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Self-concept in specific academic domains, academic values and goals: A study of Comprehensive Multisectoral Lyceum students in Greece

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ABSTRACT

The present study examined the relationship between dimensions of academic self-concept, values and future goals of 208 first grade Lyceum students (equivalent to 10th grade), as well as the link between the level of course-specific self-concepts and students' future orientation, that is, selection of school courses and vocational fields. Adapted versions of the Brookover Self-Concept of Ability Scales and of the Rosenberg Self-Esteem Scale measured the course-specific self-concepts and global self-esteem respectively. Content analysis of questionnaire data showed that the majority of students was oriented towards studies at the Tertiary Education level through the national entrance exams, and placed higher value on the core courses of the curriculum, as they considered these as useful for achieving their goals of future education. Factor analysis showed that the dimensions of these students' academic self-concept were related to their conceptions of course value and to their short-, but not long-term goals. Finally, multiple logistic regressions showed that students planned to follow a cycle at the second grade (i.e., 11th) according to their course-specific self-concepts at the first (i.e., 10th) grade, and that self-concept in the area of social sciences and humanities seemed to be the most significant, compared to other dimensions of academic self-concept, for explaining students' global self-esteem.

Key words: Academic goals, Academic self-concept, Course selection.

Self-assessments in adolescence

Developmental and educational psychologists have examined the function of self-assessments in adolescence in several domains (Harter, 1993). Self-assessments play a crucial role in a person's academic and career orientations and this issue is not always given proper attention by educational authorities. This study discusses this issue, by focusing on the relationship between course-

specific self-concepts and future course selection.

An important and related line of research focuses on the criteria adolescents employ for their self-assessments. In an effort to test James's suggestion that self-esteem = successes/pre-tensions, Harter (1993) found that the correlations between self-concepts in important domains and global self-esteem are higher than the correlations between self-concepts in unimportant domains and global self-esteem. Harter (1993) also noted

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that, in order to maintain high self-esteem, students might attempt to change their value system if this is not in accordance with the level of their self-concepts (the relationship is reciprocal).

This, however, is not always easy, since the values hierarchy might have been suggested by parents and other significant others in childhood, might be internalized, and might be difficult to change, so as not to jeopardize their approval. This agrees with Rosenberg's discussion of self-values which are "not purely idiosyncratic" (Rosenberg, 1965, pp. 252-3).

Ryan (1993) discussed the internalization of social values, or the way in which an individual assimilates "new forms of behavioral regulation that are not inherent in the organism, but are socially transmitted" (Ryan, 1993, p. 28). In other words, internalization of social values is considered as part of the general process of social learning, as it is assimilation of external stimuli to the self, and we may assume that it has started long before adolescence or transition to Secondary Education.

On the other hand, Eccles and Midgley (1990) showed that, during early adolescence, there was a decline in motivational constructs like interest in school and intrinsic motivation, and an increase of truancy and dropout. Both Eccles (1993) and Harter (1993) emphasized that, in adolescence, there is a salience of values such as physical appearance and acceptance by peers, values the school does not necessarily promote (also Peetsma, 1997).

However, the adolescent may still be sensitive to other persons' judgements of his/her worth, especially along criteria which are considered to be important in his/her immediate social context, the peer-group, or classmates. Concerning educational experiences, we may assume that overreliance on external criteria (such as grades) for self-assessments is damaging for the adolescent student. Ryan's (1993) review indeed showed that students' excessive preoccupation with how their capacities are judged by others results in superficial processing, loss of thought flexibility in learning, less challenge seeking, less long-term memory and creativity.

Factors which influence adolescent students' course-specific self-concepts

Marsh and Yeung (1997) differentiated between self-efficacy beliefs and self-concepts in specific school courses. Namely, self-efficacy is an indication of feelings of adequacy in an area (e.g., Math) along criteria "implicit to the task", whereas self-concept in this specific area is mostly a function of school and grade-based evaluative criteria. Self-concepts can predict anxiety, effort and intrinsic motivation, whereas self-efficacy beliefs cannot (Marsh & Yeung, 1997).

According to Marsh (1986), the course-specific self-concepts function according to the Internal/External (I/E) frame of reference model, in which the student compares experiences of success/failure in relation to external criteria (social comparison with peers) to those experiences coming from internal criteria (in relation to other courses). In particular, math and verbal self-concepts, operating on the I/E frame of reference model, have been shown to be negatively correlated in many studies (for a review, see Marsh, 1992).

Parents' attitudes, beliefs and perceptions about their children's abilities influence children's own task and self-expectations. Moreover, social class, family structure and activities, as well as school and classroom arrangements play a significant role for a student's school-related self-concepts (Eccles, 1993). Gronlick and Ryan (1989) have suggested that the basic elements for the enhancement of achievement motivation are involvement, support for autonomous behaviors and structure in the family.

Individuals use a variety of information in order to judge how good they are in various domains of their lives. Eccles (1993) suggests that people compare their relative performance across domains and create a hierarchy of ability perceptions from these internal self-comparisons. What is more interesting, is the finding of Eccles-Parsons, Adler, Futterman, Goff, Kaczala, Meece, and Midgley (1983) that mothers had formed, and communicated, a hierarchical view of their children's relative abilities in different courses and, that, the location of math ability in this hierarchy in

turn influenced children's own conclusions regarding their math ability. This effect, which proves the impact of parents, as significant others, in the shaping of specific self-concepts, may, as we have already discussed, decline during adolescence (Eccles, 1993; Ryan, 1993).

The structure of academic self-concept and its relationship with values and goals

The hierarchical, multifaceted model of the self-concept was initially suggested by Shavelson, Hubner, and Stanton (1976), who, in reviewing several self-concept studies, noted that the self-concept consists of several content-dimensions. It was also suggested that age is a crucial factor for the differentiation among situation-specific self-concepts (the older the child, the more differentiable the self-concepts). International evidence has supported the model, and studies examining the relationship of self-concept with school-achievement have employed measurements of academic rather than of general self-concept, because the academic self-concept has

been confirmed as a separate dimension of the self-concept structure (Watkins & Regmi, 1990).

Marsh and his colleagues have conducted a series of investigations on the structure of the academic self-concept with Australian and U.S. students and provided strong evidence on the multidimensionality and hierarchical organization of the construct. Several course-specific self-concepts formed the lower-level factors, whereas a verbal/academic and math/academic self-concepts formed the higher-level factors of the hierarchy (Marsh, 1992).

In a study of Greek Gymnasium (Lower Secondary Education) students (average age 13 years), it was shown that the academic self-concept is a multidimensional, hierarchically organized construct (Koumi, 1994). Two higher-order factors were identified as core-academic and noncore-academic self-concepts, because core course-specific self-concepts and noncore course-specific self-concepts loaded on each of them respectively. The distinction between core and noncore academic self-concepts was based firstly on official curricular arrangements (hours of

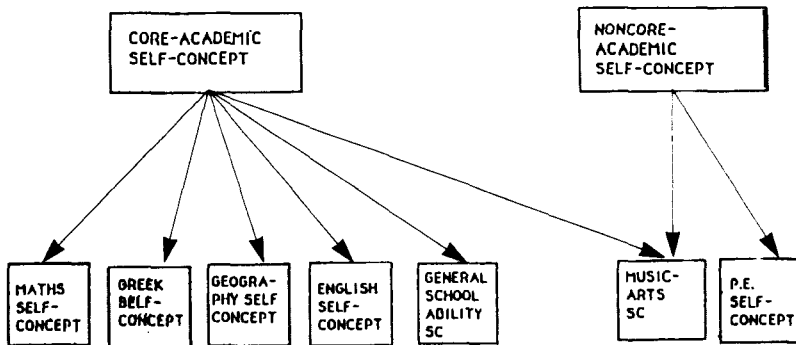


Figure 1: The structure of the academic self-concept for the Greek secondary school students: the self-concepts in Math, Greek (language), Geography, English (foreign language) and general school ability (assessment of one's overall competency in school courses), related to the core-academic self-concept factor, whereas the self-concepts in Music-Arts and Physical Education (P.E.) related to the noncore-academic self-concept factor (Koumi, 1994, p. 169).

Note: SC = self-concept

teaching) and unofficial suggestions (grading procedures, parental and social suggestions on the importance of different courses). Math and verbal self-concepts did not appear as distinct higher-order academic factors (correlation of .403, $p < .000$), but both loaded on the core-academic self-concept higher-order factor (Figure 1). A link was suggested between the students' goals (plans to enter Tertiary Education), values (importance attached to core courses) and structure of academic self-concept, which was also supported by qualitative data (content analysis of interview data, Koumi, 1994).

Course-specific self-concepts and course selection or future orientation

In a review of motivational research in education, Weiner (1990) explicitly considered self-evaluating or relevant parameters (such as self-efficacy, causal attributions, learned helplessness) as constituting the cognitions which, along with individual differences and environmental determinants, affect the motivational course of a student's task-engagements. Similarly, in the framework of the theory of Cognitive Orientation, Kreitler and Kreitler (1994) have suggested that cognitive elements like meanings, beliefs (one type of which is self-beliefs), and attitudes guide human behavior. Ryan also attempted to prove the self as "an active center of initiation and spontaneous engagement with the surround" (Ryan, 1993, p. 5).

The concept of goals is very relevant to the self's initiation of activity. Kreitler and Kreitler (1994) noted that "goals form an essential part of human motivation, perceptions of the self and of others, of self-presentation, of management, even of personality changes" (p. 142).

Based on the theories of expectancy-value as well as of planned behavior, and Bandura's (1986) social cognitive model which postulates self-efficacy and its impact on task choices, persistence and motivation in a reciprocal manner, we may expect that course-specific self-concepts will affect students' course choices and educational goals and performance. For example,

a student who perceives him/herself as very competent in math will possibly value the specific course and his/her achievement in it (also Harter, 1993; Rosenberg, 1965) and will decide to invest time and effort in this particular domain. Similarly, Eccles (1984) suggested a model of academic choice, according to which academic behaviors (choice, persistence in a task) are a function of task value and expectancies of personal success, as determined both by the person and by significant others.

A line of research which is very related to the above, is that of Future Time Perspective or Future Orientation (Lens & Rand, 1997; Zaleski, 1994). Nurmi (1994) suggested that social environments provide a context in which people's future-oriented goals and interests develop, according to internalization processes. More specifically, it has been shown that students make decisions concerning schooling at times imposed on them by the structure of the educational system (Osipow, 1983).

In an effort to clarify the effects of self-concept on subsequent behaviors, future orientation researchers focused on the impact of self-evaluations on the sense of personal control over the environment. People with increased sense of personal control or internal locus of control in turn tend to be more optimistic concerning the future (Lens & Moreas, 1994). Future Time Perspective (FTP) as a system is linked to the goal-setting process.

Marsh and Yeung (1997) found that specific components of self-concept were more strongly related to subsequent course selection than were school grades for 8th and 10th graders. They also concluded that it is essential to utilize the level of course-specific self-concepts as predictors of course selection for students. Eccles-Parsons et al. (1983) found that self-concept had both a direct effect on coursework and selection plans, as well as indirect effects which were mediated by achievement expectations (see also Eccles, 1993).

The aims of the present study

In order to understand the background of the

present study, we shall firstly give a description of the educational system in Greece as regards the upper secondary school education, and specifically the Comprehensive Multisectoral Lyceum.

The role of the Comprehensive Multisectoral Lyceum has been defined as to offer its students a variety of courses, including theoretical and technical ones. Also, to keep students of different vocational preferences together for a longer period of time and through a variety of common activities. In the first grade (corresponding to 10th grade), students follow common courses. In the second grade, however, they have to follow a specific cycle of studies. The cycles are as follows: first cycle (man and society), second cycle (health and physical sciences), third cycle (business and finance), fourth cycle (mechanical technology), fifth cycle (electronics) and sixth cycle (technology of primary production).

In the third grade, students have to make a decision about their future studies in tertiary education. They have the option to enter Technological Institutions without general national exams, that is, only by means of their grades, or enter Universities through entrance exams. In the former case they have to select a sector of studies out of 17 available. In the latter case, they have to follow one of 4 branches of studies. The four branches of theoretical studies and the access they provide to tertiary education have remained the same for several years in the Greek educational system, and they are as follows: first branch (physical sciences), second branch (medical sciences), third branch (humanities, legal and social sciences), fourth branch (business, economics and social sciences). The same theoretical orientation via branch attendance is practically the only option for students of the general lyceum.

The present study with students attending the 1st grade of the Comprehensive Multisectoral Lyceum focused on:

a. the structure of the academic self-concept of students and its relation with students' estimation of course value/instrumentality as well as future educational goals/plans;

b. the role of course-specific self-concepts for the selection of cycle at the 2nd grade and sector

or branch at the 3rd grade of Lyceum. The cycles are related to all possible vocational choices, whereas the sectors of studies regard both technically and theoretically-oriented courses, and the branches purely theoretically-oriented courses;

c. the relationship between self-concept in different academic domains and global self-esteem.

As explained above, the curricular arrangements at the first grade offer alternative courses (technical and theoretical) to students, with a prospect of providing variety of possibilities. However, we could expect that the majority of students will select a theoretical orientation (such as language or science) for their tertiary education, because this will be considered by their social context and themselves, as more "prestigious", via internalization processes of the shaping of values, as we have already discussed. We could also expect that they will consider core courses (e.g., Language, Math) as more important than noncore secondary courses (e.g., Physical Education, Agriculture), for the same reason. In other words, it was expected that technical courses/orientations will be considered as secondary, "noncore" ones, as opposed to theoretical professional courses considered as main or "core" ones by the majority of the students.

The hypotheses of the study were the following:

1. The majority of students will attach higher value to the core courses, because they will consider them as more important (effect of internalized social values).

2. The majority of students will be oriented towards the four branches that lead to national exams for the entrance to University, as this is related to the emphasis on core theoretical and not to the noncore technical courses (educational goals/plans).

3. The students' academic self-concept will be structured in dimensions, such as math or language self-concept, according to the students' perceptions of course value/instrumentality (core-useful vs. noncore-nonuseful).

4. Students will select cycle for the 2nd and sector or branch for the 3rd grade according to

their course-specific self-concepts (influence of self-concept on course selection and educational goals/plans).

5. Students' global self-esteem will be more related to their level of self-concept in the "core" rather than the "noncore" courses.

Method

Participants

The sample consisted of 208 students of the first grade of the Comprehensive Multisectoral Lyceum of Rethymnon, Crete, during the school year 1996-97 (average age 15 years). Of these, 44.2% were boys ($n = 92$) and 55.8% girls ($n = 116$).

Questionnaires

The students completed a questionnaire of 69 questions, which measured the variables of 13 course-specific self-concepts (52 items), value attached to 6 specific courses and justification (3 items), educational goals/plans (1 item), selection of cycle, sector and branch (3 items), and global self-esteem (10 items).

Course-specific self-concepts. An adapted version of the Brookover, Erickson, and Joiner (1967) Self-Concept of Ability Questionnaires was used to measure the following course-specific self-concepts: Modern Greek (3 items), Technology (3 items), Math (7 items), Physical Education (5 items), Ancient Greek (7 items), Design (4 items), Physics (4 items), Accounting (4 items), Business Administration (3 items), Computer Information Systems (C.I.S., 3 items), Psychology (3 items), Electronics (3 items), Agriculture (3 items).

The Self-Concept of Ability Questionnaires were used in the past with a Greek sample and with very good psychometric qualities (Cronbach's $\alpha = .921$ for whole questionnaire and ranging from .851 to .928 for course-specific self-concepts questionnaires, Koumi, 1994). The student is asked to assess his/her ability in a specific school course or at school work in general (e.g., "How would you rate yourself in school ability/math/history compared

with those in your class at school?" – 5 point Likert scales "I am the best/above average/average/below average/the poorest").

Projected course-specific self-concepts.

Since the Self-Concept of Ability Questionnaires also measure the student's projected self-concept in the future, the students were asked to assess not only their self-concepts in various courses taught to them at the time of the study (e.g. Modern Greek, Ancient Greek, Technology, Math, Physical Education), but also their potential abilities in additional courses they would be taught the following year (Design, Physics, Accounting, Business Administration, Computer Information Systems - C.I.S., Psychology, Electronics, Agriculture) as well as at the third year of Lyceum and at tertiary education level (Design, Physics, Accounting, Business Administration, Computer Information Systems - C.I.S., Psychology, Electronics, Agriculture, Ancient Greek, Physical Education, Math). (For example, "Forget for a while how others grade your achievement in each of the following courses. In your opinion, how good do you think your work is in each of these? – excellent / good / average / below average / much below average.") The α coefficients for the 13 different course-specific self-concepts ranged between .80 and .91.

Course-specific value. Three questions asked from students to rank the courses of Modern Greek, Technology, Math, Physical Education and Ancient Greek in terms of their importance (students were familiar with these courses at the time of assessment) and to justify their assessments of the two more important for them courses (two open-ended questions, e.g., "Rank the following courses in terms of importance...Why do you consider ... as the most important course?").

Educational goals / plans. One question asked from students to indicate their goals/plans for after their graduation from Lyceum (Tertiary Education, that is, University Institutions through national entrance exams/Technical or other school/Termination of education after Lyceum/Do not know - nominal data). Three open-ended questions asked from students to declare which cycle they would attend at the second grade, and

which sector and branch at the third grade of Lyceum (nominal data, e.g., "Which cycle do you plan to attend at the second grade of Lyceum?").

Global self-esteem. Finally, ten 4-point Likert items assessed the students' level of global self-esteem. The Rosenberg (1965) Self-Esteem Questionnaire was used for the measurement of the global self-esteem variable. This questionnaire consists of 10 items, asking the student to assess his/her general worth as a person (e.g., "On the whole, I am satisfied with myself" – "strongly agree / agree / disagree / strongly disagree"). The questionnaire has also been used with Greek samples with very good psychometric qualities. The α coefficient for the present study was .83.

Procedure

The 208 students completed all the questionnaires at the end of their first year of Lyceum (April 1997). The initial design included re-assessment of all students in the following year, but this was not made possible, for practical reasons.

The headmaster and teachers of the Multisectoral Comprehensive Lyceum were informed and permission for testing was obtained.

All students of the first grade were included and were informed by the researcher on the purpose and process of the study. The data was collected with the assistance of psychology students. The questionnaires were completed within 45 minutes for each class. The students did not experience any difficulty with the questionnaires' format.

Results

Distributions of the course-specific self-concepts and global self-esteem variables of the sample

Initially, the mean of the responses to the items per course was estimated in order to determine each student's self-concept in each different course (having answered at least one of the related questions was an adequate criterion for inclusion). Secondly, the mean score for each of the 13 course-specific self-concepts was estimated considering all students' mean scores. The means for each of the course-specific self-concepts are presented in Table 1.

The same method was applied for the

Table 1
Mean and standard deviation of course-specific self-concepts (5-point scales)

Course-specific self-concept	<i>M</i>	<i>SD</i>	<i>N</i>
Physical Education	4.3	0.8	182
Technology	4.2	0.6	182
Modern Greek	3.6	0.7	182
Computer Inf. Systems	3.5	1.0	181
Business Administ.	3.4	1.0	182
Psychology	3.3	1.2	181
Design	3.1	1.2	182
Math	3.1	1.0	182
Ancient Greek	3.0	1.0	182
Accounting	2.9	1.1	181
Physics	2.8	1.2	181
Electronics	2.4	1.1	182
Agriculture	2.4	1.0	181

estimation of global self-esteem. The mean for the whole sample was 3.0 (standard deviation 0.6), which shows that the level of global self-esteem of the sample was quite high.

Frequencies of cycle, sector, branch selection

About 19.2% ($n = 40$) of the students of the whole sample did not declare the cycle which they would follow in the following school year, at the second grade of Lyceum. Of the 80.2% students ($n = 168$) who gave an answer, the following frequencies were observed: 24.4% ($n = 41$) would follow the first cycle (man and society), 4.8% ($n = 8$) would follow the second cycle (health and physical sciences), 50% ($n = 84$) would follow the third cycle (business and finance), 8.9% ($n = 15$) would follow the fourth cycle (mechanical technology), 10.7% ($n = 18$) would follow the fifth cycle (electronics) and 1.2% ($n = 2$) would follow the sixth cycle (technology of primary production).

Of the total sample, only few students (28.4%, $n = 59$) declared the sector they were going to follow at the third year of Lyceum, two years after the time of assessment. However, a higher percentage was observed for the question of the branch they would follow (49%, $n = 102$). Of the

last percentage, 27.5% ($n = 28$) declared that they would follow the first branch (physical sciences), 5.9% ($n = 6$) declared that they would follow the second branch (medical sciences), 30.4% ($n = 31$) declared that they would follow the third branch (humanities, legal and social sciences), and 36.3% ($n = 37$) declared that they would follow the fourth branch (business, finance and social sciences) at the third grade.

Ranking of courses

All students were asked to rank the six courses which they were taught at the time of testing, in terms of importance and to explain the reasons for which they ranked certain courses as more important than the rest. We had assumed that the main reasons provided would refer to a course's usefulness/instrumentality for achieving at the present time and in the future, to the course being considered important by the educational system, to the student's liking (these were categories of reasons which emerged in our previous work [Koumi, 1994]). The ranking results are presented in Table 2, which shows that the majority of students consider that Math and Modern Greek are the most important courses, compared to

Table 2
Frequency and percentage of participants according to their rankings of school courses in terms of importance

Course	Ranking					Total
	First	Second	Third	Fourth	Fifth	
Ancient Greek	24 (16.21%)	25 (16.89%)	43 (29%)	32 (21.62%)	24 (16.21%)	148
Modern Greek	50 (31.44%)	71 (44.65%)	32 (20.12%)	5 (3.14%)	1 (0.62%)	159
Math	78 (45.61%)	33 (19.29%)	31 (18.21%)	9 (5.26%)	20 (11.69%)	171
Technology	8 (5%)	20 (12.65%)	23 (14.55%)	64 (40.50%)	43 (27.21%)	158
Physical Education	9 (6%)	15 (10.13%)	25 (16.89%)	28 (18.91%)	71 (49.97%)	148

Ancient Greek, Technology and Physical Education.

The reasons, which students provided for the high evaluations of these courses, and which we analyzed by means of content analysis, included for Math: "It facilitates daily living" ($n = 56$), "Is the basis for other courses/further studies" ($n = 12$), "Helps with job hunting" ($n = 13$), as well as "It shows one's ability", and "I like it". For Modern Greek, the categories were: "It facilitates daily living" ($n = 61$), "Helps with further studies" ($n = 7$), "Helps with job hunting" ($n = 3$), "Helps development of language and personal development/communication", and "I like it".

Specifically, 39.9% of the students ($n = 83$) declared that they plan to enter tertiary education, through general national exams (following a branch at the third grade) rather than join a

technical school or terminate their education after Lyceum.

The above results suggest that students of the 1st grade of Multisectoral Lyceum to a considerable extent have an articulated conception of the present and future courses.

The structure of course-specific self-concepts

In order to detect the structure and the dimensions / factors along which students' course-specific self-concepts are organized, a factor analysis was conducted on the mean scores constituting the course-specific self-concept variables. The significant correlations among the course-specific self-concept variables ranged from .60 ($p < .000$) for Math and Physics to -.35 ($p < .000$) for Greek Language and

Table 3
Factor Analysis – Extraction of domain-specific self-concept factors

Percentage of variance explained	Courses	Loading on the factor
Factor: Social Sciences & Humanities		
19.5%	Modern Greek	0.83
	Ancient Greek	0.80
	Psychology	0.60
Factor: Physical Sciences		
15.1%	Physics	0.86
	Math	0.82
	Electronics	0.46
Factor: Noncore Domain		
13.7%	Design	0.67
	Physical Education	0.60
	Agriculture	0.57
	Technology-Production	0.48
Factor: Business		
12.3%	Business Administration	0.86
	Accounting	0.80
	Computer Information Systems	0.67

Electronics. The Principal Components method was used for the extraction of the factors, and the varimax solution technique, for rotation. The pattern matrix of the analysis presented 4 factors. The number of factors was determined according to the scree-plot diagram. The factors explained 60.7% of the explained variance. The loadings on the factors are presented in Table 3. The minimum

loading which was used as a criterion for inclusion was .40.

The extracted factors corresponded to the following clusters of course-specific self-concepts of Social Sciences and Humanities, Physical Sciences, Business, and Noncore Domain. These factors parallel the three out of the four branches of studies, namely: Humanities, Legal and Social

Table 4
Models of Logistic Regression for the relationship between domain-specific self-concept and selection of cycle of studies for the second grade

Factors	B	Odds ratio	Criterion for entry			Criterion for removal			Wald Test		
			Score	df	Sig	-2log LR	df	Sig	Statistic	df	Sig
Dependent variable: 1st cycle of studies (man and society)											
Social Sciences/ Humanities	1.9	6.7	35.2	1	<0.0001	48.1	1	<0.0001	26.7	1	<0.0001
Physical Sciences	-1.6	0.2	31.4	1	<0.0001	34.7	1	<0.0001	21.5	1	<0.0001
Business	-0.9	0.4	12.1	1	0.0005	12.7	1	0.0004	10.7	1	0.0001
--2LL statistic= 96.7											
Dependent variable: 3rd cycle of studies (business and finance)											
Social Sciences/ Humanities	-0.5	0.6	7.13	1	0.0008	7.0	1	0.0008	6.8	1	0.001
Physical Sciences	-0.7	0.5	12.0	1	0.0005	13.9	1	0.0002	12.1	1	0.0005
Business	1.3	3.6	36.0	1	<0.0001	43.7	1	<0.0001	30.5	1	<0.0001
--2LL statistic= 173.4											
Dependent variable: 4th cycle of studies (mechanical technology)											
Social Sciences/ Humanities	-0.7	0.5	6.4	1	0.01	6.5	1	0.01	5.9	1	0.02
Physical Sciences	1.4	4.0	19.8	1	<0.0001	20.7	1	<0.0001	14.9	1	0.0001
--2LL statistic= 74.8											
Dependent variable: 5th cycle of studies (electronics)											
Social Sciences/ Humanities	-1.1	0.3	14.1	1	0.0002	14.8	1	0.0001	11.5	1	0.0007
Physical Sciences	1.8	5.8	27.7	1	<0.0001	31.3	1	<0.0001	19.0	1	<0.0001
-2LL statistic= 71.2											

Sciences branch, Physical Sciences branch, and Business, Economics and Social Sciences branch.

Relations between students' course-specific self-concepts and course selection

The technique of multiple logistic regression (method stepwise / criterion for entry: significance of score statistic < 0.05 ; criterion for removal: significance of likelihood ratio statistic > 0.1) was applied with the aim to detect those parameters which affect the selection of cycle (not of sector or branch, due to the small number of students who had declared sector or branch for the third grade of Lyceum, see above).

The technique was applied to each of the

following cycles of study: first cycle (man and society), third cycle (business and finance), fourth cycle (mechanical technology), fifth cycle (electronics). Logistic regression was not applied to the second and the sixth cycles, due to the small number of students who had selected these cycles. In each application of the technique, independent variables were the mean scores of the self-concept factors which were extracted from the factor analysis procedure.

The analysis was performed with a sample of 168 students (those who had answered at least one question for every course-specific self-concept and had declared their preferred cycle of study for the following school year). The factor of the noncore courses self-concept (3rd factor) entered none of the four models of logistic

Table 5
Classification tables of the models of Logistic Regression for the relationship between domain-specific self-concept and selection of cycle of studies for the second grade

	Expected			
Observed	No	Yes	Total	Percentage of classification
Dependent variable: 1st cycle of studies (man and society)				
No	119	8	127	93.7%
Yes	15	26	41	63.4%
				Total: 86.3%
Dependent variable: 3rd cycle of studies (business and finance)				
No	62	23	85	72.9%
Yes	20	63	83	75.9%
				Total: 74.4%
Dependent variable: 4th cycle of studies (mechanical technology)				
No	150	3	153	98.0%
Yes	14	1	15	6.7%
				Total: 89.9%
Dependent variable: 5th cycle of studies (electronics)				
No	147	3	150	98.0%
Yes	11	7	18	38.9%
				Total: 91.7%

regression. Therefore this self-concept factor did not seem to affect students' selection of cycle. Moreover, the selection of the fourth cycle (mechanical technology) and the fifth cycle (electronics) did not seem to be affected by the factor of business, as this factor did not enter the respective models of logistic regression.

More specifically, the technique gave the results presented in Table 4, which shows that an increase in the self-concept in the social sciences and humanities domain increased the probability of selection of the first cycle of studies (man and society). Also, that increase in the self-concept in the physical sciences and business domains decreased the probability of selection of this cycle of studies.

Table 4 also shows that an increase in the self-concept in the domain of business increased the probability of selection of the third cycle of studies (business and finance). On the contrary, an increase in the self-concept in the domains of physical sciences and social sciences and humanities decreased the probability of selection of this cycle of studies.

Finally, Table 4 shows that an increase in the self-concept in the domain of physical sciences increased the probability of selection of the 4th (mechanical technology) and the 5th (electronics) cycles of studies. On the other hand, an increase in the self-concept in the domains of social sciences and humanities decreased the probability of selection of both cycles of studies. A clearer differentiation appears for the fifth cycle (electronics).

Classification tables of the models of logistic regression with the frequencies of students' selection of each of the 5 cycles (according to their course-specific self-concepts) are given in Table 5.

The relationship between values and global self-esteem

The technique of multiple linear regression (method stepwise / criterion for entry: significance of F statistic < 0.05 ; criterion for removal: significance of F statistic > 0.1) was applied with the aim to detect those self-concept factors which

affect a pupil's global self-esteem.

The size of the sample with which this technique was applied was 175 students (those who had answered at least one question for every course-specific self-concept and at least one question of the global self-esteem questionnaire).

The only factor of the self-concept which entered the model was that of social sciences and humanities ($B = 0.1$, $Beta = 0.2$, $T = 2.5$, $F = 6.0$, $p < .01$, adjusted $R^2 = 0.028$). More specifically, an increase of self-concept in the domain of social sciences and the humanities means an increase in the students' global self-esteem.

Discussion

This study aimed at investigating the relations between students' self-concept in specific academic domains and their values and academic goals. The analyses of results suggested that the first hypothesis of the study, which predicted that the majority of the students would attach higher value to core courses rather than to noncore ones, was supported. This is because the majority of students indicated that the most important courses for them were those of Math and Modern Greek, since they both facilitate daily living and help with other courses and further studies, and they are useful for the attainment of future goals (that is, entering tertiary education through national exams, rather than following technical orientations; in the latter case other courses would be considered more useful). From this point of view, goal setting and expectancy seem to be related (see also Ames & Ames, 1984).

The second hypothesis, which regarded students' academic goals, was also supported, since the majority of students was oriented towards studying in tertiary education rather than following technical vocations or terminating their education after Lyceum.

The third hypothesis, which referred to the dimensions or factors underlying students' self-concept, was also supported, as the structure of the academic self-concept was indeed related to the distinction between core and noncore

courses, and the instrumentality of core courses for attainment at the specific domains of study. This corresponds to the arrangements of the educational system concerning the content of theoretically-oriented branches.

The fourth hypothesis, which regarded the selection of cycle and sector or branch, was also supported, since students indeed seemed willing to select a cycle of courses for the second grade according to their course-specific self-concepts. Unfortunately due to the small number of responses with regard to sector / branch selection we could not identify the relationship we intended to. This lack of responses suggests that students did not have very clear long-term plans/goals. Rosenberg's (1979) and Harter's (1993) claims that people decide their involvement in tasks in which they consider themselves competent, in order to maintain a high self-esteem, was supported. Similarly, future orientation theorists would agree that attitudes towards the self are important predictors of future time perspective and effort investment (e.g., Kreitler & Kreitler, 1994). These results are also in line with Eccles' (1993) and Marsh and Yeung's (1997) findings on the effect of self-concept on course selection and attendance among adolescents. However, our data only showed this effect in the case of short-term goals (cycles selection) rather than long-term (sectors / branches selection) ones.

The above findings support the suggestion that there is a relationship between the structure of the academic self-concept, and the values and goals of the students. Moreover, that the cognitive content of course-specific self-concepts should be examined in junction with the motivational content of setting goals for the future, within a framework of self-regulated learning (Boekaerts, 1997) for all students, irrespective of their orientation (theoretical or technical).

Finally, the fifth hypothesis, which regarded the relations between global self-esteem and core vs. noncore self-concept, was partially supported, since we expected that the self-concept in the domain of physical sciences, which belong to core courses, would also affect global self-esteem. However, this was not the case, and only the self-concept in social sciences and humanities was

related to global self-esteem.

What was interesting and predictable is that the noncore-courses self-concepts (Design, Physical Education, Agriculture, Technology) did not seem to affect the level of global self-esteem. This is understandable since for the "average student" these courses were not considered to be important. Business self-concept did not affect the level of global self-esteem either. We have no information on the valence students attribute to the specific courses of this factor (Business Administration, Accounting, Computer Information Systems). It would be interesting to include this investigation in future research.

However, the fact that physical sciences self-concept (Physics, Math, Electronics) did not relate to the level of global self-esteem is surprising, since students had indicated that Math is a very important course and it shows one's ability. However, self-concepts in the specific Physical Science courses were relatively low (Table 1). It could be that students did not assume direct responsibility for achievement in this area, using ability as an attributional parameter (which is stable and uncontrollable), and that, therefore, were ready to "excuse themselves" and to exclude the criterion of ability in the Physical Sciences from the formation of their global self-esteem. On the contrary, ability in the domain of humanities and social sciences may not have been perceived as innate ability (cleverness), but as the result of exerted effort (an unstable and controllable attributional criterion). Self-concepts in the respective Humanities and Social Science courses were relatively high (Table 1). The role of ability and effort attributions in the formation of global self-esteem for important domains is a point which merits further examination, also in light of controversial findings on the role of effort attributions in adolescence and on the developmental shift from ability to effort attributions for task-oriented and ego-oriented students (Covington & Omelich, 1979; Nicholls, 1984).

Overall, the study has shown that Lyceum students in this particular school placed high value on core, important, useful courses, and had high educational goals (that is, studying at a university). These values were reflected in the structure /

dimensions of their academic self-concepts and their course selection and vocational planning (short-term goals). This setting of short-term goals was highly related to the self-concept held for the courses taught at school.

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