuzzo, Davis & Ginsburg 1995; Castejón & Pérez 1998; Morvitz & Motta. 1992), that we may obtain more information on certain psychosocial and family-related variables (number of siblings, birth order among siblings, parents' profession, parents' childraising style, conditioning factors from the social context or the neighborhood where the pupil lives, etc.) and the formation of an adapted or maladapted self-concept. The purpose should serve toward the development of a guide we can use for making intervention proposals and offering training directed toward parents and/or teachers, and to optimize educational processes.

Conclusions for intervention

It is true that the forming of self-concept, principally the academic type, is not only the task of the classroom teacher, but that the other professionals in the school also intervene. This is why we continue to insist that teacher training, apart from the teaching specialty involved, must include training in common themes which concern the entire educational team that deals with each student. Thus, at each school, training and development in the areas of the pupil's personal and social competence -- self-concept, self-esteem, social abilities,

personal development, school mediation, living together, conflict resolution, etc. (Haeusler & Milicic, 1996; Machargo, 1991; Trianes, 1996; De la Fuente, 1999; Merrell & Gimpel, 1998; Trianes, Muñoz & Jiménez, 1997; Trianes, De la Morena & Muñoz, 1999; Fernández, 2001; Torrego, 2000; Merrell, Streeter, Boelter, Caldarella & Gentry, 2001, Monjas & González, 2000) should be addressed through the teachers' development plans.

Most definitely, we feel it necessary to give adequate and sufficient attention to self-concept and self-esteem (Carr & Kurtz-Costes, 1994; Gil, 1998; Machargo, Alonso, Quintana, Rojas & Santana, 1996), and that teachers should be offered methodological guidance in order to work on these throughout the educational process, in order that this type of psycho-educational intervention may serve as an avenue to improve academic performance. (Castejón, Navas & Sampascual, 1996; González, 1999).

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