Computer Science and Engineering Students Addressing Critical Issues Regarding Gender Differences in Computing: a Case Study

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Abstract

This study focuses on how Computer Science and Engineering Students (CSESs) of both genders address certain critical issues for gender differences in the field of Computer Science and Engineering (CSE). This case study is based on research conducted on a sample of 99 Greek CSESs, 43 of which were women. More specifically, CSESs were asked to respond to a specially designed questionnaire addressing the following issues: a) essential motives in selecting CSE as a subject of study, their primary experience with computers and their family's views regarding CSE as a career prospect, b) the relationship between gender, strengths and weaknesses in CSE and cooperation with fellow students of the opposite gender, c) the desirability of having both male and female University Professors in CSE, d) CSE courses and CSESs choice, and e) career issues.

Keywords: Prospective computer engineers; gender differences; computer science

Introduction

Nowadays, men are more actively involved with computers than women, although female active involvement in the world of computers dates back to the early 19th century, with many remarkable women making great achievements (Galpin, 2002; Gürer and Camp, 2002; Gürer, 1995). It is therefore crucial to address a significant current phenomenon; that women are at present underrepresented in all fields of

Computer Science, in both undergraduate and graduate studies (Galpin, 2002; Wardle and Burton, 2002), the Computer Science Industry (Duplantis, MacGregor, Klawe and Ng, 2002) and Computer Science Academia (Camp, 1997; Moskal, 2002). Given this fact, it is important to investigate the different factors affecting motivation in studying CSE among males and females.

Although there are a great many difficult-to-determine factors that contribute to the low participation of women in the Computer Science sector, many studies have been conducted, with very illuminating results (Fisher and Margolis, 2002; Lazowska, 2002; Moskal, 2002). Family is one of the factors that strongly influence children in their liking or disliking computers: a boy is more likely than a girl to be given a computer game or a PC and to receive support in studying CS or even using computers (Balcita, Carver and Soffa, 2002; Tsagala and Kordaki, 2005). Computer games are a very attractive source of fun for boys because of their male-oriented context (Duplantis, MacGregor, Klawe and Ng, 2002; Kiesler, Sproull and Eccles, 2002; Pearl, Pollack, Riskin, Thomas, Wolf and Wu, 1990). Consequently, girls who do not enjoy this kind of entertainment are not likely to gain experience with computers in their childhood and subsequently grow up in the belief that computers are "a boys' thing" (Gürer and Camp, 2002; Balcita, Carver and Soffa, 2002). With this in mind, it is important to investigate both the primary informal experience with computers gained by male and female students in CSE departments and their families' views on CSE as a prospective profession for their sons and daughters.

School is another factor that contributes to a bad relationship developing between girls and computers. Discrimination within the classroom (with CS teachers rarely

interacting with female students), lack of encouragement for girls to study CS and limited computer access for girls (with boys tending to dominate in computer laboratories) are characteristic of schools today (Lazowska, 2002; Jepson and Perl, 2002). Thus, investigating the opinions of students in CSE departments regarding the role of secondary school in their experience with computers becomes significant.

Another important factor that causes low female participation in CS is how the policies adopted by departments and universities are formulated. The hostile and uncomfortable atmosphere created by boys when they participate in computing activities and the fact that CS Academics interact more with their male students, leads to diminishing female self-confidence during their CS studies (Gürer and Camp, 2002; Lazowska, 2002). Moreover, the male-dominated world of Academia (at least in terms of CS Departments) appears to be blocking women from continuing their studies at a doctoral or even postgraduate level. In addition, the dearth of successful women as mentors and role models in the field of CS, at all levels of education, in the CS Industry, the media and society in general, has a negative psychological effect on some women during the course of their studies (Balcita, Carver and Soffa, 2002; Lazowska, 2002). It is therefore essential to investigate how University students in CSE departments deal with their colleagues of the opposite gender in terms of equality/inequality and collaboration as well as their strengths and weaknesses in CSE studies. Moreover, it is of interest to examine if students in CSE departments are bothered by the absence/presence of female University Professors and whether these students equally trust male and female University professors.

As far as the Computer Science working environment is concerned, it has also been observed that women have different potential job expectations that conflict with their beliefs of what a Computer Science job entails (Duplantis, MacGregor, Klawe and Ng, 2002; Jepson and Perl, 2002). Additionally, their priorities are quite different from those of men, who are not so greatly concerned about creating a family as they are about developing their career and making professional progress (Jepson and Perl, 2002; Teague, 2002). Therefore, it is important to investigate gender differences in the career plans of students in CSE departments.

With the above in mind, it is critical to examine the different perspectives of prospective computer professionals, both male and female, regarding issues widely acknowledged as significant in the formation of gender inequality in CSE. In this paper, the issues in focus are related to gender differentiation and: a) motivation to study CS, previous experience with computers and family perceptions of a CSE-oriented job, b) strengths and weaknesses in CSE studies, including cooperation with students of the opposite gender, c) most favored courses in CSE and most trusted Professors, and d) career plans in CSE. This study investigates the views of CSESs of both genders with respect to the afore-mentioned critical issues.

Despite the fact that a considerable amount of research has been conducted into the main anti-motives for women to study CSE, a study investigating the views expressed by both genders on all the above-mentioned issues as well as the main motives and the general positive factors that encourage women to study CSE and to plan a related career has not yet been reported. In the following section, the context of the study reported in this paper is described, followed by the presentation and discussion of the results emerging from the experiment. Finally, conclusions are drawn.

The context of the study

The focus of the survey was to elicit the opinions of CSE students in five general areas of possible gender differences: these five areas are investigated with twelve (12) questions, with respect to the issues described in the previous section. These areas with the corresponding questions are presented below:

- *CSESs motivation in selecting CSE as a subject of study, their primary experience with computers and their family's views regarding CSE as a profession*. The questions posed were: a) Why did you choose this School?, b) How did your family react when you began to study Computer Science?, c) Did you have any former experience before entering this School? and d) What did Secondary School offer you as far as computers is concerned?
- *The relation between gender, strengths and weaknesses in CSE as well as cooperation with fellow students of the opposite gender*. The questions posed were: a) Where do you believe that you are superior or inferior in competence regarding CSE studies in comparison to colleagues of the opposite sex?, b) How do colleagues of the opposite sex treat you?, and c) Do you find it hard to cooperate with colleagues of the opposite sex?
- *The desirability of having both male and female University Professors in CSE*. The questions posed were: a) Does the absence/presence of female University Professors bother you?, and b) Who do you trust more - a female or male University Professor?
- *CSE courses and CSESs choice*. The question posed was: a) Which courses do you prefer?

- *Career*. The questions posed were: a) What are your plans after completing your studies? and b) Do you believe that making a career in CSE would be an obstacle to creating a family?

The study was conducted in May 2003, in the Department of Computer Engineering and Informatics, University of Patras, Greece. The questionnaires were given to a sample of 99 adult students (43 females, 56 males), aged 19-23 years old. From a methodological point of view, this study was based on phenomenography (Marton, 1988), where student responses rather than their thinking are the focus of study. Student responses were carefully classified in order to depict their perceptions as accurately as possible. In fact, the CSESs responses were classified in terms of the topics emerged. The results are presented in the form of comparison between the different female and male opinions.

Results

A presentation follows of the issues addressed in the questionnaire together with the results of the survey and our interpretations of them.

a) CSESs motivation in selecting CSE as a subject of study, their primary experience with computers and their family's views regarding CSE as a profession. Table I shows the answers provided by the CSESs to the relevant questions.

Insert Table I about here

As is shown in this Table, male CSESs were equally motivated in selecting CSE as a subject of study because they find it interesting (51.8%) and because CSE provides

great career opportunities (48.2%). In contrast, the latter motive, i.e. great career opportunities, seemed to motivate most female CSESs (74.4%). It is worth noting that this motive is also acknowledged as the main argument for a positive reaction from CSES's families after they have entered a CSE School. It is also important to note that the majority af CSESs expressed that their admission in a CSE School was welcome by their families. As for former computer experience, about half of the male CSESs reported that they were sufficiently experienced (44.6%) while about half (41.9%) of the female CSESs reported that they had had no experience at all before entering this CSE School. In total, three out of four male students (76.8%) reported some primary experience with computers in comparison with three out of five female students (58.1%). The percentage of female students who expressed a limited interest in CSE is also related to the low percentage of them who expressed little or no previous experience with computers. Regarding the role of the Secondary School, it is worth noting that a considerable number of CSESs expressed some kind of positive reinforcement by their schools (41.9% for women and 44.7% for men). However, a remarkable percentage of female students (39.5%) reported being discouraged by their teachers, who suggested CSE might not be a suitable study subject for girls. In addition, a notable percentage of male students expressed that they hadn't received any tuition in computer-based courses in their schools. Finally, it is worth noting that all students who reported an interest in CSE also reported previous experience with computers, encouragement by their school-teachers to study CSE and acceptance of their tertiary-education choice by their families.

b) Gender, strengths and weaknesses in CSE and cooperation with fellow students of the opposite gender. Table II demonstrates CSES's answers to the specific questions posed.

Insert Table II about Here

As is shown by the above Table (Table II, a), the majority of CSESs expressed self-confidence regarding their competence in CSE (92.8% males and 67.4% females). However, one in three female CSESs expressed that they feel inferior in comparison to colleagues of the opposite sex while only one in fourteen male CSESs seemed to share such feelings. As regards feelings of superiority, an inverse relationship seems to apply. Mixed feelings were primarily reflected by female CSESs. Regarding feelings of equality, more males (51.8%) than females (34.9%) expressed such feelings. In addition, more males than women expressed superiority feelings (33.9 % males and 9.3% females) in contrast to the inferiority feelings expressed mainly by females (32.6% females and 7.2% males).

In addition, a remarkable percentage of CSESs reported that they feel they are treated as equals by their colleagues of the opposite gender (92.9% males and 67.4% females) However, a considerable percentage of female students (32.6%) expressed that they feel they are not equally treated (Table II, b). As far as gender and co-operation is concerned (Table II, c), a significant percentage of CSESs (more than 60.7%) expressed that it is hard for them to collaborate with their classmates of the opposite gender. In addition, a low percentage of CSESs reported no experience with classmates of the opposite gender.

c) Gender differences and the desirability of having both male and female CSE University Professors. CSESs opinions are reflected in Table III.

Insert Table III about Here

As is shown in Table III, one in two females (Table III, a) seemed to be annoyed by the absence of female University professors while one in three males (Table III, b) expressed their lack of trust in female CSE faculty members. Here, it is worth mentioning that in the said CSE Department, only three female adjunct assistant professors exist. Despite the fact that the majority of both genders indicate trust in their university teachers, more females than males regard their teachers as having equal skills. It is worth noting that these male students also expressed feelings of superiority in their competence in field of CSE regarding their female colleagues.

d) CSE courses and CSESs *choices.* Table 4 demonstrates CSESs preferences for CSE courses in terms of two main areas: i) hardware/software and ii) theoretical courses. Most CSESs seemed to prefer courses relevant to hardware/software while slightly more females (27.9%) than males (19.6%) denoted preference for theoretical courses. It is worth to note that, these latter students also reported lack of any experience with computers prior to their entering this CSE School.

Insert Table IV about Here

e) CSESs and career. A variety of career-plans are reported by CSESs participating in this experiment. In particular, CSESs reported the following main career-plans: a) Graduate-Postgraduate Studies (GPS), b) CSE-related work in the Private Sector (RPRS) c) Non-CS-related work in the Private Sector (NRPRS), d) CSE-related work in the Public Sector (RPLS), e) Non-CSE-related work in the Public Sector (NRPLS), f) Other (O). These main plans and the corresponding percentages of CSESs who

mentioned them are presented in Table V (a). This Table (Table V,b) also shows the views of CSESs regarding family issues in relation to a career in CSE.

Insert Table V about Here

As can be seen in Table Va, approximately one in two CSESs expressed their willingness to undertake Graduate/ Postgraduate studies. This comes as no surprise, since CSE is a rapidly developing field of science. Moreover, a considerable number of females (30.2%) stated they wished to take up employment in the Public Sector, as they believe this would provide them with security. As having a family is mainly viewed as a female-issue, half the female CSESs were concerned that a CSE career would be a deterrent to starting up a family and that work in the Public Sector is probably more suitable to that end. In contrast, a considerable number of males (30.4%) stated their willingness to work in the Private Sector. In addition, the view that having a family would be an obstacle to career prospects is shared by more than half the females (55.8%) while same is not shared among most males (75%). This view, combined with the feelings of self-confidence and superiority previously expressed by most of the males (see Table II, a), is possibly a strong argument for preferring a career in the Private Sector.

Discussion

The views of Computer Science and Engineering students of both genders participating in this experiment regarding essential issues about gender differences in CSE were presented in this paper.

a) CSES's *motivation to select CSE as a subject of study, CSESs' primary experience with computers as well as their families' views regarding CSE as a profession.* The

analysis of the data shows that males are equally motivated to select CSE as a subject of study in terms of their interest in this subject and because CSE provides great career opportunities, while females are mainly attracted by CSE-job security. This is probably due to the fact that a considerable percentage of male students reported that they had had experience with computers prior to their entering University, while an equal number of women reported that they had not. Secondary education seemed to play a positive but rather insignificant role in students' previous experience and knowledge of computers. However, in the case of female students, their secondary school experience discouraged a considerable amount of them from studying CSE as their teachers suggested CSE might be 'not suitable for females'. The families of CSESs acknowledge their children's career opportunities through acquiring a CSE degree, CSE being a prestigious profession and also acknowledge that entering a CSE department is a measure of their children's personal success. These CSES' family views are also reflected as main motives for both their sons and daughters to select CSE as a subject of study. It is worth noting that, all CSESs who expressed an interest in CSE had had previous informal - not school based - experience with computers, encouragement by their school teachers and supporting family views to their choice to study CSE.

b) The relation between gender, strengths and weaknesses in CSE, as well as co-operation with fellow students of the opposite sex. In general, the majority of CSESs reported self-confidence about CSE. However, more males expressed superior feelings in comparison to colleagues of the opposite sex, while most females expressed the opposite. In particular, one in three male CSESs feel superior to women in CSE while the same percentage of women feels inferior. Moreover, the majority of CSESs expressed that they feel they are treated equally by their colleagues of the

opposite gender. Despite this fact, a considerable percentage of females expressed the opposite feeling. In addition, a significant percentage of CSESs did not appreciate co-operation with colleagues of the opposite gender. Bearing this in mind, we can say that the relationships between CSESs of different genders in this particular CSE department are guarded, segregated and derogatory to women.

c) CSESs and the desirability of having both male and female University Professors in CSE departments. The majority of CSESs expressed trust to their University professors of both genders. However, one in three men reported that they do not trust women as University Professors in CSE; that is to say that these students view this Science as a male-oriented field, with the implication that these students believe that female professors are not as competent as the male professors in CSE. Moreover, half of the female CSESs also expressed that they feel uncomfortable with the absence of female faculty members. In our view, this means that female students need to communicate better with female university professors in terms of receiving support, attention and mentoring in their studies and career. In addition, female students probably need to see living examples of successful women in the field of CSE, to inspire them to progress in their studies and to express their capabilities more forcefully.

d) CSE courses and CSESs choice. Most CSESs prefer hardware and software courses, while slightly more female CSESs seem to prefer theoretical courses. This may be attributed to the lack of previous PC experience on the part of female students.

e) CSESs career plans. Half of the CSESs acknowledge that they would like to continue their studies at postgraduate level. In addition, it appeared that one in three

male CSESs would prefer a job in Industry while the same percentage of female CSESs expressed that they would prefer the security of a job in the Public Sector.

The above findings would appear to point to three main gendered profiles for the CSESs participating in this experiment:

i) The '*self-confident'* computer professional profile, including individuals of both genders and emphasizing: interest in CSE, strong self-confidence in the field, hardware/software-oriented interests, trust in (and desire for) both men and women as competitive professors and colleagues in CSE, dreams for employment opportunities in CSE and for a job with prospects.

ii) The '*superior'* computer professional profile, mainly male-oriented and emphasizing: interest in CSE, feelings of superiority in the field, hardware/software-oriented interests, dreams for a competitive and profitable job in Industry, lack of faith in women as competitive professors and colleagues in CSE.

iii) The '*inferior'* computer professional profile, mainly female-oriented and emphasizing: low interest in CSE, feelings of inferiority in the field, theoretically-oriented interests, dreams of job security within the Public Sector, worry over the absence of women as professors and lack of trust in men as colleagues in CSE.

CSESs with profiles (i) and (ii) reported previous experience with computers, and reinforcement from their family and school to enter a CSE School.

It is worth to note that, the motivators for boys and anti-motives for girls regarding Computing -which emerged from this study - are in confirmation with the correspondent motives/anti-motives reported in the literature. However, the positive

motivators and behaviours of females CSESs that emerged from this study contribute to the extension of the reported findings. On the whole, the investigation of the kind of positive behaviour of female CSESs about these issues regarding CSE and the kind of positive influences these students expressed have not yet been reported in the literature.

Conclusions

Critical issues of gender differences in Computer Science and Engineering were addressed in this paper by Computer Science and Engineering students in tertiary education. In particular, the analysis of the data showed that interest in the field of CSE and the employment opportunities that a CSE-oriented job entails are the main motivators for CSESs of both genders. These motivators were mainly expressed by more male students while the latter was reported as the main motivator for females. Interest in CSE seemed to be closely related to previous experience with computers and to the encouragement by family and school to study CSE.

More male CSESs reported such experience before entering this CSE School. Job-oriented motivators are mainly encouraged by family views regarding CSE as a profession. Secondary schools do not provide strong motivators for the students to experience and to gain knowledge of computers. In addition, Secondary School teachers seemed to discourage a considerable amount of females, suggesting that computers might not be 'appropriate for females'.

The majority of CSESs expressed self confidence and competitiveness in the field of CSE. In particular, the majority of male students, expressed such feelings coupled with dreams of securing a competitive job in Industry. A considerable percentage of

these also feel superior to women and do not trust them as colleagues and as university professors in CSE. In contrast to male students, a considerable percentage of female students demonstrate feelings of inferiority, reporting that they feel they are treated unequally by their colleagues of the opposite sex. These students mainly pursue the security of a job in the Public Sector which also satisfactorily serves their family plans. However, there is also a category of CSESs, including students of both genders, who demonstrate interest and self-confidence in the field of CSE, believe in equality in competence of both genders and have dreams of a job with prospects as computer professionals. These students reported previous experience with computers as well as reinforcement by their schools and families to enter a CSE School .

On the whole, our study supported that equality of gender in CSE is encouraged/discouraged by: a) the experience/inexperience of students with computers acquired privately or at secondary schools before entering CSE schools, b) the encouraging/discouraging role of family and of secondary school CS teachers, c) the presence/absence of female university professors, d) the friendly/hostile atmosphere created by males in CSE departments, as well as e) the support/non support policy of CSE departments with respect to female students and software/hardware courses. Despite the limitations of this study, due to the fact that this was performed only in one country (Greece) and in one University department, the results emerged can be further exploited with a view to taking appropriate actions to decrease gender inequality in CSE in future.

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References

Balcita, A., Carver, D. and Soffa, M.L. (2002), Shortchanging the Future of Information Technology: The Untapped Resource. ACM *SIGSE Bulletin Inroads, Special Issue: Women and Computing*, 34(2), 32-35.

Camp, T. (1997), The Incredible Shrinking Pipeline. *Communications of the ACM*, 40(10), 103-110.

Duplantis, W., MacGregor, E., Klawe, M. and Ng, M. (2002), `Virtual Family`: An Approach to Introducing Java Programming. ACM *SIGSE Bulletin Inroads, Special Issue: Women and Computing*, 34(2), 40-43.

Fisher, A. and Margolis, J. (2002), Unlocking The Clubhouse: The Carnegie Mellon Experience. ACM *SIGSE Bulletin Inroads, Special Issue: Women and Computing*, 34(2), 79-83.

Galpin, V. (2002), Women in Computing Around the World. ACM *SIGSE Bulletin Inroads, Special Issue: Women and Computing*, 34(2), 94-100.

Gürer, D. and Camp, T. (2002), An ACM-W Literature Review on Women in Computing. ACM *SIGSE Bulletin Inroads,, Special Issue: Women and Computing*, 34(2), 121-127.

Gürer, D. (1995), Pioneering Women in Computer Science. *Communications of the ACM*, 38(1), 45-54.

Jepson, A. and Perl, T. (2002), Priming the Pipeline. ACM *SIGSE Bulletin Inroads, Special Issue: Women and Computing*, 34(2), 36-39.

Kiesler, S., Sproull, L. and Eccles, J. (1985), Pool Halls, Chips, and War Games: Women in the Culture of Computing. *Psychology of Women Quarterly*, Vol. 9, 451-462.

Klawe, M. (2002), Girls, Boys, and Computers. ACM *SIGSE Bulletin Inroads, Special Issue: Women and Computing*, 34(2), 16-17.

Lazowska, E. (2002), Pale and Male: 19th Century Design in a 21st Century World. ACM *SIGSE Bulletin Inroads, Special Issue: Women and Computing*, 34(2), 11-12.

Marton, F. (1988), Phenomenography: Exploring Different Conceptions of Reality. In D.M. Fetterman (Eds). *Qualitative Approaches to Evaluation in Education: The Silent Scientific Revolution*, (pp. 176-205). New York: Praeger.

Moskal, B. (2002), Female Computer Science Doctorates: What Does the Survey of Earned Doctorates Reveal? ACM *SIGSE Bulletin Inroads, Special Issue: Women and Computing*, 34(2), 105-111.

Pearl, A., Pollack, M., Riskin, E., Thomas, B., Wolf, E. and Wu, A. (1990), Becoming a Computer Scientist.*Communications of the ACM*, 33(11), 47-57.

Teague, J. (2000), Women in Computing: What brings them to it, what keeps them in it? *GATES*, 5(1), 45-49.

Tsagala, E. and Kordaki, M. (2005), Essential Factors that Affect Students' Choices to Study Computer Science: Gender Differences. *7th International Conference for Computer Based Learning in Science*, Zilina, Slovakia, 541-552,.

Wardle, C. and Burton, L. (2002), Programmatic Efforts Encouraging Women to Enter the Information Technology Workforce. ACM *SIGSE Bulletin Inroads, Special Issue: Women and Computing*, 34(2), 27-31.

Captions

Table I. CSESs: motivation to study CSE**, family** expectations, former **experience** and the role of the **secondary school**

Table II. CSESs: i) gender, **strengths and weaknesses in CSE**, ii) gender and **co-operation**

Table III. CSESs: gender issues and **university professors**

Table IV. CSESs: **gender** and CSE **courses**

Table V. CSESs: gender, career plans in CSE and **family** issues

	MALES		FEMALES	
STATEMENTS	NUMBER (N1)	PERCENTAGE (N1/56) %	NUMBER (N2)	PERCENTAGE (N2/43) %
Why did you choose CSE as a subject of study?				
Increased Interest in the Subject	29	**51.8**	11	**25.6**
Employment Opportunities/ Prestigious Profession	27	48.2	32	**74.4**
TOTAL	56	100.0	43	100.0
How did your family react when you began to study CSE?				
Positively: Employment Opportunities/ Prestigious Profession	36	**64.3**	28	**65.1**
Positively: Personal success	16	28.6	10	23.3
Negatively	4	7.1	5	11.6
TOTAL	56	100.0	43	100.0
Did you have any previous computer experience before entering this CSE-School?				
None	13	23.2	18	**41.9**
Little	18	32.2	21	48.8
Enough	25	**44.6**	4	9.3
TOTAL	56	100.0	43	100.0
What did secondary school offer you in terms of computers?				
Encouraged me to use computers	9	16.1	9	20.9
Discouraged me	13	23.2	17	**39.5**
Gave me knowledge	16	28.6	9	21.0
No course in school	18	**32.1**	8	18.6
TOTAL	56	100.0	43	100.0

Table I

	MALES		FEMALES	
STATEMENTS	NUMBER (N1)	PERCENTAGE (N1/56) %	NUMBER (N2)	PERCENTAGE (N2/43) %
a) Do you believe that you are superior or inferior in competence regarding CSE studies in comparison to colleagues of the opposite sex?				
Inferior	4	7.2	14	32.6
Superior	19	33.9	4	9.3
Inf-Sup	4	7.1	10	23.2
Equal	29	51.8	15	34.9
TOTAL	56	100.0	43	100.0
b) How do colleagues of the opposite sex treat you?				
Equally	52	**92.9**	29	67.4
Not equally	4	7.1	14	**32.6**
TOTAL	56	100.0	43	100.00
c) Do you find it hard to cooperate with colleagues of the opposite sex?				
Yes	10	17.9	7	16.3
No	34	**60.7**	30	**69.8**
No experience	12	21.4	6	13.9
TOTAL	56	100.0	43	100.0

Table II

a) Does the absence of female University Professors bother you?					b) Who do you trust more - a female or male University Professor?				
	MALES		FEMALES			MALES		FEMALES	
	Number (N1)	Percentage (N1/56) %	Number (N2)	Percentage (N2/43) %		Number (N1)	Percentage (N1/56) %	Number (N2)	Percentage (N2/43) %
Yes	10	17.9	20	**46.5**	Male	20	**35.7**	7	**16.3**
No	22	39.3	14	32.6	Female	3	5.4	2	4.6
Doesn't matter	24	42.8	9	20.9	Equally	33	58.9	34	**79.1**
TOTAL	56	100.0	43	100.0	**TOTAL**	56	100.0	43	100.0

Table III

Which courses do you prefer?				
	MALES		**FEMALES**	
	NUMBER	PERCENTAGE	NUMBER	PERCENTAGE
	(N1)	(N1/56) %	(N2)	(N2/43) %
Hardware/Software	45	80.4	31	72.1
Theoretical	11	19.6	12	27.9
TOTAL	56	100.0	43	100.00

Table IV

a) What are your plans after completing your studies?					**b) Do you believe that a career in CSE would be an obstacle to having a family?**				
	MALES		**FEMALES**			**MALES**		**FEMALES**	
	Number (N1)	Percentage (N1/56) %	Number (N2)	Percentage (N2/43) %		Number (N1)	Percentage (N1/56) %	Number (N2)	Percentage (N2/43) %
GPS	31	55.4	24	55.8	Yes	14	25.0	24	**55.8**
RPRS	17	**30.4**	8	18.6	No	42	**75.0**	19	44.2
NRPRS	5	8.9	0	0.00	**TOTAL**	56	100.0	43	100.0
RPLS	4	7.1	13	**30.2**					
NRPLS	0	0.00	2	4.6					
O	4	7.1	2	4.6					

Table V