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SOCIAL-ACADEMIC CLIMATE AND ACADEMIC SATISFACTION IN ARCHITECTURAL DESIGN EDUCATION

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Abstract

The social climate created in the classroom has been recognized to have important implications for learning. This study was motivated by the explore how design students in the design studio compared to other other architectural courses view their social-academic climate.
Despite the role played by social climate in classroom, some have argued that classroom climate has been largely ignored in studies of higher education and most studies on classroom climate explore the perceptions of teachers rather than views of students themselves. The present study focuses on social-academic climate and its significance in architectural studies and its effect on academic satisfaction.
A survey was conducted of students of architecture, following an approach developed by Moos (1970), who claimed that behavior is largely affected by environmental and situational factors. The model he constructs presents social climate as a product of bilateral pressure systems - environmental pressures that affect the individual, and pressure that the individual exerts on his or her environment. This study evaluates social-academic climate and academic satisfaction in an academic architectural program, focusing on a comparison of perceptions of students in the design studio and traditional classes, based on the eight dimensions proposed by Moss (1979).
Findings shed light on the importance that students attribute to the measures of social-academic climate. These factors (specifically, students' involvement, competence, innovation, and teacher support) were rated higher in the design studio than in the courses. Social-academic climate measures such as involvement, order and organization, teacher's control, and orientation of the learning material were higher in the first year than in more advanced years. Academic satisfaction was higher in the first year design studio. Ratings of order, organization, and teacher support were the major predictors of students' academic satisfaction with the architectural program.
Key words: *academic satisfaction, architecture, classroom, design studio, learning environment, social-academic climate.*

Introduction

The large number of university-level schools and departments of architecture in the West that have been established in the last 60 years consider the design studio to be the core of the architectural curriculum. The design studio is the place where students envisage, devise, and develop innovative artifacts. In this educational setting, students are exposed to a multiplicity of views presented by their instructors (Ledewitz, 1985; Waks, 1999, 2001). They are encouraged to develop their skills and expertise, develop their own concepts and judgments (Chastain and Elliott, 2000), and integrate theoretical and practical knowledge (Sancar, 1996).

In architectural studies, the design studio can be distinguished from the traditional classroom with respect to a number of aspects such as the teaching approach. While the teaching activity in the classroom is mainly characterized by teachers giving frontal lectures to groups of students, the teaching modality in the studio is based on intense interpersonal interactions

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between students and teachers in individual design sessions. In the studio, students are engaged in a learning-by-doing activity that implies gaining knowledge in a practical manner, as they receive feedback from their teachers (Hinson, 2007; Schon, 1987). In addition to their role as educational environments where professional knowledge is acquired, the design studio and the traditional classroom are potential sites where social climate develops. Traditionally, social climate has been defined as the atmosphere that emerges during the studies as the result of the interactions between the physical elements of the learning environment, and the interpersonal interactions between students and teachers (Schubert, 1986). The social climate created in the classroom has been recognized to have important implications for learning (Davis, 2003). A positive social climate contributes to involvement, stimulates discussions and dialogue (Anderson, 1982), and increases students' satisfaction with their studies.

The study of social climate in schools of architecture is important since they are characterized by a unique organizational structure in which diverse teaching modalities are employed, offering not only theoretical knowledge but also practical training to students. Nonetheless, with the exception of a limited number of studies (e.g., Lauring and Selmer, 2011), the effect of teaching and learning on students' social climate is a topic that has been largely neglected in higher education research in general (Iram, 1978), and in architecture and design in particular. The identification of critical dissimilarities in social climate in different types of learning settings can be fundamental for supporting a positive development in higher education (e.g., Allodi, 2010). Therefore, the present research focuses on this almost-forgotten dimension, and explores its meaning in architectural studies, and its effect on academic satisfaction. Therefore, a main aim was to investigate the sense of social-academic climate and academic satisfaction that fresh and advanced students have in the design studio, and in the classroom. The predictive role of social-academic climate for academic satisfaction is also explored.

Social-Academic Climate and the Traditional Classroom

Students' perceptions of social climate have been recognized as an influential aspect of teaching, and central to student learning and involvement (Davis, 2003; Cornelius-White, 2007). In classrooms with positive social climate, students feel comfortable and engaged (Mainhard et al., 2010). In general, social climate develops progressively as students become more familiar with each other, and increase their motivation to share knowledge and expertise (Gatfield, 1999). Social climate in the classroom can be divided into two dimensions (LeBlanc et al., 2008; Schubert, 1986): (i) context, which is concerned with the physical elements of the learning environment, such as desks, light, etc., and (ii) teaching, which encompasses all the factors affecting performance and interactions between teacher and students.

Research on classroom climate was launched in 1936, when Kurt Levin and his associates examined the impact of types of leaders on group climate and learning products. The numerous studies that have accumulated since then have tested classroom climate from various perspectives (scholastic climate, social climate, perceived climate), and developed models and questionnaires to measure it.

The study described below followed the approach developed by Moos (1970), which is one of the most accepted and commonly used in the education system. Moos claimed that behavior is largely affected by environmental and situational factors. The model he constructs presents social climate as a product of bilateral pressure systems - environmental pressures that affect the individual, and pressure that the individual exerts on his or her environment. According to Moss (1979), each learning environment has the following main features: (i) architectural (building shapes, convenience of use, surroundings of the buildings); (ii) organizational (school size, classroom size); (iii) the learner population (sex, IQ, background, personality); and (iv) academic (teaching methods, subjects, norms). Whereas each group of features can directly or indirectly affect classroom climate, this becomes a source of attraction/repulsion between teachers and pupils (Moos, 1970). A classroom whose climate tends toward supervision attracts

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authoritative teachers who have a strong need for control, and pupils who have a strong need for a structured, regulated environment. In contrast, creative pupils are attracted by classrooms whose climate cultivates innovation and where teacher control is low (Od-Cohen and Lazarovitz, 1988).

Despite the role played by social climate in classroom, some have argued that classroom climate has been largely ignored in studies of higher education (Davidovitch, Sharlin, and Birnbaum, 2007; Iram, 1978) as in studies of academic design programs. Most studies on classroom climate explore the perceptions of teachers rather than views of students themselves (Hoy et al., 1990). One exception is a study by Davidovitch (2004), which investigated the relationship between social climate and self-efficacy in several higher education institutions. Other studies in higher education based on Moos' (1979) model point to the importance that students attribute to social-academic climate, and its perceived contribution to success in the classroom (Davidovitch and Dantziger, 2006; Davidovitch and Iram, 2006; Davidovitch, Sharlin, and Birnbaum, 2007). In classrooms characterized by intense interpersonal interactions, students assigned high scores to teacher's involvement and support, and gave lower scores to competition and organization. However, in classrooms with weak interpersonal relations, they awarded higher scores to control, order, and organization (Davidovitch and Soen, 2009).

Teaching, as perceived by students and measured by social-academic climate, may be instrumental in cultivating students' sense of satisfaction with their academic studies.

The Design Studio and Social-Academic Climate

In addition to gaining knowledge and experience, the design studio offers an environment for talking, reflecting and participating in discussions designed to cultivate design and creative thinking (Ledewitz, 1985; Stevens, 1995; Teymur, 2007). One major aim in the studio is to encourage students to develop their creative and innovative capabilities (Casakin and Kreitler, 2010). The acquisition of creative skills and professional knowledge involves a variety of means, as well as the implementation of a wide range of activities that are both theoretically and practically oriented (Reffat, 2007).

On the other hand, the design studio is not only a producer of knowledge, but also a site of social practice and social interaction, where social climate plays a critical role. In many ways, the structure of the studio reflects the social structure of most workplaces, which are based on systems of hierarchy, a division of labor, obedience, orientation to means rather than ends (Dutton, 1987). This similarity raises the question of how social climate might be affected by the structure of this educational environment. In this regard, Dutton (1987) and Yanar (2007) criticized the hierarchical organization in the studio, arguing that it hinders the possibility of conducting a true dialogue. Instead, knowledge should be constructed interactively through common interests (Yanar, 2001), and in a social-academic climate based on trust, and mutual concern (Burbules, 1993). It is the teacher's role to be aware of students' needs, be supportive, and encourage them to engage in a genuine dialogue (Yanar, 2007).

Competition is another important social-academic climate factor, and possibly one of the major motivators of success in architectural studies. There is disagreement, however, on whether competition is positive or detrimental to social-academic climate. Dutton (1987) criticized competition in the design studio, arguing that it brings out the worst in people. In his view, competition not only encourages a climate of rivalry, pressure, and hostility among peers, but it also leads to the erroneous belief that ideas are exclusive and should be protected from others. This view, however, was contrasted by others who found that competition and cooperation can coexist harmoniously in the design studio (Chiu, 2010). In many cases the studio setting becomes a teacher-centered experience, where dependency upon teachers remains high. As such, teachers are more likely to impose their own views, rather than to help students discover the innovative processes behind their own creations (Argyiris and Schon, 1974). Despite the relevance of social-academic climate in architectural studies in general, and in the design studio in particular, no empirical studies have been conducted on this topic to date.

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Research Goals

The manner, in which educational settings differ in their social climate, makes social-academic climate an essential issue. The identification of critical dissimilarities between learning settings plays a role in supporting a positive development in higher education (e.g., Allodi, 2010). This study evaluates social-academic climate and academic satisfaction in an academic architectural program, focusing in the studio and the traditional class. Social-academic climate is assessed according to the eight dimensions proposed by Moss (1979) (See Method). Whether social-academic climate in architectural studies is affected differently by course type and by the year in the program needs to be addressed. The design studio rather than the traditional classroom remains dominant in many contemporary architectural programs (Kvan and Yunyan, 2005). Due to differences in approach, activities, and physical characteristics of each setting, it is suggested that educational needs in the design studio may differ from those in the classroom. Thus, the first goal was to explore whether students have a similar sense of social-academic climate and academic satisfaction in the design studio as in the classroom. It is hypothesized that academic satisfaction and all social-academic climate dimensions will be higher in the design studio than in the classroom.

The learning experience of the first year in the architectural program is known to be different from the remaining years in the program. This is in part because first-year students of architecture are known for their high socialization, involvement, compromise, and positive attitudes in their studies. Although their perceptions of social-academic climate and academic satisfaction might differ from those of the students who are in more advanced stages of the program, no empirical study has been performed assess this. Therefore, the second goal was to understand if students in the first year and more advanced years of study rate the measures of social climate differently. It is hypothesized that academic satisfaction and all social-academic climate dimensions will be higher in first year than in the advanced years.

There is a shared view among educators that social-academic climate has much to contribute to students' academic satisfaction. However, the effect of the different dimensions of social-academic climate on academic satisfaction has never been assessed empirically, independently of the educational environment in consideration. Thus, the third goal was to study the predictive role of social-academic climate factors for academic satisfaction, and to gain insight into what contributes most to enhanced academic satisfaction in the design studio in comparison to traditional architectural courses. It is hypothesized that while teacher support, involvement and competitiveness will have the largest contribution for academic satisfaction in the design studio, order and organization and teachers' control will be dominant contributors to academic satisfaction in traditional classrooms.

Methodology of Research

Participants

Research participants were 112 students of architecture, recruited from the population of first-year to fifth-year students in a school of architecture in a public university in central Israel. Nine participants were eliminated from the study due to structural inconsistencies in their responses, or a large number of incomplete responses.

The final sample comprised 93 students (39 men and 55 women). Their mean age was 24.36 years (SD = 2.54). Slightly over one half (53.2%) of the participants were in their first year of the program, and 46.8% were in more advanced years. The sample was representative of the population studying at the school architecture. Over one third (36.1%) of the students were religious, 32.5% traditionalists, and 31.3% secular. A 81.7% of the participants in the sample were single, and most of them (86.2 %) were born in Israel.

While the sample is small, it comprises all the students of architecture in this institution. Typically the School of Architecture, similarly to other practice-oriented departments in academic institutions in Israel and overseas, have small classes and studies are organized such that students in the same year take all their classes together. Therefore the findings that relate to the students of architecture are representative of students in other fields of a similarly practical nature.

Instruments

1. Courses grades and design studio grades. These grades were assigned by teachers of courses and by design studio instructors.

2. Social-academic climate. Social-academic climate was assessed using measures that appear in a questionnaire developed by Moos (1979). This questionnaire is based on the rationale that a consensus of individuals regarding the attributes of an environment is an indication of the environment's social-academic climate.

The original questionnaire was translated into Hebrew by Levinson (1980), and was adapted by Davidovitch (2004) to higher education institutions. The instrument contains 90 items, which respondents rate on a 5-point Likert scale from 1 (*not true for my academic studies*) to 5 (*very true for my academic studies*). The items address the following dimensions: (i) Involvement: students' attention and interest in classroom activities; (ii) Social connections: friendship among students and their willingness to help each other; (iii) Teacher's support: assistance, interest, trust, and friendliness that the teachers demonstrate to the students; (iv) Orientation to course materials: the extent to which the teacher directs students to acquire knowledge to complete the planned activity; (v) Competitiveness: the extent of competition among pupils to achieve high grades and gain recognition (vi) Order and organization: students' proper conduct and the proper management of classroom activities; (vii) Teacher's control: the extent to which teachers attribute importance to enforcing rules, and the severity of punishments for violating the rules; (viii) Innovation: the number and diversity of activities that take place in the learning environment, and the degree to which the teacher encourages creative thinking.

The internal consistency of the original questionnaire developed by Moss ranged from α = 45–78. The questionnaire used in the present study had higher internal consistency, ranging from α =0.62 – 0.78.

3. Academic satisfaction. This criterion variable was measured by five items rated on a 5-point Likert scale from 1 (*very dissatisfied*) to 5 (*very satisfied*). The internal consistency for the questionnaire was $\alpha = 0.68$ for courses, and $\alpha = 0.62$ for the design studio.

Procedure

Potential participants were approached in public areas of the school of architecture and were asked to participate in a survey. They were informed that the survey was about their perceptions of the social climate and satisfaction of the architectural program. Students rated each item on the questionnaire twice: once regarding the design studio, and once regarding other courses in the architectural program. Students were coded by their identity number. Scoring, recording, and analyses of the data were performed anonymously.

Data Analysis

An academic-satisfaction index was constructed on the basis of a 5-item questionnaire. Data concerning academic satisfaction, and the eight social-academic climate dimensions were analyzed separately using a 2 (Course type: design studio, regular course) × 2 (Study year: first year, advanced years) ANOVA.

To explore the extent to which the study variables jointly explain the variance of aca-

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demic satisfaction in design studio and in classroom, and whether the same variables affect students' satisfaction, stepwise regression analyses was performed for each course type. Results attained significance at a $p < 0.05$ level.

Results of Research

Academic Satisfaction

As predicted, academic satisfaction was significantly higher in the design studio than in the architectural courses, and it was higher for first year students than for students in more advanced years of the program. A significant interaction effect was found for course type and study year. Post hoc analysis indicated that in the advanced years, academic satisfaction in design studio was significantly higher than in courses; but there was no difference for first year between design studio and courses. In contrast, academic satisfaction in first year was significantly higher than in the advanced years, for both design studio and courses (See Tables 1 and 3).

Table 1. Mean and Standard Deviation for Study Year and Course Type on Academic Satisfaction.

		Courses		Design studio		Total	
Year	*N*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
First	50	2.77	0.43	2.79	0.51	2.78	0.60
Advanced	43	2.25	0.44	2.48	0.45	2.36	0.60
Total	93	2.51	0.50	2.65	0.51	2.57	0.60

General Social-academic Climate

Consistent with our predictions, general social-academic climate in the design studio was significantly higher than in courses, and was significantly higher for first-year students than for advanced students. An interaction effect was observed between course type and year of study. Post hoc analysis indicated that for the advanced years, general social-academic climate in courses was higher than in the design studio. There was no difference between studio and courses ratings of first-year students. General social-academic climate in first year was higher than in the advanced years for both design studio and courses (See Tables 2 and 3).

Table 2. Mean and Standard Deviation for Study Year and Course Type on General Social-Academic Climate.

		Courses		Design studio		Total	
Year	*N*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
First	50	3.27	0.32	3.26	0.33	3.26	0.42
Advanced	44	2.93	0.34	3.08	0.29	3.00	0.42
Total	94	3.11	0.371	3.18	0.32	3.14	0.43

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Table 3. Analysis of Variance of Academic Satisfaction, and General Academic-Social Climate Measures by Study Year and Course Type.

	Academic satisfaction			General academic-social climate		
	df	*F*	η_p^2	*df*	*F*	η_p^2
Type of Course	1	10.12**	0.100	1	6.97**	0.07
Year of Study	1	21.88***	0.974	1	17.15***	0.15
Type of Course x Year of Study	2	6.80**	0.070	2	9.37**	0.07

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

Involvement

As expected, social involvement in the studio was significantly higher than in the courses, and significantly higher for first year than for more advanced years of the program. An interaction effect was found between course type and year of study. Post hoc analysis showed that while social involvement in courses was higher in first year than in the advanced ones, no differences existed in the design studio by students' year in the program. However, social involvement in the studio was higher than in courses, for all years (See Tables 4 and 6).

Table 4. Mean and Standard Deviation for Study Year and Course Type on Social-Academic Climate – Involvement.

		Courses		Design studio		Total	
Year	*N*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
First	50	3.33	0.55	3.51	0.53	3.42	0.68
Advanced	44	3.00	0.58	3.36	0.50	3.18	0.68
Total	94	3.18	0.58	3.45	0.52	3.30	0.69

Social-academic Connections

In contrast to our predictions, there were non-significant main effects of course type and study year, and no interaction between of course type and study year on social-academic climate connections (See Table 6).

Teacher's Support

As hypothesized, teacher support in the design studio was significantly higher than in courses. However, no significant main effect was found for study year. A significant interaction effect was observed between course type and year of study on teacher support. Teacher support in advanced years of the program was higher in the studio than in the courses, but no differences existed in first-year students' ratings by course type. In both courses and design studio, teacher support in the first year was higher than in more advanced years (See Tables 5 and 6).

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Table 5. Mean and Standard Deviation for Study Year and Course Type on Social-Academic Climate - Teacher Support.

		Courses		Design studio		Total	
Year	*N*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
First	50	3.33	0.52	3.36	0.49	3.35	0.75
Advanced	44	3.02	0.66	3.25	0.63	3.14	0.75
Total	94	3.19	0.61	3.31	0.56	3.24	0.75

Table 6. Analysis of Variance of Academic-Social Climate Measures - Involvement, Connections, Teacher's Support, and Competitiveness, by Study Year and Course Type.

	Involvement			Social connections			Teacher's support			Competitiveness		
	df	*F*	η_p^2	*df*	*F*	η_p^2	*df*	*F*	η_p^2	*df*	*F*	η_p^2
Course type	1	5.88**	0.06	1	1.57	0.02	1	7.89**	0.08	1	6.71**	0.07
Study year	1	27.83***	0.23	1	2.01	0.02	1	3.60	0.38	1	2.90	0.03
Course type x Study Year	2	3.57*	.004	2	1.61	0.02	2	4.36*	0.05	2	0.70	0.08

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

Competitiveness

As expected, competitiveness in the design studio was significantly higher than in the architectural courses. However, there was no main effect of year of study on this factor, and no interaction effect between course type and year of study was found (See Table 6).

Order and Organization

In accordance with the predictions, order and organization in first year was higher than in the advanced years, but no main effect of course type was observed. An interaction effect, however, was found between course type and year of study on order and organization. Whereas order and organization for the advanced years was higher in design studio than in courses, there were no differences in first–year students' ratings. In both courses and studio, order and organization in first year was higher than in advanced years. (See Tables 7 and 9).

Table 7. Mean and Standard Deviation for Study Year and Course Type on Social-Academic Climate - Order and Organization.

		Courses		Design studio		Total	
Year	*N*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
First	50	2.92	0.52	2.87	0.64	2.89	0.69
Advanced	44	2.51	0.48	2.71	0.50	2.61	0.69
Total	94	2.73	0.54	2.79	0.58	2.75	0.70

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Teacher Control

As hypothesized, teacher control in first year was significantly higher than in the advanced years of the program. However, no significant main effect of course type was observed. There was an interaction effect between course type and year of study on teacher control. While teacher control in first year was higher in the courses, no differences were observed in the advanced years by course type. Teachers had greater control in first year in both design studio and courses. (See Tables 5-9).

Table 8. Mean and Standard Deviation for Study Year and Course Type on Social-Academic Climate - Teacher Control.

		Courses		Design studio		Total	
Year	*N*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
First	50	3.15	0.59	2.97	0.68	3.06	0.74
Advanced	44	2.65	0.54	2.71	0.44	2.68	0.74
Total	94	2.91	0.62	2.85	0.59	2.87	0.74

Innovation

In accordance with the predictions, innovation in the design studio was higher than in the courses taught at the school of architecture. However, no main effect of year of study was observed this factor, and no interaction effect between course type and year of study was found (See Table 9).

Orientation to Study Material

As hypothesized, orientation to study material in first year was significantly higher than in advanced years. However, no main effect of course type, and no interaction effect between course type and year of study was observed for this factor (See Table 9).

Table 9. Analysis of Variance Academic-social Climate Measures - Order and Organization, Teacher Control, Innovativeness, and Orientation to Study Material, by Study Year and Course Type.

	Order and organization			Teacher control			Innovativeness			Orientation to study material		
	df	*F*	η_p^2	*df*	*F*	η_p^2	*df*	*F*	η_p^2	*df*	*F*	η_p^2
Course type	1	2.54	0.03	1	1.77	0.02	1	28.38***	0.24	1	0.50	0.01
Study year	1	7.87**	0.08	1	12.41***	0.12	1	0.01	0.01	1	26.30***	0.22
Course type x Study Year	2	3.57*	0.004	2	6.23*	0.06	2	1.09	0.01	2	0.29	0.01

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

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Explaining the Variance of Academic Satisfaction in the Design Studio and Other Architectural Courses

Regression analyses were performed on academic satisfaction in design studio and in architectural courses. Forward stepwise regression was used to determine the independent variables that had maximum value in explaining the variance of academic satisfaction. Only variables with *F* probability of .05 or less were entered into the regression equation. Three predictors account for 48% of the observed variance of academic satisfaction in the courses, and 43% of the observed variance of academic satisfaction in the design studio, with each predictor making its own independent contribution.

The hypothesis that order and organization, and teachers' control have the largest input for academic satisfaction in the classroom was partially confirmed. The predictors that contribute to the explained variance of academic satisfaction in the courses are year of study, and two variables of social-academic climate, teacher support, and order and organization (See Table 10).

The hypothesis that teacher support, involvement, and competitiveness make the greatest contribution to academic satisfaction in the design studio was also partially confirmed. Similar social climate variables (teacher support, and order and organization) contribute to explained variance of academic satisfaction in the studio, in addition to the grade variable (See Table 11).

Table 10. Regression Analysis of Social-Academic Climate and Study Year on Academic Satisfaction in Courses.

	Variables	*B*	*SE B*	*β*	R^2	$\bar{R}^2$	ΔR^2
Step 1							
	Year of study	-0.532	0.099	-0.526***	0.277***	0.267	0.277***
Step 2							
	Year of study	-0.422	0.096	-0.418***			
	Social-academic climate: teacher support	0.285	0.079	0.345***	0.384***	0.367	0.107**
Step 3							
	Year of study	-0.308	0.095	-0.304***			
	Social-academic climate: teacher support	0.280	0.073	0.339***			
	Social-academic climate: order and organization	0.326	0.090	0.327***	0.477**	0.456	0.058**

** $p < 0.01$, *** $p < 0.001$

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Table 11. Regression Analysis of Social-Academic Climate and Study Year on Academic Satisfaction in the Design Studio.

	Variables	*B*	*SE B*	*β*	R^2	$\bar{R}^2$	ΔR^2
Step 1							
	Social-academic climate: order and organization	0.421***	0.269	0.448***	0.201***	0.190	0.201***
Step 2							
	Social-academic climate: order and organization	0.390	0.086	0.416***			
	Social-academic climate: teacher support	0.393	0.088	0.410***	0.368***	0.351	0.167***
Step 3							
	Social-academic climate: order and organization	0.394	0.083	0.420***			
	Social-academic climate: teacher support	0.369	0.085	0.385***			
	Score	0.018	0.006	0.243**	0.426**	0.403	0.058**

** $p < 0.01$, *** $p < 0.001$

Discussion

The study examined perceived social-academic climate (Moos, 1979), academic satisfaction, and their connection to course type and year of study in the architectural program. Although social- academic climate was found to be an influential factor in the classroom (Davis, 2003; Fraser and Waldberg, 1991), its relation to architecture, and particularly to the design studio, was never assessed. Understanding how students with different levels of expertise perceive social climate and academic satisfaction in the different course types is an important aspect of design education that can improve the learning and teaching environment. Due to their central role in the architectural curriculum, it is not surprising that academic satisfaction and general social-academic climate were rated higher in the design studio (Chastain and Elliott, 2000) than in the courses. The studio is the place where architectural students invest their best efforts to develop basic knowledge and practical skills (Kvan and Yunyan, 2005).

That academic satisfaction and general social-academic climate were higher in the first year than in the advanced years seems to question previous findings suggesting that social climate develops progressively (Gatfield, 1999). It is possible that social climate increases as students and teachers become familiar with each other within a specific course, but decreases in relation to the beginning of the program. The finding that students' positive perceptions tend to decline as they advance in the program represents a major challenge for architectural educators.

Involvement was found to be higher in the design studio for both group of students, supporting the views that the traditional studio is an ideal place to develop interpersonal relations in the teaching and learning process (Ledewitz, 1985; Waks, 2001), and enhance social climate. This finding is in line with Davidovitch and Soen (2009), who found that students assigned high scores to teacher involvement in educational environments characterized by strong interpersonal interactions. Furrer and Skinner (2003) also observed that strong connections with teachers and other classmates is a major factor promoting students' involvement, even at an emotional level. That involvement was highest in first year suggests that novices are more positive and engaged, and establish stronger friendship networks.

Furthermore, teacher support was higher in the studio, indicating students' extensive reliance on their design instructors This educational environment is characterized by a peda-

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gogical approach that encourages help, interest, trust, and openness that teachers demonstrate and extend to their students what allow gain a close understanding of each other (Demirkan, 2003) . Previous studies also found that in learning environments characterized by strong interpersonal interactions, students gave high scores to teacher's support (e.g., Davidovitch and Soen, 2009). The effect of teacher's support on academic success was found to be positive in academic departments other than design (Davidovitch, 2004). Although no significant differences were found between first-year and advanced years with regard to this measure, there is a tendency for novice students to be more dependent on their teachers (Dutton, 1987; Yanar, 2007). Strong reliance of design students was found to undermine the capacity for independent learning (Samarawickrema, 2005). Therefore, while teacher support can be considered a positive aspect of the learning process, educational approaches should take care to avoid students' over-dependence, especially in the first years of the program.

Moreover, sense of order and organization, and teacher control were higher in the first year, independent of course type. These findings suggest that in addition to a supportive environment characterized by inter-personal interactions, freshman positively view a climate that is oriented toward organization and supervision. This might be partly caused due to the needs of new students, who are still unfamiliar with the existing rules for order and organization in group activities. However, this perception is subject to change as they progress in their studies and become more aware of the learning context, and their preference for a controlled environment decreases. Since architecture is a discipline characterized by the development of creative abilities, this finding does not come as a surprise. As noted before, less structured environments were seen to be more suitable for learning in creative contexts (Davidovitch and Danzinger, 2006; Od-Cohen and Lazarovitz, 1988), as is the case in architecture. However, in order to be seen as positive factors for the social climate, teachers' control and sense of order and organization need to be understood as having a favorable effect on students' well-being and self-development, rather than as mere authoritarianism (Allodi, 2010). For example, Emmer and Stough (2001) demonstrated that when teachers explain their rules and desirable behavior into more detail, they have a better chance of managing their groups more effectively.

That the studio is a highly competitive environment does not necessarily imply an absence of supportive relations or conflicts among students, as claimed in some studies (e.g. Dutton, 1987). Whereas competitiveness in the traditional classroom may conduct to an atmosphere of rivalry and antagonism (e.g., Sutton and Keogh, 2000), in the design studio it might reflect a positive social climate dominated by students' intentions and ambitions to strive for excellence in their personal development (Argyiris and Schon, 1984) and for self-achievement (Kreitler and Casakin, 2009). A reason for supporting the above finding is that while exams in the classroom usually involve standard responses, problems in the studio are ill-defined, and entail the generation of an unlimited number of possible design solutions (Simon, 1983), a situation that may encourage knowledge sharing. In this regard, Chiu (2010) demonstrated that competition and cooperative behavior in the studio can coexist. He showed that competition was not divorced from the sharing of knowledge among pairs, a behavior that increased as the design problem becomes more complex.

That innovation was higher in the design studio than in the courses is related to the fundamental nature of the studio, characterized by the promotion of creative and innovative outcomes (Cross, 2006). This is not to say that innovation is not important in the traditional classroom. But there is an indisputable difference in emphasis and variety of activities carried out in each environment (Kuhn, 2001), and the stress placed on creative thinking (Casakin & Kreitler 2010; Tsungjuang, 2010). Opportunities to foster creative thinking in the studio are considered to be an indicator of the quality of social climate (Allodi 2010; McLellan and Nicholl, 2008).

Guidance concerning study materials was found to be higher in the first year than in more advanced years. This result is supported by Benner (1984), who claimed that novice students who lack experience and knowledge adhere firmly to existing principles and theoretical background, and thus they need the most support and guidance of learning materials to progress in their studies.

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Findings from the regression analysis showed that academic satisfaction in the traditional classroom mainly correlates with students' year of study, and two variables of social-academic climate (order and organization, and teacher support, in this order). These imply that as the two factors of social-academic climate increase, academic satisfaction in the courses also increases. However, as the year of study increases, academic satisfaction in the courses declines. This might be explained by students' growing expectations over time. That order and organization and teacher support are the main variables contributing to academic satisfaction in the classroom reflects a learning process characterized by close supervision and systematic assistance, as suggested in previous studies (e.g., Davidovich and Soen, 2009; Od-Cohen and Lazarovitz, 1988; Yanar, 2001).

Finally, results of the regression analysis of the design studio data revealed that academic satisfaction is mainly correlated with order and organization and teacher support. The third factor was the student's grade in the design studio. This last predictor highlights the studio's important role in architectural studies, and is indicative of the satisfaction that students experience when they are rewarded for their design achievements. Consequently, as the two factors of social-academic climate and the grade increase, academic satisfaction in the design studio also increases. The finding that order and organization and teacher support are major predictors of academic satisfaction in both the design studio and the courses, reconfirms their stability as major social-academic climate factors in architectural studies.

Conclusions

This study addressed assessments of social-academic climate and academic satisfaction in architecture. Findings indicate that academic satisfaction and most social-academic climate measures were stronger in the design studio, and specifically in the first year of the program, which reflects the core importance of the studio in the educational curriculum. That order and organization and teacher support were the major predictors of academic satisfaction in architectural studies suggests that academic satisfaction increases hand in hand with increased encouragement, and well-coordinated environments, contributing to greater personal development in the learning and teaching processes.

Implications for design education can be drawn from the present study. Enhancing design teachers' awareness of the importance of academic satisfaction and the different dimensions of social climate, not only in architecture, but also in other design disciplines, may assist teachers in creating a better learning environment in their classes. In this regard, findings from this study can be generalized to other design faculties and departments that share a similar organizational structure and provide practical training to students, such as industrial and engineering design. Studies in different academic domains confirm that students attribute importance to the various aspects of social-academic climate for success in their studies.

Intervention programs aimed at enhancing social-academic climate can implement the present findings mainly by acknowledging the existing differences between the design studio and the traditional classroom, and by reinforcing the specific dimensions of social climate that are perceived as being more critical for novice and advanced students, respectively. As social-academic climate increases, so increases satisfaction in the architectural studies. Therefore, a major challenge of educational programs might be the development of a curriculum that takes into consideration the contribution of social climate measures in enhancing academic satisfaction, particularly in the courses, and avoids its declining impact through the years.

From a broader perspective, the findings of this study show that an understanding of social-academic climate indices may help design educators plan interventions to improve the teaching and learning process. It is suggested that students might consider the teaching quality of their instructors as an important factor in the realization of their learning potential and academic achievements in many design areas, extending beyond a specific course. This view is shared by many design educators, and in the recent years there has been a significant change in the process of evaluating the quality of teaching in higher education.

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This study is pioneer in the architectural design domain, and its findings should be treated with caution in view of the limited sample that participated in the survey. A future study could extend the scope of the present study by examining social climate as perceived by students in other design departments.

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