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GENDER IDENTITY AND COURSE SELECTION

by
Michele Nasife

A Thesis

Submitted in partial fulfillment of the requirements of the
Master of Arts Degree
Of
The Graduate School
At
Rowan University
May 2, 2000

Approved by _____

Date Approved | 5/2/00

ABSTRACT

Michele Nasife-Brown
Gender Identity and Course Selection
2000
Dr. John Klanderman
School Psychology

Differences between males and females in cognitive skills during adolescence are trivial, but despite this absence of differences females are less likely to pursue advanced courses in math and science, and those who do are more likely to drop out before finishing. This has implications, because some females may have personality characteristics that lead them away from stereotypical careers. The consensus of the research is that females are not encouraged to pursue careers in math and science because they are seen as masculine careers. This study examined gender identity and how it correlates with academic major and career choice in males and females.

The sample consisted of thirty-six undergraduate students from a southern New Jersey University. There were seven males and twenty-nine females, from various academic majors. All participants volunteered for the study. Two tests were administered. The first was the Bem Sex-Role Inventory, the second a demographic information sheet compiled by the researcher. A Pearson Product Moment Correlation was calculated between the gender identity score and the value assigned to the subject's choice of occupation. Correlations were not significant, but the data collected has interesting implications for future research.

MINI ABSTRACT

Michele Nasife-Brown
Gender Identity and Course Selection
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School Psychology

The purpose of this study was to examine the relationship between gender identity and one's academic major and career choice. No significant correlation was found between gender identity and career choice. An interesting finding was how equally distributed subjects were among the four gender categories. The majority of female students were interested in female dominated careers. In combination with the evenness of the distribution of gender these two findings are valuable and lend support to this researcher's initial question: are females forced to ignore their gender identity and still choose female dominated careers?

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Chapter One

Need

Differences between males and females in cognitive skills during adolescence are trivial, but despite this absence of differences females are less likely to pursue advanced courses in math and science, and those who do are more likely to drop out before finishing. Women are exceedingly underrepresented among graduates whose degrees are in math, engineering, and the physical sciences and are over represented among graduates whose degrees are in the humanities and education (Steinberg, 1999). One may say that a stereotype has evolved. A stereotype is an individual's set of beliefs about the characteristics or attributes of a group. Although many stereotypes are inaccurate exaggerations, there is some truth to our gender stereotypes. For example, when you think of famous scientists who comes to your mind first? Einstein, Pavlov, Alexander Bell, ect are the first ones most people think of. It is a real effort to think of women scientists. This has implications, because some females may have personality characteristics that lead them away from stereotypical careers. The consensus of the research is that females are not encouraged to pursue careers in math and science because they are seen as masculine careers. Is this appropriate? Females should be able to pursue any career that fits their identity, the same for males. The stereotypes may work fine for some people, because they fit them. What about those individuals who do not fit into the stereotype? Should they be forced to? This researcher does not believe society should force anyone into any stereotype. Stereotypical or unsterotypical that person is just as valuable to society.

This study will look at gender identity and how it correlates with academic major and career choice in males and females. Questions about parental involvement, occupation, major role model's involvement, and occupation will also be asked. A connection between one's gender identity and their choice of career would be an interesting finding. A finding that females high in masculinity, and males high in femininity choosing the stereotypical career for their sex would be one small piece of evidence that something is at work in society that is limiting these people's potential. This may be inspiration for future research into the operation of gender stereotypes in our world.

Purpose

The Bem Sex Role Inventory (BSRI) will be administered to a group of subjects. This inventory was designed for conducting empirical research on psychological androgyny. The BSRI contains sixty personality characteristics. Twenty of the characteristics are stereotypically feminine such as: affectionate, gentle, understanding, and sensitive to the needs of others. Twenty are stereotypically masculine such as: ambitious, self-reliant, independent, and assertive. There are also twenty filler items such as: truthful, happy, and conceited. The BSRI provides independent assessments of masculinity and femininity through self-reported possession of socially desirable, stereotypically masculine and feminine personality traits.

A questionnaire will also be distributed to the same subjects with questions addressing their biological sex, academic major, career aspirations, parents occupation, extent of parental involvement, major role model's sex and occupation. The correlation

between the answers to these questions and the subject's classification from the BSRI will be calculated.

The purpose of this study is to examine the relationship between gender identity and one's academic major and career choice.

Hypothesis

A person's gender identity correlates with their academic major and career choice. Individuals high in masculinity will choose male dominated courses and careers, such as those related to math and science. Individuals high in femininity will choose female dominated careers and courses, such as language arts and humanities.

Additional Research Questions

Do males high in femininity choose female dominated careers? Do females high in masculinity choose male dominated careers and courses? Since nothing in our world is ever simplistic, we may see the effects of stereotypes at work. An expected finding is that some if not all males that are high in femininity and females high in masculinity still choose stereotypically male and female careers and courses of study ignoring their true gender identity. This would be due to the pressure to conform to stereotypes. That is the purpose of the questionnaire, to see what other possible forces outside of the person may be at work.

Theory

Sex Differences

Sex segregation of occupations, or the extent to which men and women perform different jobs with different tasks and duties in the labor market, is persistent around the

world, despite women's increased participation in the labor force and their increased educational attainment. Excluding the majority of workers from the majority of occupations is a waste of human resources, so why does it occur?

Sex differences in cognitive skills during adolescence are trivial. Males and Females perform at about the same level on standardized tests of intellectual abilities. When sex differences are observed, they are too small to make any meaningful difference in school performance. Males and females have equal ability, but show different patterns of math and science achievement during high school. Females are less likely to pursue advanced courses in math and science, and those who do are more likely to drop out before finishing. Choice of major, as well as decisions about where to attend college, are an important link in the chain of decisions and events that shape a person's career. An individual's preferences for various courses of study, can be encouraged by parental and societal expectations, and labor market prospects for a given set of skills, which may provide more encouragement for one sex than the other to pursue certain fields of study. Women are exceedingly underrepresented among graduates whose degrees are in math, engineering, and the physical sciences and are over represented among graduates whose degrees are in the humanities and education. As will be evidenced in Chapter Two, the research shows a definite sex difference with regards to the types of careers men and women choose that is not biologically based, and may be socially created.

Gender

Femininity and masculinity have long been conceptualized as opposite ends of a single dimension. Meaning a person can be either masculine or feminine, without any room for integration of the two types of traits in one person. The Bem Sex-Role

Inventory treats femininity and masculinity as two independent dimensions rather than two ends of a single dimension. This enables a person to be high on both dimensions (androgynous), low on both (undifferentiated), or high on one and low on the other (either masculine or feminine). American culture has clustered attributes into two categories, one category considered more characteristic of and desirable for males, the other for females. These cultural expectations are well known by all members of the culture. Individuals will vary in the extent to which they use these definitions as standards of masculinity and femininity for evaluating personality and behavior. The sex typed individual is highly attuned to these definitions and is motivated to keep his or her behavior consistent with them. An androgynous individual is less attuned to these cultural definitions and is less likely to regulate their behavior.

Both historically and cross-culturally femininity and masculinity have represented complementary sets of traits and behaviors. Femininity has been associated with an expressive orientation, an affective concern for the welfare of others and the harmony of the group. Masculinity has been associated with an instrumental orientation, a cognitive focus on getting the job done or the problem solved. According to Bem (1995) culture is organized around the distinction of being male or female. Her goal is to make the male-female distinction as minimal a presence in human life as things such as eye color or foot size.

Assumptions

The study is confidential, and assumes all participants will be honest.

Limitations

This study relies on self-report measures, therefore there may be a tendency to give socially desirable answers. The results will be purely correlational, no causality can be inferred from them. A random sample of college age men and women will be used, therefore this study is applicable to that population.

Definitions of Commonly Used Terms

Sex- A term used to describe limited set of innate structural and physiological characteristics related to reproduction that divide a species into male and female. A person is categorized as male or female based on their anatomy. (Beall &Steinberg, 1993).

Gender- A classification that is specific to humans, includes all the complex attributes ascribed by culture to human males and females, that constructed and learned by humans, for example, styles of dress, behavior, and mannerism. (Beall &Steinberg, 1993).

Gender Identity -How a person is defined with regard to one's individuality as male or female. Can also be thought of as how closely they fit the definition of their gender. (Reber, 1995).

Stereotype- An individual's set of beliefs about the characteristics or attributes of a group. Some stereotype are standard parts of society. Some stereotypes are false and detrimental, others can have some truth to them. (Beyer, 1999).

Overview

Chapter Two will review the pertinent literature. In Chapter Three the exact design of this study will be outlined. Chapter Four will be a presentation and analysis of the results of the research. In Chapter Five summary, discussion, conclusions, and implications for further research will be presented.

Chapter Two

The goal of this chapter is to review the pertinent literature beginning with the information that is the most relevant, then moving on to other related topics. The discussion will focus on sex and gender differences in general, with regards to segregation of occupation, with regards to choice of major, and with regards to motivation and achievement. Then stereotypes will be discussed. Finally, will be a discussion of parental involvement, attention, and freedom. The chapter will end with a summary of the findings of these studies.

Sex and Gender Differences

According to Laurence Steinberg (1999) sex differences in cognitive skills during adolescence are trivial. Males and Females perform at about the same level on standardized tests of intellectual abilities. When sex differences are observed, they are too small to make any meaningful difference in school performance. Males and females have equal ability, but show different patterns of math and science achievement during high school. Females are less likely to pursue advanced courses in math and science, and those who do are more likely to drop out before finishing. Studies of college students show that women are exceedingly underrepresented among graduates whose degrees are in math, engineering, and the physical sciences and are over represented among graduates whose degrees are in the humanities and education.

Sex segregation of occupations, or the extent to which men and women perform different jobs with different tasks and duties in the labor market, is persistent around the world, despite women's increased participation in the labor force and their increased

educational attainment (Anker, 1998). Women now make up forty-six percent of the United States labor force, and are projected to make up forty-seven percent by 2006 (Williamson, 1998). Our society has experienced changes over the past few decades that encourage, if not require, women to work (Williamson, 1998). Birthrates are lower, but the number of single mothers is rising. Many women are delaying marriage and childbearing. Half of marriages lead to divorce, and more people are living together without getting married. Levels of educational attainment between men and women are now identical, which means higher potential for earned income (Williamson, 1998). According to Williamson (1998) women are beginning to make themselves known in formerly male-dominated fields, but remain highly over represented in clerical and service positions. For example, 83 percent of apparel and sales personnel are women. Women still make up 93 percent of registered nurses, and 84 percent of elementary school teachers. According to Richard Anker (1998) there are still more male-dominated occupations than female-dominated occupations. This is important, because the female occupations tend to be lower paying, lower status, and have fewer advancement opportunities.

High school preparation influences college course choices, which affect career choices, therefore it is important to understand why sex differences in math achievement emerge during adolescence. There are still gender differences in subject choice at school despite a national curriculum which forces boys and girls to study the same subjects until they are 16 years old. What appears to emerge is that both boys and girls make subject choices in a way that will protect their gender identity. The same choices are apparent in students in higher education. Steinberg (1999) discusses three of the explanations for

these differences. Most notably, fear of success may be present among females more than males during early and middle adolescence. This research suggests that peer groups make it difficult for girls to have positive feelings toward achievement, especially in stereotypically masculine areas. A second idea focuses on sex differences in attitudes toward mathematics. Girls and boys are equally likely to report liking math, but girls are less likely to believe taking math classes will be useful to their future careers. As a consequence, by high school there are clear sex differences in course selection. Boys' after school activities are less closely monitored than girls', therefore boys have more opportunities to use math skills in informal settings, like the neighborhood store, or a sporting event. As a result of socialization, girls place less value on achievement in math classes, and do not pursue a math curriculum. Interestingly, the finding that boys are more positive about math and science, and that girls are more positive about language arts is not limited to the United States as figures 2.1, 2.2, and 2.3 on the following page illustrate.

A third explanation proposes that sex differences in course selection may be related to differences in achievement attributions and beliefs. Parents may pass on different expectations to sons and daughters, regardless of similarities in actual achievement (Steinberg, 1999). Parents of sons are more likely to believe that their child's success in math reflects intrinsic math ability. Parents of daughters are more likely to attribute math success to hard work. School counselors and teachers also endorse views that support math achievement among boys and discourage it among girls (Steinberg, 1999).

Figure 2.1

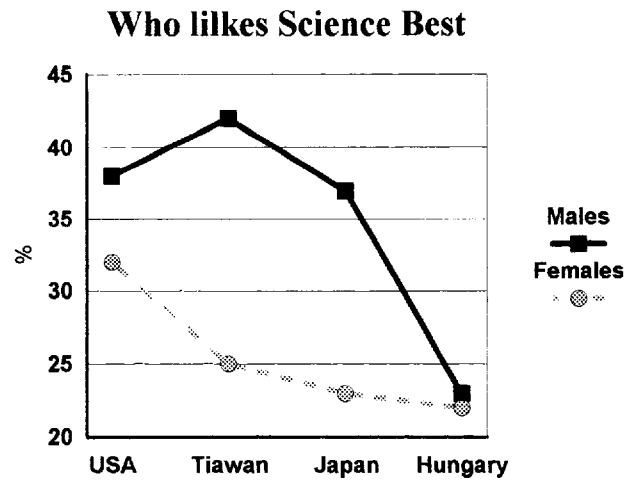


Figure 2.2

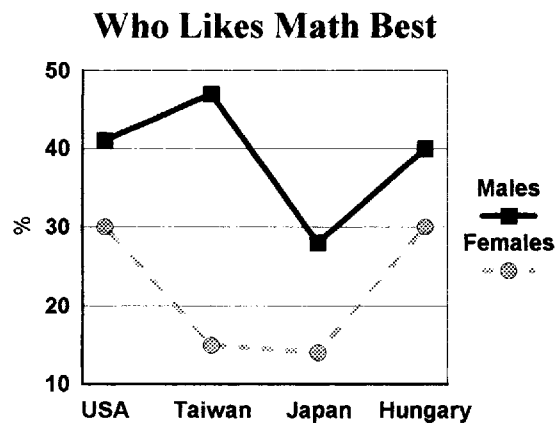
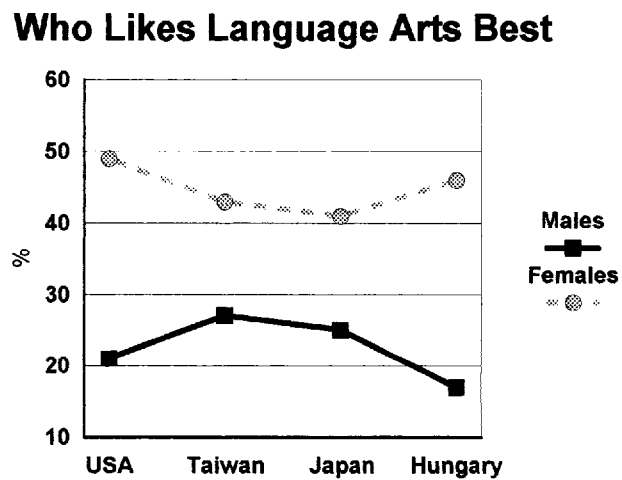


Figure 2.3



Cross-cultural differences in males' and females' favorite classes (Steinberg, 1999).

Within the arts, sciences, and engineering fields, differences between men and women in choice of college major have not lessened in the past two decades. According to Sarah Turner and William Bowen (1999) choice of major, as well as decisions about where to attend college, are an important link in the chain of decisions and events that shape a person's career. Turner and Bowen (1999) used detailed data on choice of major and individual scores on the Scholastic Aptitude Test (SAT) to examine the extent to which observed differences between men and women reflect the effects of pre-college preparation in contrast with many other forces. Turner and Bowen found that there is a widening divide between life sciences and math and physical science fields in their relative attractiveness to men and women. Differences in SAT scores account for only part of the gap. Differences in preferences, labor market expectations, and gender-specific effects account for the main part of today's gender gaps in choice of academic major (Turner and Bowen, 1999). An individual's preferences for various courses of study, can be encouraged by parental and societal expectations, and labor market prospects for a given set of skills, which may provide more encouragement for one sex than the other to pursue certain fields of study (Turner and Bowen, 1999).

Stephen Farenga and Beverly Joyce (1998) examined science-related attitudes and science course selection of young high-ability students. Students completed the Test of Science-Related Attitudes and the Course Selection Sheet. The results revealed significant correlations between specific science-related attitudes and the number of science courses selected. The results suggest that science-related attitudes are important predictors of the number of science courses selected by girls, but this result is not true for boys. Positive feelings and perceptions of science among females translates into greater

interest in science classes, but females are more likely to view the role of scientist in a traditional manner, and are less likely to select future science courses because of this. They believe the females are expressing an acceptance of the role of the scientist as one of male dominance. According to Farenga and Joyce (1998) female's attitude toward science, not achievement, is related to gender-role perceptions and belief of male dominance in the field of science. Girls' attitude toward science is manifested by limiting the number of future science courses selected. Girls remove themselves from science-related academic courses, blocking avenues of career aspirations in the field of science.

Gender and motivation in high school mathematics classes were examined by Barbara Greene and associates (1999) by using an expectancy-value framework. Students completed a questionnaire which measured situation-specific goals, task specific values, beliefs, and gender self-schemata. Students' percentage grade in math and self reported effort in math class were the dependent variables. Greene and associates (1999) found that although there is evidence that achievement differences between males and females are disappearing, differences in choices related to mathematics seem to persist. Females are less likely than males to choose high school courses that requires higher level mathematics. The goal, value, and belief variables were important for both males and females. The most noteworthy gender difference was that the beliefs set was more important for females when predicting achievement outcome. This means that females might be more vulnerable when high ability beliefs are challenged or difficult to establish. Therefore, if we maintain the "math as a male domain" stereotype, then girls will not get the same amount of encouragement as boys

when they feel challenged, girls will feel like they do not have the ability, stay away from math classes, and thus perpetuate the stereotype.

It is generally agreed that females have a slight advantage on average in verbal abilities and males have a slight advantage on average in mathematics. It is unclear whether these differences have changed over time. Amy Nowell and Larry Hedges (1998) analyzed data from samples of the U.S. Twelfth grade population to test whether or not gender differences are changing systematically over time. Nowell and Hedges' (1989) results conform to the accepted pattern of gender differences. Males score higher on tests of mathematics, science, and the composite, while females score higher on tests of reading, perceptual speed, and writing. These results have remained stable since 1960.

Lee Manning (1998) reviews some of the accumulated literature on gender differences in young adolescents' mathematics and science achievement. One report she reviews is titled *Everybody Counts: A Report to the Nation on the Future of Mathematics Education*, from the National Research Council, 1989. According to this report, as girls and boys progress through mathematics curriculum they show little difference in ability, effort, or interest until the adolescent years. Then, as social pressures increase, girls tend to exert less effort in studying mathematics, which limits their future education, and career choice. The *Everybody Counts* report attributed Gender differences in mathematics performance to the accumulated effects of sex-role stereotyping perpetuated by families, schools, and society.

Gender Stereotypes

A stereotype is an individual's set of beliefs about the characteristics or attributes of a group. One of the most basic categories is biological sex. Unlike members of many

social groups, males and females are raised together and live together, therefore they have a vast amount of information and strongly held beliefs about each other. The existence of gender stereotypes is well documented. Males are described more often than females as being intellectually competent, and said to have more instrumental traits. Females are described as warm and expressive, as well as incompetent and passive. Not all stereotypes are false as some may think. Deborah Blum (1999) turned a group of boys and girls loose in a playground, with equal access to toys, equipment and dress-up clothes. The two genders conformed to stereotypes completely with their behavior and choice of toys. Culture tunes us for gender roles. Boys and girls are not encouraged to ask for gender-inappropriate toys. Researchers found that if little boys asked for a soldier equipped with battle cannons for their birthday, they got it seventy percent of the time. If they asked for a Barbie doll, the success rate was forty percent or less (Blum, 1999). Obviously, children can quickly learn how the system works, and this is shaping their behavior and attitudes.

Research by Sylvia Beyer (1999) assessed the accuracy of academic gender stereotypes. Participants estimates of the percentage of female and male students and their GPAs were compared to the actual percentage of female and male students regardless of the type of major. Females and males made more accurate percentage estimates for gender-congruent majors. Participants overestimated the GPAs of male students significantly more than the GPAs of female students. Gender stereotypes in academics are likely to have consequences for the choice of one's major and profession. If it is believed that female students receive higher grades in female-dominated majors, that these majors are easier than male-dominated majors, and that female-dominated

majors attract students with feminine characteristics, then female students may be dissuaded from choosing a gender-incongruent male-dominated major.

Parental Involvement, Attention, and Freedom

How does parent's involvement in school differ for sons and daughters, and what difference does it make in the gender gap in mathematics achievement? Chandra Muller (1998) reports on a longitudinal study of the impact of parental involvement on adolescents' mathematics achievement from grade eight to twelve. Parental involvement has a strong impact and is viewed as a way to improve students' educational performance. Parents may influence children's attitudes, including self concept, which may affect academic performance. Parents are more restrictive and more nurturing with daughters, but encourage sons to be free and explore more widely outside the family. Males have more opportunities to use math skills in informal settings, and their after school activities are less monitored than the female's, therefore girls tend to place less value on math. This limits the opportunities for females in these areas. Parents stronger encouragement of sons to explore and take advantage of neighborhood resources also contributes to the gender gap in mathematics achievement (Muller, 1998).

Denise Croker (1999) asked students to imagine they woke up the next morning as the opposite sex, and how they would spend their day. For most boys this was difficult to imagine. Most boys felt that becoming a girl would be constricting. They did not want to study as much as girls, and were upset at the loss of physical freedom. Girls talked about the increased freedom they would have. They would be able to joke around, do homework rarely, and still make good grades. In discussion Croker (1999) had students recount any experiences of gender discrimination they had felt or observed in

the classroom. Boys seemed to receive more attention in school, especially early on when they were being disciplined for bad behavior. Girls felt they received less attention in school, especially in math and science classes.

Another factor is sex-linked parental influence. According to Shu and Marini (1998) the educational and occupational attainments of mothers have a stronger effect on the occupational aspirations of daughters than sons, and the educational and occupational attainments of fathers have a stronger effect on occupational aspirations of sons. For example, a mother's employment in a male occupation increases the likelihood that her daughter will be employed in a male occupation.

Summary

Sex differences between males and females in math and science skills are trivial. Males and females have equal intellectual ability, but show different patterns of achievement in math and science. There are more women with careers in the humanities and education, and more males in math, engineering, and the physical sciences. The research shows a definite sex difference with regards to the types of careers men and women choose that is not biologically based, and may be socially created.

Results of recent studies suggest that many factors such as parental encouragement, teacher student interactions, teacher preparation, curriculum content, self-concept, hands-on laboratory experiences, attitudes toward mathematics and science, availability of mentors, and home resources contribute to the achievement of women in math and science. Parents' beliefs about their child's abilities influence the child's academic self-conceptions, which influence performance in school. Girls receive less support for achievement in math and science from adults, who inadvertently socialize

girls to believe these subjects are difficult and not very useful, and peers, who make success in these fields not very attractive. Girls may respond by avoiding math and science. This is easy to understand, because by the time a girl reaches high school, she is able to choose among electives. She has been socialized to believe math and science are difficult, useless, and that success in these courses is inconsistent with being popular and attractive. For many decades educators, perhaps unknowingly, considered reading and literature as female domains and mathematics and science as male domains.

Chapter Three

This study looks at gender identity and how it correlates with academic major and career choice in males and females. According to the research females are not encouraged to peruse careers in math and science, because these are seen as masculine careers. If gender identity correlates with academic major and career choice, then males high in masculinity will choose male dominated courses and careers, and females high in femininity will choose female dominated courses and careers. A finding that females high in masculinity, and males high in femininity chose the stereotypical career for their sex instead of following their identity would be one small piece of evidence that something is at work in society that is limiting these people's potential.

Sample

The sample consisted of thirty-six undergraduate students from a southern New Jersey University. There were seven males and twenty-nine females, from various academic majors. All participants volunteered for the study.

Measures

Two tests were administered. The first was the Bem Sex-Role Inventory, the second a demographic information sheet compiled by the researcher. The information sheet asks subjects for their sex, grade point average, academic major and career aspiration. A copy of the demographic information sheet can be found in Appendix A.

The Bem Sex-Role Inventory was written by Sandra Lipsitz Bem and is published by Consulting Psychologists Press, Inc. The BSRI was designed for conducting empirical

research on psychological androgyny. It is also used for workshops and counseling on gender awareness. The BSRI treats femininity and masculinity as two independent dimensions rather than as two ends of a single dimension. This enables a person to be high on both dimensions (androgynous) low on both dimensions (undifferentiated) or high on one dimension but low on the other (either masculine or feminine). The Bem Sex-Role Inventory is based on a conception of the traditionally sex-typed person as someone who is highly attuned to cultural definitions of sex-appropriate behavior and who uses such definitions as the standard for evaluating his or her behavior. The BSRI contains sixty personality characteristics. Twenty of the characteristics are stereotypically feminine (e.g. affectionate, gentle, understanding, sensitive to the needs of others) and twenty are stereotypically masculine (e.g. ambitious, self-reliant, independent, assertive). The BSRI also contains twenty filler items (e.g. truthful, happy, conceited).

The short form of the BSRI was used. This form is a refinement of the original BSRI, it includes thirty of the original sixty items and scoring is more convenient. Feminine and masculine items were selected from the Short BSRI in order to maximize the internal consistency of the items.

The Bem Sex-Role Inventory is hand scored. Ten of the items measure masculinity, and ten measure femininity. The responses to these items are added together and divided by ten to yield the subjects raw masculinity and femininity scores. These scores are converted to standard scores by using the tables in the manual. The difference between these standard scores is calculated by subtracting the masculinity score from the femininity score. This difference can be positive or negative, and is

converted into a T-Score using the tables in the manual. The inventory is used to classify the subject as one of the following: feminine, masculine, androgynous, or undifferentiated. This is done by comparing the raw scores for femininity and masculinity to the medians from the norming sample.

The BSRI is self-administering and is suitable for large groups of individuals. The test is labeled “Short Form” to reduce possibility that responses might be influenced by a knowledge of the purpose of the scales. Concise written directions are included. The short form can be completed by most subjects in ten minutes. Subjects were orally reminded to answer all items.

Two samples of subjects were used to test the reliability and internal consistency of the Bem Sex-Role Inventory. The samples consisted of undergraduate students in Introductory Psychology at Stanford University. The first sample includes 279 females and 444 males and was done in 1973, the second includes 340 females and 476 males and was done in 1978. Reliability was assessed using the Test-Retest method. The inventory was administered to a sample of twenty eight-males and twenty-eight females from the 1973 Stanford sample. The second administration took place four weeks after the first. Subjects were told that researchers were interested in how their responses varied over time, and were instructed not to try and remember how they had previously responded. Correlation showed high reliability, the lowest score being .76 occurring for males describing themselves on the masculine items.

Empirical research has been done to examine the validity of the BSRI in order to determine whether the inventory did in fact discriminate between those individuals who restrict their behavior in accordance with sex stereotypes and those who do not. The

central hypothesis was that a non androgynous sex role restricts the range of behavior available to an individual as she or he moves from situation to situation. In one study, for example, undergraduate subjects were asked to indicate which of a series of paired activities they preferred to perform for play while being photographed. Consistent with the hypothesis, sex typed subjects were significantly more likely than androgynous subjects to prefer sex-appropriate activity, and to resist engaging in cross sex-inappropriate behavior, even when such choices cost them money. Research provides strong validation for the BSRI by supporting the central hypothesis. The BSRI does identify the groups of individuals that Bem set out to study.

Variables

The two variables in this study were Gender Identity and Academic Major/ Career Choice.

Hypothesis

I. A person's gender identity is related to their choice of academic major/ career choice. Individuals high in masculinity will choose male dominated courses and careers. Individuals high in femininity will choose female dominated careers and courses.

II. Females with mother's in female dominated careers, will also choose female dominated careers. Males with fathers in male dominated careers, will also choose male dominated careers.

III. The career choice of a person's major role model will also affect that person's career choice in a manner similar to that of a parent.

IV. Males high in femininity will choose female dominated careers, and females high in masculinity will choose male dominated careers.

Null Hypothesis

Career choice/ academic major is not related to gender identity.

Method

The Bem Inventory was scored for each subject. The subject's score was used to classify them as one of the following: Feminine, Masculine, Androgynous, or Undifferentiated. Each of these categories was assigned a value: Feminine = 1, Masculine = 2, Androgynous = 3, and Undifferentiated = 4. The Statistical Abstract of the United States (1998) was used to assign a value of 1 for Female or 2 for Male to the subjects response to the academic major/ future desired occupation item on the demographic information sheet. This table lists official statistics from the U.S. Census Bureau. The table used lists employed civilians by occupation, sex, race and Hispanic origin for the years 1983 and 1997. The data from 1997 was used in this study. If the subject's desired occupation employed a higher percentage of females than males, then that occupation was labeled 1 for female. If the subject's desired occupation employed a higher percentage of males than females, then that occupation was labeled 2 for male. A Pearson Product Moment Correlation was calculated between the gender identity score and the value assigned to the subject's choice of occupation.

Chapter Four

Hypothesis I

A person's gender identity correlates with their academic major and career choice. Individuals high in masculinity will choose male dominated courses and careers, such as those related to math and science. Individuals high in femininity will choose female dominated careers and courses, such as those related to language arts and humanities.

Results

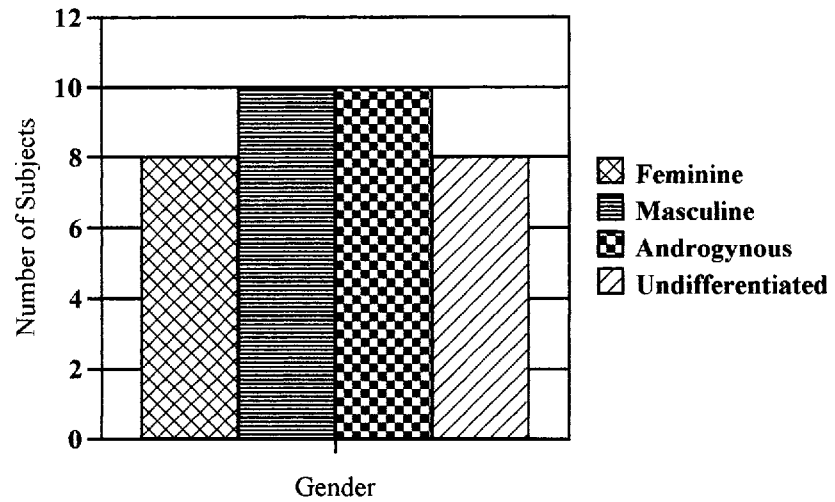
The Pearson Product Moment Correlation between gender identity and occupation is $-.085$. This correlation is not significant, therefore the null hypothesis can not be rejected. The subjects in this study were well distributed among the four gender categories with only slightly greater numbers in the masculine and androgynous categories, see figure 4.1 on the following page. As for occupation, the numbers were not as balanced. As one can see in figure 4.2 on the following page more of the subjects selected female dominated careers, regardless of their gender status.

Hypothesis II

Females with mother's in female dominated careers, will also choose female dominated careers. Males with fathers in male dominated careers, will also choose male dominated careers.

Figure 4.1

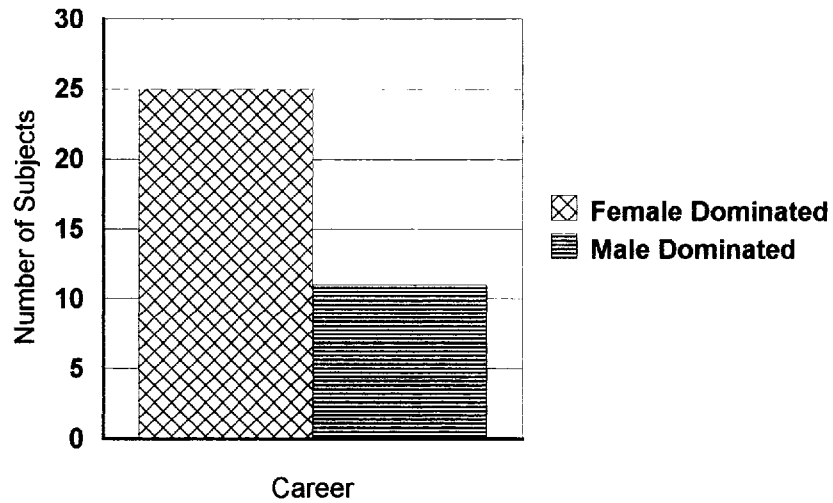
Distribution of Subjects by Gender



N=36

Figure 4.2

Distribution of Subjects by Career Choice



N= 36

Results

The Pearson Product Moment Correlations conducted between the mothers and fathers careers and the subjects career choice were not significant. The raw data shows that all but 3 of the mothers were in female dominated occupations. A large number of fathers were also in female dominated occupations. Some subjects did not list an occupation for one of the parents, and some of the occupations were not easily determined to be male or female dominated when comparing them to the census statistics. Some of the answers given by subjects were too vague to be categorized. There were also many more female than male participants in the study.

Hypothesis III

The career choice of a person's major role model will also affect that person's career choice.

Results

The Pearson Product Moment Correlation conducted between the role model's career choice and subject's career choice was not significant. Less than half of the subjects reported having a major role model, and some of the occupations were not easily determined to be male or female dominated when comparing them to the census statistics, because of the quality of the answers from participants.

Hypothesis IV

Males high in femininity will choose female dominated careers, and females high in masculinity will choose male dominated careers.

Results

There were no males with scores that classified them as feminine, therefore this part of the hypothesis could not be calculated. Six females were classified as masculine. Three chose masculine careers, and three chose feminine careers. A larger sample size is required to properly test this hypothesis.

Summary

No statistically significant results were obtained by this study, and none of the null hypothesis could be rejected. The sample size needed to be larger, and include more males. The Bem inventory was very useful in categorizing subjects by gender, but the system for coding the occupations as male or female had flaws. In some cases it was difficult to match the subject's response to an occupation listed.

An interesting finding was how equally distributed subjects were among the four gender categories, refer back to figure 4.1. Another interesting finding was that the majority of students were interested in female dominated careers. Since the sample was comprised primarily of females, it is not surprising that most of the career choices were female, but in combination with the evenness of the distribution of gender these two findings are valuable and lend support to this researcher's initial question: are females forced to ignore their gender identity and still choose female dominated careers?

Chapter Five

Summary

Differences between males and females in cognitive skills during adolescence are trivial, but despite this absence of differences females are less likely to pursue advanced courses in math and science, and those who do are more likely to drop out before finishing. Women are exceedingly underrepresented among graduates whose degrees are in math, engineering, and the physical sciences and are over represented among graduates whose degrees are in the humanities and education. This has implications, because some females may have personality characteristics that lead them away from stereotypical careers. The consensus of the research is that females are not encouraged to pursue careers in math and science because they are seen as masculine careers. This study examined gender identity and how it correlates with academic major and career choice in males and females. Questions about parental involvement, occupation, major role model's involvement, and occupation were asked. The purpose of this study was to examine the relationship between gender identity and one's academic major and career choice.

The sample consisted of thirty-six undergraduate students from a southern New Jersey University. There were seven males and twenty-nine females, from various academic majors. All participants volunteered for the study. Two tests were administered. The first was the Bem Sex-Role Inventory, the second a demographic information sheet created by the researcher. The information sheet asks subjects for their sex, grade point average, academic major and career aspiration. A Pearson Product

Moment Correlation was calculated between the gender identity score and the value assigned to the subject's choice of occupation.

Conclusions

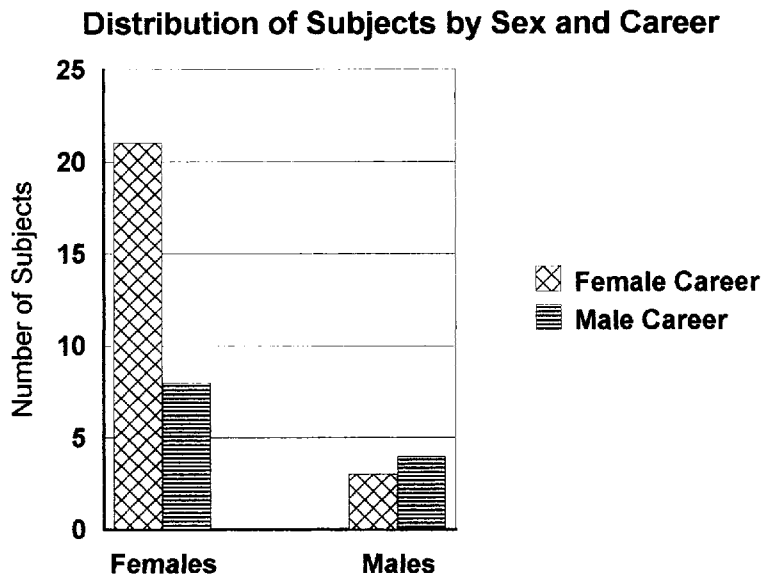
1. The correlation between gender identity and occupation was not significant. More of the subjects selected female dominated careers, regardless of gender status.
2. The correlation between the mothers' and fathers' career choice and the subjects' career choice were not significant.
3. The correlation between the role models' career choice and subjects' career choice was not significant.
4. There were no males with scores that classified them as feminine, therefore it was not possible to find out if males high in femininity chose female dominated careers. Six females were classified as masculine. Three chose masculine careers, and three chose feminine careers.

Discussion

The overall theme of the material reviewed in Chapter two is that as a result of social, biological, institutional, and personal reasons, gender plays a role in shaping the choices people make regarding their careers. Despite a national school curriculum which forces boys and girls to study the same subjects until they are sixteen years old, both boys and girls make subject choices in a way that will protect their gender identity. At first glance, the results of this study do not seem to support this information. No significant correlation was found between gender identity and career choice. The sample size needed to be larger and include more males, and the researcher had problems classifying

some of the careers. The majority of females, selected female dominated careers, see figure 5.1.

Figure 5.1



This is interesting when the distribution of subjects among the four gender categories is taken into consideration. Subjects were very evenly distributed among the four categories, refer back to figure 4.1 on page 25. Females are choosing female dominated careers, regardless of their gender identity. The number of males in the study is small, and they were more evenly divided between female and male dominated careers.

Sex segregation of occupations, or the extent to which men and women perform different jobs with different tasks and duties in the labor market, is persistent around the world, despite women's increased participation in the labor force and their increased educational attainment. There are more male-dominated occupations than female-dominated occupations. This is important because female dominated occupations tend to be lower paying, lower status, and have fewer advancement opportunities. The

labor market is not ideal for women, even in this modern society. Excluding the majority of workers from the majority of occupations is a waste of human resources, contributes to rigidities in the labor market, and reduces the economy's ability to adjust to change. We can encourage girls to be positive about math and science, and motivate them to follow their dreams for whatever career they desire, but what good will it do in a society that is going to push them into a so called "female" career?

Results of recent studies discussed in Chapter Two suggest that many factors such as parental encouragement, teacher student interactions, teacher preparation, curriculum content, self-concept, hands-on laboratory experiences, attitudes toward mathematics and science, availability of mentors, and home resources contribute to the achievement of women in math and science. One or a combination of these factors may be the reason why so many women are ignoring their true gender identity, and still choosing female dominated careers. There is some force in our society that is maintaining the sex segregation of careers. There would not be a problem with this if it were not for the fact that male and female occupations are not equal with regards to pay, status, and advancement opportunity. It becomes a vicious cycle. Society sees math and science as male subjects, because they lead to male dominated careers. Males are encouraged to be interested in math and science, and females are not even when they are best suited for them. More males go into these careers, therefore perpetuating the fact that they are considered masculine. It is that force that is at work that needs to be examined.

Implications for Future Research

This study could be repeated with a larger sample, consisting of more males. The system for classification of careers should also be refined. On a larger scale, other

research should be done to find out what forces are at work in society that are perpetuating segregation of occupations by sex. This is a lofty task, but one that should prove interesting. Parents and educators certainly have a large amount of influence on our children, but it does not seem to be enough to break down the barriers. Research has shown there are no biological reasons for the split. Some larger force must be at work within our society. It would not be so important to address this issue if it were not for the fact that female dominated occupations are lower paying, lower status, and have less opportunity for advancement than male dominated occupations.

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Appendix A

Demographic Information Sheet

Subject Number _____

Please answer all questions as truthfully and accurately as possible. Select or write only one answer per question. All answers are completely confidential. Thank You for your participation.

Sex: Male _____ Female _____ Age: _____ Year: Freshman _____ Sophomore _____

Junior _____ Senior _____

Academic Major _____

Future Occupation _____

Grade Point Average (select one range) 1.0 - 2.0 _____ 2.1 - 3.0 _____ 3.1 - 4.0 _____

Father's Occupation _____

Mother's Occupation _____

On a scale of 1 to 5, how involved in your academic career do you feel your parents are?
Circle one number.

1	2	3	4	5
Not Involved	minimally involved	involved	very involved	extremely involved

Do you have someone in your life, other than your parents, that you consider to be a role model?

No _____

Yes _____ Your role model's Sex: Male _____ Female _____

Your role model's Occupation _____

On a scale of 1 to 5, how involved in your academic career do you feel your role model is?
Circle one number.

1	2	3	4	5
Not Involved	minimally involved	involved	very involved	extremely involved

Please place this sheet on top of your completed Bem Inventory and turn both in to the researcher. Thank you for your participation.