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Relationships between academic self-concept and academic performance in high school students

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Abstract

The purpose of this research was to determine the relationship between the academic self-concept and academic performance. The sample consists of 363 students from 10 high schools were chosen by using multistage cluster sampling method. The data collection instrument for academic self-concept was a researcher made questionnaire. For obtaining data regarding the participant's self-concept used of the total score of SCQ questioner, and regarding their scholastic performance through marks assigned by their teachers. After verifying the scale's factorial structure, established levels of association between self-concept and academic performance, and predictive power of academic self-concept. The research finding showed a close relationship between academic self-concept and measures of academic performance. Academic self-concept powerfully and positive predicts general performance in literature and mathematics. Feel it is necessary to give adequate and sufficient attention to self-concept and self-esteem and teachers should be offered methodological guidance in order to work on these throughout the educational process.

1. 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 is 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 individuals has about himself; the set of characteristics, attributes, qualities and deficiencies, capacities and limits, values and relationships that the individuals knows to be descriptive of himself and which he perceives as data concerning his identity (Marsh & Seeshing, 1997). It is the set of knowledge and attitudes that we have about ourselves; the perceptions that the individual assigns to him 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

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he or she thinks, learns, values himself or herself, relates to others, and ultimately, how he or she behaves (Marsh & Seeshing, 1997). 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 him, 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 (Marsh & Seeshing, 1997) 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 total 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 total self-concept; in the opposite case we generate negative feelings and thus produce a negative global self-concept.

2. Self-concept and performance

Insert Educational psychology has been concerned with analysing different types of relationships, both associative and predictive, that exist between self-concept and academic performance (Marsh & Seeshing, 1997). 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 (Marsh & Seeshing, 1997). 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 performance.* Likewise for this causal relationship model, there are implications for applying important educational decisions. Given that self-concept is what determines levels of academic performance, 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 and persistent in classwork, with lower anxiety levels, more supportive families and higher expectations of future success.

3. Method

3.1. Participants

Using multistage cluster sampling ten public high schools in Tehran were selected. A sample of 363 students participated in this study. From this sample, 176 are male and 187 are female. Age ranged from 15 to 18 years, with an average age of 16.4 (SD=.42). As for the "school year" variable, 118 students were in 1st of high school, and 126 were in 2nd grade of high school and 119 students were in 3rd of high school.

3.2. Instruments

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

3.2.1. Academic self-concept

The data collection instrument for academic self-concept in this research was a researcher made questionnaire that used from standard scales to making the questionnaire statements. After initial survey, the final version in a pilot study carried out on 120 high school students (girl and boy) in Tehran. The reliability was obtained using cronbach's alpha coefficient 0.91 and using test-retest 0.89. Content validity was confirmed by psychometric and Educational Psychology experts. Construct Validity also was tested by obtaining each term correlation with the total correlation test. Scores on the questionnaire are based on 18 items. In order to complete this questionnaire, subjects must respond to a series of two options (yes or no) items. A high score on this inventory indicates a higher self-concept, while a low score shows low self-concept.

3.2.2. self-concept

To study self-concept and comparison of the academic self-concept questionnaire the Self -Concept Questionnaire (SCQ) of Rajkumar Saraswat (1984) is used. The self-concept inventory provides six separate dimensions of self-concept, which are, physical, social, intellectual, moral, educational and temperamental. It also gives a total self-concept score that this study, only the total score was used. The inventory contains 48 items. Each dimension contains eight items. The added score of all eight items of a particular dimension of self-concept will provide the score for that particular dimension of self-concept. Each item is provided with five alternatives. The respondent is provided with five alternatives to give his responses ranging from most acceptable to least acceptable description of his self-concept. The reliability of the inventory was found by test-retest method, and it was found to be .91 for the total self-concept measure. Reliability coefficients of its various dimensions vary from.67 to.88.

3.2.3. Measuring level of school performance

Based on marks given to each student by their teacher in the semester prior, they were asked to report their marks for Literature and Mathematics. Marks were categorized in a range of scores from 0 to 20.
Statistical treatment and analysis was performed using the SPSS software.

4. Results

Results following are based on three objectives that directed this research:
First objective of the research was determining correlation between made questionnaire and total score of SCQ scale. The result is shown in table 1.

Table1: Pearson correlation coefficients between academic self-concept and total self-concept.

Variables	n	M	SD	r
Academic self-concept	363	13.06	2.89	.67
Total Self-concept	363	123.47	14.5	$P < .001$

The result show academic self-concept questionnaire has high correlation with total score of saraswat self-concept scale (.67). This represents validation of academic self-concept.

Second goal of this research was verify to what degree academic self-concept and total self-concept is associated with performance in essential subject matters (literature or mathematics) and comparing this data together. The results were showed in the table 2.

Table2: Pearson correlation coefficients between academic self-concept questionnaire, total self-concept and the two marks of academic performance used (literature and mathematics).

Variables	n	M	SD	Literature	Mathematics
Academic Self-concept	363	13.06	2.89	.61*	.57*
Total Self-concept	363	123.47	14.15	.46*	.42*
Literature	363	15.29	3.66	1.00	.38*
Mathematics	363	12.6	4.52	.38*	1.00
p < .001					

As we can observe in the above table, results regarding the second hypothesis show that all correlations coefficient between academic self-concept, total self-concept and academic performance marks is significant. Therefore can be said with confidence that students self-concept is valid predictor of their academic performance. Both test correlation with mathematics mark is higher than literature score, but this is not enough for being significant (.04). Also there is a correlation between academic performance both mathematics and literature (.38).

The third hypothesis expressed that academic self-concept questionnaire predict academic performance better than Saraswat self-concept scale (SCQ). For investigating this hypothesis we used ρ_1 & ρ_2 difference test. The results were showed in table 3.

Table3: ρ_1 & ρ_2 difference test between correlation coefficients of academic self-concept, total self-concept and academic performance of literature and mathematics

Variables	r	z	p
Academic self-concept & Literature	.61	2.8443	.0068
Academic self-concept & Literature	.46		
Academic self-concept & Mathematics	.57	2.6833	.0104
Total self-concept & Mathematics	.42		

As in the above table is clear, the relationship between academic self-concept and literature and mathematics marks is stranger than the relationship between total score of saraswat self-concept scale and academic performance of these two lessons. Therefore we can say certainly that academic self-concept questionnaire is better predictor than saraswat self-concept scale for academic performance.

5. Discussion

The first objective of this research consisted of determining correlation between made questionnaire (academic self-concept) and total score of saraswat self-concept scale (SCQ). The second objective was to analyse the degree of association existing between academic self-concept, as well as the total self-concept and academic performance, taken in two aspects: literature academic performance and mathematics academic performance. The third objective was to determine association between academic self-concept and total self-concept in literature and mathematics. And in final specifying which questionnaire (academic self-concept or saraswat self-concept) is better in predicting academic performance of literature and mathematics.

Result relevant to the first goal showed academic self-concept questionnaire has high correlation with total score of saraswat self-concept scale (.67). This represents validation of academic self-concept. In order to second objective we have seen all correlations coefficient between academic self-concept, total self-concept and academic performance marks is significant. Therefore can be said with confidence academic self-concept powerfully and positively predicts both literature and mathematics. Both test correlation with mathematics mark is higher than literature score, but this is not enough for being significant (.04). Also there is a correlation between academic performance both mathematics and literature (.38). According to the third purpose relationship between academic self-concept and literature and mathematics marks is stranger than the relationship between total score of saraswat self-concept scale and academic performance of these two lessons. Therefore we can say certainly that academic self-concept questionnaire is better predictor than saraswat self-concept scale for academic performance.

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 academic performance and academic self-concept, as well as between total self-concept and academic self-concept. Another study similar to the previous one reports that academic self-concept proves itself favourably 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.

Acosta (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. In our literature review we found studies that analyse existing relationships among similar variables (Carr & Kurtz-Costes, 1994): 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. Carr & Kurtz-Costes, (1994) uses self-concept as a predictor of academic adjustment or performance. Regarding the predictive ability of self-concept regarding school achievement specific to literature and mathematics we found similar behaviour. That is, the academic dimension of self-concept (academic self-concept) and factors included in it have the capacity to predict academic performance as well as that of literature or 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 possible that the causal order of these variables may vary with age. We found studies (Miujs, 1997) in the literature which analyse and find significant predictive relationships between the constructs of self-concept and academic performance. This last study shows a unidirectional model in which the influence of self-concept on academic achievement is statistically significant. Results found by Patrikakou, (1996) may be in line with other research (for example, Shavelson & Bolus, 1982; Patrikakou, 1996). As claimed by Patrikakou, (1996), 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 & Yeung, 1997; Marsh, Hau & Kong 2002; Valentine, 2002) show evidence of reciprocal relationships between self-concept and academic achievement. (Merrell, Streeter, Boelter, Caldarella, Gentry, 2001) report from the International Conference on Motivation: 6th Workshop on Achievement and Task Motivation, held in Greece, that results presented from several investigations where the relationship between self-concept and academic achievement was measured by a longitudinal strategy (with an interval of one year between the pre-test and the post-test), 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 (Merrell & Gimpel, 1998). It is needful to continue doing research in the line of other studies (Fantuzzo, Tighe & Childs 2000; Fantuzzo, Davis & Ginsburg 1995), that we may obtain more information on certain psychosocial and family-related variables (number of siblings, birth order among siblings, parents' profession, parents' child rearing style, conditioning factors from the social context or the neighbourhood 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 suggestions and offering training directed toward parents and/or teachers, and to optimize educational processes. 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.) (Gabelko, 1997) 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), 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. (Bosson, Swann & Pennebaker, 2000).

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