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EXTERNAL AND INTERNAL SOCIAL BARRIERS IN STEREOTYPING UNIVERSITY MAJORS

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ABSTRACT

Stereotyping female and male roles engender the selection of majors among university students. In this article we examined different patterns between males and females in the rating of university majors as either feminine or masculine. External and internal barriers were measured and used as independent variables with gender, to study the effects on the rating of majors as masculine and feminine. A set of interviews and pilot questionnaire were used to obtain the internal and external barriers. A final questionnaire was administered to 206 university undergraduates. Main gender effects were found on computer science, political science, mathematics, and physical education; these majors were rated higher in the masculine direction by males than females. Interaction effects were found among the physical education, political science, mathematics and science disciplines with exception to biology. Males with high external barriers rated higher in the masculine direction than females did. Males with internal barriers rated the physical education and political science majors as more masculine than did females. The results indicated that internal and external preferences are important measures of difference in the rating of majors among university students.

INTRODUCTION

The aim of the current study was to examine sex differences and factors underpinning university students' perceived feminine-masculine ratings of university majors. The research tackles the perceived societal factors influencing students' selection of university majors. We refer particularly to factors as external and internal barriers, in cross-cultural context that engender student ratings of university majors. These barriers have their roots in social stereotypes of

women and men that tend to limit students' career aspirations and selection of majors in higher education.

LITERATURE REVIEW

Partly, because of external influences and internal preferences, both genders face difficulties in career decision making. External forces such as social, cultural, and obsolete traditional manifestations, stereotype men's and women's career roles, subesequently, streaming them into predefined dichotomous roles. Data on women participation in traditionally masculine labeled fields of study reported by the American Association of University Women (AAUW) (1992) and the National Association of Educational Progress (NAEP) (1992) have called for alarm. The number of women enrolled in science and engineering fields presents a desperate picture in the US (Sadker and Sadker, 1988). Similar patterns of gender differences appear to be large in countries like Lebanon where women continue to enroll into academic majors suitable for the family such as home-economics and education (The United Nations Report: Arab Women Trends Statistics and Indicators, 1995).

Cultural modernization and changing traditional norms in the Middle East in general, and in Lebanon in particular present an alternative picture to women's passive role in society (Khalaf, 1987). The influence of the Western model of greater sedimented social practices, equal access to higher education and job market have helped change the attitudes towards the traditional role of women. Opportunity and social equity in Lebanon; however, remain anachronistic and multidimensional. For instance, particularistic confessional or religious affiliations are among the

many factors that lead towards an upward social mobility. In this study we tried to isolate two dimensions i.e., barriers that limit student choices of major. Two focused questions are raised in this article. First, is there a belief among Lebanese youth that suggests neutral attitudes of majors and careers? Do social forces influence individual selection of majors? This study attempts to answer these questions by first investigating whether differences among male and female students exist in the rating of majors traditionally labeled as masculine or feminine. Second, it explores whether internal and external barriers expose gender differences on the rating of majors as masculine or feminine.

Attitudes: Feminine and Masculine Ratings

Cultural norms exert overt pressures on the individual to follow a career outcome not desired by individual's choice. Attitudes may be one of the most detrimental factors to success, participation, and goals for desired careers. It is expected, for instance, that male students express more gender stereotyped views of science than girls do (Greenfield, 1996). Students both males and females rate biology as feminine; while, chemistry, mathematics, and physics (i.e., most difficult according to students) are rated as masculine (Weinreich-Haste, 1981). Archer and Freedman (1989) and Archer and Macrae (1991) found that North West Britain pupils rated French, sociology as most feminine and engineering, physics, chemistry, home economics as masculine. Baker (1990) showed little gender stereotyping differences between boys and girls. In

a similar vein, Baker and Leary (1995), found through interview protocols, a strong rejection by 11th grade females of cultural stereotypes about physical and biological sciences, a reverse position to the 8th grade students. Greenfield (1996) found no significant difference between girls' and boys' perception of "masculine" labeled subjects (i.e., science and mathematics). Despite different sampling techniques and data analysis, cross-cultural research should provide different results. Furthermore, Caucasian Americans in grade 8 and below reported more female stereotypes by 11th grade than males did (Greenfield, 1996). Current studies report a diminished stereotyped view of career and educational goals. To how much these findings are valid in cross-cultural context, is upraised empirically by the present investigation.

[153]
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[154]

Parental attitudes, teacher styles, and other external influences have engendered the selection of majors among young pupils' role acquisition (Eccles and Jacobs, 1986). Leder and Fennema (1990) explain that teachers promote men in the sciences and mathematics fields that may advance masculine roles. As a socio-cultural product teachers stereotype the role of a successful male as being independent, aggressive, very competitive, self-confident, while, an unsuccessful female as passive, dependent, uncritical, or gentle. Although cross-cultural gender prescriptions vary in every culture, whether institutionalized or practiced socially, they mold the sex-type role of girls and boys (Johnson and Pinar, 1980).

With a diminishing gender stereotype in schools and universities in the West, gender among other factors (i.e., confessional affiliation and ethnicity) does not appear to be an obstacle to enrollment into higher education (Halsey, 1993). While previous studies (Weinreich-Haste, 1981; Colley, Combor & Hargreaves 1993; Archer & Freedman, 1989) have investigated rating of university majors as feminine or masculine, they have not yet been cross-culturally framed. In addition, there is a paucity of studies that investigated differences between external and internal barriers and gender on masculine or feminine rating of university majors. As an exploratory investigation, the relationship between gender in the rating of majors based on factors as external and internal preferences provide a framework of analyses that support process views and selection of career choices (Colley, Combor & Hargreaves 1993).

External and Internal Barriers

Halsey (1993) explained that the small number of Men enrolled in feminine labeled university majors, and women in male labeled university majors is a result of and an amalgamation of societal influences of class, gender, confessional affiliation, patriarchal forces, or even urbanization (Halsey, 1993). These influences are not free of individual style dimensions. Two main views explain under-representation: external and internal barriers (Hartman, Jenkins, Fuqua, and Sutherland, 1987; Chipman, Brush and Wilson, 1985). External barriers are formed due to overt causes and societal pressures. For instance, females are faced with external barriers in the selection of a major because societal expectations or standard norms influence their decision making process. Internal barriers are cognitive beliefs and affects, i.e., factors that may hinder or advance educational and

[154]
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[155]

career aspirations of students because of affective internal choices. For instance, women may be confronted by an affective conflict; in which they hold a contrary perceived role of domesticity and at the same time, preferential work career. The increased usefulness of career, high self-esteem, enjoyment, satisfaction and challenge are perceived as key dimensions to student selection of a specific and "competitive" university major which, is evidence of high internal preferences or low internal barriers. The view is that these barriers are not correlated i.e., if the external barriers are high, does not imply an opposite high or low internal barrier to student selection of a career goal. Barriers are also bipolar ends of preferences; thus, those who have a high preference of a subject, maintain low barriers, in the same sense those that have low internal preferences have high internal barriers. This study is original in first, tackling conceptualization of the external and internal dimensions, and in using these dimensions as determinants for explaining the etiology of gender stereotypes affecting enrollment in university majors.

METHOD

Participants

A questionnaire was pilot tested in the fall of 1998 then proof read, validated and administered by the authors in the spring of 1999. Students who did not respond to a specific question were removed from an aggregate analysis, but not from the study. There were 101 female students and 100 male students in the sample (i.e., 5 students did not respond). The mean age group of the sample was 21.5 years. Students (n=150) (73%) came from mixed schools and 50 attended single sexed schools. Students were drawn from five faculties; Faculty of Arts and Social Sciences (n=32); Faculty of Business and Management (n=78); Faculty of Science (n=16); Faculty of Engineering (n=35); and Faculty of Health Sciences (n=37). Internal institutional statistics have shown that almost 33% came from the closest town to the university, approximately 8-Km away; 33% came from the vicinity; 24% originated from the capital of the country, and 12% from the various regions of the country.

Questionnaire

The questionnaire was divided into three sections. The first sought to obtain standard background information (e.g., gender, major, type of last school attended and type of certificate obtained prior to university entry). The second part of the questionnaire included the internal/external dimension questions and feminine-masculine rating of the majors. The third part included the external dimensions and ranking priorities for the rating of student majors.

Over a year, students were interviewed and asked to list and rank the internal and external barriers or preference for the selection of their own majors. The highest-ranking dimensions of the external and internal dimensions were turned into ratings and pilot tested. Through a series of rating, some items were improved and others were reformulated and incorporated into the final format of the questionnaire.

Students, specialists, and lay individuals were asked to judge the appropriateness, adequateness, and applicability of the items for consensual validity. The feedback was mostly positive having minor technical, and grammatical changes.

Based on the consensual assessment and a sample of almost 179 students participating in the pilot test, the questionnaire was improved substantially. Specific items such as the proximity of the university to the place of residence appeared not to have an effect on the selection of major; hence, were removed. Further, the feminine-masculine scale was re-scaled from a 3-point to a 7-point scale, ranging from 1 being highly feminine to 7 being highly masculine, 4 being the mid-point on the scale. The Likert-scale was used because the bipolar scale limited the possibility of continuous masculine and feminine rating that some disciplines may have (Bem, 1974; Archer & Freedman, 1989). The split half reliability of the feminine-masculine rating reported a Spearman Brown correlation of 0.60.

[156]
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[157]

Design and Data Analysis

As alluded to earlier, this study is concerned with examining gender stereotyping attitudes and how external/internal dimensions influence the rating of majors. Additionally the study sought to provide a portrayal of gender difference in the choice majors. First, a set of external and internal dimensions was selected through a number of interviews conducted by the researchers with students. The preferences or barriers were turned into ratings in which students were asked to rate on a scale ranging from strongly agree to strongly disagree. For example, those who were defined as low internals found their majors as highly enjoyable or highly challenging; those who rated their major offering high financial paybacks maintained high external barriers. The ratings of 20 majors offered at the two universities were established on the 7-point scale. Second, a mean rating (i.e., mean masculinity-femininity rating) was determined for each major by dividing the rating by the highest rating point of "7." Third, to overcome the within and between confounding, the mean rating of all the majors was obtained and used as a measure of feminine-masculine ratings of majors (Archer and Freedman, 1989). Then the neutral point was incorporated in the 7-point scale in which a t-test was used to determine whether the ratings are significantly different from the neutral point "4" or not (Archer and Freedman, 1989). Fourth, a factor analysis was performed using a varimax rotation to establish the preconceptualized factors of internal and external dimensions.

Lastly, to examine main and interaction effects of gender and barriers respectively, a mean score measure was obtained for each of the dimensions by adding each rating on each item of the internal and external barriers dimensions and dividing them by the number of items for each dimension. The distribution of both variables of internal and external was examined. Based on the median score the two variables were divided into lower and upper externals, and lower and upper internals, these two variables, crossed, with gender were studied on the rating of the masculine-feminine scale. A two-way ANOVA factorial design was performed using the main effects of gender and barrier effects, respectively on student rating of the university majors.

[157]
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[158]

RESULTS

Masculine or Feminine Rating of Majors by Sex

Using the mean rating of each major and the ideal neutral-point of "4" (midpoint of 4 on a scale from 1 to 7), a t-statistic was used to test for differences between the observed measures and the midpoint. The t-value effect size for each comparison (Effect size was computed by subtracting the mean of each of the women's and men's responses from the median score and dividing it by the standard deviation) was computed. Those t scores that were negative implied the feminine scaling of the major; the positive t score indicated a masculine rating of the major (see Table 1). Female and male students showed significantly different ratings departing from the neutral point (4) with exception to ratings on the biology major among males, significant different rating from the mid-point was found among female students ($t = -2.79$, $p < 0.05$). Females and males rated the social sciences, humanities and related majors as feminine with exception to economics and political science, which were rated as masculine. Professional track fields such as fine arts and education were rated as feminine, significantly different than the neutral point ($p<.001$). The physical sciences (chemistry and physics), computer studies, and engineering were rated significantly as masculine ($p<.001$). Females rated biology significantly more feminine than masculine, with insignificant neutral ratings by males. Biology careers are perceived to be areas that are value laden, which females may wish to undertake for helping people, animals, and the earth (Baker and Leary, 1995). Political science careers, on the other hand, as perceived in Lebanon's patriarchal context, are socially ascribed to men; hence, rated as masculine.

Factor Analysis Results

The internal and external dimensions were rated on a Likert scale. These variables along with gender were then factor analyzed. Using principle component analysis with unities in the diagonal, and an eigen cut-off value of 1.0, a varimax rotation was used to validate the factors on *a priori* of the internal and external barriers. The analysis of the 11 items were reduced to three factors: the first factor accounted for 26.3% of the variance; the second 12.1%; the third 3.8%. In total 42% of the variance was explained by the factors. These results were considered to provide an easily

interpretable inference, agreeing with the scales devised. Table 2 presents the factor analysis results with the distributed loading on all rotated factors which provide good evidence for the validity of the items and exactly in *a priori* of the conceptualized internal and external dimensions. The first factors loading appear for the internal dimensions with the exception of the Easy-Difficult dimension. The second factor showed high loading on items 8 through 11 (see Table 2) conceptualized as the external dimensions. The third factor showed high loading for the Easy-Difficult item and "gain of respect" item. This last factor produced a level of heterogeneity not evident in the other two factors. Being a construct of the internal and external dimension, this factor explained 4.0% of the variance, presenting a level of variance having little impact on the overall factor structure. The results suggest that the overall composition of the items in the questionnaire as *a priori* conceptualized provide evidence of the general internal and external conceptualized dimensions. With exception to the "easy-difficult" and "gain of respect," items

they were conceptualized as contextual, functional and exclusive to preference or barrier dimensions.

Table 1. t-scores for the difference of mean rating from the midpoint on majors for females and males

	Male			Female		
Major	**t**	**SD**	**n**	**t**	**SD**	**n**
1. Mathematics	7.43**	1.28	98	5.35**	1.22	101
2. Psychology	-7.00**	1.35	97	-8.56**	1.42	101
3. Sociology	-7.65**	1.32	98	-6.30**	1.27	100
4. Biology	-0.29	1.06	97	-2.79*	0.93	100
5. Education	-8.02**	1.52	98	-11.27**	1.40	101
6. Fine Arts	-5.15**	1.31	98	-7.42**	1.26	101
7. Statistics	4.72**	1.16	97	5.93**	1.21	101
8. Physics	9.26**	1.27	97	10.10**	1.23	100
9. Chemistry	7.43**	1.22	98	5.62**	1.32	101
10. Media Studies	-2.65*	1.18	96	-2.80*	1.22	101
11. English Literature	-9.60**	1.49	98	-10.05**	1.46	101
12. Business Studies	3.56**	1.21	98	3.75**	1.18	101
13. Computer Science	5.86**	1.25	98	4.06**	0.99	101
14. Cultural Studies	-5.64**	1.22	98	-5.70**	1.03	100
15. Arabic Literature	-6.34**	1.47	98	-6.93**	1.46	101
16. Political Science	6.83**	1.41	98	4.60**	1.39	100
17. Physical Education	5.25**	1.49	98	3.47**	1.16	101
18. Economics	4.65**	1.31	98	5.82**	1.18	101
19. Engineering	11.48**	1.33	98	12.19**	1.29	99
20. French Literature	-10.64**	1.28	97	-10.92**	1.38	101

* significant at the 0.05 level; ** significant at the 0.001 level

Table 2. Factor Analysis Results for the Barrier External Dimensions and Gender

	I	II	III	h^2
1. Gender	0.13	-0.09	0.15	0.05
2. Interesting-Boring	0.89[a]	0.06	0.10	0.89
3. Easy-Difficult	-0.01	0.02	0.35[a]	0.12
4. Enjoyable-Unenjoyable	0.70[a]	0.12	0.09	0.52
5. Challenging-Unchallenging	0.72[a]	0.18	-0.03	0.55
6. Satisfying-Unsatisfying	0.72[a]	0.09	-0.03	0.53
7. Major demanded by market	0.12	0.46[a]	-0.00	0.23
8. Major will help find a good job	0.17	0.65[a]	0.19	0.49
9. Major will generate money	0.02	0.74[a]	0.03	0.55
10. My major will make me a respectful person	-0.01	0.30	0.53[a]	0.37
[a]**Variance explained**	26.3	12.1	3.8	

No significant differences were found between females and males on the feminine-masculine ratings of majors, with exception to a masculine-directional rating on mathematics, computer science, physical education and political science major. Our results indicate that both female and male students have a similar directional rating on all majors. Further understanding of these attitudes suggest an exploration of the interaction effects of external and internal dimensions and gender on student rating of majors.

[160]

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[161]

Table 3: F-Ratios for a Two Way (2x2) ANOVA of the Internal Factors (low and high) and Gender Factors (low and high) on the Mean Rating of Each of the Majors.

Major	F-ratios(df) Internal (A)	F-ratios(df) Gender (B)	F-ratios(df) AXB
1. Mathematics	0.00(1,175)	2.59(1,175)	0.02(1,175)
2. Psychology	2.23(1,175)	1.33(1,175)	0.09(1,175)
3. Sociology	1.59(1,174)	0.35(1,174)	0.28(1,174)
4. Biology	1.26(1,173)	3.17(1,173)	1.13(1,173)
5. Education	0.00(1,175)	2.99(1,175)	0.12(1,175)
6. Fine Arts	2.67(1,175)	1.27(1,175)	1.19(1,175)

7. Statistics	9.42(1,175)**	0.00(1,175)	0.02(1,175)
8. Physics	0.34(1,173)	0.12(1,173)	2.57(1,173)
9. Chemistry	0.29(1,173)	1.03(1,173)	0.43(1,173)
10. Media Studies	0.11(1,172)	0.02(1,172)	0.02(1,172)
11. English Literature	0.08(1,175)	0.17(1,175)	0.36(1,175)
12. Business Studies	2.83(1,175)	0.00(1,175)	0.45(1,175)
13. Computer	0.64(1,175)	4.57(1,175)*	1.69(1,175)
14. Cultural Studies	0.00(1,174)	1.92(1,174)	0.47(1,174)
15. Arabic Literature	2.34(1,175)	0.05(1,175)	2.15(1,175)
16. Political Science	1.50(1,174)	4.58(1,174)*	4.63(1,174)*
17. Physical Education	3.60(1,175)	3.50(1,175)	6.27(1,175)*
18. Economics	3.77(1,175)*	0.06(1,175)	0.12(1,175)
19. Engineering	1.24(1,175)	0.38(1,175)	0.62(1,175)
20. French Literature	0.71(1,175)	0.57(1,175)	1.85(1,175)

* significant at the 0.05 level; **significant at the 0.01 level

Internal/External Barriers and Gender Effects

Tables 3 and 4 present the F-ratio for main effects and interaction effects of the internals with the variable of gender, and externals with gender, respectively. Main internal effects were found on rating the major of statistics and economics. Also main external effects were found on statistics and business administration. In both cases low internals/externals rated higher in the masculine direction. Main significant gender effects were found on the rating of mathematics, computer science, political science, and physical education. Significant interaction effects between gender and internals on political science and physical education. Interaction effects were also found between gender and externals on physics, chemistry, computer science and physical education.

Interaction Effects Between Gender and Barriers

A post-hoc Scheffe' test showed that male low-internals had rated the majors in the masculine direction. A second post-hoc Scheffe' test showed that female high-externals and male high-externals rated physics, chemistry, computer science and physical education in the feminine direction. Consistently male low internals, rated majors in the masculine direction, on the other hand low externals rated science courses, computer science and physical education in the feminine direction than female and male high externals.

Table 4. F-Ratios for a Two-Way (2x2) ANOVA of the External Factors (low and high) and Gender on the Mean Rating of each of the Major

Major	F-ratios(df) Internal (A)	F-ratios(df) Gender (B)	F-ratios(df) AXB
1. Mathematics	0.51(1,190)	5.62(1,190)*	5.30(1,190)*

2. Psychology	3.40(1,190)	2.93(1,190)	0.86(1,190)
3. Sociology	3.43(1,189)	0.17(1,189)	0.00(1,189)
4. Biology	0.73(1,189)	1.34(1,189)	0.51(1,189)
5. Education	0.69(1,190)	2.62(1,190)	0.34(1,190)
6. Fine Arts	1.41(1,190)	3.93(1,190)	2.24(1,190)
7. Statistics	4.85(1,189)*	1.17(1,189)	0.01(1,189)
8. Physics	0.75(1,188)	0.26(1,188)	6.17(1,188)*
9. Chemistry	4.39(1,190)	2.50(1,190)	4.41(1,190)*
10. Media Studies	0.32(1,188)	0.04(1,188)	0.93(1,188)
11. English Literature	1.13(1,190)	0.03(1,190)	0.22(1,190)
12. Business Studies	6.09(1,190)*	0.19(1,190)	0.65(1,190)
13. Computer	0.69(1,190)	4.93(1,190)*	4.64(1,190)*
14. Cultural Studies	1.16(1,189)	0.18(1,189)	0.23(1,189)
15. Arabic Literature	0.05(1,190)	0.01(1,190)	1.13(1,190)
16. Political Science	0.09(1,189)	4.26(1,189)*	0.76(1,189)
17. Physical Education	0.02(1,190)	5.50(1,190)*	6.72(1,190)*
18. Economics	1.14(1,190)	0.25(1,190)	0.02(1,190)
19. Engineering	1.06(1,190)	0.07(1,190)	0.39(1,190)
20. French Literature	2.84(1,188)	0.31(1,188)	1.95(1,188)

* significant at the 0.05 level; **significant at the 0.01 level

DISCUSSION

The factor analysis results provide good evidence of the preconceptualized factor structure of the barrier dimensions. These results should be approached with caution; because the internal and external dimensions do not constitute a reliable or comprehensive item defining the psychometric properties of the dimension. In fact, they were perceived as preferences that hinder males from the selection of traditionally feminine labeled majors and females from the selection of traditionally male-labeled majors.

No difference appeared between males and females on their stereotyping of the biology major. While males, rated biology as neutral, females believed it was more feminine. Hence, girls may select biology to reach a compromise with societal expectations. While teachers and peers encourage girls to enter the science fields, negative stereotypes by parents and society steer girls away from enrolling in "traditionally demarcated" masculine majors. Further, it is well-documented that children as early as three learn their appropriate gender label, pattern, and psychological perspectives (Martin, Eisenbad, and Rose, 1995) and preferences in curricular options are formed prior to their enrollment in secondary school. Thus, as important as girls to be

instigated in the sciences at an early age, it is of high priority to encourage boys in the humanities, education, and social science fields (Wilson, Stocking, and Goldstein, 1993).

The equity discourse of the 1980s and 1990s has encouraged women to move into the sciences and engineering careers with the intent to increase the number of female students in the field. However, while this discourse has been notably pursued in the US and UK, it has gained little momentum in Middle Eastern countries.

In Arab countries, the underrepresentation of women in the engineering fields and professional fields has been abysmal, while concrete obstacles working against women have been virtually eradicated. Barriers as prejudice, traditional beliefs and cultural stereotypes, hinder females from selecting, but, traditionally female-labeled university majors. With current curricular planning and changes in Lebanese curriculum, at the level of national debate there is no affective discussion on curricular reconstruction in the direction of gender equity. Further, schools, both public and private have invested little in career guidance services that urge students to see the different possibilities in career choices and future roles out of individual preferences, away from gender stereotypes.

[163]
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[164]

Main gender effects were found on computer science, political science, mathematics, and physical education; males than females consistently rated these majors higher, in the masculine direction. Interaction effects showed that males with low internal barriers or those who have preferential attitudes toward their current major tended to rate political science and physical education as more masculine than their female counterparts did. Further the rating of males with high external barriers on mathematics, computer science and science majors with exception to biology were higher in the masculine direction, than females with low external barriers, respectively. Males who anchor life educational and career goals on societal expectations adopt the neopatriarchal, paternal, patriarchal, patri-local, and "rural", dominant ideology that stereotypes majors as masculine significantly more than females. In general, Arab society honors careers in engineering and medicine for men; whereas, majors as mathematics, computer science, political science or physical education are disregarded as lay areas having little financial reward or prestige. Furthermore, Arab society contours for men positions of status and prestige, as a sacrifice, females accept "less regarded" university majors bogging down their advancement, success, continuity in work, and commitment to career goals.

While women rate these majors in the neutral direction, men feel they are more masculine. Females face little pressures to undertake a career in political science and physical education; they exhibit indifference towards these subjects and rate them as less masculine. Males with external barriers rated higher than females in the masculine direction on mathematics; physics; chemistry; and computer science. As these scholastic subjects are taken to prepare for engineering careers, males with high external barriers tend to find these careers as more masculine whereas, females with less external barriers see these majors as optional educational choices and rate them in the direction of the neutral point. These results are good indicators for female students "change of heart" in the selection of masculine labeled majors. Females may aspire toward a career in technology, but concurred to a less prestigious choice of career due to

intrinsic reasons. Whereas, males because of extrinsic reasons, select a university major that helps them advance in careers (Gurman, 1989).

[164]
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[165]

From a cross-cultural perspective woman in Lebanon enjoy a wide array of opportunities in the educational and professional fields. For instance, in cosmopolitan areas they enjoy a western style- sexual desegregation in virtually all work places. However, stereotyping as a social phenomenon has restricted women from participating in political or engineering careers, because women access to all means of production, are precluded by existing patriarchal attitudes. Second, Lebanon, a Middle Eastern country and compatibly religious; male-female relationships are often engendered by the male discourse of the religious institutions that limit their decisions of career choices (Jabbra an Jabbra, 1992).

Two important limitations of this study are underlined and can be registered as recommendations for further improvements in research in the area of gender stereotyping: (a) Because religious affiliation background may be an important surrogate measure to student rating of majors, its measure and reaction to the rating of students are key to understanding student stereotypes in a multi-confessional country like Lebanon. (b) The sample was limited to two universities in North Lebanon, which may be a representative of a non-cosmopolitan population, which is regarded as traditional, patri-local and patriarchal. We hope that this study will help us discern factors not controlled for by previous studies mostly conducted in the West, in order to identify which of those factors associated with student's gender stereotyping are capable of being addressed by students and those who teach them.

Particular to students' selection, liking or disliking of a university major is their styles of learning. Students who choose science as their major may favor intellectual independence, rationality, certainty, control, or even predictability, whereas the 'softer' side reflects a reflective, impressionistic, imaginistic, or creative orientation. Thus, understanding of internal and external styles i.e.; locus of control may be an important dimension to students rating of majors on the feminine-masculine scale. The nurture argument suggests that these styles be reinforced by a set of modes that are culturally impressed and socially reconstructed in discourses of achievement, participation and the epistemology of the "hard" or "soft" subjects. Whether scholastic disciplines are understood as "hard" or "soft" because of social control and barriers it is as important to understand these selections in view of individual internal and external styles.

[165]
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[166]

To sum up, the main goals of this study were to understand the etiology of attitudes in the rating of feminine and masculine ratings of majors. While current studies can be classified into gender participation, attitudes, achievement, and learning strategies (Kenway and Gough, 1998), few studies have provided understanding of the rating of majors by studying external and internal determinants among students from the Middle East. If research is to register the differences, a critical view and etiology of students' selection of majors should go beyond the difference

discourse to a more unitary category of analysis of male and female under-representation in careers and university majors.

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