INFORMATION TO USERS

While the most advanced technology has been used to photograph and reproduce this manuscript, the quality of the reproduction is heavily dependent upon the quality of the material submitted. For example:

- Manuscript pages may have indistinct print. In such cases, the best available copy has been filmed.

- Manuscripts may not always be complete. In such cases, a note will indicate that it is not possible to obtain missing pages.

- Copyrighted material may have been removed from the manuscript. In such cases, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, and charts) are photographed by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps. Each oversize page is also filmed as one exposure and is available, for an additional charge, as a standard 35mm slide or as a 17"x 23" black and white photographic print.

Most photographs reproduce acceptably on positive microfilm or microfiche but lack the clarity on xerographic copies made from the microfilm. For an additional charge, 35mm slides of 6"x 9" black and white photographic prints are available for any photographs or illustrations that cannot be reproduced satisfactorily by xerography.
The testing of a structural equation model of women's career choice in two college populations

Fassinger, Ruth Elizabeth, Ph.D.

The Ohio State University, 1987
PLEASE NOTE:

In all cases this material has been filmed in the best possible way from the available copy. Problems encountered with this document have been identified here with a check mark.

1. Glossy photographs or pages
2. Colored illustrations, paper or print
3. Photographs with dark background
4. Illustrations are poor copy
5. Pages with black marks, not original copy
6. Print shows through as there is text on both sides of page
7. Indistinct, broken or small print on several pages
8. Print exceeds margin requirements
9. Tightly bound copy with print lost in spine
10. Computer printout pages with indistinct print
11. Page(s) lacking when material received, and not available from school or author.
12. Page(s) seem to be missing in numbering only as text follows.
13. Two pages numbered. Text follows.
14. Curling and wrinkled pages
15. Dissertation contains pages with print at a slant, filmed as received
16. Other

University Microfilms International
THE TESTING OF A STRUCTURAL EQUATION MODEL OF WOMEN'S CAREER CHOICE IN TWO COLLEGE POPULATIONS

DISSERTATION

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in the Graduate School of the Ohio State University

By

Ruth E. Fassinger, B.A., M.A.

* * * * *

The Ohio State University
1987

Dissertation Committee:

D. Dell
W. Dowling
T. Kaul
L. Schmidt

Approved by

Theodore J. Kaul
Adviser
Department of Psychology
ACKNOWLEDGEMENTS

I express my appreciation to my adviser, Dr. Theodore Kaul, for his support and assistance in this study. I also thank the members of my reading committee, Drs. Don Dell and Lyle Schmidt, for their insightful comments and suggestions. I would also like to thank Amy Reynolds, Deb Romac, Debra Reese, and Terence Bradley for assistance in data collection and coding. I would like to acknowledge Dr. Robert MacCallum, whose excellent teaching inspired my interest in this research. And my heartfelt thanks to Dr. Nancy Betz, who has been a constantly supportive mentor, colleague, and friend.
VITA


1973 ..................... B.A., State University of New York / Fredonia, Fredonia, N.Y.

1978 ..................... M.A., State University of New York / Fredonia, Fredonia, N.Y.

1973-1978 ............... Teacher, Jamestown Public Schools, Jamestown, N.Y.

1978-1980 ............... Teacher, West Genesee High School, Camillus, N.Y.

1981-1985 ............... Teaching Assistant, Department of Psychology, Ohio State University

1984 ..................... M.A., Department of Psychology, Ohio State University

1985-1986 ............... Psychology Intern, University of California/Santa Barbara, CA

1986-1987 ............... Counseling Psychologist, University of California/Santa Barbara

PUBLICATIONS


FIELDS OF STUDY

Major Field: Psychology

Minor Fields: Student Personnel Work in Higher Education Quantitative Methods

iii
# TABLE OF CONTENTS

ACKNOWLEDGEMENTS ........................................ii
VITA ..................................................... iii
TABLE OF CONTENTS ........................................ iv
LIST OF TABLES ............................................ vi
LIST OF FIGURES .......................................... vii

<table>
<thead>
<tr>
<th>CHAPTER</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>II. REVIEW OF THE LITERATURE</td>
<td>23</td>
</tr>
<tr>
<td>Factors Influencing Women’s Career Choice</td>
<td>23</td>
</tr>
<tr>
<td>Structural Equation Modeling</td>
<td>74</td>
</tr>
<tr>
<td>Summary</td>
<td>89</td>
</tr>
<tr>
<td>III. METHOD</td>
<td>90</td>
</tr>
<tr>
<td>Subjects and Procedures</td>
<td>90</td>
</tr>
<tr>
<td>Instruments</td>
<td>91</td>
</tr>
<tr>
<td>Analysis of the Data</td>
<td>110</td>
</tr>
<tr>
<td>IV. RESULTS</td>
<td>111</td>
</tr>
<tr>
<td>Descriptive Statistics</td>
<td>111</td>
</tr>
<tr>
<td>Model 1 (Initial Model)</td>
<td>119</td>
</tr>
<tr>
<td>Model 2</td>
<td>136</td>
</tr>
<tr>
<td>Model 3</td>
<td>142</td>
</tr>
<tr>
<td>Model 4</td>
<td>148</td>
</tr>
<tr>
<td>V. DISCUSSION</td>
<td>173</td>
</tr>
<tr>
<td>Summary of Findings</td>
<td>173</td>
</tr>
<tr>
<td>Issues and Problems</td>
<td>178</td>
</tr>
<tr>
<td>Implications and Conclusion</td>
<td>184</td>
</tr>
</tbody>
</table>

FOOTNOTES ................................................ 188
# TABLE OF CONTENTS (continued)

LIST OF REFERENCES ........................................... 189

APPENDICES

<table>
<thead>
<tr>
<th>Appendix</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>(Structural and Measurement Equations)</td>
<td>208</td>
</tr>
<tr>
<td>B</td>
<td>(Personal Data Form)</td>
<td>209</td>
</tr>
<tr>
<td>C</td>
<td>(SAT/ACT Equivalency Table)</td>
<td>210</td>
</tr>
<tr>
<td>D</td>
<td>(Personal Characteristics Questionnaire)</td>
<td>211</td>
</tr>
<tr>
<td>E</td>
<td>(Career Decision Questionnaire)</td>
<td>212</td>
</tr>
<tr>
<td>F</td>
<td>(Attitudes Toward Feminism Questionnaire)</td>
<td>214</td>
</tr>
<tr>
<td>G</td>
<td>(Family Questionnaire)</td>
<td>216</td>
</tr>
<tr>
<td>H</td>
<td>(Women's Roles Questionnaire)</td>
<td>217</td>
</tr>
<tr>
<td>I</td>
<td>(Career and Family Plans Questionnaire)</td>
<td>219</td>
</tr>
<tr>
<td>J</td>
<td>(Career Questionnaire)</td>
<td>220</td>
</tr>
<tr>
<td>K</td>
<td>(Career and Family Plans Questionnaire)</td>
<td>222</td>
</tr>
<tr>
<td>L</td>
<td>(College Course Questionnaire)</td>
<td>223</td>
</tr>
<tr>
<td>M</td>
<td>(Cover Letter)</td>
<td>225</td>
</tr>
</tbody>
</table>

V
# LIST OF TABLES

<table>
<thead>
<tr>
<th>TABLE</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Demographic Information for University of California/Santa Barbara (UCSB) and Ohio State University (OSU) Samples</td>
<td>112</td>
</tr>
<tr>
<td>2. Means and Standard Deviations of Variables Used in Testing Models of Women's Career Choice in University of California/Santa Barbara (UCSB), Ohio State University (OSU), and Combined Samples</td>
<td>115</td>
</tr>
<tr>
<td>3. Pearson Correlation Coefficients for All Variables Used in Models of Women's Career Choice for All Three Sample Data Sets</td>
<td>120</td>
</tr>
<tr>
<td>4. Summary of Overall Fit Information for Models of Women's Career Choice Tested in University of California/Santa Barbara (UCSB), Ohio State University (OSU), and Combined (COMB) Samples</td>
<td>126</td>
</tr>
<tr>
<td>5. Detailed Fit Information for Models of Women's Career Choice</td>
<td>127</td>
</tr>
</tbody>
</table>
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>FIGURE</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Final Model of Women's Career Choice in Fassinger (1985) Study</td>
<td>14</td>
</tr>
<tr>
<td>3. Initial Model of Women's Career Choice Tested in Present Study</td>
<td>19</td>
</tr>
<tr>
<td>4. Model 2/Revised Model of Women's Career Choice</td>
<td>137</td>
</tr>
<tr>
<td>5. Model 3/Revised Model of Women's Career Choice</td>
<td>143</td>
</tr>
<tr>
<td>6. Model 4/Revised Model of Women's Career Choice</td>
<td>149</td>
</tr>
<tr>
<td>7. Final Model of Women's Career Choice/Combined Sample</td>
<td>159</td>
</tr>
<tr>
<td>8. Final Model of Women's Career Choice/UCSB Sample</td>
<td>165</td>
</tr>
<tr>
<td>9. Final Model of Women's Career Choice/OSU Sample</td>
<td>170</td>
</tr>
</tbody>
</table>
CHAPTER I

INTRODUCTION

It has been noted that although the field of vocational psychology itself is over 70 years old, the interest in women's career choice and vocational adjustment is a relatively recent phenomenon. Only in the last 20 years or so have scholars begun to view women's career development as an important and unique area of study (Betz & Fitzgerald, 1987; Fitzgerald & Betz, 1983).

Betz and Fitzgerald (1987) postulated that the lack of attention to women's career development during vocational psychology's first 50 years probably derived from one or both of two previously accepted assumptions. The first of these assumptions was that the primary roles of women were those of housewife and mother; women's "work" revolved around domestic and childcare responsibilities, and women who did work outside the home were only doing so out of necessity. A second possible basis for the lack of attention to women's career development involved implicit assumptions that the theories and concepts developed to describe and explain male career development would generalize to the description and explanation of women's
career development. Although these assumptions concerning women's place in the home and the applicability to women of existing theories of career development were widely held, questions of their validity and the potential need for specific attention to women's career development have dramatically increased in recent years (e.g., Osipow, 1975).

Regarding the first assumption, "women's place" clearly is no longer exclusively in the home. Working women increasingly are becoming the norm in our society (Hyde, 1985), and are a critical part of the national labor force. For example, in 1984, 63% of all women 18 to 64 were working outside the home; these women constituted more than 44% of all workers (U.S. Department of Labor, 1984). The odds that any given woman would work outside the home at some time in her life were over 95 out of 100, and the average woman could expect to spend 29.3 years in the labor force compared with 39.1 years for the average man. Over half of currently married women work, and the number of working mothers has increased tenfold since the period immediately preceding World War II (U.S. Department of Labor, 1984). Additionally, a growing body of research (e.g., Harmon, 1980; Komarovsky, 1982; Rand & Miller, 1972) suggests that there has been a consistent decrease in marriage-only lifestyle preferences among women and an increasing degree of career orientation among younger
women. These trends indicate that "women's place" is in the work force, and that women's career development is an area deserving of theoretical and empirical attention.

The second assumption, that women's career development is capable of being described, explained, and predicted using existing theories of career development, also may be untenable. The lack of applicability of theories developed on men to women's vocational behavior has been discussed (e.g., Osipow, 1975), and seems related to several important differences in the career behavior of men and women.

The first salient difference is the concentration of women in a restricted range of "pink collar" occupations (Howe, 1977) involving low status, low pay, and little opportunity for advancement. This pattern contributes to the large wage gap in earning power between men and women; despite decades of social change, women's earnings continue to be about 60% of those of men, and 60% of working women earn less than $10,000 a year (Betz & Fitzgerald, 1987; Ferraro, 1984; U.S. Department of Labor, 1984). Even within a particular field, women tend to be concentrated in low-prestige and low-pay positions, such as in education and medicine where the percentage of women decreases as the occupational level increases (Ferraro, 1984; U.S. Department of Labor, 1984). Not only are women actually employed in traditionally female fields, but the career
aspirations of young women continue to focus on stereotypically female occupations, suggesting a limited range of female occupational pursuits (Betz & Fitzgerald, 1987; Fitzgerald & Betz, 1983; Hesse-Biber, 1985; Poole & Clooney, 1985).

Related to women's concentration in low-pay, low-status occupations is the finding that, in contrast to men in general, women's capacities and talents often are not reflected in their educational and occupational achievements; women's career aspirations frequently are lower than those of males with comparable levels of ability (Fitzgerald & Crites, 1980). Bem and Bem (1970) described this phenomenon as the "homogenization" of American women, meaning that women are socialized to pursue the same life roles regardless of their individual capabilities and talents (for example, a brilliant musician becoming a mother and part-time secretary because that is what is expected of her). A woman's life roles and vocational choices therefore may be predictable not on the basis of her characteristics as an individual but on the basis of her sex; men's choices, on the other hand, have tended to be more closely related to individual differences variables rather than gender per se (Fitzgerald & Crites, 1980). In terms of vocational theory, then, factors associated with gender seem more powerful predictors of vocational role choices in women than have other individual factors.
postulated as important in vocational theories focusing, either explicitly or implicitly, on male career development (Betz & Fitzgerald, 1987; Fitzgerald & Betz, 1983).

Finally, women's career development typically has involved one more step than that of men (Kriger, 1972). Before women decide what occupation or career to pursue, they often must decide whether or not they want to make outside employment a focus of their lives. Men, in contrast, typically grow up assuming that they will need to support themselves and their families, and therefore begin with the choice of an occupation rather than with the choice of whether or not to work at all (Betz & Fitzgerald, 1987).

Thus, women’s restricted range of career options, the economic disadvantages of those careers which customarily are chosen by women, the underutilization of women's capabilities, and the need for decisions concerning the role of career involvement in women's lives are some of the major areas in which women's career development may differ from that of men. Many vocational psychologists now assume the need for theory and research focused specifically on women's career development, and, although a comparatively new field of inquiry, the career development of women has been the subject of extensive and continuing interest and empirical investigation during the past two decades. Much of this research has focused on variables uniquely
important to the understanding and prediction of women's career choice behavior.

Betz and Fitzgerald (1987) noted that the study of women's career development necessitates the utilization of dependent variables usually not relevant to the study of male career development. In addition to dependent variables describing the content of career choices (e.g., occupational field and level), the study of women's career development adds variables describing the degree to which a woman intends to work at all and the importance, if any, of career pursuits in her life (typically assumed in men's career development and therefore often not treated as variables). This expanded focus requires increased attention to a large group of influential (independent or predictor) variables which, while often related to men's career choice as well as women's, may affect the career choices of women more directly, more powerfully, or in a different manner (Almquist & Angrist, 1971; Betz & Fitzgerald, 1987).

A great deal of the research in this area, for example, has examined various background factors such as parental attitudes and occupations (Almquist & Angrist, 1971; Lemkau, 1979), role model influence (Almquist & Angrist, 1971; Basow & Howe, 1980; Goldstein, 1979; Phelan, 1979; Stake & Granger, 1978), education and academic success (Greenfield, Greiner, & Wood, 1980) including
coursework in math and science (Betz & Hackett, 1981; Peng & Jaffe, 1979), encouragement (Stake & Levitz, 1979), and work experience (Almquist & Angrist, 1971). Other influential variables examined in research on women's career development have been related to personality characteristics and attitudes such as emotional health (Lemkau, 1979), self-efficacy expectations (Betz & Hackett, 1981; Hackett, 1985), competitiveness (Helmreich et al., 1980), self-concept (O'Leary, 1974) and self-esteem (Stake, 1979), dating and social behavior (Sedney & Turner, 1975), and instrumentality (Spence & Helmreich, 1980). A third group of variables shown to be especially influential in women's career choice behavior involves situational factors and choices such as societal sex role stereotypes (O'Leary, 1974), sex-appropriate occupational stereotypes (Standley & Soule, 1974), and adult marital and parental status (Card, Steel, & Abeles, 1980; Leviton & Whitley, 1981; O'Leary, 1974; Perun & Del Vento Bielby, 1981; Russo & Denmark, 1984; Wallston, Foster, & Berger, 1978).

Despite the large quantity of research on factors related to women's career choices, the lack of unifying theory to describe relationships among variables has made it difficult to determine the relative strength of the variables in their influence on women's career choice. The burgeoning interest in this area has produced many excellent studies of individual variables, but the manner
in which these factors occur concurrently and interact to affect women's career development, and the relative importance of their effects, have been poorly understood due to inadequacies in the theoretical underpinnings of research in women's career development (Betz & Fitzgerald, 1987; Fitzgerald & Betz, 1983; Fitzgerald & Crites, 1980). Research has been needed which allows the examination of causal relationships between these many variables in an integrated, testable form.

A promising methodological advance in this regard is structural equation modeling or multivariate analysis with latent variables, also called causal modeling or covariance structure analysis (Bentler, 1980). This method allows the use of correlational and nonexperimental (as well as experimental) data to determine the plausibility of theoretical models in specific populations. Hypothesized in the structural equation model is a specified causal structure among a set of unobservable constructs, each measured by a set of observed indicator variables; this model can then be tested for "fit" in a particular population. A full structural equation model consists of two components: (a) a structural model which specifies the hypothesized causal structure among "latent variables" (hypothetical constructs not directly observable); and (b) a measurement model which defines relationships between "measured variables" or "indicators" (variables which are
observed directly) and the latent variables for which they are used as approximations. When the sample data are transformed into correlation or covariance matrices and described by a series of regression equations, the model can be analyzed using the LISREL computer program (Joreskog & Sorbom, 1984) to examine its fit in the population from which the sample has been drawn. This analysis provides estimations of the parameters of the model (path coefficients and error terms) and several measures of goodness-of-fit of the model to the sample data. The parameter estimates and goodness-of-fit information determined by analysis may be examined for possible modification and retesting of the theoretical model, implying flexibility in the degree of confirmation and exploration embedded in the method.

In addition, the structural component of the model may be examined separately from the measurement component; this allows inspection of measurement problems (often rooted in psychometric inadequacy) separately from the inspection of structural problems (rooted in the theory under investigation). The capacity for separate analyses of model components may be especially useful in the early stages of confirmatory studies where examination of the measurement model can aid in item evaluation and construct development, and examination of the structural model can identify theoretical weaknesses; these are important
contributions to the design of future studies as well as to the interpretation of present findings (Bagozzi, 1983). Thus, while structural equation modeling is essentially a confirmatory analysis method to be used on carefully constructed, empirically based theories, the large amount of information obtained from analysis may aid in a more exploratory function, leading to potentially more concise, comprehensive theories and more informative research.

It would appear, then, that the application of structural equation modeling to the study of women's career choice offers significant potential to contribute to our understanding of the factors underlying the choice process. Such a study was undertaken by Fassinger (1985), who tested a model of career choice in college women (Betz & Fitzgerald, 1987) using the structural equation modeling methodology. The tested theory was integrative, in that it unified the many variables previously studied into a causal ordering framework, represented in Figure 1. As can be seen in the figure, the model contained four independent (exogenous) latent variables and five dependent (endogenous) latent variables. It was hypothesized in the model that the independent variables Previous Work Experience, Academic Success, Role Model Influence, and Perceived Encouragement directly affect the dependent variables Attitudes Toward Work, Attitudes Toward Self, and Sex Role Attitudes. These dependent variables in turn
Figure 1. Betz/Fitzgerald Model of Women's Career Choice Tested in Fassinger (1985) Study.
Figure 1 (Continued)

Key:

PWE = Previous Work Experience
VEX = Volunteer Experience
WEX = Work Experience

ACS = Academic Success
HSG = High School GPA
COG = College GPA

RMI = Role Model Influence
FPW = Female Parent's Work
Sow = Significant Other Women's Work

PEN = Perceived Encouragement
MPA = Male Parent's Attitude
FPA = Female Parent's Attitude
SQA = Significant Other's Attitude

ATW = Attitudes Toward Work
MNS = Mastery Needs
CAS = Career Salience
CAM = Career Maturity

ATS = Attitudes Toward Self
INS = Instrumentality
GSE = General Self-Esteem
PSE = Performance Self-Esteem
SSE = Social Self-Esteem

SRA = Sex Role Attitudes
AWR = Attitudes Toward Women's Roles
TMS = Title Ms.
FEM = Feminist

LPP = Lifestyle Preferences and Plans
CAR = Career Plans
MAR = Marriage Plans
CHL = Children Plans

RCH = Realism of Career Choice
AXL = Ability X Level Congruence
IXF = Interest X Field Congruence
affect the dependent variables Lifestyle Preferences and Plans, and Realism of Career Choice. In addition, it was hypothesized that there is a relationship between the independent variables Role Model Influence and Perceived Encouragement.

Using the LISREL VI computer program (Joreskog & Sorbom, 1984), Fassinger (1985) tested this model through eight modifications based on the LISREL goodness-of-fit information. The final modified model, which represented the best fit to the sample used in the study, is represented in Figure 2. As can be seen in the figure, the independent latent variables Ability, Achievement Orientation, and Feminist Orientation are hypothesized to affect the dependent latent variables Career Orientation and Family Orientation, which in turn affect the dependent latent variable Career Choice. In addition, Career Choice is hypothesized to be affected by Ability directly.

Fassinger (1985) noted that while this model represented "good fit" to the sample data according to the LISREL information, there were several flaws in the study which make acceptance of the final model questionable. The first major problem was the homogeneity of the sample used in the study, reducing variance in many key variables and creating difficulty in using a methodology that relies on variances among variables. The second major problem in the Fassinger study was the apparent psychometric inadequacy of
Figure 2. Final Model of Women's Career Choice in Fassinger (1985) Study.
Figure 2 (Continued)

Key:

ABIL = Ability
ACTL = ACT Level
HSG = High School GPA
COG = College GPA

ACHO = Achievement Orientation
MNS = Mastery Needs
INS = Instrumentality
PSE = Performance Self-Esteem

FEMO = Feminist Orientation
TMS = Title Ms.
FEM = Feminist

FAMO = Family Orientation
MAR = Marriage
CHL = Children

CARO = Career Orientation
AWR = Attitudes Toward Women's Roles
CAS = Career Salience

CACH = Career Choice
PRES = Prestige
TRAD = Traditionality
several of the measures used, leading to the elimination of a large number of variables from the final model; this may be questionable on theoretical grounds.

Fassinger (1985) also pointed out that the model testing probably required a larger sample size than the one used, and suggested the possibility that "fit" may have been achieved simply by eliminating much of the model's complexity. Fassinger stressed the importance of re-testing the original and final models or a derivative of those models on a more appropriate sample with more adequate measures.

Thus, the purpose of the present study was to test a modified version of the model derived in the Fassinger (1985) study, utilizing information gained in that study to guide the present effort. That the model proposed in the present study differed from the models tested in the previous (1985) study was a function of psychometric limitations in the original study and additional review of the literature since that study was completed.

It will be noted, for example, that the model tested in this study contained variables related to mathematics orientation and ability. Although this variable was not present in the original study, an examination of the research literature regarding mathematics and women's career choice suggested that this may have been a rather serious oversight in the original model; thus it was
included in this research effort.

Other variables in the original model were eliminated from the present model due to measurement limitations. For example, the variables relating to previous work experience, role model influence, perceived encouragement, and realism of choice presented great difficulty in testing the original model, eventually being eliminated from that model because they appeared to be inadequate indicators of their underlying theoretical constructs. Additional examination of the literature failed to reveal other measures that might be more adequate; without alternatives in terms of measuring those variables, the decision was made to focus the present research effort on exploring variables with more psychometric success in prior research literature and in this researcher's prior study.

Other decisions regarding variables in the present model were made on the basis of difficulties in the final model of the Fassinger (1985) study. For example, Fassinger noted that a variable measuring attitudes toward women's roles in society presented difficulties regardless of its position in various modified models, and suggested that measurement of sex role ideologies needed to be further refined in future model testing; thus, the present model contained variables which measure separately feminist attitudes, sex role beliefs related to work and society, and sex role beliefs related to family, husband, and
children. The family orientation variable in the Fassinger (1985) final model also presented difficulties in terms of fit information and its significance in that model; consequently, it was assigned different indicators than those of the previous study, and was given a different causal position in the model proposed in this study. Similar changes were made in the career orientation variable, as well as the achievement orientation variable; the latter was reformulated into a variable tapping agentic characteristics (such as instrumentality and the capacity for career decision-making), consistent with recent research literature (Betz & Fitzgerald, 1987) and with fit information generated in the Fassinger (1985) study.

Thus, the model tested in this study was judged by the researcher to be one which might resolve difficulties inherent in the models of the previous study, as well as presenting a model consistent with recent literature in the field of women's career development. The model which was tested is represented in Figure 3. As can be seen in the figure, there were four independent latent variables: Ability (ABIL), measured by High School GPA (HSG) and ACT/SAT Composite (COM); Agentic Characteristics (AGEN), measured by Instrumentality (INS) and Career Decision-Making (CDM); Feminist Orientation (FEMO), measured by Attitudes Toward Feminism (ATF), use of the Title Ms. (TMS), and labeling of oneself as a Feminist
Figure 3. Initial Model of Women's Career Choice Tested in Present Study.
Key:

ABIL = Ability
   HSG = High School GPA
   COM = ACT/SAT Composite Score

AGEN = Agentic Characteristics
   INS = Instrumentality
   CDM = Career Decision Making

FEMO = Feminist Orientation
   ATF = Attitudes Toward Feminism
   FDM = Use of Feminist Label
   TMS = Use of Title Ms.

FAMO = Family Orientation
   AFR = Attitudes Toward Family Roles
   FFP = Future Family Priorities
   IMP = Importance of Family
   RIM = Relative Importance of Family

CARO = Career Orientation
   CAS = Career Salience
   AWR = Attitudes Toward Work Roles
   CAP = Career Plans
   CIM = Career Importance

MATH = Mathematics Orientation
   HSM = High School Math (years)
   MSE = Math Self-Efficacy
   ACH = Math Achievement

CACH = Career Choice
   TRD = Traditionality
   PTG = Prestige
   SCI = Science Relatedness
(FEM); and Family Orientation (FAMO), measured by Attitudes Toward Family Roles (AFR), Future Family Priorities (FFP), Family Importance (IMP), and Relative Importance of Family vs. career (RIM). These independent variables were hypothesized to affect three dependent latent variables: Career Orientation (CARO), measured by Career Salience (CAS), Attitudes Toward Work Roles (AWR), Career Plans (CAP), and Career Importance (CIM); Mathematics Orientation (MATH), measured by ACT/SAT Mathematics Achievement (ACH), Mathematics Self-Efficacy (MSE), and number of years of High School Math (HSM); and Career Choice (CACH), measured by occupational Traditionality (TRD), Prestige (PTG), and Science-Relatedness (SCI). Additionally, Career Choice was hypothesized to be affected by Career Orientation and Mathematics Orientation, and there were hypothesized relationships between Ability and Agentic Characteristics, and between Feminist Orientation and Family Orientation.

There are important theoretical, empirical, and practical implications of this study. The testing and refinement of models of women's career choice advances theoretical knowledge in the integration of a large number of variables studied in women's career development and the corroboration of their hypothesized relationships. This theoretical advance can provide direction for future research in the area of women's career development. It also might offer a useful framework for considering and
providing career counseling for women at the college level, suggesting myriad implications for current counseling practice.
CHAPTER II

REVIEW OF THE LITERATURE

The following review is divided into two major sections. The first section presents the rationale and literature base utilized in the development of the model of women's career choice tested in the present study. The second section of the chapter describes the technique of structural equation modeling, including previous applications of the technique in theory exploration.

Factors Influencing Women's Career Choice

The last 20 years have been characterized by a dramatic increase in the amount of research focusing on women's career choice and adjustment. Although this topic was largely ignored during the first 50 years of work in vocational psychology, realization that increasing numbers of women did work outside the home, and that women's work patterns often were quite different from those of men, led to increased attention by researchers in the field of vocational psychology. In the comprehensive review of this literature, Betz and Fitzgerald (1987; Fitzgerald & Betz, 1983) discussed women's career choice in terms of major dependent and independent variables.
In terms of dependent variables, research on women's career development has used a number of dependent variables not used previously in research on men. Because men were assumed to work and pursue careers, the study of the career development of men could focus on variables describing the nature of their career choices -- for example, occupational field and level or congruence of occupational environment with vocational interests. Studies of women's career choice, however, have begun with the assumption that women might not necessarily work at all outside the home, necessitating the development of a number of variables describing the degree to which a woman intended to work and the relative importance of career pursuits in her life. Therefore, ideas such as lifestyle plans (for example, decisions regarding marriage, motherhood, or career pursuits) provide a first step in understanding women's career choices, and attempts to differentiate homemaking from career oriented women characterized early research in women's career development (see Betz & Fitzgerald, 1987, for a complete review). More recently, the dichotomous variable of career versus home orientation has decreased in usefulness as more and more women have planned to pursue both career and family roles (e.g., Levitt, 1972; Oliver, 1974), and it has been replaced by concepts describing the nature and degree of career orientation (Betz & Fitzgerald, 1987).
One major approach to describing the nature of women's career choices involved the classification of those choices according to their traditionality/nontraditionality, or occupations in which women predominate (in terms of numbers) versus those in which men predominate; the terms "innovator," "pioneer," and "nontraditional" have all been used to differentiate women pursuing occupations in which men predominate from those pursuing traditionally-female fields (Almquist, 1974; Rossi, 1965; Tangri, 1972). This research has assumed that choices of a nontraditional career require stronger and more consistent career commitment than do choices of traditionally-female careers (such as teaching and nursing), and much of the research completed in the early 1970's documented numerous differences between "pioneers" and "traditionals" in terms of personality characteristics, family background, and other variables (e.g., Astin & Myint, 1971; Standley & Soule, 1974; Tangri, 1972).

Fundamentally, many of the dependent variables, at least indirectly, have been approaching the idea of realism of career choice. As pointed out by Fitzgerald and Crites (1980), one of the major areas in which women's career development has differed in degree from that of men has been in the area of realism. The idea of realism in career choice was originally based on Parsons' (1909) idea that career choices should "match" the person's abilities to the
ability requirements of the job. Realistic choices (Crites, 1969) are those where abilities and choices match. Unrealistic choices are those where either the individual chooses an occupation for which he/she possesses insufficient abilities, or those where the individual chooses an occupation at a lower level than is warranted by his/her capabilities, known as underutilization (Crites, 1969). Women’s career choices have tended to underutilize their abilities and, thus, may represent unrealistic career choices. Thus, while the study of men’s career choice has focused on content, studies of women’s career choice have focused more on the degree to which a career is pursued at all.

Independent variables are key predictive factors related to women’s career choice and commitment. In categorizing the independent or predictor variables, Betz and Fitzgerald (1987; Fitzgerald & Betz, 1983) have divided them into environmental and individual variables. Environmental variables include such cultural factors as living environment and societal sex-role stereotypes and background variables such as ethnic origin and family patterns; individual variables include concepts such as achievement motivation, career maturity, instrumentality, and other self-concept variables. Betz and Fitzgerald (1987) point out that several classification systems have been developed to emphasize various aspects of
environmental and individual variables in predicting women's career behavior (e.g., Farmer, 1985; Matthews & Tiedeman, 1984; Osipow, 1975; Perun & Del Vento Bielby, 1981; Psathas, 1968; Senesh, 1973; Sobol, 1963); major independent variables considered uniquely pertinent to women's career choices and pursuits which seem to emerge from the various classification systems are marital/familial status, sex role attitudes, and role conflict (Betz & Fitzgerald, 1987), suggesting that these variables may offer predictive utility in exploring women's career choice.

In the following sections, each construct utilized in the tested model will be discussed briefly (the reader is referred to Figure 3). This review will focus on previous studies which have suggested the importance of each of these constructs to women's career choice, and thereby attempt to support the inclusion of these variables in the proposed model. Due to the large number of variables being tested in this study, the review is selective and includes, primarily, those studies which appear to: (a) have had heuristic value in the field of women's career development; (b) have been cited often; (c) be methodologically adequate; (d) provide historical perspective for understanding women's career behavior; and/or (e) offer conceptual, theoretical, or psychometric advances in the field of women's career development. Although a detailed
methodological analysis of each study has not been included, the section concludes with a discussion of the inadequacy of previous research efforts in women's career development, and the need for integrated approaches such as that proposed in the present study.

**Ability.** Ability has long been viewed as an important variable in the prediction of the career development of both women and men. In men, intelligence level consistently has been found to predict attained occupational levels (Crites, 1969; Tyler, 1965) and the extent of achievement and contribution in career-related activities (Terman & Oden, 1959). Among women, level of intelligence has been related to educational and occupational attainments, but the relationship is far less consistent than among men. As children, girls tend to perform better academically than boys at all educational levels (Carnegie Commission on Higher Education, 1973; Hyde, 1985; Tyler, 1965); females obtain higher high school and college grade point averages (from one half to a full point difference, depending on field), and are more likely than males to be accelerated and promoted (cf. Hyde, 1985). However, despite higher grades throughout school, the relationship between ability and educational/occupational levels begins to break down during adolescence, and the disparity is quite apparent by college age and beyond; women tend to be concentrated in a narrow range of
traditionally female majors (Pfafflin, 1984; Randour et al., 1982) and are less often enrolled in high-prestige research-oriented universities than are men, while tending toward overrepresentation in colleges and universities emphasizing teacher training (Carnegie Commission on Higher Education, 1973). This ability-achievement gap is illustrated in a recent study by Card et al. (1980), which reported results of a long-term follow-up study of the 9th-grade cohort of the original Project Talent study. Project Talent was a large-scale longitudinal study of 440,000 9th and 12th graders sampled from 1,353 secondary schools across the country, in which students were administered a battery of tests in 1960 with follow-up measures of educational and occupational attainment 1, 5, and 11 years after high school graduation. Results of the study indicated that while female students had demonstrated higher grade point averages and composite scores on academic ability tests, by 11 years after high school, men had obtained significantly more education and were earning significantly more money. Sex differences in realization of potential were found across all socioeconomic status levels, and differences widened from the 5-year to the 11-year follow-up. This study and others similar to it (see Betz & Fitzgerald, 1987) seem to support the generalization that, while women who have demonstrated educational and occupational achievement are of higher
intellectual ability than women in general, women’s educational and occupational achievements are on the average less than those of a man with equal ability (Betz & Fitzgerald, 1987; Carnegie Commission on Higher Education, 1973). Thus, the occupational achievements of women often represent an underutilization of their intellectual abilities (Carnegie Commission on Higher Education, 1973; Fitzgerald & Crites, 1980).

Despite underutilization issues, in terms of ability, research does suggest that higher academic aptitude is associated with stronger career-orientation in girls and women. Higher aptitude or achievement test scores have been found to differentiate career-oriented from home-oriented women in several studies (Rand, 1968; Tinsley & Faunce, 1978). And, in spite of the tendency toward underutilization of ability in women, educational level has been found to be one of the most powerful predictors of the career achievements of women (Harmon, 1970; Wolfson, 1976), perhaps because educational level appears to moderate such variables as marital and motherhood status, sex role attitudes, and career salience (Greenfield et al., 1980; Houseknecht & Spanier, 1980; Tinsley & Faunce, 1980).

In attempting to understand the lack of consistency in the relationships among ability, educational level, and occupational attainment in women, it may be useful to examine the educational system itself, which has been said
to be far more facilitative of male than female educational attainment (Betz & Fitzgerald, 1987). Discriminatory practices have been said to discourage, or fail to encourage, the educational achievements of many women students. At early levels of schooling, there is evidence that teachers respond with more interest and encouragement to boys versus girls, and tend to demonstrate higher expectations regarding male (versus female) achievement (Maccoby & Jacklin, 1974; Sadker & Sadker, 1985; Weitzman, 1979). The existence of overt discrimination against women in higher education has been amply documented (e.g., Lockheed & Ekstrom, 1977; Merritt, 1976; National Project on Women in Education, 1978), as well as the problems with women's enrollment in higher education. For example, women's enrollments exceed those of men only at the junior (2-year) college level, and in every field offering a professional degree (such as medicine, law, dentistry, optometry, and theology) there is an inverse relationship between the level of the degree and the proportion of degree recipients who are women. Research also has documented females' lesser likelihood of being chosen as proteges and their subsequent loss, both educationally and in terms of later job opportunities, of the benefits of close working relationships with professors (Epstein, 1970; Feldman, 1974; Goldstein, 1979). The existence of negative attitudes of faculty members toward women, including a
failure to mentor, support, or take women students seriously, also has been reported (Bernard, 1976; Holahan, 1979). Kutner and Brogan (1980) reported that 50% of their sample of female medical students had been discouraged from their aspirations by parents or professors (vs. only 14% of the males).

While discrimination against women students is a barrier to their educational attainments, an equally serious concern is the lack of support and encouragement many women receive (Betz & Fitzgerald, 1987). According to Freeman (1975), a "null academic environment," that is, one lacking in support and encouragement, has effects on women similar to those of overt discrimination. Finding in her (1975) research on students' perceptions of encouragement in higher education that neither men nor women felt mentored or encouraged in their college and university environments, Freeman stated that "an academic environment that neither encourages nor discourages students of either sex is inherently discriminatory against women because it fails to take into account the differentiating external environments from which women and men students come" (p. 198). According to Freeman, the support for male students of parents, relatives, friends, and societal norms is probably available even when faculty support is minimal. Career-oriented female students, in contrast, often must persist with very little encouragement from others in the
environment, so that lack of faculty support becomes more seriously debilitating to women's career pursuits than to those of men. Support for the concerns (if not the assertions) voiced by Freeman is found in several studies which have found greater lack of support in academic environments for female than male students (e.g., Goldstein, 1979; Holahan, 1979). The importance of environmental support is underscored by the research of Farmer (1985), who found parental support to be one of the strongest predictors of young women's career motivation, and Stephan and Corder (1985), who found that girls reared in two-career homes were more career-oriented than those reared in more traditional families.

Even though it may be argued that the educational system provides a null or discriminatory environment for women, it should be noted that recent data suggest gradual social change in women's educational attainment. For example, enrollments of women in higher education have increased at a faster rate than have those of men, particularly at the age levels of 25 and older (the "re-entry" student); from 1963 to 1979 the percentage of women in 2-year colleges increased from 37% to 54%, while enrollments at 4-year institutions increased from 41% to 48%. In terms of degrees earned, during the same time period, the percentage of Bachelor's degrees earned by women increased from 38% to 48%, the percentage of Master's
degrees from 32% to 49%, doctoral degrees increased in percentage from 10% to 28%, and the percentage of professional degrees increased from 3% to 24% (Betz & Fitzgerald, 1987). It should be noted that women still tend to be concentrated in traditionally-female educational fields, even at advanced levels (Randour et al. 1982; Thomas, 1980); for example, in 1979 women earned 68% of all doctorates in home economics and 54% of the doctorates in foreign languages, but only 3% of the doctorates in engineering, 11% of the doctorates in physics, and 12% of those in business (Betz & Fitzgerald, 1987). However, recent trends indicate movement by women into traditionally-male fields; from 1970 to 1979, the percentage of women earning law degrees increased from 5% to 28%, while the increase in medicine was from 8% to 23% and the increase in engineering from less than 1% to 8% (Betz & Fitzgerald, 1987).

Regardless of the direction of societal trends, women's attained educational level has been positively and strongly related to the type and extent of their vocational participation. Higher attained education is related to greater labor force participation among women whether married or not (Blaska, 1978; Houseknecht & Spanier, 1980; Vetter, 1980), to stronger career orientation and salience (Astin & Myint, 1971; Harmon, 1970; Tinsley & Faunce, 1980; Vetter, 1980; Wolfson, 1978), and to the choice of
"pioneer" (nontraditional) occupations (Almquist, 1974; Greenfield et al., 1980; Lemkau, 1979; Peng & Jaffe, 1979). The influence of educational level on the pursuit of nontraditional occupations is even stronger for graduates of women's colleges (Douvan, 1976). This may be because women's colleges tend to provide a larger number of female faculty role models and leadership opportunities (Astin, 1977; Douvan, 1976), although Oates and Williamson (1978) argue that the apparent superiority of women's colleges in producing highly achieving women is due primarily to the success of graduates of the highly selective "seven sisters" colleges, where academic selectivity rather than sex composition facilitates women's later career attainments.

Higher education also appears to be related to a greater tendency for women to remain single, to higher rates of marital disruption, and to lower fertility rates (Houseknecht & Spanier, 1980). And higher education in women is related to more liberal attitudes toward women's roles (Greenfield et al., 1980; Mason & Czajka, 1976; Vetter, 1980) and to such characteristics as autonomy and the desire for direct rather than vicarious achievement (Ginzberg et al., 1966; Lemkau, 1979). Thus, ability, especially as manifested in educational achievement, appears to be strongly related to other major variables identified in studies of women's career development,
suggesting that ability is almost certainly a key variable in women's vocational choices and achievements.

**Agentic Characteristics.** In reviewing literature related to self-concept variables in women's career development, Betz and Fitzgerald (1987) point to a general state of confusion regarding definitions and measurement of self-concept variables. They assert that the literature is characterized by poorly-defined terms operationalized by a wide variety of measures, lack of agreement among researchers regarding differences among similar self-concept variables (such as self-esteem, self-concept, and confidence), and confusion as to whether self-concept variables involve global, unidimensional traits or multidimensional concepts. Given the apparent disarray in the research literature in regard to self-concept variables, the consistency of their predictive utility across studies suggests the importance of these variables in understanding women's career achievements. Although some research suggests that the self-concepts of females in our society generally have been found to be less positive than those of males (e.g., Stake, 1979; see also Richmond-Aubott, 1983), consistent sex differences in global measures of self-esteem have not been found (see Betz & Fitzgerald, 1987 for a detailed review). However, career-oriented women consistently have been found to have more positive self-concepts and higher levels of
self-esteem than other women (e.g., Rand, 1968; Tinsley & Faunce, 1980). Greater self-definition, self-confidence, and self-esteem have been found to be associated with stronger career orientation in women (Stake, 1979; Stewart, 1980), and, in particular, to characterize women in male-dominated professions (Astin, 1977; Bachtold, 1976; Lemkau, 1979, 1983). Academic self-concept (Farmer, 1976), or confidence in achievement or performance-related situations, seems particularly relevant to career achievements; although some research suggests that females exhibit a general tendency to underestimate their abilities even when their actual performance equals or excels that of males (Eccles et al., 1983, 1984; Meece et al., 1982), other findings suggest that females’ lower expectancies for success occur primarily in relation to masculine-stereotyped tasks, tasks lacking clear performance feedback, or tasks involving social comparison or competition (Deaux, 1984; McHugh & Frieze, 1982).

A substantial subset of the self-concept research (e.g., Cook, 1985; Gilbert, 1985; Spence & Helmreich, 1980) suggests that self-esteem is largely derived from a constellation of characteristics best summarized as "instrumentality" (Spence & Helmreich, 1980, 1981). Often associated with traditional masculinity, instrumentality refers to such characteristics as the capability of effectively dealing with the environment, competency,
self-directedness, assertiveness, independence, and self-sufficiency (Bakan, 1966; Gilbert, 1985; Spence & Helmreich, 1980, 1981). Generally, characteristics related to instrumentality appear both essential to women's career development and descriptive of career-oriented and innovative women (Fassinger, 1985). Several studies have shown that career-oriented women, particularly those pursuing male-dominated occupations, are more likely to possess the instrumentality and competency-related characteristics of the traditional masculine sex-role stereotype (Bachtold & Werner, 1970, 1973; Fassinger, 1985; O'Leary & Braun, 1975), and masculinity in both personality and childhood activities was found to distinguish career-oriented from home-oriented women (Metzler-Brennan et al., 1985). Higher levels of instrumentality were related to stronger career orientation in other studies (Abrahams, Feldman, & Nash, 1978; Greenglass & Devins, 1982; Marshall & Wijting, 1980), and Williams and McCullers (1983) reported that women in nontraditional occupational fields scored higher on the masculinity scale of the Bem Sex Role Inventory (BSRI, Bem, 1974) than did women in traditional fields. Spence and Helmreich (1983) reported that instrumentality was significantly correlated with the three subscales (Mastery Needs, Work, and Competitiveness) of the Work and Family Orientation Questionnaire (WOFO, Helmreich & Spence, 1978), which measures achievement
motivation and work orientation; additionally, women who demonstrated high levels of instrumentality were found to have stronger achievement motivation needs than were other women. Higher levels of instrumentality also have been found to be related to greater labor force participation following the birth of a woman's first child (Gaddy, Glass, & Arnkoff, 1983) and greater career achievement (Wong et al. 1985). Helmreich et al. (1980), in a study of male and female academic psychologists, found no sex differences on instrumentality characteristics which, in the general population, would be found to a greater degree in males. Women pursuing traditionally-male occupations appear to possess a similar degree of instrumentality and competency-related characteristics as their male colleagues. In younger women, instrumentality appears to be related to stronger interest in and pursuit of math and science and greater likelihood of selecting a math-related college major (Hackett, 1985).

Other characteristics associated with traditional masculinity have been found to characterize career-oriented women. In comparison to women low in career orientation, career-oriented women have been reported to be more self-directed, independent, and autonomous, more likely to emphasize their own needs (Cartwright, 1972; Tangri, 1972) and to perceive themselves as more internally than externally controlled (Tangri, 1972). Burlin (1976) found
that internally-oriented women more often aspired to innovative career choices than did externally-oriented women, and that the correspondence of ideal and real career choices was considerably greater for internally- versus externally-oriented women. Thus, it would appear that a pattern of instrumentality, including independence, assertiveness, and competence, seems to characterize career-oriented women.

The examination of the relationship between "expressiveness" or stereotypically feminine characteristics (such as emotional expression, passivity, and nurturance; Spence & Helmreich, 1980, 1981) and women's career orientation reveals a pattern of findings which is far less clear and consistent than that involving instrumentality. Femininity is only weakly or negligibly related to self-esteem and adjustment (e.g., Antill & Cunningham, 1979; Orlofsky & Stake, 1981; Whitley, 1984), and while some studies have found relationships between femininity or expressiveness and home orientation (Abrahams et al., 1978; Marshall & Wijting, 1980), other studies have suggested that career-oriented women score no differently on measures of femininity than do home-oriented women (Metzler-Brennan et al., 1985; Rand, 1968). Farmer (1985) reported that highly career-motivated young women tended to be androgynous, possessing high levels of both instrumentality and expressiveness.
The absence of a strong consistent relationship between femininity and home orientation, coupled with the strong relationship of instrumentality to career orientation, led Spence and Helmreich (1980) to conclude that it may not be the presence of instrumentality which leads some women to seek career achievements, but the absence of instrumentality which leads home-oriented women to avoid such pursuits, suggesting that homemaking orientation may arise from doubts about one’s abilities to cope and compete in the work world. Eagly and Steffer (1980) postulated that stereotypes of the sexes derived not so much from gender per se but from the different social roles to which the two sexes have traditionally been assigned; in a study of college students’ perceptions of both male and female homemakers and workers, the salient variable identified was not sex but social role. Both conclusions suggest that, although instrumentality may facilitate career pursuits (and lack of instrumentality may lead to homemaking orientation and avoidance of career pursuits), it may be that career pursuits (particularly if they are successful) lead to changes in one’s own and others’ perceptions of self and social role. Thus, although the directionality of the relationship between instrumentality and career orientation is not clear, research suggests the importance of instrumentality as a key variable in understanding women’s career achievement.
A second variable closely related to agentic or instrumental characteristics is that aspect of decisiveness and goal-directedness which is specifically concerned with the tasks and behaviors necessary in choosing a career and implementing that choice. One conceptual schema used to describe these competencies is the concept of career maturity, defined as the attitudes and competencies critical in realistic career decision-making. Career maturity in women was not systematically investigated until Crites (1973) included female subjects in his standardization of the Career Maturity Inventory (CMI, Crites, 1973). Several studies since that time (e.g., Lunneborg, 1978) which have found sex differences in vocational maturity have found greater maturity in women than in men. Fitzgerald & Crites (1980) noted that this represents an interesting anomaly. Since career maturity predicts realism of choice, and since females tend to demonstrate greater maturity than males, we would expect females to make earlier and more realistic choices than males. Instead, the reverse is true; females consistently select occupations that are unrealistically low in terms of their interests and abilities (Fitzgerald & Crites, 1980; Patterson, 1973), suggesting that the concept of career maturity, at least for women, may have limited applicability.
Much research in the area of career decision and indecision has focused on the development of instruments assessing the components or antecedents of indecision in high school and college students (Taylor & Betz, 1983). Research using the Career Decision Scale (Osipow et al., 1980) and the Vocational Decision-Making Difficulty Scale (Holland & Holland, 1977) has suggested such antecedents as lack of confidence in decision-making skills, lack of a clear sense of personal identity, external barriers to preferred choices, and the lack of immediacy of the need to make a decision (Holland & Holland, 1977; Osipow, Carney, & Barak, 1976; Slaney, Palko-Nonemaker, & Alexander, 1981).

Taylor and Betz (1983) pointed out that one component of indecision requiring further elaboration was the concept summarized by Osipow et al. (1976) as a lack of structure and confidence, in combination with choice anxiety, leading to avoidance of occupational choice, or by Holland and Holland (1977) as a lack of confidence in decision-making skills. In their own research, Taylor and Betz (1983) attempted to apply the concept of self-efficacy expectations to career indecision, and they developed the Career Decision Making Self-Efficacy Scale (CDMSE, Taylor & Betz, 1983) in order to assess the degree to which an individual's self-efficacy expectations regarding career decision-making tasks were related to the levels of career indecision exhibited by that individual. Results of the
study indicated that college students in general expressed considerable confidence in their ability to complete decision-making tasks, and that the strength of their career decision-making self-efficacy expectations was strongly and negatively related to overall levels of career indecision, and, in particular, to the component of career indecision involving lack of structure and confidence. Interestingly, results also indicated that relationships of career decision-making self-efficacy expectations to ability level were negligible, and no sex differences were found. Research indicates, then, that the capacity to engage in career decision-making tasks, and the confidence in one's ability to do so, may be important factors in career decision and career choice. This suggests the importance of including the career decision-making variable in models of women's career development, especially where potential research subjects are likely to represent varying levels of career decision and choice.

**Feminist Orientation.** An attitudinal variable that has received considerable research attention is attitudes toward women's roles in society, found to be a powerful predictor of women's career involvement (Betz & Fitzgerald, 1987). That society traditionally has specified different life roles, personality characteristics, and acceptable behaviors for males and females has been amply documented (e.g., Hyde, 1985; Maccoby & Jacklin, 1974;
Societal norms governing the approved masculine and feminine image seem to be consensually understood and endorsed (e.g., Broverman, Broverman, Clarkson, Rosenkrantz, & Vogel, 1970; Mischel, 1970; Williams, 1983) and become a powerful force in the socialization of children. In terms of adult roles, men traditionally have been expected to work and to be the family provider, while women have been expected to be the nurturant wife and mother who stays at home (although recent societal trends indicate that these role expectations are undergoing rapid change as women enter the work force in ever-increasing numbers and even small numbers of men opt to remain at home to rear children; see Richmond-Abbott, 1983, and Hyde, 1985, as well as discussion elsewhere in this chapter). In terms of personality characteristics, men traditionally have been expected to develop those associated with competency, instrumentality, and achievement, while women have been expected to develop those comprising a "warmth-expressiveness" cluster, including nurturance, sensitivity, warmth, and emotional expressiveness. Normative expectations such as these then become sex-role stereotypes, to which both men and women have traditionally been pressured to conform.

The psychological mechanisms by which children learn sex-role stereotypes and develop sex-typed characteristics
may include reinforcement and punishment, modeling, and the adoption of rules, schemas, or generalizations based on the observations or teachings of others (e.g., Hyde & Rosenberg, 1980; Williams, 1983). These mechanisms operate through the influence of parents, teachers, and the media, including literature and television. Parents, for example, often encourage the development of sex-typed interests and behaviors in their children (Maccoby & Jacklin, 1974) and are more likely to encourage achievement in their sons than their daughters (Etaugh & Hall, 1980; Williams, 1983). Teachers also often encourage sex-typed activity (Fagot, 1981), and a study by Dwech, Davidson, Nelson, and Enna (1978) found that teachers encouraged 4th and 5th grade boys to attribute their success to ability and failure to lack of effort or external factors, while the reverse pattern of attributions was encouraged in girls. Interestingly, behaviors of experienced teachers may differ from those of inexperienced teachers; Fagot (1981) reported that inexperienced teachers of both sexes reinforced sex-typed behaviors in preschool girls and boys, but experienced teachers reinforced stereotypically feminine behaviors compatible with school performance in both girls and boys. Media also has tended to reinforce sex role stereotypes, through the presentation of women in a narrowly-circumscribed range of personality characteristics and life roles, although societal
transition has led to much change in television, advertising, magazines, and books (see Richmond-Abbott, 1983, Hyde, 1985, and Williams, 1983 for more detailed reviews of the mechanisms and effects of sex role socialization). Thus, culturally based sex-role socialization traditionally has operated from early childhood to prepare many young girls for their primary roles of wife and mother and to encourage them in the development of personality characteristics and behavioral competencies that would facilitate the performance of those roles. Until recently, young girls generally were not socialized to prepare for career pursuits or to develop the characteristics and competencies necessary for such pursuits (Hyde, 1985).

Sex role stereotypes are closely related to occupational stereotypes or normative views of the appropriateness of various occupations for males and females; occupational stereotypes appear to be consistent and durable in adult populations (Albrecht, Bahr, & Chadwick, 1977; Panek, Rush, & Greenwalt, 1977). Not only do adults stereotype occupations as appropriate for males or females, but children appear to learn these stereotypes very early. For example, Gettys and Cann (1981) found that children as young as 2 1/2 were able to distinguish masculine and feminine occupations, while Tremaine and Schau (1979) found that preschoolers identified and agreed
with adult job stereotypes. Occupational stereotypes consistently are found in elementary school children (Gettys & Cann, 1981; Rosenthal & Chapman, 1982; Schlossberg & Goodman, 1972; Tremaine & Schau, 1979; Zuckerman & Sayre, 1982) and generally increase with age (Gettys & Cann, 1981; Tremaine & Schau, 1979). One study (Drabman, Robertson, Patterson, Jarvei, Hammer, & Corduo, 1981) of children's occupational stereotypes is particularly illustrative of the power of these stereotypes; the study utilized a videotaped portrayal of a boy visiting his doctor ("Mary Nancy," a woman) who was assisted by a male nurse ("David Gregory"). Immediately after viewing the tape, 1st, 4th, and 7th grade children were given a quiz on which they were asked to recognize the names of the doctor and nurse. Results indicated that almost all 1st and 4th grade children assigned a gender-typed name (even if the name had not appeared in the videotape); among 7th graders, 53-79% chose the correct names for both the nurse and the doctor, but the ability to recall an appropriate gender-typed name decreased after a 1-week interval. These results suggest that children may alter their perception or memory of a counter-stereotyped videotaped presentation to fit previously-learned occupational stereotypes and that stereotypic cognitive structures may be capable of modifying long-term memory as well (Betz & Fitzgerald, 1987); Bem (1981) postulates the
idea of "gender schema" to account for findings such as these.

Research also suggests that children's occupational preferences tend to be consistent with the occupational stereotypes they hold in that both boys and girls tend to choose sex-typed occupations (Frost & Diamond, 1979; MacKay & Miller, 1982; Tremaine & Schau, 1979). While children of both sexes generally make sex-stereotyped occupational choices (MacKay & Miller, 1982), the smaller number and more limited range of traditionally-female occupations (Bird, 1968) often results in the limitation of girls' perceived options at very early ages (Gettys & Cann, 1981; MacKay & Miller, 1982). Even in the primary grades, boys were found to indicate a wide variety of occupational preferences (20 different occupations in one sample) while the majority of girls (70% in one sample) listed a smaller number of occupations, their choices dominated by two occupations -- nurse and teacher (Siegel, 1973; MacKay & Miller, 1982; Nelson, 1978). Kriedberg, Butcher, and White (1978) found that while some 2nd-grade girls expressed interest in traditionally-male occupations, almost all 6th-grade girls were choosing traditionally-female occupations, indicating that occupational stereotypes may be limiting girls' perceived career options even before they finish elementary school. In MacKay and Miller's (1982) study, 3rd and 5th grade boys most frequently chose
the occupations of police officer, truck driver, pilot, and architect, while girls chose nurse, teacher, and airline attendant.

Not only do children of all ages appear to hold occupational stereotypes, but these stereotypes seem fairly resistant to change. For example, in a study by Knell and Winer (1979), preschool age children were read stories portraying people in 12 different occupations, with six male and six female characters used and the design varying the extent to which occupations were portrayed with sex-"appropriate" versus "inappropriate" characters; occupational stereotypes were assessed both before and after treatment. Although it was hypothesized that presenting nontraditional portrayals in videotapes would reduce stereotyping, no effects for the nontraditional treatments (either half or all 12 of the stories showing a sex-inappropriate member of the occupation) were found; interestingly, the only treatment effect found was an increase in stereotyping among girls who had viewed the "traditional" tape (all 12 occupations portrayed by the appropriate gender). Zuckerman and Sayre (1982), in a study of middle-class children between ages 4 and 8, found that children demonstrated less occupational stereotyping than expected, but persisted in sex-stereotypic personal choices; among the girls, 52% chose nurse, 16% chose teacher, 8% chose dancer, and 8% chose veterinarian, while
among boys, greater variability in choice was demonstrated, but 83% were sex stereotypic.

Thus, research seems to suggest that cultural attitudes and beliefs concerning women's roles and capabilities, through the mechanisms of sex role socialization and occupational stereotyping, may operate to encourage the development of sex-typed psychological characteristics and to perpetuate sex-typed adult roles. Previous research has consistently indicated that young women and girls have been taught that their appropriate adult roles are those of wife and mother and that if they do work, there is a set of female-appropriate occupations from which they "should" choose. More recent research, however, indicates that these assumptions may no longer be tenable, and that women are becoming more liberal in their role expectations and values in comparison to women in previous studies (Lyson & Brown, 1982; Mezydlo & Betz, 1980; Stafford, 1984; Zuckerman, 1981).

More specifically, one of the most consistent findings in recent research literature concerns the greater tendency of career-oriented women to express liberal or feminist attitudes toward women's roles (Orcutt & Walsh, 1979; Smith, 1980; Stafford, 1984; Stringer & Duncan, 1985). For example, Parsons et al. (1978) found associations between the extent of identification with the women's movement and career aspirations, nontraditional values, and willingness
to delay marriage. In a large study of predictors of women’s career choice, Fassinger (1985) found that responses to questions regarding use of the title Ms. and labeling of oneself as a feminist were among the strongest predictors of career orientation and the prestige and nontraditionality of career choices among college women. Dreyer-Arkin (1976) reported that feminists were more likely to value their own personal growth and achievement at least as highly as that of others, while more traditional women tended to prioritize the needs of others over their own. More liberal sex role attitudes have been found to be related to greater labor force participation (Atkinson & Huston, 1984; Dreyer et al., 1981; Stafford, 1984), higher levels of educational aspiration (Dreyer et al., 1981; Lyson & Brown, 1982), and stronger career motivation and higher career aspirations (Fassinger, 1985; Komarovsky, 1982; Lyson & Brown, 1982).

In addition to suggesting the important facilitative effect of profeminist attitudes toward women’s roles on women’s career development, research investigating these attitudes has led to a finding having potentially important implications for the success and satisfaction of working women. Numerous studies have suggested that even traditional women’s attitudes have changed in the realm of equal opportunity (Betz & Fitzgerald, 1987). For example, most women now positively endorse the principle of equal
pay for equal work (Smith & Self, 1981; Williams, 1983). However, traditional women tend to show an ideological duality, supporting equality in the labor market but not in interpersonal relationships with men (Smith & Self, 1981). Given that the majority of men apparently continue to prefer traditional marriages and express less liberal sex role ideologies relative to women (Adams, 1984; Kassner, 1981; Richmond-Abbott, 1983), it would seem that the extent of a woman's commitment to marriage and family roles may continue to be an important mediator of women's career behavior regardless of expressed liberal attitudes regarding women's roles and equal opportunity. It also may be increasingly difficult to speak of attitudes toward women's roles as a unitary phenomenon, and research efforts will need to tap several aspects of women's attitudes toward their potential and actual roles in both the family and society. Research efforts also may need to distinguish between generally liberal sex role attitudes, which seem increasingly to characterize most of the population (particularly those who are more highly educated), and more specifically pro-feminist attitudes, which appear to characterize the most career-oriented women in society at this point in time (Fassinger, 1985; Fassinger & Enns, in preparation).

In summary, it would appear that attitudes toward women's roles, both in the family and in the workplace, may
be important predictors of women's career behavior. Research also supports the importance of specifically pro-feminist attitudes over and above liberal sex role ideologies in understanding women's career development, underscoring the need to include feminist orientation variables in studies of women's career choice.

**Family Orientation.** As has been noted previously, women's career development often has contained a major difference from that of men, that is, the expectation that women's lives would usually include the roles of homemaking and childrearing. Since, until very recently, the assumption of competing roles was not considered relevant to the study of male career development, research on men could proceed more directly toward examination of the content of career choice. For women, however, research first had to focus on a woman's personal choices regarding the roles of career woman and housewife/mother. These lifestyle choices resulted in an examination in the literature of career patterns, originally developed by Super (1957) to be used in the study of male career development. Super, noting both the centrality of homemaking in a woman's life and the trend toward increased labor force participation among women, described seven career patterns of women which attempted to encompass all possible combinations of career and homemaking orientations. Another model of women's career patterns was formulated by Zytowski (1969), who postulated that vocational participation patterns could be characterized
based on three dimensions of participation: age of entry, span (length) of participation, and degree of participation (traditionality vs. nontraditionality for women). Based on these three dimensions, Zytowski described three resulting patterns: 1) the mild vocational pattern, characterized by early or late entry and brief and low-degree participation; 2) the moderate pattern, characterized by early entry and lengthy span but low-degree participation; and 3) the unusual career pattern, characterized by early entry, lengthy or uninterrupted span, and a high degree of participation. Thus, Zytowski's model attempted to combine a notion similar to that of career orientation -- span of participation -- with the traditional versus "pioneer" distinction, that is, degree of participation (Betz & Fitzgerald, 1987; Fitzgerald & Betz, 1983). It should be noted that Zytowski's model was based on several assumptions which probably are less valid than they were in the late 1960's. The first assumption was that the modal life role for women is that of homemaker, although Zytowski did state that this role was not static and might ultimately bear no distinction from that of men. The second major assumption was that vocational and homemaker participation are largely mutually exclusive and that, consequently, vocational participation constitutes departure from the homemaker role. The movement of increasing numbers of women into the labor force in the past 10 to 15 years makes Zytowski's (1969) assumptions somewhat obsolete, and helps to explain the
modifications of Zytowski's postulated patterns in subsequent research.

A study by Wolfson (1976) was designed to investigate differences among groups of women characterized according to Zytowski's (1969) vocational patterns. Wolfson (1976) investigated the career outcomes of 306 women, then aged 43 to 54, who had received career counseling as college students in the 1930's. She found five, rather than three, distinguishable vocational patterns; in addition to the three formulated by Zytowski, Wolfson added a "never worked" pattern and a "high moderate" pattern, including women whose span of participation was 18 years or more. Wolfson also found that college graduation, attendance in graduate school, and unmarried status were predictive of membership in the "high moderate" or "unusual" groups; all women in the "never worked," "mild," and "moderate" groups were or had been married, while half those in the "high moderate" and "unusual" groups were single.

An extension of Wolfson's work was undertaken by E. Betz (1984a), who found seven rather than five vocational patterns, incorporating all possible combinations of span of participation (labeled "commitment") and "traditional" versus "pioneer" career choices; Betz added categories of "low" and "moderate" commitment for women in pioneer occupations, and found that, in fact, these categories included 5% of her sample of female college graduates. Betz' results indicated a majority of subjects in the "high
commitment" (59.4%) and "moderate commitment" (25.5%) subgroups and only small percentages of women in the "low commitment" and "never worked" categories. Differentiating these groups was marital and parental status; the percentage of women who were married at the time of testing generally decreased with increases in span and degree of participation. The "low commitment pioneer" and both "high commitment" groups had the fewest children, in comparison to the "low commitment traditional" and "never worked" groups, who had the most children. Analyses of the occupational mobility of women indicated that women in pioneer occupations were likely to experience upward mobility, whereas those in traditional occupations tended to experience either horizontal or downward mobility. Traditional women were also significantly more likely to move from careers to homemaking over the 10-year span studied. Betz' study also suggests that the pattern of high commitment to a pioneer occupation is no longer as unusual as it once was, since it was followed by about 24% of the sample; interestingly, only about 1.4% followed the "never-worked" pattern, suggestive of dramatic change in women's career involvement. Also interesting is the preponderance of married women in all career categories, ranging from 100% in the "never-worked" and "low-commitment pioneer" categories to 58.1% in the "high-commitment pioneer" category, again suggestive of changing social expectations regarding family and career.
The influence of marital/motherhood status on a woman's career life has been documented in other research as well (e.g., Fassinger, 1985). Indeed, the most consistent predictor of women's career orientation and participation in nontraditional occupations is their adult marital/familial status or, among girls and young women, their plans for marriage and children (Betz & Fitzgerald, 1987; Fitzgerald & Betz, 1983). Several studies have found that career-oriented or employed women are less likely than home-oriented women to be married (Del Vento Bielby, 1978; Harmon, 1970; Stake, 1979; Tinsley & Faunce, 1980; Yuen, Tinsley, & Tinsley, 1980). Career-oriented women are more likely than home-oriented women to plan to defer marriage (Houseknecht, 1978; Parsons et al., 1978; Tangri, 1972), and, when studied as adults, married at later ages than their home-oriented counterparts (Card et al., 1980; Harmon, 1970). Stewart (1980) found negative relationships between marriage and children and career persistence in women who were freshman in 1960, followed in 1974.

In comparison to women who marry, women who remain single have tended to achieve higher levels of education (Gigy, 1980; Houseknecht & Spanier, 1980) and are substantially more likely to pursue predominantly-male occupations (Astin & Myint, 1971; Card et al., 1980; Del Vento Bielby, 1978; Gigy, 1980). Not only are professional women more often single than other women, they are more likely than male professionals to be single (Bailey &
Burrell, 1981; Helmreich et al., 1980). In addition, Houseknecht and Spanier (1980) reported that women with five or more years of postsecondary education have one of the highest rates of marital disruption (i.e., divorce, widowhood, previous divorces among the currently married), suggesting that highly-educated, career-oriented women are more likely to remain single, to defer marriage, or to find their marriages disrupted.

Career-oriented women also tend to have or want fewer, if any, children (Card et al., 1980; Greenfield, et al., 1980; Harmon, 1970; Tinsley & Faunce, 1980), and the presence and number of children are negatively related to the pursuit of nontraditional occupations (Astin & Myint, 1971; Greenfield et al., 1980). Just as female professionals are less likely to be married than male professionals, female professionals are less likely to have children, and, if they do have children, tend to have fewer than do male professionals (Helmreich et al., 1980).

Studies of voluntary childlessness tend to corroborate the above pattern of findings in that voluntarily-childless women are likely to be strongly career-oriented, highly educated, and disproportionately employed (Houseknecht, 1978, 1979).

It appears, then, that a women's orientation toward family may affect the extent and nature of her career involvement. Although societal change and dramatic shifts
in women's labor force participation have rendered the relationship between family and career less clear than it appeared in previous research, extensive support seems evident for the inclusion of family orientation variables in studies of women's career behavior.

Career Orientation. As with family orientation, an orientation toward career as a salient part of a woman's adult life has generated a great deal of research attention. Since women traditionally were not expected to work, the earliest research attempted to differentiate homemaking-versus career-oriented women (Kriger, 1972). Studies done later in the 1960's suggested that the majority of young women did not plan to work outside the home (e.g., Matthews & Tiedeman, 1964), while studies in the early 1970's suggested that the majority of young women planned to combine marriage and career. This latter finding suggests that a new "cultural imperative" (Rand & Miller, 1972) to combine marriage and career had replaced the previous emphasis on the centrality of marital and motherhood roles in women's lives (Faunce, 1983; Harmon, 1980; Komarovsky, 1982; Yogev, 1982). Because of the growing numbers of young women planning to combine career and marriage, the homemaking versus career orientation distinction decreased in usefulness as a dependent variable (Levitt, 1972; Oliver, 1974); increasingly, the question became not "whether to do both" but rather "how to do both" (Perun & Del Vento Bielby, 1981; Rooney, 1983). Thus, it became necessary to replace
the dichotomous career versus home variable with concepts to
describe the nature and degree of career orientation itself
in order to understand women's career choice behavior.

As a result of these changes in women's work patterns,
the concept of career orientation was extended and refined.
Rather than conceiving of career orientation as a single,
undifferentiated state defined by its opposition to
homemaker orientation, career orientation began to be
conceptualized as a continuous variable reflecting degree of
preferred work involvement independent of involvement in the
homemaker role (Eyde, 1962). Almquist and Angrist (1970,
1971) adapted some of this earlier work to construct a
measure of "career salience," defined as "aspiration for
work as a central feature of adult life, regardless of
financial necessity and under conditions of free choice"

Other approaches to the definition and measurement of
the concept of career salience were those of Masih (1967),
Greenhaus (1971), and Marshall and Wijting (1980). Masih
defined career salience as (a) the degree to which a person
is career-motivated, (b) the degree to which an occupation
is an important source of satisfaction, and (c) the priority
ascribed to career among other sources of satisfaction.
Greenhaus (1971) developed a 27-item measure of career
salience and a 28th item requesting subjects to rank order
six life areas, including career and family, in terms of
their importance in the respondent's life. Marshall &
Wijting (1980) defined "career centeredness" as an orientation which prioritizes career activities, and "career commitment" as involving a commitment to steady pursuit of a career throughout one's life. Similarly, Richardson (1974) distinguished "work motivation" from "career orientation." Work motivation was defined as the desire to pursue work outside the home although not prioritizing work roles; career orientation, on the other hand, was defined as the desire to pursue work as a primary life focus, with homemaking interests viewed as secondary. Finally, Perun and Del Vento Bielby (1981) distinguished occupational behavior, shown by all women who work, from career development, shown by women whose work follows an orderly sequence of successively-higher stages within a specific profession or occupation. These definitions of career salience all have in common the idea of prioritization of strong and continuous work involvement throughout one's lifetime, within the context of upward mobility within one's chosen field.

Most previous studies of women's career development have utilized either the home/career or traditional/non-traditional distinction or a measure of career orientation or salience as the dependent variable. However, the failure of a single variable or distinction to adequately describe women's career development has been noted (Betz & Fitzgerald, 1987; Osipow, 1973). For example, a woman pursuing a traditionally-female occupation such as nurse or
teacher could be as strongly career oriented as a woman pursuing a nontraditional occupation such as medicine or law. Osipow (1973) has suggested the necessity of research designs which utilize the various possible combinations of such variables in describing women's career development. It would seem, therefore, that multivariate designs such as the structural equation model tested by Fassinger (1985) and in the present study may offer promise in terms of investigating the complex role that career orientation plays in women's career choice.

Mathematics Orientation. The critical importance of mathematics background for entrance into many of the most lucrative careers in our society, for example, engineering, scientific and medical careers, computer science, business and the skilled trades, is now generally agreed upon (Armstrong, 1985; Chipman & Wilson, 1985; Sells, 1982; Sherman, 1982b). The classic study of the importance of math to career options was that of Sells (1973), who found that 92% of the freshman women at UC/Berkeley were prevented by lack of high school math preparation from considering 15 of the 20 major fields at the university at that time; the five remaining options were in the traditionally-female areas of education, the humanities, the social sciences, library science, and social welfare.

The determining character of mathematics performance is also illustrated in a study by Goldman & Hewitt (1978), who found that SAT mathematics scores were the predominant
predictor of choice of a science versus a non-science major among college men and women; the authors concluded that the association between sex and choice versus avoidance of science-related careers is mediated largely by sex differences in mathematics achievement. Sells (1982) further elaborated on the vital importance of math preparation for both career options and future earnings. Sells noted that four years of high school math are vital for survival in the standard freshman calculus course, now required for most undergraduate majors in business administration, economics, agriculture, engineering, forestry, resource management, health sciences, food and consumer sciences, and the natural, physical, and computer sciences. Further, Sells (1982) showed a strong and direct relationship between college calculus background and both starting salaries and employers' willingness to interview a student for a given job. Sells concluded: "Mastery of mathematics and science has become essential for full participation in the world of employment in an increasingly technological society" (Sells, 1982, p. 7).

Given the importance of math background to career options, females' tendency to avoid math coursework becomes potentially one of the most serious barriers to their career development (Betz & Fitzgerald, 1987). Further, it is fairly clear that lack of math background, rather than lack of innate ability, leads to females' poorer performance on quantitative aptitude and mathematics achievement tests.
(Chipman & Thomas, 1985; Chipman & Wilson, 1985; Pedro et al., 1981; Sherman, 1982a & b; Wise, 1985; Betz and Fitzgerald note in this regard that the failure of many studies finding sex differences in math achievement to control for math background renders their conclusions questionable). Females' avoidance of math has been amply documented (e.g., Eccles, 1983; Ernest, 1976, Chipman & Thomas, 1985). Girls take fewer math courses than do boys beginning in high school and continuing through college (Ernest, 1976; Fennema & Sherman, 1977; Pedro et al., 1981), and even boys who fall into the lower half of the achievement distribution are more likely than their female counterparts to continue the study of math (Fennema & Sherman, 1977). There are signs, however, that girls are beginning to take more math in high school (e.g., Chipman & Thomas, 1985). Further evidence that it is math coursework that is vital to math achievement comes from findings that sex differences do not occur until females stop taking math, and that girls who continue the study of math achieve math grades as good as those of boys (Chipman & Wilson, 1985); additionally, in Wise' (1985) Project Talent sample, no sex differences were found in math achievement among 9th graders, but by 12th grade there were significant sex differences in math participation. Thus, mathematics serves as a "critical filter" in women's career development (Betz & Fitzgerald, 1987); because math background is essential to an ever-increasing range of college majors and careers and
to adequate performance on the quantitative portions of the aptitude tests required for admission to graduate and professional schools, women's lack of preparation (in comparison to that of men) may prevent them from pursuing many otherwise-attractive occupational possibilities. Mathematics training, therefore, serves as a filter through which many young women do not pass.

That lack of mathematical preparation largely may be due to societal stereotypes and beliefs about females' lack of ability and success in math has been amply documented (e.g., Eccles, 1983; Fennema & Sherman, 1977; Osen, 1974). Research has shown, for example, that girls may avoid high achievement in math because of "sex role strain" (Sherman, 1983) or because they fear social disapproval (Benbow & Stanley, 1980). Girls also are less likely than boys to view math as useful to them (Armstrong, 1985; Boswell, 1985; Chipman & Wilson, 1985; Fennema & Sherman, 1977; Lantz, 1985), and are less confident than boys of their math abilities at ages prior to the appearance of differences in math achievement and even when their math performance is equal or superior to that of boys (Armstrong, 1985; Chipman & Wilson, 1985; Fennema & Sherman, 1977; Frieze et al., 1981; Wise, 1985). In addition to acquiring negative attitudes toward math, there is also a growing body of research on math anxiety that suggests that it may be more predominant among females and that it is strongly associated with lack of math background (Armstrong, 1985; Betz, 1978;
Boswell, 1985; Chipman & Wilson, 1985; Hackett, 1985; Llabre & Suarez, 1985; Wise, 1985), although one study found no sex differences in math anxiety (Resnick, Viehe, & Segal, 1982). It would appear, then, that for many women a negative cycle may become established: various forces lead to the development of anxiety and avoidance of math coursework during adolescence, both of which hinder subsequent math achievement, exacerbating anxiety and solidifying patterns of math avoidance.

A concept which takes into account the problem of math anxiety and the idea of math confidence is mathematics "self-efficacy expectations," that is, an individual's belief in her ability to engage successfully in math-related tasks. According to Bandura's (1977) theory, self-efficacy expectations influence not only the kind of behaviors in which an individual engages, but also persistence when obstacles or disconfirming experiences are confronted. In research on women's self-efficacy expectations regarding careers, Betz and Hackett (1981) found significant differences in self-efficacy expectations of college students with regard to their perceived ability to pursue traditionally-female versus traditionally-male occupations; while males perceived themselves as equally capable of pursuing careers both traditional and nontraditional for men, females' perceived capability with regard to traditionally-male careers was significantly less than their self-efficacy expectations with regard to traditionally-
female careers.

Since ability in math and science appears to be an important variable differentiating women who pursue predominantly-male occupations from those who pursue predominantly-female occupations (Peng & Jaffe, 1979), the relationship between mathematics self-efficacy and non-traditional career self-efficacy seems clear. More specifically, Ayres (1980) found that females' self-efficacy expectations with regard to behaviors requiring performance in math and science was significantly lower than that of males. Betz and Hackett (1983) found that math-related self-efficacy expectations of college males were significantly stronger than were those of college females, and students' math-related self-efficacy expectations contributed significantly to the degree to which they selected science-based college majors (see also Hackett, 1985).

In summary, young women who have coursework in mathematics and science have a broader range of career options than do young women who have avoided such work. It might be expected, then, that higher mathematics achievement test scores, preparation, and self-efficacy offer predictive utility in studies of women's career behavior.

Career Choice. As has been noted previously, the examination of women's career choices had an early focus on career patterns and the home versus career orientation distinction. More recent trends in women's occupational
patterns suggest that work is playing an increasingly important role in women's lives. Betz and Fitzgerald (1987) note, however, that while the extent of women's labor force participation is approaching that of men, the nature of that participation continues to differ greatly from that of men, keeping women in economically-disadvantaged, low-status, traditionally-female occupations. For example, although engineering is the largest professional field in the country, women are earning only about 10% of the B.A.'s in this field (National Science Foundation, 1984); it should be noted, however, that this figure represents a marked increase from the 1% figure 10 years ago. Of the 2500 engineering doctorates awarded in 1982, only 124 (.05%) were earned by women (National Science Foundation, 1984). In 1983, women were 80% of all administrative support (including clerical) workers but only 8% of precision production, craft, and repair workers, and 70% of retail sales workers but only 32% of managers, administrators, and executives. Women were only about 6.8% of apprentices as of March, 1984 (U.S. Department of Labor, 1984).

Because the nature of women's career involvement has tended to be restricted in terms of pay, prestige, and upward mobility, the career versus home distinction seems an inadequate descriptor of women's career choice behavior, and it becomes important to examine career decisions from the perspective of the nature of the choice as well as simply making a decision to engage in an occupation. The major
approach to describing the nature of women's career choices in early research involved the classification of choices according to the degree to which they were traditional or non-traditional for women. The terms "pioneer" (Rossi, 1965), "innovator" (Almquist, 1974; Tangri, 1972), and "non-traditional" have been used extensively in the literature to differentiate women pursuing predominantly-male fields, which have been assumed to require stronger and more consistent career commitment and involvement than more traditionally-female fields. Studies of characteristics differentiating non-traditional and traditional women dominated research in the early 1970's and indicated numerous differences between the two types of women (Astin & Myint, 1971; Betz & Fitzgerald, 1987; Fitzgerald & Betz, 1983; Standley & Soule, 1974; Tangri, 1972).

Much recent work on women's occupational status addresses the issue of differences in the prestige and salary that society accords predominantly-male and predominantly-female occupations. For example, the vast majority of nurses, elementary school teachers, librarians, and social workers are female, while the majority of physicians, lawyers, scientists, and engineers are male (Prediger & Cole, 1975; U.S. Department of Labor, 1984). Among the professions, women are particularly poorly represented in the sciences and engineering (Pfafflin, 1984). Even within the same occupational field, women tend to be concentrated at lower levels while men predominate at
upper levels (Gottfredson, 1978). For example, 86% of elementary school teachers but only 26% of school administrators are women; women constitute 51% of instructors at universities, but only 5% of full professors (U.S. Department of Labor, 1984).

That lower status is frequently associated with lower pay is illustrated by the current "comparable worth" controversy. The concept of comparable worth is based on the assumption that jobs can be matched (by the U.S. government or independent consultants) for "equivalent" levels of complexity, responsibility, and knowledge and skill required. When compared in terms of salary, however, predominantly-male jobs tend to pay considerably more than do predominantly-female jobs of equivalent or "comparable" complexity, responsibility, and skill (Betz & Fitzgerald, 1987). For example, the predominantly-male job of Electrician and the predominantly-female job of Secretary III are both assigned 197 "worth points" and therefore presumably are equivalent in knowledge and skill, responsibility, and complexity; the average monthly salary of an Electrician, however, is $1918, while the average monthly salary of a Secretary III is $1324 (Betz & Fitzgerald, 1987).

Differential status also is encoded in official documents such as the United States Employment Service' Dictionary of Occupational Titles (DOT), which assigns 3-digit codes for complexity of jobs in dealing with data,
people, and things (low numbers indicating "skilled" involvement, such as Surgeon - 101). According to the DOT, the predominantly-male jobs of Marine Mammal Handler (328) and Horse Pusher (874) are considered more highly skilled than the predominantly-female jobs of Foster Mother, Child Care Attendant, and Nursery School Teacher (all 878). The predominantly-male job requiring as little skill as Nursery School Teacher is Parking Lot Attendant (878).

Related to traditionality and prestige are descriptions of the degree to which career choices are in the sciences and mathematics. Since women have been underrepresented in careers in the sciences, mathematics, and engineering, much recent research has emphasized improving that representation (Fox, Brody, & Tobin, 1980; Humphreys, 1982; National Science Foundation, 1984; Pfafflin, 1984). In this effort, math-relatedness and science-relatedness have been scaled and used to describe the content of women's choices. For example, Goldman and Hewitt (1976) have developed a 5-level continuum of science-relatedness of various occupations. Their five categories include Fine Arts (Level 1 - least science emphasis), Humanities (Level 2), Social Sciences (Level 3), Biological Sciences (Level 4), and Physical Sciences (Level 5 - most science emphasis). Since most traditionally-male professions fall into categories 3-5, and also tend to be professions which are high in prestige, the relationships among traditionality, prestige, and science-relatedness appear strong. It should be noted, however,
that these relationships are imperfect; traditionally-female jobs such as nursing and dental hygiene are high in science-relatedness but tend to be low in prestige, while a traditionally-male (and high-prestige) profession such as law is not necessarily strongly science-related.

Despite the imperfect relationship among the three commonly-used indicators of women's career choice, their utility as dependent variables has found considerable support in the research literature on women's career development. Thus, their inclusion in the present study may help to clarify their complex role in women's career behavior.

Summary. The preceding section has presented research on variables found in the literature to be influential in women's career decisions. A variety of factors, both environmental and individual, have been reported to affect women's career choices; these include ability (as manifested in academic and mathematical achievement), instrumentality and decision-making capacity, sex role attitudes (regarding work, family, and feminist orientation), family importance, career salience, and mathematics background and attitudes. While research was selected for presentation in this review based on its quality and its capacity to inform this research effort, it should be noted that the manner in which these various factors occur concurrently and interact to affect women's career development and the relative importance of their
effects are poorly understood at this point. Our present research methodologies tend to be fragmented and inadequate, and contribute to a state of "epistemological disarray" (Borgen, 1984) in our research literature. Methodologies have been needed which would allow the examination of large numbers of variables concurrently as they interact to affect the career choices of women. It is in this area that structural equation modeling offers promise, and because it is such an integral part of the present study, the following section reviews this methodology in some depth.

**Structural Equation Modeling**

Bentler (1980) noted that the development of latent variable causal models represents the convergence of relatively independent research traditions in psychometrics, econometrics, and biometrics, pulling together many already-familiar techniques into one broad framework. The concepts of latent variables and errors in variables, long used in psychometrics, have been developed as factor analysis and reliability theory, respectively, and are an important foundation of much of our measurement research in counseling psychology (Fassinger, in press). In econometrics, the simultaneous directional influences of some variables on others have been studied under the label of simultaneous equation models. In biometrics, a tradition has dealt with simultaneous equation models.
(sometimes with latent variables) in the context of representation and estimation schemes known as path analysis; these techniques have been used occasionally in vocational and counseling studies (Fassinger, in press).

Beginning in the 1960's, researchers began to see the value of combining the simplicity of path analytic structures with the rigor of simultaneous equations, sometimes including latent variables. By the 1970's, causal modeling was a major sociological research method, and latent variable models were being studied extensively in several social science disciplines (Bentler, 1980). Psychology, however, did not focus on the use of causal inference in non-experimental data, probably because unifying statistical principles and procedures for their implementation had not been developed (Bentler, 1980).

Much of the credit for developing hypothesis-testing models for analysis of non-experimental data using latent variables has been given to Karl Joreskog, who developed procedures for fitting models to sample data and developed the computer program LISREL (Joreskog & Sorbom, 1978), which has become the standard statistical computer program in this field (Bentler, 1980). Bentler noted that the importance of Joreskog's work lies in the balance between statistical sophistication and relevance to social science applications, but that acceptance of these procedures in psychology has been slow. This seems unfortunate, because
structural equation modeling can address many of the problems common in current research. The method, for example, provides a basis for quantifying and operationalizing such concepts as construct validity and can add greatly to the rigor of experimental research. It is of crucial importance, however, in the areas of quasi-experimental or correlational research (much of our present research in counseling psychology), where theory-testing methods are not well developed. Specifically, the use of structural equation modeling can aid researchers in stating theory more exactly, testing theory more precisely, and gaining a more thorough explanatory (rather than simply descriptive) understanding of their data (Hughes, Price, & Marrs, 1986).

A complete structural equation model begins with a path diagram which represents the theoretical relationships being tested. Figure 3 contains the path diagram of the structural equation model of women's career choice tested in the present study. In the path diagram, the theoretical variables of interest are represented as circles; since they are constructs which are not directly observable, they are termed "latent variables" and are functionally equivalent to factors in factor analysis. In Figure 3, there are four independent (exogenous) latent variables; they are presumed to be the result of influences outside the model, either unknown or of no interest in this study.
The path diagram also contains three dependent (endogenous) latent variables; they are presumed to be the result of other variables in the model. The relationships among the latent variables are represented by directional arrows, which serve as regression weights in the structural equations. The structural component of the model also contains "errors in equations," error terms resulting from the prediction of latent variables from other latent variables. Essentially residuals, these errors may be random or may be the result of systematic influences not explicitly modeled.

The measurement component of the full structural equation model is defined in the path diagram by the relationships between the circles (latent variables) and their accompanying rectangles (measured variables or indicators). According to the logic of factor analysis, using multiple measures of a theoretical variable permits extraction of that component of each measure specifically related to the theoretical variable; assuming that the selection of measures is psychometrically sound, the common dimension that underlies those measures should reflect the theoretical variable of interest. This factor analytic model is embedded in the structural equation modeling procedure, and in the path diagram the measures or "indicators" of each latent variable are represented by rectangles near it (usually 2-4 indicators are used for
each latent variable). Each indicator has a directional arrow leading to it from its latent variable; these are equivalent to factor loadings, or weights used to represent the proportion of variance in those measures accounted for by their underlying latent constructs. Since the measurement of the latent variables is assumed to include some error, the path diagram also contains "errors in variables," error terms resulting from the imperfect approximation of the latent variables by their indicators (similar to measurement error in classical test theory).

All of the relationships or "parameters" in the model (both measurement and structural) can be represented as a series of regression equations and parameter matrices, and LISREL requires the use of a notational system of Greek letters (see Appendix A for the equations corresponding to Figure 3). Since the full structural equation model contains unobserved as well as observed variables, the model parameters must be estimated by means of links between the variances and covariances of the observed variables and the parameters of the model as specified by the researcher. Accordingly, the equations and matrices are used to compute estimates of a predicted population covariance matrix based on the specified model, and several measures of goodness-of-fit of the estimated model to the sample data. The data used are sample responses to the observed variables or indicators, and may
range from single items to lengthy questionnaires. It is imperative to consider usual psychometric issues (such as validity and reliability) when selecting indicators, and since structural equation modeling subsumes factor analytic procedures, the measures will be tested implicitly for psychometric adequacy in the analysis. The raw data (which can be ordinal, categorical, interval, cross-sectional, longitudinal, repeated measures, etc.) usually are first converted to a covariance or correlation matrix of the relationships among the observed variables before being used as input to the LISREL program. Goodness-of-fit measures for the model are obtained by a comparison between the estimated population covariance matrix (based on the model as specified by the researcher) and the sample covariance matrix computed from the input sample data. Depending upon distributional assumptions regarding the data being analyzed, a maximum likelihood or least squares iterative process generally is used, although other iterative procedures are available for specialized kinds of data sets. In the iterative process, maximization of a likelihood function or minimization of a fit function occurs successively over many estimations of all parameters simultaneously, converging to final estimates that presumably achieve "best fit" of the model to the sample data.

Specifically, a chi-square value is computed, which is
a test of the null hypothesis that the model is plausible in the population; a significant chi-square indicates the rejection of the null hypothesis, indicating that the model is not plausible in the population. The chi-square value, however, is easily distorted by large sample sizes (which increase power and thereby increase the probability of rejecting the null hypothesis) and sensitive to violations of normality assumptions; it is used comparatively, testing the model under investigation against the null or "worst possible" model (which postulates completely random relationships among the measured variables), or against other competing models. The computation of the rho-statistic (Bentler & Bonett, 1980) is often used in comparative testing, a descriptive measure of fit derived from the comparison between the model in question and the null model. The LISREL program also produces a Goodness-of-Fit Index (a ratio of the sums of squares accounted for by the model to the total sums of squares of the estimated population covariance matrix) which (in terms of the acceptable range of values) is interpreted similarly to a correlation coefficient, and a Root Mean Square Residual (a measure of the overall residual variance in fitting each parameter to the sample data) which is interpreted as a function of covariance magnitude.

In addition to the overall measures of fit discussed above, LISREL produces much detailed information about fit
which can be used in modifications of the model under investigation. Modification Indices are computed for each "fixed" parameter in the model (i.e., a value set at zero, implying the absence of that parameter in the model); this value indicates the minimum improvement that could be obtained in the chi-square value if that parameter were freed for estimation, the equivalent of adding paths to the model. LISREL also computes t-values for each "free" (estimated) parameter in the model, significance tests that indicate which parameters might be removed from the model without large increases in the chi-square value. It should be noted that the addition and elimination of paths according to t-values and modification indices addresses the issue of direct versus indirect influences in the model, since fit information indicates whether indirect influences through moderating variables need to be made more explicitly direct (adding paths) or whether direct influences need to be made indirect through moderating variables (eliminating paths).

LISREL also provides a Squared Multiple Correlation for each equation in the model; for the measured variables, this is an indication of the proportion of variance accounted for by the latent variable (that is, a test of how accurate a measure an indicator is) and for the latent variables, this is an indication of the proportion of variance in that variable accounted for by the other latent
variables in the model (that is, the strength of the relationships among the latent variables). Coefficients of Determination also are produced by LISREL, and are interpreted like summaries of the squared multiple correlation information; they indicate for the dependent and independent measured variables the overall strengths of those relationships with the latent variables they theoretically measure, and for the structural equations the overall strength of the relationships among variables in each equation. Additionally, Normalized Residuals (much like significance tests for each residual variance) can be examined, significant values indicating relationships between variables which are not being fit well in the model under investigation.

Examination of the estimated parameters and various fit measures suggests where modifications of the model under investigation may be made. Model modifications must be made cautiously and must be theoretically and substantively meaningful. For example, allowing error terms to covary might decrease the chi-square value and thereby improve statistical fit by introducing a free parameter to the model, but this choice must be based on a real possibility that some sort of systematic error occurred during data collection, or one is simply capitalizing on chance in an effort to improve fit. Ideally, the final step in model testing is to obtain a new
sample from the same population and test the modified model (alternatively, a randomly-assigned half of the original sample may be set aside and then used to analyze the modified model). This important final step is rarely done in practice, however, because of the complexity and difficulty of the methodology and the need for large sample sizes (discussed below).

Although complete latent variable models with measurement and causal regression structures are only beginning to appear in psychology (Bentler, 1980), some important studies have been done using these methods. For example, Maruyama and McGarvey (1980) used structural equation modeling to explore hypothetical causal relations between peer acceptance and classroom achievement in children. Using two models, the "influence" model (in which the causal assumption was that acceptance from others influenced scholastic achievement) and the "star" model (which hypothesized that scholastic achievement caused greater peer acceptance), they examined the relationships among five latent variables, each measured by two or three measured variables. The latent variables were Socioeconomic Status, Academic Ability, Acceptance by Significant Adults, Acceptance by Peers, and Achievement. The analysis of these data, based on school desegregation data for 249 schoolchildren, supported the "star" model, suggesting that scholastic achievement leads to increased
acceptance by peers. This model, analyzed using LISREL IV, was re-analyzed by the present researcher using LISREL V, and the "star" model again was supported.

Other researchers have used structural equation modeling in exploring theories of love (Bentler & Huba, 1979), female sexual response (Bentler & Peeler, 1979), the relationship of beliefs, attributions, and evaluation on social cognition (Smith, 1982), the relationship between life satisfaction and job satisfaction (Schmitt & Bedeian, 1982), self-esteem (Bachman & O'Malley, 1977), attitude-behavior relations (Bentler & Speckart, 1979), job enrichment (Hughes, Price, & Marrs, 1986), the structure of attitudes (Breckler, 1984), and women's career choice (Fassinger, 1985).

In spite of the tremendous potential of structural equation modeling in investigating social science problems (and particularly in improving the explanatory power of non-experimental data), the method is complex and difficult to use. The very features that make it extremely flexible -- a broad conceptual framework, incorporation of latent variables, use of multiple measures, allowance for error, accommodation of varying distributional assumptions, and capacity for handling many kinds of data -- also make it an unwieldy methodology conceptually and logistically. One area of flexibility which has generated considerable controversy is the capacity of these procedures to serve an
exploratory as well as confirmatory function. While data analysis software packages such as LISREL provide information for use in modification and retesting, many researchers (e.g., Maruyama & McGarvey, 1980; MacDonald, 1985) assert that repeated analysis of a data set with varying models in pursuit of "best fit" is an exploratory misapplication of what is essentially a confirmatory procedure. A pragmatic approach to this issue is taken by MacCallum (1986), who explores whether common procedures for "specification searches" (sequentially modifying models to improve fit) are statistically likely to lead to discovery of the true population model. MacCallum (1986) outlines four conditions that maximize the likelihood of success in such a specification search: (a) the investigator's initial model corresponds closely to the true model; (b) the search continues even when a statistically plausible model is obtained; (c) the investigator places valid restrictions on permissible modifications; and (d) a large sample is used. MacCallum also suggests that models arising from specification searches be viewed with caution, even under favorable conditions.

Ideally, of course, modifying models and then retesting them on new samples would help to resolve these issues (Fassinger, in press). Unfortunately, the procedure requires a very large sample size in order to obtain the
chi-square distribution. Although there is no clear consensus on the optimal size, estimates range from 100 for a small study (perhaps four or five variables) to 30 subjects per measured variable used (Fornell, 1983; Bagozzi, 1983; Joreskog & Sorbom, 1984); Bentler (1985) suggests that the ratio of sample size to number of estimated parameters may be as low as 5:1 under normal distributional assumptions, but must be at least 10:1 for arbitrary distributions. The sample size requirement becomes even more prohibitive in terms of modifying models and retesting on new samples; consequently, important replication and retesting is seldom done. This creates the problem of allowing sample data to guide theory, causing restrictions in generalizability and validity of conclusions (Fornell, 1983; Cliff, 1983).

Another major obstacle facing researchers using structural equation modeling is the difficulty of identification of parameters and indeterminacy. Identification refers to the existence of a unique solution for parameter estimates. If there are alternative solutions for parameters, they are not identified and the model is indeterminate; that is, a unique solution cannot be found for the system of equations postulated by the model, and it will converge to an improper solution (if, indeed, it produces a solution at all). The identification problem is often the result of a problem in the theory or
data which can be logically resolved. It is also possible
to fix unidentified parameters at zero or to constrain them
to be equal to other parameters in order to force the
computer program to run, but this makes it difficult to
interpret the results, as the fixed values sometimes alter
other parameter values. This problem in identification is
exacerbated by the tendency in the LISREL program to
terminate upon encountering numerical instabilities, quite
common in small samples or where normality assumptions have
been violated (Joreskog, 1984).

A broader problem in using structural equation
modeling is the difficulty of assessing fit in the context
of a reversed research hypothesis. In structural equation
modeling, if the null hypothesis is rejected, the research
hypothesis also is rejected. The problem is that the power
to reject the research hypothesis (in this case, the model
under investigation) is not known. The implication of low
power in structural equation modeling is that the model may
find support when it is incorrect (Fornell, 1983); the
implication of high power is that the model will be
rejected when it is only "minimally false" (i.e., where
differences between the covariance matrix predicted by the
model and the observed covariance matrix are trivial
(Bentler & Bonett, 1980). It therefore becomes crucial to
examine not only the chi-square (which is easily affected
by the large sample size) but all of the other information
related to fit. It is also important not to lose sight of long-established principles of scientific inference: that is, that data do not positively confirm a model but only fail to disconfirm it (Popper, 1959; Cliff, 1983). A model that "fits" only fits in the sense of being plausible in a population given a particular set of sample data, and it is likely that other models could be generated which would be equally plausible. This problem underscores the real imperative in structural equation modeling: the analysis must be guided by substantive theory, otherwise there is no basis for the acceptance or rejection of competing empirical models. Fornell (1983) sums up the tremendous demand made on the researcher when he observes that "in the absence of theoretical knowledge, covariance structure analysis becomes a boundless exercise in empiricism that contributes little to scientific progress" (p. 445).

In summary, although just beginning to find acceptance in psychology, structural equation modeling is beginning to be utilized more and more in the social sciences. Because it subsumes many of the fragmented techniques already used in counseling psychology research, it provides the broad framework necessary for a more integrated approach to understanding relationships among variables and for improving the explanatory power of our research efforts. It makes great demands on the researcher, however, and must be grounded firmly in theory. It also presents problems in
sample size, indeterminacy and identification, and assessing fit in the context of the reversed research hypothesis, making it a difficult tool to use in research efforts.

Summary

This chapter has contained literature relevant to the study of women's career development and the methodological considerations of structural equation modeling. The existing research on women's career development suggests a large number of variables that appear to be related to women's career choice. Some of these are academic ability, agentic personality characteristics, feminist orientation, family orientation, career orientation, and mathematics orientation. Many of these variables are imperfectly understood at this time, largely due to the fragmented quality of existing methodology. Structural equation modeling, because of its capacity to examine causal relationships and relative importance of variables, has been proposed as a more fruitful method of integrating and understanding these variables. Although the method presents problems in terms of sample size, identification, and interpretation of results, it has been used successfully in previous research efforts on women's career development and offers potential toward increased understanding of the variables related to career choice.
CHAPTER III

METHOD

Subjects and Procedures

Subjects were 663 undergraduate female students enrolled in introductory psychology courses at the Ohio State University (315) and the University of California/Santa Barbara (348). Data collection took place during the 1985-86 academic year and during fall quarter, 1986.

Subjects completed the instrument packets in groups of 30-50 during 1-hour sessions. At the beginning of the session, the importance and purpose of the study were explained, and the researcher or an assistant remained present to answer any questions during completion of the instruments. Subjects also signed consent forms indicating their voluntary participation in the study; these consent forms were detached from the instrument packets following recording of ACT/SAT scores, thus preserving each participant's anonymity in the final data analysis. Participants also were given information regarding how to obtain results of the completed study. As no deception was involved in this study, formal dehoaxing was not necessary.
but debriefing was provided.

**Instruments**

The following section describes the indicators which were used to measure each of the seven latent variables postulated in the structural model represented in Figure 3. The discussion proceeds according to the order of the latent variables in the model from left to right: the independent variables Ability, Agentic Characteristics, Feminist Orientation, and Family Orientation; then the dependent variables Career Orientation, Mathematics Orientation, and Career Choice. These sections are further subdivided into discussions of each measured variable (corresponding to the rectangles in Figure 3) used as an indicator of that particular latent variable.

The structural equation modeling methodology provides an implicit test of the adequacy of each measure used in the analysis. For this reason, while it is desirable to use fully-developed instruments with established psychometric properties, it also is possible to use single questions as measures and to test these and any newly-developed instruments within the context of the model testing. Because of the large number of measured variables used in this study, an attempt was made to minimize the number of questions on any given variable. Thus, where existing measures with acceptable psychometric properties were available, they were reduced to a short form using
only the items or portions of the instruments judged to be most relevant to the measured dimension. Where no previous method of measuring a particular variable was found, a measure was developed by the researcher for use in this study.

**Ability (ABIL).** Two indicators were used to assess Ability. The first indicator was a measure of the subject's prior academic achievement (presumed to be closely related to Ability); this measure was the subject's **High School G.F.A. (HSG)**, self-reported on the Personal Data Form and randomly checked for accuracy against university records; accuracy was checked on every fifth questionnaire, and where discrepancies were found (approximately 31% at an average discrepancy of .19), the GPA on university records was used. The second indicator of Ability was the subject's **ACT/SAT Composite Score (COM)**, obtained from university records and recorded by the researcher on the Personal Data Form. The Personal Data Form can be found in Appendix B, and a table of ACT-SAT equivalency scores (obtained from the UCSB Admissions Office) can be found in Appendix C.

**Agentic Characteristics (AGEN).** Two indicators were used to assess Agentic Characteristics. The first was a measure of self-reported **Instrumentality (INS)**, that taps characteristics such as ambition, independence, assertiveness, and the ability to deal proactively with
one's environment. Because these qualities are associated with traditional masculinity, research throughout the 1970's focused on sex-role identification in terms of masculinity, femininity, and "androgyny," (which was hypothesized to constitute high degrees of both masculine and feminine characteristics) and Bem developed the Bem Sex Role Inventory (BSRI, Bem, 1974) in order to measure the extent to which an individual possessed these characteristics. Subsequent research had mixed (and often controversial) results, and Spence and Helmreich (1980) presented an argument for focusing on the behavioral clusters themselves (which were termed "instrumentality" for traditional masculine qualities and "expressiveness" for the traditional feminine qualities), arguing that it was actually these dimensions that were being tapped in sex-role inventories. In more recent research, it is becoming common to investigate these personality characteristic dimensions using sex-role inventories.

Accordingly, the measure of instrumentality that was used in the present study contained the masculine items of the BSRI (Bem, 1974), which assesses the extent to which a person ascribes masculine or feminine qualities to him or herself. The BSRI (administered in full) consists of 20 masculine, 20 feminine and 20 neutral personality characteristics; only the 20 masculine, or instrumental, items were scored to comprise the present measure. The
subject was asked to respond on a 7-point Likert scale from 1 (Never or almost never true) to 7 (Always or almost always true) as to how well each characteristic described herself. To obtain a total score, responses to each item were summed; thus, the total possible range of scores was from 20 to 140, higher scores indicating greater degrees of instrumentality.

Extensive information regarding the psychometric properties of the BSRI may be found in the manual (Bem, 1974). In terms of reliability, stability of the overall test scores over a four-week period is high; also, test-retest correlations of .90 were found for both the masculinity and femininity subscales, indicating that the measure is quite stable. The BSRI can be found in Appendix D.

The second indicator of Agentic Characteristics was a measure of Career Decision-Making (CDM), or confidence in one's ability to complete career-related decision-making tasks. The measure of career decision-making was selected items of the Career Decision-Making Self-Efficacy Scale (CDMSE, Taylor & Betz, 1983), a 50-item scale which assesses a subject's confidence in career-decision competencies in five behavioral domains: (1) accurate self-appraisal, (2) gathering occupational information, (3) goal selection, (4) making plans for the future, and (5) problem solving. For the present measure, 25 of the items
(5 items from each subscale) were selected by the researcher as being the most important career-decision tasks; examples of items included "Prepare a good resume" (Planning), "Determine what your ideal job would be" (Self-Appraisal), "Find information in the library about occupations you are interested in" (Occupational Information), "Select one major from a list of potential majors you are considering" (Goal Selection), and "Move to another city to get the kind of job you would really like" (Problem Solving). The subject was asked to respond on a 5-point Likert scale from 0 (No confidence at all) to 4 (Complete Confidence) as to how much confidence she had in her ability to complete the career-decision task in each item. Responses were summed to yield a total score; thus, the total possible range of scores was from 0 to 100, higher scores indicating greater confidence in the ability to complete career decision-making tasks.

In a study using the CDMSE on 346 college students, Taylor and Betz (1983) reported an internal consistency reliability coefficient of .97. Item-total score correlations for 43 of the 50 items (86%) were in the range of .50 to .80, and reliabilities of the five 10-item subscales were .88 (Self-Appraisal), .89 (Occupational Information), .87 (Goal Selection), .89 (Planning), and .86 (Problem Solving). The validity of the scale is evidenced by strong negative correlations between the CDMSE scale and
measures of overall career indecision; scores on the CDMSE scale were also found to be strongly and negatively correlated with the specific component of career indecision involving confidence in making career decisions. The measure of career decision-making can be found in Appendix E.

**Feminist Orientation (FEMO).** Three indicators were used to assess Feminist Orientation. The first indicator was a measure of Attitudes Toward Feminism (ATF) in contemporary society. The measure of attitudes toward feminism is an instrument developed by the present investigator to assess college women’s subjective reactions to the women’s movement and feminist ideology (Attitudes Toward Feminism Scale, Fassinger, in preparation). The instrument contains 10 items regarding feminism and the women’s movement, the items equally divided according to whether they represent positive or negative statements. Item responses were obtained on a 5-point Likert scale, ranging from Strongly Disagree (1) to Strongly Agree (5); reverse scoring was required for five of the items. Responses to the items were summed to yield a total score; thus, scores ranged from 10 to 50, higher scores indicating more pro-feminist attitudes.

This scale, constructed according to methods outlined by Thurstone (1928), Edwards (1957), and Ostrom (1971), is based on Thurstone’s method of equal appearing intervals
attitudinal scaling. Although the instrument has not yet
been used extensively in research, Enns (1985, personal
communication; Fassinger and Enns, in preparation) used the
instrument with 150 undergraduate women and found that
stability of scores over a two-week period produced a
test-retest reliability coefficient of .81. Evidence of
the scale's convergent validity is demonstrated by moderate
correlations between the ATF scale and subjective
identification with feminism (.68), interest in feminist
activities (.51), and endorsement of the NOW Bill of Rights
(.41); evidence for the instrument's discriminant validity
is demonstrated by a low correlation with the Personal
Attributes Questionnaire (PAQ, Spence, Helmreich, & Stapp,
1974) and a negative relationship with a short form of the
Rokeach Dogmatism Scale (Troldahl & Powell, 1965). The
Attitudes Toward Feminism Scale can be found in Appendix F.

In order to assess women's attitudes toward feminism
and sex role ideologies, some studies have used single and
presumably direct questions such as "Are you a feminist?"
and "Do you use the term 'Ms.'?" (Smith & Self, 1981;
Fassinger, 1985); the implicit assumption in such practice
is that the use of the labels "feminist" and "Ms." probably
denotes an individual who holds more liberal, pro-feminist
attitudes toward the role of women in society (Smith &

Accordingly, the second indicator used to assess
Feminist Orientation was a single question regarding the labeling of oneself as a "Feminist" (FEM). The item was a declarative statement, "I would label myself a 'feminist' in my beliefs and values," and was scored on a five-point scale in the same way as the items measuring attitudes toward feminism (discussed above). Scores ranged from 1 to 5, higher scores indicating greater preference for labeling oneself a feminist, and presumably more liberal, pro-feminist attitudes.

Also consistent with the work of Smith and Self (1981) is the third indicator used to assess Feminist Orientation, a single question regarding the use of the Title _Ms._ (TMS). The item was a declarative statement, "I prefer to use the title 'Ms.' when referring to myself," and was scored in the same way as the item measuring the labeling of oneself as a feminist (discussed above). Higher scores again were presumably indicative of more liberal, pro-feminist sex-role attitudes suggested by greater preference for use of the title "Ms."

Smith and Self (1981) found that the use of this form of measurement adequately discriminated between feminist and traditionalist women in their studies. Fassinger (1985) found that these variables emerged as important predictors of women's career orientation and choice in the study which preceded the present research effort. The items used to measure preference for the title "Ms." and
the labeling of oneself as a feminist can be found in Appendix F.

**Family Orientation (FAMO).** Four indicators were used to assess Family Orientation. The first indicator was a measure of **Future Family Priorities (FFP)**, an adaptation of Eyde's Desire to Work Scale (Eyde, 1962). Eyde (1962) investigated career salience in women under certain lifestyle conditions, and the measurement method consisted of a series of hypothetical conditions (such as married with no children, unmarried with no children, and married with three young children) to which women were asked to respond stating whether they would or would not work outside the home. Greater career salience was suggested by those women who would work outside the home under a greater number and type of conditions; conversely, greater family orientation was suggested by those women who showed greater reluctance to work outside the home under various family conditions.

The modified version of Eyde's scale, slightly condensed by the present researcher for use in this study, contained 16 of Eyde's 17 original items, which were slightly reworded and put into a format presumably easier to read. Responses to the items were obtained on a 4-point scale according to the desire of the subject to work under each condition: Definitely would not want to (1), Probably would not want to (2), Probably would want to (3), and
Definitely would want to (4). Responses to the items were summed in reverse to yield a total score; scores ranged from 16 to 64, higher scores indicating less desire to work under a variety of family conditions, and therefore, presumably, greater family orientation.

Extensive validity and reliability information for the Eyde scale is available in Beere (1979). Eyde (1968) found test-retest reliabilities (five year spans) for two groups of women of .45 and .80. Richardson (1974) obtained scores for 33 college women who completed the scale on two occasions and found a higher test-retest correlation of .86. Evidence of the scale's validity is demonstrated by studies which have found significant correlations between the Eyde scale and other career/family orientation variables such as pioneer-traditional-homemaker work history, extent of work in life plans, value of marriage, value of career, educational aspiration, and chosen occupational field (Beere, 1979; Richardson, 1974). The measure of future family priorities can be found in Appendix G.

The second indicator used to assess Family Orientation was a measure of Attitudes Toward Family Roles (AFR). The measure of attitudes toward family roles contained selected items of the Attitudes Toward Women Scale (AWS, Spence & Helmreich, 1972). The AWS contains 55 items, categorized into six groups representing the following themes:
vocational, educational and intellectual roles; freedom and independence; dating, courtship, and etiquette; drinking, swearing, and dirty jokes; sexual behavior; and marital relationships and obligations. For the present measure, items included were from three of the six dimensions: marital relationships and obligations; dating, courtship, and etiquette; and sexual behavior. Each of the seven items was a declarative statement for which there were four response alternatives -- Agree strongly, Agree mildly, Disagree mildly, and Disagree strongly. Item responses were scored from 1 to 4, with 4 representing the response alternative reflecting the most traditional, conservative attitudes, and 1 the alternative reflecting the most liberal attitudes. Total scores were obtained by summing the values for the individual items; thus, total scores ranged from 7 to 49, higher scores indicating more traditional attitudes toward husbands and family roles.

Normative data for the AWS are available from two samples of male and female students and their parents (Spence & Helmreich, 1972). Results indicated that, while both male and female students averaged on the non-traditional side of the scale, women indicated significantly more non-traditional attitudes than men; students also tended to be more non-traditional than their parents regarding the roles of women in society, although women were again more non-traditional than men. Evidence
for the validity of the AWS derives, in part, from its extensive use in research. Beere (1979) noted that the AWS is the most commonly-used attitude measure regarding women's issues and life roles and subjects' sex role beliefs. Test-retest reliability coefficients ranging from .85 (three-month intervals) to .95 have been reported, and a split-half reliability of .92 has also been reported (Beere, 1979). The measure of attitudes toward family roles can be found in Appendix H.

The third and fourth indicators of Family Orientation were measures of Family Importance (IMP) and Relative Importance of Family (RIM), which consisted of two single questions regarding the extent to which the subject values family versus career pursuits. The first question asked the subject to indicate on a 4-point scale (Very unimportant to Very important) the extent to which she values Marriage/Family. The second question asked the subject to prioritize career or family pursuits and respond to five possible combinations of their relative importance (from "Career pursuits are far more important than family pursuits" to "Family pursuits are far more important than career pursuits"). Both items were scored so that family-valued responses received higher scores than career-valued responses. Total scores for the first item ranged from 1 to 4 and total items for the second item ranged from 1 to 5, higher scores indicative of greater
importance to the subject of family pursuits.

Although extensive psychometric information is not available for these two items, they were used successfully in a study of women's career development by Richardson (1974), were found to discriminate adequately between family versus career-oriented women, and were found to be strongly related to traditionality of career choice. The items measuring family importance and relative importance of family can be found in Appendix I.

**Career Orientation (CARO).** Four indicators were used to assess Career Orientation. The first indicator was a measure of *Career Salience (CAS)*, or the importance of work and career in an individual's life. The measure of career salience was the Greenhaus Career Salience Scale (Greenhaus, 1971). The Greenhaus scale consists of 27 items which measure three a priori dimensions designated Relative Importance of Work and Career, Planning and Thinking About Career, and General Attitudes Toward Work; a 28th item asks respondents to rate the extent to which they expect to derive satisfaction in six life areas, including family and career. Item responses were obtained on a 5-point Likert scale, ranging from Strongly Disagree (1) to Strongly Agree (5); reverse scoring was required on some of the items. Responses for the items were summed to yield a total score; scores on the scale ranged from 27 to 135, higher scores indicating greater career salience.
Normative data for the scale have included a sample of 377 students, 104 male and 273 female, at two eastern colleges (Greenhaus, 1971), where males scored significantly higher ($p < .05$) on career salience than did females. Internal consistency reliability (coefficient alpha) for the scale was found to be .81 for both males and females. The measure of career salience can be found in Appendix J.

The second indicator of Career Orientation was a measure of Attitudes Toward Work Roles (AWR) of women. The measure contained the 12 of the items comprising two dimensions of the Attitudes Toward Women Scale (AWS, Spence & Helmreich, 1972, described above): Vocational, educational, and intellectual roles; and Freedom and independence. The scoring of the items was similar to that already described but with the numerical values reversed; total scale scores ranged from 12 to 48, higher scores indicating more liberal attitudes toward women's roles in the workplace and their freedom and independence in society. The measure of attitudes toward work roles can be found in Appendix H.

The third and fourth indicators of Career Orientation were two single questions measuring Career Plans (CAP) in the subject's future and Career Importance (CIM). The first question asked respondents to choose from among six life plans and career patterns the one they expect to most
closely match their own (e.g., "Continuous full-time paid employment from school completion to retirement"). The second item asked the subject to indicate on a 4-point scale (Very unimportant to Very Important) the extent to which she values career pursuits. Both items were scored so that more career-oriented responses received higher scores; scores for the first item ranged from 1 to 6 and for the second item from 1 to 4, higher scores indicating greater commitment to future career plans.

These questions have been used successfully in previous studies of women's career development, where extensive information on their psychometric properties is available. The question regarding career patterns was used by Marshall and Wijting (1982, adapted from Richardson, 1974), and the second question was first reported by Almquist and Angrist (1971) and used subsequently by several researchers (e.g., Douce, 1976; Richardson, 1974). The measure of career plans can be found in Appendix K and the measure of career importance can be found in Appendix I.

**Mathematics Orientation (MATH).** Consistent with research literature suggesting the importance of Mathematics Orientation in women's career choice, three indicators were used to assess this variable. The first indicator was a measure of the number of years of High School Math (HSM), which was self-reported by subjects on
the Personal Data Form (found in Appendix B); this score was not checked for accuracy against university records, so its reliability is unknown.

The second indicator of Mathematics Orientation was a measure of Math Self-Efficacy (MSE), or the subject’s belief in her ability to perform math-related activities. The measure was the 27 items comprising Part II of the Mathematics Self-Efficacy Scale (MSES, Betz & Hackett, 1983). The MSES is a three-part, 52-item scale that asks subjects to rate their degree of confidence relative to the performance of math-related tasks (Part I), college courses (Part II), and specific math problems (Part III). For use in the present study, item responses were obtained on a 5-point confidence scale, ranging from No confidence at all (0) to Complete confidence (4). Total scores were obtained by summing the responses to the 16 items which represent math-related courses (based on Goldman & Hewitt, 1976); total scores ranged from 0 to 64, higher scores indicative of greater mathematics self-efficacy.

Analyses of the MSES have found item-total score correlations ranging from .33 to .73 for Part II and internal consistency reliability (coefficient alpha) of .93. The reliability of the total scale was found to be .96. Validity evidence (presented in detail in Betz & Hackett, 1983, and Hackett, 1985) is supported by significant relationships between the MSES and choices of
science versus non-science majors, math anxiety, global measures of math confidence, and instrumentality, all consistent with previous empirical research. The measure of math self-efficacy can be found in Appendix L.

The third indicator of mathematics orientation was a measure of **Math Achievement (ACH)**. This measure was the subject's SAT/ACT Mathematics score obtained from university records and recorded by the researcher on the Personal Data Form (Appendix B); the table used to compute ACT-SAT equivalencies can be found in Appendix C.

**Career Choice (CACH).** Three indicators were used to assess Career Choice. The first indicator was a measure of the **Traditionality (TRD)** of the subject's career choice. A method of ranking used often in women's career development research (e.g., Fassinger, 1985; Richardson, 1974; Rossi, 1965; Wolfe & Betz, 1981), this system categorizes and lists occupations based on the number of women in them according to the most recent census data. In the present study, the self-reported intended occupations of the subjects were classified as Traditional (66% or more women), Moderately Traditional (34%-65% of women), or Non-Traditional (33% or less women); where statistical data were unavailable, categories were estimated by the researcher and checked for accuracy by an experienced colleague knowledgeable in the area of women's career development. Scores were assigned such that Traditional
occupations received a score of 1, Moderately Traditional occupations received a score of 2, and Non-Traditional occupations received a score of 3. Scoring thus represented a 3-point continuum, higher scores indicating more non-traditional career choices.

The second indicator of Career Choice was a measure of occupational **Prestige** (PTG). This measure was a ranking of the desirability of the subject's self-reported occupation according to consensual endorsement in the population. The prestige rankings used most often in vocational research are found in Gottfredson and Brown (1977), and consist of a 3-digit code. For example, the occupation of College President has a prestige ranking of 76.4, while the occupation of Sailor has a prestige ranking of 28.8. For the present study, prestige rankings were taken directly from Gottfredson and Brown (1977), or estimated by the researcher if codes were unavailable (again, estimates were checked for accuracy by a more knowledgeable colleague). Higher scores indicated more prestigious occupational choices.

The third indicator of Career Choice was a measure of the **Science-Relatedness** (SCI) of the subject's stated occupational choice. These ratings were taken from Goldman and Hewitt's (1976) five-level science/non-science continuum, which specifies the science-relatedness of occupations/college majors and has been used frequently in
recent research. Consistent with Goldman and Hewitt (1976), occupational preferences in the present study were assigned a score of 1 to 5, higher scores indicating occupations reflecting greater science-relatedness; as with the scoring of traditionality and prestige, estimates were checked for accuracy by a more experienced colleague. All three of the indicators of Career Choice were recorded by the researcher on the Personal Data Form (see Appendix B).

**Personal Data Form.** A brief demographic questionnaire asked the subject for the following information: Date Entered the University (to access ACT/SAT scores), Ethnicity, Class Status, College Major declared or anticipated, Intended Occupation, High School GPA, and Years of High School Math. The Personal Data Form (which also contained space for recording SAT/ACT Composite and Math scores, and the Traditionality, Prestige, and Science-Relatedness of the subject's occupational preference) can be found in Appendix B.

**Consent Form.** Attached to each packet of questionnaires was a brief description of the study with space to indicate consent to participate in the study. The consent form required the subject's name and social security number, needed to access university records; it was explained to subjects that after the recording of their achievement test scores, the consent form would be detached from the questionnaire packet, thereby preserving their
anonymity in the final data analysis. The form containing consent to participate can be found in Appendix M.

**Analysis of the Data**

The relationships among the variables describing women's career choice were examined using the LISREL VI computer program (Joreskog & Sorbom, 1984). This analysis provided estimations of the parameters (path coefficients) in the model and several estimations of goodness-of-fit between the model and the sample data. The steps involved in the analysis were as follows:

1) a series of equations and matrices were generated which described both the structural and measurement components of the model of women's career choice tested in the present study;

2) the covariance structure of the model (provided by a maximum likelihood or unweighted least squares solution) was compared to the observed (sample data) covariance matrix to determine "fit" according to the various indices of fit that LISREL provides;

3) where theoretically justified and substantively meaningful, modifications the structural and measurement models were made in order to attempt to improve fit;

4) the modified models were re-analyzed, making theoretically-justified successive changes until maximum fit was achieved or modifications became no longer theoretically or statistically tenable.
CHAPTER IV

RESULTS

Introduction

In this chapter the results of the testing of the structural equation model under investigation are presented. In addition to the initial model (represented in Figure 3), three revised models were tested, and the fourth model was tested through a series of modifications. All testing was done on three samples: the University of California/Santa Barbara (UCSB) sample alone, the Ohio State University (OSU) sample alone, and a combined sample that included all data from both universities. Following a presentation of descriptive statistics regarding the samples and a brief discussion of the differences between the samples, the chapter is divided into sections discussing each of the models tested; within each section, the samples are discussed separately and as a combined data set.

Descriptive Statistics

Table 1 presents demographic information for both the UCSB and OSU samples. As Table 1 indicates, these samples demonstrate several demographic similarities and differences. The mean ages for the samples are 19.5 for the
Table 1. Demographic Information for University of California/Santa Barbara (UCSB) and Ohio State University (OSU) Samples

<table>
<thead>
<tr>
<th>Demographic Data</th>
<th>UCSB</th>
<th>OSU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Age</td>
<td>19.1</td>
<td>19.5</td>
</tr>
<tr>
<td>Ethnicity (in %)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian American</td>
<td>5.8</td>
<td>6.4</td>
</tr>
<tr>
<td>Black</td>
<td>2.6</td>
<td>5.7</td>
</tr>
<tr>
<td>Caucasian</td>
<td>80.8</td>
<td>84.8</td>
</tr>
<tr>
<td>Hispanic</td>
<td>6.9</td>
<td>1.3</td>
</tr>
<tr>
<td>Native American</td>
<td>3.5</td>
<td>4.8</td>
</tr>
<tr>
<td>Other</td>
<td>.3</td>
<td>1.6</td>
</tr>
<tr>
<td>Declared Major (in %)</td>
<td>64.7</td>
<td>74.9</td>
</tr>
<tr>
<td>Class Rank (in %)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>47.1</td>
<td>74.0</td>
</tr>
<tr>
<td>2</td>
<td>31.6</td>
<td>16.2</td>
</tr>
<tr>
<td>3</td>
<td>9.5</td>
<td>4.1</td>
</tr>
<tr>
<td>4</td>
<td>9.5</td>
<td>3.2</td>
</tr>
<tr>
<td>5</td>
<td>.9</td>
<td>.6</td>
</tr>
</tbody>
</table>
OSU sample and 19.1 for the UCSB sample. Differences in class status were marked: approximately 74% of the OSU sample but only about 48% of the UCSB sample were freshmen, with the UCSB sample showing greater representation of upper class ranking despite a lower mean age. Table 1 also indicates that most of the subjects in this study had declared majors (64.7 for the UCSB sample and 74.9 for the OSU sample), with the OSU sample demonstrating a greater percentage of subjects with declared majors. Ethnically, the samples were representative of their university ethnic composition overall; they were predominantly caucasian, with the OSU sample including a larger number of blacks and the UCSB sample containing a larger number of hispanics (it should be noted that the seemingly large percentage of native Americans is probably due to misinterpretation by subjects of the term "native American," since it is considerably higher than the percentage of this ethnic group at either university). In terms of overall student body composition, the two universities are quite different. UCSB draws many students who have attempted to gain admittance to Stanford, Berkeley, or UCLA, so students tend to be academically gifted (the mean SAT combined score of incoming freshmen for the 1986 year was 1064, 150 points higher than the national average and 82 points higher than the California average), while OSU's more liberal admissions standards produce a student body somewhat less academically able overall (the average ACT mean at OSU is 18, which is
equivalent to about 850 SAT points). The more stringent admissions standards at UCSB also tend to produce a student body which is academically fairly homogeneous, while there tends to be wider variation in ability levels at OSU. Additionally, the UCSB student body represents very high socioeconomic status levels overall; again, there tends to be more variability in the OSU student body, but with average family income considerably lower than at UCSB (Office of Admissions, University of California/Santa Barbara and Office of Records, Ohio State University, personal communication). The overall differences between the two samples will be further discussed in Chapter 5 in terms of impact on the results of this study.

Table 2 presents the means and standard deviations of the 21 variables used in data analysis across all three samples; it also contains t-values for tests of differences between the UCSB and OSU samples for each variable. As the table indicates, both samples tend to be fairly academically able overall, as demonstrated by SAT/ACT composite (M=992.52, 914.16) and math scores (M=528.26, 453.52), high school GPA scores (M=3.47, 3.22), and years of high school math (M=3.38, 3.53). The samples also tend toward somewhat liberal sex role ideology, indicated by attitudes toward feminism (M=36.45, 34.15), women's work roles (M=43.06, 41.36), women's family roles (M=11.32, 12.51), and future family priorities scores (M=29.78, 31.53). Both samples appear quite career-oriented as well, suggested by career
Table 2. Means and Standard Deviations of Variables Used in Testing Models of Women's Career Choice in University of California/Santa Barbara (UCSB), Ohio State University (OSU), and Combined Samples

<table>
<thead>
<tr>
<th>Variable</th>
<th>Score Range</th>
<th>M</th>
<th>UCSB SD</th>
<th>M</th>
<th>OSU SD</th>
<th>t</th>
<th>Combined M</th>
<th>Combined SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSG</td>
<td>1.0-4.0</td>
<td>3.47</td>
<td>.32</td>
<td>3.22</td>
<td>.51</td>
<td>7.89***</td>
<td>3.36</td>
<td>.44</td>
</tr>
<tr>
<td>COM</td>
<td>400-1600</td>
<td>992.52</td>
<td>139.12</td>
<td>914.16</td>
<td>177.93</td>
<td>5.27***</td>
<td>955.85</td>
<td>162.68</td>
</tr>
<tr>
<td>INS</td>
<td>20-140</td>
<td>100.15</td>
<td>14.42</td>
<td>90.38</td>
<td>14.00</td>
<td>1.55</td>
<td>99.31</td>
<td>14.61</td>
</tr>
<tr>
<td>CDL</td>
<td>0-100</td>
<td>74.66</td>
<td>11.85</td>
<td>75.38</td>
<td>11.37</td>
<td>-1.00</td>
<td>75.31</td>
<td>11.63</td>
</tr>
<tr>
<td>ATF</td>
<td>10-50</td>
<td>36.45</td>
<td>5.34</td>
<td>34.15</td>
<td>5.38</td>
<td>5.50***</td>
<td>35.38</td>
<td>5.48</td>
</tr>
<tr>
<td>FEM</td>
<td>1-5</td>
<td>3.23</td>
<td>.94</td>
<td>3.03</td>
<td>.99</td>
<td>2.75**</td>
<td>3.13</td>
<td>.07</td>
</tr>
<tr>
<td>TNS</td>
<td>1-5</td>
<td>2.59</td>
<td>1.05</td>
<td>2.50</td>
<td>1.06</td>
<td>1.06</td>
<td>2.55</td>
<td>1.06</td>
</tr>
<tr>
<td>AFR</td>
<td>7-49</td>
<td>11.32</td>
<td>2.71</td>
<td>12.51</td>
<td>3.01</td>
<td>-5.34***</td>
<td>11.68</td>
<td>2.91</td>
</tr>
<tr>
<td>FFP</td>
<td>16-64</td>
<td>29.78</td>
<td>11.45</td>
<td>31.53</td>
<td>11.11</td>
<td>-1.98*</td>
<td>30.60</td>
<td>11.31</td>
</tr>
<tr>
<td>IMP</td>
<td>1-4</td>
<td>3.74</td>
<td>.53</td>
<td>3.69</td>
<td>.56</td>
<td>1.00</td>
<td>3.72</td>
<td>.54</td>
</tr>
<tr>
<td>RIM</td>
<td>1-5</td>
<td>3.20</td>
<td>.79</td>
<td>3.25</td>
<td>.86</td>
<td>-.90</td>
<td>3.22</td>
<td>.09</td>
</tr>
<tr>
<td>CAS</td>
<td>27-135</td>
<td>93.85</td>
<td>11.66</td>
<td>94.49</td>
<td>13.10</td>
<td>-.67</td>
<td>94.15</td>
<td>12.36</td>
</tr>
<tr>
<td>AUR</td>
<td>12-48</td>
<td>43.06</td>
<td>3.47</td>
<td>41.36</td>
<td>4.34</td>
<td>5.52***</td>
<td>42.25</td>
<td>4.00</td>
</tr>
<tr>
<td>CAP</td>
<td>1-6</td>
<td>4.84</td>
<td>1.18</td>
<td>4.97</td>
<td>1.15</td>
<td>-1.52</td>
<td>4.90</td>
<td>1.12</td>
</tr>
<tr>
<td>CIM</td>
<td>1-4</td>
<td>3.62</td>
<td>.56</td>
<td>3.66</td>
<td>.60</td>
<td>.67</td>
<td>3.61</td>
<td>.50</td>
</tr>
<tr>
<td>HSR</td>
<td>0-5</td>
<td>3.39</td>
<td>.74</td>
<td>3.53</td>
<td>.85</td>
<td>-2.42*</td>
<td>3.45</td>
<td>.79</td>
</tr>
<tr>
<td>MCE</td>
<td>0-64</td>
<td>40.32</td>
<td>10.85</td>
<td>38.52</td>
<td>12.07</td>
<td>2.01*</td>
<td>39.47</td>
<td>11.47</td>
</tr>
<tr>
<td>ACH</td>
<td>200-800</td>
<td>520.26</td>
<td>128.75</td>
<td>453.52</td>
<td>127.56</td>
<td>6.29***</td>
<td>493.21</td>
<td>133.29</td>
</tr>
<tr>
<td>TRD</td>
<td>1-3</td>
<td>2.27</td>
<td>.69</td>
<td>2.17</td>
<td>.66</td>
<td>1.66</td>
<td>2.22</td>
<td>.78</td>
</tr>
<tr>
<td>PTG</td>
<td>16-68</td>
<td>62.40</td>
<td>10.17</td>
<td>60.83</td>
<td>9.77</td>
<td>2.06*</td>
<td>61.68</td>
<td>10.08</td>
</tr>
<tr>
<td>SCI</td>
<td>1-5</td>
<td>3.06</td>
<td>.57</td>
<td>3.41</td>
<td>.82</td>
<td>-6.95***</td>
<td>3.23</td>
<td>.73</td>
</tr>
</tbody>
</table>

*Ranges of N: UCSB 248-348, OSU 219-315, Combined 467-663

bSignificance levels: * p<.05, ** p<.01, *** p<.001

Scores in OSU sample were ACT scores converted to SAT equivalents using table in Appendix C.
Table 2 (Continued)

Key:

HSG = High School GPA
COM = ACT/SAT Composite
INS = Instrumentality
CDM = Career Decision Making
ATF = Attitudes Toward Feminism
FEM = Use of Feminist Label
TMS = Use of Title Ms.
AFR = Attitudes Toward Family Roles
FFP = Future Family Priorities
IMP = Family Importance
RIM = Relative Importance of Family
CAS = Career Salience
AWR = Attitudes Toward Work Roles
CAP = Career Plans
CIM = Career Importance
HSM = High School Math
MSE = Math Self-Efficacy
ACH = Math Achievement
TRD = Traditionality
PTG = Prestige
SCI = Science-Relatedness
salience (M=93.85, 94.49), and career decision-making scores (M=74.88, 75.78), and career importance (M=3.62, 3.60).

Family orientation also seems apparent in these samples, as demonstrated by family importance (M=3.74, 3.69) and relative family importance (M=3.20, 3.25). The apparent orientation toward both career and family in these samples is supported by their responses to additional questions not used in data analysis: approximately 87% of the total number of subjects stated their intentions to be married career women with children in 15 years, while approximately 5-7% stated plans to be married career women without children, and an additional 2-3% stated plans to be unmarried career women with or without children (interestingly, not a single subject stated plans to be a homemaker without children in 15 years, but approximately 3-4.5% stated plans to be a homemaker with children). Also, on the 28th item of the Greenhaus Career Salience scale (discussed in Chapter 3), which asks subjects to rank order six life activities in terms of future satisfaction, the majority of subjects ranked family and career as the two most important activities (about 73% ranked family first and about 51% ranked career second). It would seem, then, that these women typify the new "cultural imperative" (Rand and Miller, 1972) to combine work and family roles in their adult lives.

Table 2 also indicates significant differences between the UCSB and OSU samples on many of the variables, as well as a tendency toward greater overall variability in the OSU
sample. As can be seen in the table, there are significant differences in the three achievement variables (ACT/SAT composite and math scores and high school GPA) considerably favoring the UCSB sample, consistent with the differences between the two universities already discussed. The UCSB sample also is significantly more liberal in sex role attitudes than the OSU sample, as demonstrated by significantly higher scores on attitudes toward feminism, use of the feminist label, and attitudes toward women's work roles, as well as significantly lower scores on attitudes toward family roles and future family priorities.

Interestingly, the OSU sample demonstrates significantly more high school math preparation, while the UCSB sample expresses significantly greater math self-efficacy (probably consistent with greater overall academic ability of the UCSB sample). Consistent with the greater number of years of high school math, the OSU sample also demonstrates significantly greater science-relatedness of career choices, probably a function of major differences between the two universities, with OSU offering programs in medicine, nursing, dentistry, pharmacy, and veterinary medicine, while UCSB does not offer such programs. The UCSB sample, on the other hand, demonstrates a preference for significantly higher-prestige occupational choices (M=62.49 vs. 60.83 for the OSU sample); this may be due, in part, to the large numbers of OSU subjects planning careers in the allied medical professions such as nursing and dental hygiene,
which tend to be lower in prestige than occupations such as engineering, business, and law (occupations which are fairly well-represented in the UCSB sample). Some of the differences between the UCSB and OSU samples may be due to an apparently more pragmatic approach to education in the OSU sample overall, with the UCSB students (presumably because of higher socioeconomic status and greater financial support by parents) allowed greater flexibility in taking time to determine their career and lifestyle plans.

Model 1 (Initial Model)

The correlation matrices of the UCSB, OSU, and Combined samples used as input to the LISREL program are presented in Table 3 (a,b,c). As can be seen in the table, there are many highly significant correlations among variables, although in magnitude they are quite small. The large number of low-magnitude but statistically-significant correlations is probably due to the large sample sizes used, so these correlations should be interpreted with caution. The table also demonstrates that there are significant differences between the UCSB and OSU samples for particular pairs of variables. Most of those differences are related to the various measures of achievement used in this study (ACT/SAT composite and math scores, high school GPA, and high school math preparation), with overall ability differences between the two samples probably affecting the extent to which other variables assume importance in career decisions. Other significant correlational differences are
<table>
<thead>
<tr>
<th></th>
<th>MSG</th>
<th>HSM</th>
<th>LUM</th>
<th>ACH</th>
<th>IPQ</th>
<th>PIG</th>
<th>SIE</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSM</td>
<td>1.0000***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LUM</td>
<td>0.240***</td>
<td>1.0000***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACH</td>
<td>0.130***</td>
<td>0.241***</td>
<td>1.0000***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IPQ</td>
<td>0.087</td>
<td>0.0472**</td>
<td>1.0000***</td>
<td>1.0000***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PIG</td>
<td>0.0698*</td>
<td>0.0309*</td>
<td>0.2931***</td>
<td>0.110***</td>
<td>0.1033***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIE</td>
<td>0.0623</td>
<td>0.0162</td>
<td>0.0928**</td>
<td>0.109***</td>
<td>0.115***</td>
<td>0.2877*</td>
<td>1.0000***</td>
</tr>
</tbody>
</table>

** TABLE 3a. Pearson Correlation Coefficients for All Variables Used in Model of Women's Career Choice  
University of California, Santa Barbara - Sample Data **

<table>
<thead>
<tr>
<th></th>
<th>CAP</th>
<th>IMP</th>
<th>CIM</th>
<th>RIM</th>
<th>COM</th>
<th>AFR</th>
<th>HSF</th>
<th>KSC</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAP</td>
<td>0.075</td>
<td>0.0418</td>
<td>0.0178</td>
<td>0.0090</td>
<td>0.0233</td>
<td>0.0279</td>
<td>0.0304</td>
<td>0.0251</td>
</tr>
<tr>
<td>IMP</td>
<td>0.0075</td>
<td>0.0499</td>
<td>0.0191</td>
<td>0.0109</td>
<td>0.0079</td>
<td>0.0004</td>
<td>0.0091</td>
<td>0.0062</td>
</tr>
<tr>
<td>CIM</td>
<td>-0.0078</td>
<td>-0.0431</td>
<td>-0.0154</td>
<td>-0.0109</td>
<td>-0.0079</td>
<td>-0.0004</td>
<td>-0.0091</td>
<td>-0.0062</td>
</tr>
<tr>
<td>RIM</td>
<td>-0.0070</td>
<td>-0.0043</td>
<td>-0.0154</td>
<td>-0.0109</td>
<td>-0.0079</td>
<td>-0.0004</td>
<td>-0.0091</td>
<td>-0.0062</td>
</tr>
<tr>
<td>COM</td>
<td>-0.0007</td>
<td>-0.0043</td>
<td>-0.0154</td>
<td>-0.0109</td>
<td>-0.0079</td>
<td>-0.0004</td>
<td>-0.0091</td>
<td>-0.0062</td>
</tr>
<tr>
<td>AFR</td>
<td>0.0004</td>
<td>0.0043</td>
<td>0.0154</td>
<td>0.0109</td>
<td>0.0079</td>
<td>0.0004</td>
<td>0.0091</td>
<td>0.0062</td>
</tr>
<tr>
<td>HSF</td>
<td>0.0075</td>
<td>0.0418</td>
<td>0.0178</td>
<td>0.0090</td>
<td>0.0233</td>
<td>0.0279</td>
<td>0.0304</td>
<td>0.0251</td>
</tr>
<tr>
<td>KSC</td>
<td>0.0075</td>
<td>0.0418</td>
<td>0.0178</td>
<td>0.0090</td>
<td>0.0233</td>
<td>0.0279</td>
<td>0.0304</td>
<td>0.0251</td>
</tr>
</tbody>
</table>

** Indicates values significantly different in Ohio State and University of California samples **
|        | HSC     | HMS     | CON     | ACH     | TRL     | PFG     | SLI     | CAP     | IMP     | CIM     | RIM     |
|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| HSC    | 1.0000*** | 1.0000*** | 1.0000*** | 1.0000*** | 1.0000*** | 1.0000*** | 1.0000*** |         |         |         |         |         |
| HMS    | .7747*** | .4279*** | .7790*** | .7461*** | .7272*** | .7528*** | .7246*** | .7049*** | .7017*** | .7009*** | .7007*** | .7006*** |
| CON    | .4279*** | .7747*** | .4279*** | .7747*** | .7272*** | .7528*** | .7246*** | .7049*** | .7017*** | .7009*** | .7007*** | .7006*** |
| ACH    | .7790*** | .7790*** | 1.0000*** | .7790*** | .7790*** | .7790*** | .7790*** | .7790*** | .7790*** | .7790*** | .7790*** | .7790*** |
| TRL    | .7461*** | .7461*** | .7461*** | 1.0000*** | .7461*** | .7461*** | .7461*** | .7461*** | .7461*** | .7461*** | .7461*** | .7461*** |
| PFG    | .7272*** | .7272*** | .7272*** | .7272*** | 1.0000*** | .7272*** | .7272*** | .7272*** | .7272*** | .7272*** | .7272*** | .7272*** |
| SLI    | .7528*** | .7528*** | .7528*** | .7528*** | .7528*** | 1.0000*** | .7528*** | .7528*** | .7528*** | .7528*** | .7528*** | .7528*** |
| CAP    | .7246*** | .7246*** | .7246*** | .7246*** | .7246*** | .7246*** | 1.0000*** | .7246*** | .7246*** | .7246*** | .7246*** | .7246*** |
| IMP    | .7049*** | .7049*** | .7049*** | .7049*** | .7049*** | .7049*** | .7049*** | 1.0000*** | .7049*** | .7049*** | .7049*** | .7049*** |
| CIM    | .7017*** | .7017*** | .7017*** | .7017*** | .7017*** | .7017*** | .7017*** | .7017*** | 1.0000*** | .7017*** | .7017*** | .7017*** |
| RIM    | .7009*** | .7009*** | .7009*** | .7009*** | .7009*** | .7009*** | .7009*** | .7009*** | .7009*** | 1.0000*** | .7009*** | .7009*** |

* indicates values significantly different in Ohio State and University of California samples.

** indicates values significantly different in Ohio State and University of California samples.

*** indicates values significantly different in Ohio State and University of California samples.

**** indicates values significantly different in Ohio State and University of California samples.

#### Notes

- The table above provides the Pearson Correlation Coefficients for all variables used in the model of women's career choice.
- Ohio State University - Sample Data

---

- **Table 2:** Pearson Correlation Coefficients for All Variables Used in Model of Women's Career Choice
- Ohio State University - Sample Data
- **Notes:**
  - * indicates values significantly different in Ohio State and University of California samples.
  - ** indicates values significantly different in Ohio State and University of California samples.
  - *** indicates values significantly different in Ohio State and University of California samples.
  - **** indicates values significantly different in Ohio State and University of California samples.
<table>
<thead>
<tr>
<th>Variable</th>
<th>HSG</th>
<th>MMR</th>
<th>COM</th>
<th>ACH</th>
<th>TBD</th>
<th>PFG</th>
<th>SCI</th>
<th>CUP</th>
<th>IMP</th>
<th>CIM</th>
<th>RIM</th>
<th>COM</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSG</td>
<td>1.000***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MMR</td>
<td>1.000***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COM</td>
<td></td>
<td>1.000***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACH</td>
<td></td>
<td>1.000***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TBD</td>
<td></td>
<td></td>
<td>1.000***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PFG</td>
<td></td>
<td></td>
<td></td>
<td>1.000***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SCI</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.000***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CUP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.000***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IMP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.000***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.000***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RIM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.000***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.000***</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* p < .05, ** p < .01, *** p < .001

* indicates values significantly different in Ohio State and University of California samples.
Table 3 (Continued)

Key:

HSG = High School Gpa
HSM = High School Math
COM = ACT/SAT Composite
ACH = Math Achievement
TRD = Traditionality
PTG = Prestige
SCI = Science-Relatedness
CAP = Career Plans
IMP = Family Importance
CIM = Career Importance
RIM = Relative Importance of Family
CDM = Career Decision Making
AWR = Attitudes Toward Women's Roles
AFR = Attitudes Toward Family Roles
MSE = Math Self-Efficacy
FFP = Future Family Priorities
CAS = Career Salience
ATF = Attitudes Toward Feminism
FEM = Feminist Label
TMS = Title Ms.
INS = Instrumentality
found in several of the sex role variables (attitudes toward women's work roles, attitudes toward feminism, and use of the feminist label); again, differences between the samples in sex role attitudes may influence the extent to which other variables affect career choice. As will be demonstrated in the following discussion, differences between the UCSB and OSU samples (particularly as manifested in the patterns of correlations) produced different decisions in modifying models and re-testing and resulted in final models which, while quite similar, are not identical in structure or measurement.

Attempts to test the initial model presented some difficulty in all three samples (producing, for example, non-positive-definite matrices, unidentified parameters, and error messages stating that the program was unable to converge or unable to improve initial estimates). Some fit information was generated, however, allowing inspection of weaknesses in the model and providing direction for revisions of the model.

Using the UCSB sample data, the program produced initial parameter estimates, but was unable to converge to a final solution for parameter estimates; since convergence to a solution requires the simultaneous solution of all parameters in the model successively over many iterations (250 in the LISREL program), inability of the computer program to converge to a final solution is often the result of the model requiring more than the maximum number of
iterations allowed, and suggesting serious problems in the model. Table 4 presents a summary of the overall fit information for all models tested in the study across the three samples. As can be seen in the table, the testing of Model 1 on the UCSB sample produced a chi-square of 647.70 (df=173), which is significant, indicating the rejection of the null hypothesis that this model holds in the population (i.e., this model is not plausible in the population). The Goodness-of-Fit Index (a ratio of the sums of squares accounted for by the model to the total sums of squares of the estimated population covariance matrix) is low (.838); since its acceptable range of values is interpreted similarly to those for a correlation coefficient, it should be at least in the .90's. The Root Mean Square Residual (a measure of the overall residual variance in fitting each parameter to the sample data) is interpreted as a function of covariance magnitude and should be as low as possible (at least below .05); the value for this model is excessively high (.082) and supports the data suggesting that this model is incorrect in the population.

Table 5 contains a summary of relevant detailed fit information for all models tested in the study across the three samples. As can be seen in Table 5, the difficulties in testing Model 1 on the UCSB sample data prevented the computation of two of the Coefficients of Determination; interpreted like summaries of squared multiple correlations, these coefficients indicate for the dependent and
Table 4. Summary of Overall Fit Information for Models of Women's Career Choice Tested in University of California/Santa Barbara (UCSB), Ohio State University (OSU), and Combined (COMB) Samples.

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>df</th>
<th>G</th>
<th>$\rho^c$</th>
<th>GFI$^b$</th>
<th>RMR$^c$</th>
</tr>
</thead>
<tbody>
<tr>
<td>UCSB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>647.70</td>
<td>173</td>
<td>3.74</td>
<td>-</td>
<td>.638</td>
<td>.082</td>
</tr>
<tr>
<td>2</td>
<td>672.79</td>
<td>180</td>
<td>3.74</td>
<td>-</td>
<td>.693</td>
<td>.088</td>
</tr>
<tr>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4$^d$</td>
<td>200.00</td>
<td>96</td>
<td>3.11</td>
<td>.812</td>
<td>.903</td>
<td>.078</td>
</tr>
<tr>
<td>Final</td>
<td>192.66</td>
<td>95</td>
<td>2.83</td>
<td>.908</td>
<td>.937</td>
<td>.053</td>
</tr>
<tr>
<td>Null</td>
<td>1462.22</td>
<td>120</td>
<td>12.19</td>
<td>-</td>
<td>.682</td>
<td>.197</td>
</tr>
<tr>
<td>OSU</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>.931</td>
</tr>
<tr>
<td>2</td>
<td>646.64</td>
<td>160</td>
<td>3.59</td>
<td>-</td>
<td>.634</td>
<td>.093</td>
</tr>
<tr>
<td>3</td>
<td>281.00</td>
<td>81</td>
<td>3.47</td>
<td>-</td>
<td>.687</td>
<td>.090</td>
</tr>
<tr>
<td>4$^d$</td>
<td>381.43</td>
<td>96</td>
<td>3.97</td>
<td>.763</td>
<td>.666</td>
<td>.091</td>
</tr>
<tr>
<td>Final</td>
<td>284.19</td>
<td>94</td>
<td>2.17</td>
<td>.906</td>
<td>.926</td>
<td>.062</td>
</tr>
<tr>
<td>Null</td>
<td>1624.98</td>
<td>120</td>
<td>13.54</td>
<td>-</td>
<td>.551</td>
<td>.219</td>
</tr>
<tr>
<td>COMB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1091.43</td>
<td>173</td>
<td>6.31</td>
<td>-</td>
<td>.851</td>
<td>.077</td>
</tr>
<tr>
<td>2</td>
<td>1149.42</td>
<td>180</td>
<td>6.39</td>
<td>-</td>
<td>.844</td>
<td>.083</td>
</tr>
<tr>
<td>3</td>
<td>506.34</td>
<td>91</td>
<td>6.25</td>
<td>-</td>
<td>.899</td>
<td>.085</td>
</tr>
<tr>
<td>4</td>
<td>637.39</td>
<td>111</td>
<td>5.74</td>
<td>.901</td>
<td>.897</td>
<td>.081</td>
</tr>
<tr>
<td>Final</td>
<td>298.39</td>
<td>93</td>
<td>3.12</td>
<td>.911</td>
<td>.947</td>
<td>.052</td>
</tr>
<tr>
<td>Null</td>
<td>2978.75</td>
<td>120</td>
<td>24.82</td>
<td>-</td>
<td>.582</td>
<td>.208</td>
</tr>
</tbody>
</table>

$^a$rho-statistic ($\rho$) not computed for first three tested models.

$^b$Goodness-of-Fit Index

$^c$Root Mean Square Residual

$^d$In UCSB and OSU samples, Model 4 tested without Future Family Priorities (FFP) variable.
Table 5. Detailed Fit Information for Models of Women's Career Choice

<table>
<thead>
<tr>
<th>Model</th>
<th>X-variables</th>
<th>T-variables</th>
<th>Equations</th>
<th>Coefficients of determination</th>
<th>Squared Multiple Correlations</th>
<th>Modification Indices</th>
<th>t-values</th>
<th>Normalized Residuals</th>
</tr>
</thead>
<tbody>
<tr>
<td>UCSB</td>
<td>1</td>
<td>0.900</td>
<td></td>
<td>CAP 0.12</td>
<td>Eq.1 = 2.77</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CIM 0.19</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>HSM 0.11</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>MAF 0.15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>MAF 0.06</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>IMP 1.04</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FFP 0.15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UCSB</td>
<td>2</td>
<td>0.786</td>
<td>0.897</td>
<td>CAP 0.12</td>
<td>Eq.2 = 1.89</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CIM 0.07</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>HSM 0.12</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>MAF 1.05</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>IMP 1.05</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FFP 1.05</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UCSB</td>
<td>3</td>
<td>0.993</td>
<td>0.846</td>
<td>HSM 0.05</td>
<td>Eq.2 = -0.04</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>MAF 0.11</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UCSB</td>
<td>4</td>
<td>0.987</td>
<td>0.845</td>
<td>HSM 0.07</td>
<td>Eq.2 = -0.06</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
- Coefficients of determination reflect the proportion of variance in the dependent variable explained by the independent variables.
- Squared Multiple Correlations indicate the proportion of the variance in the dependent variable that is accounted for by the independent variables, adjusted for the number of predictors in the model.
- Modification Indices help assess the improvement in fit when variables are added or removed from the model.
- t-values are used to test the significance of the coefficients.
- Normalized Residuals provide a measure of the residuals after accounting for the model's fit.
### Table S (cont'd)

**Coefficients of determination**

<table>
<thead>
<tr>
<th>Model</th>
<th>X-variables</th>
<th>Y-variables</th>
<th>Equations</th>
<th>Squared Multiple Correlations</th>
<th>Modification</th>
<th>t-values</th>
<th>Normalised Residuals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>AWR .14</td>
<td>Eq.1 = 1.04</td>
<td>MSE/CARO 20.97</td>
<td>COM/AMR 3.46</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CAP .10</td>
<td>ACH/CARO 63.75</td>
<td></td>
<td>AFR/AMR -4.28</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FPG .14</td>
<td>TRD/CARO 23.33</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ING 1.05</td>
<td>SCI/CARO 30.86</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FPP .13</td>
<td>TRD/MATH 15.13</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SCI/MATH 27.33</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>MSE/CACH 39.42</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ACH/CACH 73.44</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FPP/ABIL 20.37</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>AFR/FEMO 24.64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>.998</td>
<td>.963</td>
<td>.987</td>
<td>AWR .08</td>
<td>ACH/ABIL 20.42</td>
<td>COM/ACM -4.17</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>MSH/ABIL 21.97</td>
<td>COM/CARO 3.19</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>MSE/AGEN 27.53</td>
<td>COM/AMR 3.97</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ACH/FEMO 16.56</td>
<td>KTP/AMR 3.79</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>INS/FEMO 17.64</td>
<td>KTP/ACL -3.13</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>TMS/FEMO 16.01</td>
<td>KTP/AMO 3.69</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>.997</td>
<td>.648</td>
<td></td>
<td>CAS .10</td>
<td>ACH/FEMO 19.42</td>
<td>COM/AMR 3.59</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CIM .18</td>
<td>CARO/CACH .42</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FPG .12</td>
<td>INS/FEMO 19.78</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ING .06</td>
<td>CONF/CARO 1.54</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FPP .08</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 5 (cont'd)

<table>
<thead>
<tr>
<th>Model</th>
<th>X-variables</th>
<th>Y-variables</th>
<th>Equations</th>
<th>Squared Multiple Correlations</th>
<th>Modification</th>
<th>t-values</th>
<th>Normalized Residuals</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM 4</td>
<td>.998</td>
<td>.815</td>
<td>.665</td>
<td>PTG .11</td>
<td>MSP/ARIL 27.45</td>
<td>CARO/CACH -.07</td>
<td>INS/CDM 17.7R</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>INS .06</td>
<td>AMP/ARIL 28.64</td>
<td>AWR/COM 4.64</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>COM .07</td>
<td>ACH/REK 16.73</td>
<td>ATP/ACH -3.58</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>AWR .17</td>
<td></td>
<td>PFM/ACH -3.21</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>INS/CDM 7.48</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>AFR/INS -3.17</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>AWR/AFR -4.06</td>
<td></td>
</tr>
<tr>
<td>FINAL</td>
<td>.997</td>
<td>.815</td>
<td>.593</td>
<td>PTG .14</td>
<td>INS/CDM 17.7R</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>COMBINED 1</td>
<td>.899</td>
<td>.996</td>
<td></td>
<td>CAP .17</td>
<td>MSE/ARIL 31.59</td>
<td>MATH/CACH .53</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>AWR .17</td>
<td>ACH/ARIL 20.02</td>
<td>ARIL/CACH -.40</td>
<td>SCI/ARIL -3.03</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>HSH .13</td>
<td>SCI/ARIL 16.10</td>
<td>AGEM/MATH .93</td>
<td>COM/WR 5.79</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SCI .17</td>
<td>AMP/ARIL 31.44</td>
<td>FFMO/CARO -.85</td>
<td>ATP/ARIL 6.52</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>INS .10</td>
<td>MSE/CACH 68.36</td>
<td>ARIL/CACH .47</td>
<td>PFM/ARIL 3.16</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FFP .13</td>
<td>ACH/CACH 44.90</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>AFR/FBRO 90.19</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>IMP/FBRO 20.70</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>BIM/FBRO 39.20</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SCI/NSR 5.09</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>INS/NSR 5.99</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>COM/NSR 6.18</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>MSP/NSR 3.80</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ATR/SCI 3.34</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>AFR/SCI 3.62</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>AFR/PEP -5.37</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>IMP/ATP 3.91</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>AFR/PEH -3.30</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>IMP/RIM 6.76</td>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

[continued...]

---

1. **Table 5 (cont'd): Coefficients of determination**
2. **Squared Multiple Correlations**
3. **Modification Indices**
4. **t-values**
5. **Normalized Residuals**

---

*Note: The table continues with additional rows and columns of data.*


<table>
<thead>
<tr>
<th>Model</th>
<th>X-variables</th>
<th>Y-variables</th>
<th>Equations</th>
<th>Squared Multiple Correlations</th>
<th>Modification Indices</th>
<th>t-values</th>
<th>Normalized Residuals</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSE/SCI</td>
<td>5.51</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ATP/SCI</td>
<td>-3.32</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TMS/COM</td>
<td>-3.34</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TMS/ACR</td>
<td>-4.11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MSE/HSH</td>
<td>5.10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IMP/MSE</td>
<td>6.43</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIN/HSH</td>
<td>6.37</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AFP/MSE</td>
<td>-3.21</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PFP/MSE</td>
<td>-3.21</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ATP/INS</td>
<td>4.22</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PFP/INS</td>
<td>4.63</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TMS/INS</td>
<td>3.93</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AFP/INS</td>
<td>-5.12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RIN/INS</td>
<td>-4.75</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IMP/INS</td>
<td>-3.50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AFP/INS</td>
<td>-3.98</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RIN/INS</td>
<td>-4.22</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IMP/INS</td>
<td>-3.45</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>.998</td>
<td>.645</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAS</td>
<td>1.14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIN</td>
<td>1.12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PFP</td>
<td>.15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INS</td>
<td>.07</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PFP</td>
<td>.12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SCI/CAO</td>
<td>22.62</td>
<td>CARO/CACH -1.98</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAO/CARO</td>
<td>21.14</td>
<td>ABIL/CARO 1.09</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ABIL/CAO</td>
<td>17.04</td>
<td>PANO/CAO -1.40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAS/CAO</td>
<td>19.71</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ABIL/CAO</td>
<td>15.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PANO/CAO</td>
<td>14.33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5 (cont'd) Coefficients of determination

3 Combined (cont'd)
<table>
<thead>
<tr>
<th>Model</th>
<th>X-variables</th>
<th>Y-variables</th>
<th>Equations</th>
<th>Squared Multiple Correlations</th>
<th>Modification</th>
<th>Normalised Residuals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Combined (cont'd)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>.992</td>
<td>.837</td>
<td>.41R</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>FPF .12</td>
<td>SCI .16</td>
<td>Eq.2 = .20</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MRE/ABIL 113.91</td>
<td>CARO/CACH .75</td>
<td>AWR/ABIL 50.77</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>NSF .14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FINAL</td>
<td>.994</td>
<td>.836</td>
<td>.442</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PTG .19</td>
<td>SCI .16</td>
<td>Eq.2 = .19</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ACH/SEXR 15.96</td>
<td>CARO/CACH .26</td>
<td>AWR/ABIL 16.63</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Values listed are those which fall outside the acceptable range of .200-.999

Values listed are those which exceed the maximum acceptable value of 15.0

Values listed are those which fall to meet the critical minimum of 2.0

Values listed are those which exceed the maximum acceptable value of 3.0

Indicates a value which could not be computed due to model problems
independent measured variables the overall strength of those relationships with the latent variables they theoretically measure, and for the structural equations the overall strength of the relationships among latent variables in the model. Ideally, these coefficients should be within a range of approximately .30-.99, with higher values most optimal. Difficulties in testing the initial model also prevented the computation of Modification Indices. Computed for each "fixed" parameter in the model (i.e., a value set at zero, implying the absence of that parameter in the model), the modification index indicates the minimum improvement that could be obtained in the chi-square value if that parameter were freed for estimation, the equivalent of adding paths to the model; values for the modification index are important to consider if they exceed about 12.0 or so. The other detailed fit information presented in Table 5 also suggests problems with the initial model. Many low t-Values are evidenced; computed for each "free" (estimated) parameter in the model, the t-value is a significance test that indicates which parameters might be removed from the model without large increases in the chi-square value, and should be considered if below the critical value of approximately 2.0. Since there are quite a few values less than 2.0 indicated for the testing of the initial model on the UCSB sample, results imply the presence of many non-significant paths in the model and suggest serious structural problems. The Squared Multiple Correlations also show several values which
exceed or fail to meet the acceptable range. For the measured variables, the squared multiple correlation is an indication of the proportion of variance accounted for by the latent variable (i.e., a test of how accurate a measure an indicator is), and for the latent variables, the squared multiple correlation is an indication of the proportion of variance in that variable accounted for by the other latent variables in the model (i.e., the strength of the relationships among the latent variables). Squared multiple correlations should fall within a range of about .20-.99; the presence of values which fail to fall within that range in this model indicate possible measurement problems as well as the structural difficulties already mentioned. Table 5 also indicates problems with the Normalized Residuals; much like significance tests for each residual variance, the normalized residuals suggest relationships not being fit well in the model under investigation. The large number of normalized residuals in this model-testing exceeding the critical value of about 3.0 suggest a great many relationships not being fit well by Model 1, and involve many of the ability and sex role variables. Several attempts were made to fix or constrain out-of-bound values to force the LISREL program to run (often done in initial stages of model-testing, but of dubious value because it renders estimated values uninterpretable); however, since the fit information that was generated suggested major problems with the model, it was finally abandoned in the
Attempts to test the initial model on the OSU sample data met with similar problems. Since the program would not compute maximum-likelihood estimates, an attempt was made to run the model using Unweighted Least Squares estimates (commonly used when normal distributional assumptions have been violated). This run did produce estimates but did not provide chi-square information. Table 4 indicates that the Goodness-of-Fit Index (which can be computed by the program regardless of the method of estimation) suggested fairly good fit (.931) but the Root Mean Square Residual was too high (.078). In terms of the detailed fit information presented in Table 5, two of the Coefficients of Determination and the t-Values could not be computed, and there are many excessively high (greater than 12.0) Modification Indices, suggesting many paths missing in Model 1. Like the UCSB sample, there also were low Squared Multiple Correlations (suggesting possible measurement problems) and quite a few large Normalized Residuals, suggesting many relationships between variables not being fit well by this model. Attempts to fix or constrain parameter values and re-run the program also were unsuccessful, so Model 1 was rejected as feasible in the OSU sample.

Although there were significant differences between the UCSB and OSU samples in terms of both individual variables and correlations among variables, a combined (or pooled)
sample also was tested for each of the models. It was reasoned that a combined sample (with correlations based on pooled data) might provide an intermediate model between the two samples, allowing for a common starting point from which separate modified models for each sample could be generated. Accordingly, the initial model was tested using the correlation matrix of the combined sample data sets, and these results also are presented in Tables 4 and 5. As can be seen in Table 4, the testing of Model 1 on the combined sample produced a chi-square of 1091.43 (df=173), which is significant, indicating the rejection of the null hypothesis that this model holds in the population. Additionally, the Goodness-of-Fit Index is fairly low (.851) and the Root Mean Square Residual is high (.077), suggesting poor fit overall. Detailed fit information presented in Table 5 suggests poor fit as well; The Coefficient of Determination for the X-variables could not be computed, and there are many very high Modification Indices, suggesting missing paths in the model. The t-Values indicate many non-significant paths in the model, and the Squared Multiple Correlations suggest possible measurement problems as well. The very large number of Normalized Residuals indicates many relationships not fitting well in this model, suggesting that Model 1 does not fit the combined sample data. Again, further attempts to force the program to run were unsuccessful.

Given the severe difficulties encountered in running the initial model on all three samples, Model 1 was finally
abandoned, and, using the limited fit information that had been provided in the initial testing, a revised model of women's career choice was generated for testing.

**Model 2**

The second model tested in this study is presented in Figure 4. It is essentially identical to Model 1, except that the Mathematics Orientation (MATH) variable has been removed as a dependent latent variable and placed on the left side of the model, now functioning as an independent latent variable (the measurement component of the model has remained the same). This change was based on information generated in the aborted attempts to test Model 1. Since the math variables had presented problems in Model 1 (especially in Modification Indices and Normalized Residuals, see Tables 4 and 5), and since structural problems were very apparent in Squared Multiple Correlations, t-Values, and Coefficients of Determination (Career Choice being especially poorly predicted), the decision was made to retain all of the latent variables with their indicators and simply rearrange the structure among the latent variables. Although there were low Squared Multiple Correlations for several of the indicators in the run of Model 1 (suggesting possible measurement problems), other information (e.g., the Coefficients of Determination for the structural equations and several t-Values) suggested that measurement difficulties might simply be a manifestation of underlying structural weaknesses in the model. Since estimates of
Figure 4. Model 2/ Revised Model of Women's Career Choice
Figure 4 (Continued)

Key:

ABIL = Ability
    HSG = High School GPA
    COM = Composite ACT/SAT Score

MATH = Mathematics Orientation
    ACH = Math Achievement
    HSM = High School Math
    MSE = Math Self-Efficacy

AGEN = Agentic Characteristics
    INS = Instrumentality
    CDM = Career Decision Making

FEMO = Feminist Orientation
    ATF = Attitudes Toward Feminism
    FEM = Use of Feminist Label
    TMS = Use of Title Ms.

FAMO = Family Orientation
    AFR = Attitudes Toward Family Roles
    FFP = Future Family Priorities
    IMP = Family Importance
    RIM = Relative Importance of Family

CARO = Career Orientation
    CAS = Career Salience
    AWR = Attitudes Toward Work Roles
    CAP = Career Plans
    CIM = Career Importance

CACH = Career Choice
    TRD = Traditionality
    PTG = Prestige
    SCI = Science-Relatedness
parameters are determined simultaneously in the analysis of models, a poor structural model can negatively affect the measurement model such that indicators appear to be inadequate measures of their latent variables when it is actually structural relationships among the latent variables themselves which are inappropriate. Therefore, instead of prematurely eliminating or rearranging indicators, only the structural relationships of the initial model were revised in Model 2; only minimal changes were made, and since the math variables had presented difficulties in the initial model, it was thought that allowing Mathematics Orientation to serve as an independent variable might eliminate structural weaknesses. As can be seen in Figure 4, the independent latent variables Ability, Mathematics Orientation, Agentic Characteristics, Feminist Orientation, and Family Orientation were hypothesized to predict the dependent latent variable Career Orientation, which, in turn, was hypothesized to affect Career Choice; in addition, Career Choice was thought to be affected by Family Orientation directly. This model was tested on both samples separately as well as the combined sample.

Again, this model was difficult to test using the UCSB sample. The LISREL program was unable to improve initial estimates, rendering the fit information only minimally interpretable. As can be seen in Table 4, the testing of Model 2 on the UCSB sample produced a chi-square value of 672.79 (df=180), indicating rejection of the null hypothesis.
that this model holds in the population. The Goodness-of-Fit Index is again quite low, and the Root Mean Square Residual (.088) is too high. Detailed fit information presented in Table 4 indicates high Coefficients of Determination (suggesting that both the measurement and structural models are quite adequate overall), but there are several non-significant paths in the model (as indicated by \( t \)-Values), several low Squared Multiple Correlations (indicating possible measurement weaknesses), and many high Normalized Residuals, suggesting quite a few relationships not being fit well by this model. In addition, there are several Modification Indices which exceed the acceptable value of about 12.0, but are not sufficiently high to decrease the chi-square appreciably by the addition of these paths to the model. Several attempts to make modifications based on this limited fit information were unsuccessful, suggesting that this model was not amenable to further testing on the UCSB sample.

Using the OSU sample, the LISREL program did run Model 2 (albeit with several LISREL warning messages regarding the possibility of unidentified parameters) and preliminary inspection suggested it that might be amenable to further exploration. As Table 4 indicates, the testing of Model 2 on the OSU sample produced a chi-square value of 646.64 (df=180), which is significant, indicating the rejection of the null hypothesis that this model holds in the population. The Goodness-of-Fit Index is low (.834) and the Root Mean
Square Residual is very high (.093), suggesting poor fit of this model to the sample data. The detailed fit information presented in Table 5, however, suggests moderate fit. The Coefficients of Determination are good (especially for the X-variables and the equations), and there are only a few low Squared Multiple Correlations, suggesting a good measurement model overall. The t-Values indicate several non-significant paths, however (almost all of them related to the Career Orientation variable), and many high Normalized Residuals indicating relationships being poorly fit. As with the testing of this model on the UCSB sample, there are several Modification Indices that exceed the acceptable limit (indicating paths which should be freed), but they are not high enough to significantly decrease the chi-square value by their addition. A few attempts were made to modify this model, but, again, they were unsuccessful and suggest that Model 2 is probably an inappropriate model for the OSU sample data.

In testing this model on the combined sample, results were very similar to those of the testing of the OSU sample. Overall fit information indicated rejection of the null hypothesis that this model holds in the population ($\chi^2 = 1149.42$, df = 180), and the Goodness-of-Fit Index (.844) and Root Mean Square Residual (.087) are excessively low and high respectively. Detailed fit information presented in Table 5 also suggests problems. There are only a few low Squared Multiple Correlations and reasonably high
Coefficients of Determination (especially for the X-variables and the structural equations), suggesting a fair measurement model and reasonably good structure among the latent variables. However, as \( p \)-Values indicate, there are several non-significant paths, all of them involving the Career Orientation variable, suggesting that Career Orientation is not being predicted very well by this model. There also are many very high Modification Indices suggesting paths to be added to the model, and an excessive number of extremely high Normalized Residuals, suggesting that this model is explaining relationships among variables very poorly. As with the two separate samples, attempts were made to modify Model 2, but were unsuccessful, suggesting that this model was not amenable to modification and retesting. Thus, it too was abandoned and, based on limited fit information provided by the testing of the first two models, a third model of women's career choice was generated for testing.

Model 3

Based on the information generated in the testing of Models 1 and 2, a third model of women's career choice was generated, which is represented in Figure 5. Model 3 is similar to Model 2 in structure (Career Orientation and Career Choice are again predicted by the other variables), but the independent latent variables and the measurement model have been revised considerably. Based on consistently low Squared Multiple Correlations in the two previous models
Figure 5. Model 3/ Revised Model of Women's Career Choice
Figure 5 (Continued)

Key:

ABIL = Ability
  COM = ACT/SAT Composite
  ACH = Math Achievement

CONF = Confidence
  MSE = Math Self-Efficacy
  INS = Instrumentality

FEMO = Feminist Orientation
  ATF = Attitudes Toward Feminism
  FEM = Use of Feminist Label

FAMO = Family Orientation
  AFR = Attitudes Toward Family Roles
  FFP = Future Family Priorities
  RIM = Relative Importance of Family

CARO = Career Orientation
  CAS = Career Salience
  AWR = Attitudes Toward Work Roles
  CIM = Career Importance

CACH = Career Choice
  TRD = Traditionality
  PTG = Prestige
  SCI = Science-Relatedness
tested and related structural problems in Model 2 despite structural revisions of the initial model, it was thought the measurement component of the model might be inaccurate and requiring revision; thus, several of the original observed variables serving as indicators were eliminated from Model 3. As can be seen in Figure 5, the latent variable Ability is now measured by the two SAT/ACT scores (Composite and Math), with the high school variables (GPA and Years of Math) having been eliminated as indicators based on their apparent psychometric inadequacy as suggested by fit information. The personality latent variable has been designated Self-Confidence, and is measured by Instrumentality and Math Self-Efficacy (Career Decision-Making also has been removed as an indicator due to probable inadequacy, a decision made hesitantly since fit information was inconsistent). The measure of preference for use of the Title Ms. has been removed as an indicator of the Feminist Orientation latent variable (due to psychometric inadequacy) and the measure of Family Importance has been eliminated as an indicator of the Family Orientation latent variable (there was very little variability in this latter indicator, since most subjects responded with the same rating). The 1-item measure of Career Plans also has been eliminated as an indicator of the latent variable Career Orientation for the same reason (little variability) that the Family Importance indicator was removed. The Career Choice indicators remain unchanged. Changes in the measurement model were based on
the reasoning that an inadequate measurement model might be confounding structural weaknesses in the models tested thus far, making it difficult to determine a direction for resolution of problems in those models. Although the elimination of indicators is risky (since, among other difficulties, it can lead to problems in parameter identification), it was thought that the potential resolution of measurement issues might help clarify the nature of structural weaknesses in the models of career choice being tested. Thus, it was hoped that Model 3 would, at the very least, indicate more clearly where problems with the samples and/or models might lie.

As can be seen in Tables 4 and 5, this model did not run in the UCSB sample at all. Several attempts were made to add or delete paths based on previously tested models, but these attempts met with no success.

In the OSU sample, an analysis of the model was obtained but severe problems were again encountered. Table 4 indicates a significant chi-square ($\chi^2 = 281.00$, df = 81), suggesting that this model is not plausible in the population. The Goodness-of-Fit Index (.887) indicates fairly poor fit, and the Root Mean Square Residual is very high (.090) supporting serious fit problems with this model. The Coefficient of Determination for the X-variables is quite high, but for the Y-variables is low, indicating measurement problems with the Y-variables; for the equations the Coefficient of Determination could not be computed
because of identification problems with parameters in this model. There also are nonsignificant paths in the model (indicated by low t-Values), two of them related to the Career Choice latent variable. There are two Modification Indices which exceed the acceptable limit (although not large enough to have much effect on the chi-square value if those paths are freed), and a number of Normalized Residuals which are high, suggesting relationships being poorly fit by this model. All attempts at modification met with failure, indicating a poor model overall.

When this model was tested using the combined sample, a pattern similar to previous model testing emerged. As can be seen in Table 4, the testing of Model 3 on the combined sample yielded a chi-square of 506.34 (df=81) indicating rejection of the null hypothesis that this model is plausible in the population. The Goodness-of-Fit Index suggests fairly good fit is evident, but the Root Mean Square Residual is still quite high (.088) indicating poor overall fit of this model. Detailed fit information presented in Table 5 suggests many problems. The Coefficient of Determination for the Y-variables is low (indicating possible measurement difficulties) and could not be computed at all for the structural equations, suggesting a weak structural pattern in this model. There are several nonsignificant t-Values (two of them related to the Career Orientation variable), suggesting that Career Orientation is poorly predicted in this model, and several Modification
Indices which exceed the acceptable values. Probably the most obvious indication of problems with Model 3 is the long list of high Normalized Residuals, indicating many relationships not being fit well in the current model. Again, modifications were attempted but analysis problems were encountered, suggesting that further examination of Model 3 was not possible. Thus, Model 3 was abandoned, and a fourth (and last) model of women's career choice was generated for testing, replacing several of the indicators which had been removed from Model 3.

**Model 4**

Based on fit information generated in the testing of Models 1, 2, and 3, a fourth model of women's career choice, represented in Figure 6, was generated. It retains Career Orientation and Career Choice as the dependent latent variables, but the independent latent variables and indicators again have been revised. As can be seen in Figure 6, the independent latent variable Ability is measured by High School GPA (added back into the model because fit information had been better with its inclusion) and the two achievement test (ACT/SAT Composite and Math) scores. The latent variable Agentic Characteristics has been restored, measured by Instrumentality, Math Self-Efficacy, and Career Decision-Making (also added back into the model since fit information for Model 3 suggested that its removal had decreased fit). Family Orientation and Feminist Orientation have been combined into the latent
Figure 6. Model 4/ Revised Model of Women's Career Choice
Figure 6 (Continued)

Key:

ABIL = Ability
HSG = High School GPA
COM = ACT/SAT Composite
ACH = Math Achievement

AGEN = Agentic Characteristics
MSE = Math Self-Efficacy
INS = Instrumentality
CDM = Career Decision Making

SEXR = Sex Role Orientation
ATF = Attitudes Toward Feminism
FEM = Use of Feminist Lable
AWR = Attitudes Toward Work Roles
AFR = Attitudes Toward Family Roles

CARO = Career Orientation
CAS = Career Salience
CIM = Career Importance
FFP = Future Family Priorities
RIM = Relative Importance of Family

CACH = Career Choice
TRD = Traditionality
PTG = Prestige
SCI = Science-Relatedness
variable Sex Role Attitudes, measured by the two indicators of feminist orientation used in Model 3 (Attitudes Toward Feminism and use of the Feminist Label) and two indicators of attitudes toward women's roles (Attitudes Toward Work Roles and Attitudes Toward Family Roles); since relationships among these variables had presented difficulties across all three previous model testings, it was thought that they might be tapping the same construct and that their combination into a single sex role variable might resolve both structural and measurement problems. The dependent latent variable Career Orientation is now measured by Career Salience and Career Importance, as well as by the variables Relative Family Importance and Future Family Priorities; it should be noted that this arrangement of indicators of Career Orientation returns to the concept of career and family variables as crucial in tapping women's attitudes toward careers. The dependent latent variable Career Choice again retains its original indicators. In structure, both dependent variables are predicted by the independent latent variables and by each other. It was hoped that Model 4 would resolve some of the problems of the previous models by ensuring that the strongest indicators were retained but reorganized into revised structural and measurement components, eliminating problems in nonsignificant paths, multiple loadings of indicators on latent variables (evidenced by many of the excessively high Modification Indices), and other difficulties encountered in
the testing of the first three models. Since Model 4 was the first model to test accurately in all three samples, and proved to be the most amenable to modification and re-testing, it is presented here in detail. First, fit information is presented for the testing of the combined sample, then each sample separately, to illustrate the way in which sample differences produced different final models having been generated from the same initial combined model.

**Combined Sample.** As Table 4 indicates, the testing of Model 4 on the combined sample produced a chi-square of 637.39 (df=111), indicating rejection of the null hypothesis that this model holds in the population. The Goodness-of-Fit Index (.897) approaches acceptable levels of fit, but the Root Mean Square Residual is quite high (.081) indicating possible fit problems; computation of the rho statistic (which should be in the .90’s) for Model 4 also supports this, as it is very low (.801). Detailed fit information presented in Table 5 suggests where some of the fit problems might lie. As Table 5 shows, the Coefficients of Determination for the Y-variables (.837) and the X-variables (.992) are good (especially for the X-variables) but the Coefficient of Determination for the structural equations is only moderate (.418), suggesting possible structural weaknesses. The Squared Multiple Correlation for Equation 2 (which predicts the dependent latent variable Career Choice) is low, suggesting that Career Choice is not being predicted well in the current model. In addition, the
path between Career Choice and Career Orientation is nonsignificant (t=.75) supporting the possibility of structural problems in this model, particularly regarding the prediction of the Career Choice variable. There are high Modification Indices for several indicators (Math Self-Efficacy, Instrumentality, and Attitudes Toward Work Roles) in relation to the latent variable Ability, indicating paths that should be freed and suggesting that other indicators might be loading on that latent variable. There also are many Normalized Residuals which are too high, suggesting pairs of variables being ill fit (many of them include the Math Self-Efficacy indicator and the indicators of Sex Role Attitudes (Attitudes Toward Work Roles and Attitudes Toward Family Roles), suggesting that those relationships in particular may be presenting problems.

Since the highest Modification Index (113.91) was for Math Self-Efficacy/Ability, the first modification of Model 4 was to free the path between those variables, allowing Math Self-Efficacy to load on the Ability variable as well as the Agentic Characteristics variable. This is theoretically justified in that academic ability may manifest itself within the context of an individual's belief in her capacity for academic success. This modification of Model 4 produced a significant chi-square ($\chi^2=508.85$, df=110) suggesting that this model is not plausible in the population (it should be recalled, however, that high power produced by large sample sizes often leads to rejection of a
model even when it is only "minimally false" and it is common for models to be statistically rejected even when other fit information indicates that they are adequate). The Goodness-of-Fit Index increased to .914, and the Root Mean Square Residual decreased to .064, indicating quite an improvement in overall fit. In terms of detailed fit information, the Coefficient of Determination for the structural equations increased to .432, and only one large Modification Index remained (Attitudes Toward Work Roles/Ability = 45.09), suggesting dramatic improvement in fit. The Squared Multiple Correlation for the indicator Future Family Priorities (FFP) was still quite low even after rearranging it in the measurement model, and it also had a low parameter value (-.514) suggesting that it might be a problem variable in an otherwise adequate model. The t-Value for the path between Ability and Agentic Characteristics was nonsignificant in this modification of Model 4, suggesting that allowing Math Self-Efficacy to load on the Ability variable had resolved some major structural and measurement problems. A few Normalized Residuals were still high, primarily for the relationship between science-relatedness (of career choice) and other variables.

The next modification of Model 4 was the elimination of the Future Family Priorities (FFP) indicator and the addition of a path between Attitudes Toward Work Roles and Ability, allowing the Attitudes Toward Work Roles indicator to load on the Ability variable as well as the Sex Role
Attitudes variable; this latter decision was based on the assumption that the extent to which a woman holds liberal ideas as to her right to assume legitimate work roles may strongly mediate the extent to which she demonstrates academic success. These modifications of Model 4 produced a significant chi-square ($\chi^2 = 425.19$, df=94), indicating statistical rejection of the model and suggesting that it does not hold in the population. The Goodness-of-Fit Index, however, increased again (to .925) and the Root Mean Square Residual decreased to a more acceptable level (.058), suggesting that again fit had been dramatically improved. Detailed fit information indicated slight increases in the Coefficients of Determination, and the path between Ability and Agentic Characteristics still nonsignificant ($t=-.236$). The only high Modification Index remaining was for Attitudes Toward Family Roles/Ability, suggesting that the indicator Attitudes Toward Family Roles also might load on the Ability variable. A few Normalized Residuals still fell in the 3.0 to 4.0 range, again primarily for the relationship of several variables to the indicator variable Science-Relatedness of career choice.

The third modification of Model 4 included the elimination of the path between the latent variables Ability and Agentic Characteristics (no longer necessary now that factor loadings had been adjusted) and the addition of the path between Attitudes Toward Family Roles and Ability, allowing the Attitudes Toward Family Roles indicator to load
on the Ability variable as well as the Sex Role Attitudes variable; underlying the latter change was the assumption (supported in previous research) that less liberal attitudes toward her role in the family probably mediate the extent to which a woman feels free to engage herself successfully in academic pursuits (which presumably lead to achievement related goals). These modifications produced a chi-square of 406.82 (df=94), suggesting the implausibility of this model in the population. The Goodness-of-Fit Index, however, has increased to .927 and the Root Mean Square Residual has decreased to .056, indicating very good fit overall. Unfortunately, detailed fit information indicated a decrease in the Coefficient of Determination for the Equations (to .409), suggesting slightly poorer structural fit than before the modifications. There were no large Modification Indices (indicating that all relevant paths had been included in the model); several Normalized Residuals remained a bit high (especially for the relationships between the Science-Relatedness indicator and other variables), suggesting fit problems were still unresolved. In addition, the Career Orientation/Career Choice path was nonsignificant (t=.562), suggesting that the causal path from Career Choice to Career Orientation should be eliminated from Model 4.

The last modification of Model 4 involved a specification search to locate large Modification Indices in the theta matrices (which contain error terms for the
measured variables), since systematic measurement error often will reveal itself in those matrices. This search did locate a very large Modification Index (122.93) for the path between the error term covariances for the Attitudes Toward Feminism and Feminist Label variables, indicating that the error terms for those variables should be allowed to covary and suggesting that some sort of systematic measurement bias affecting those two variables had occurred. As this seemed entirely plausible given the emotionally-laden connotation of the term "feminist" to many people and the fact that these questions were asked directly and without attempts at masking content, the path between these error terms was freed and the error terms were allowed to covary. This final modification yielded the final model and the fit information shown in Tables 4 and 5. As can be seen in Table 4, the chi-square value is 290.39 (df=93), suggesting that this model is not plausible in the population. The Goodness-of-Fit Index (.947), however, indicates excellent fit, as does the rho-statistic of .911. The Root Mean Square Residual has dropped to .052, supporting the overall good fit of this model to the combined sample data. The detailed fit information presented in Table 5 suggests that this model is not without flaws, however. The Coefficient of Determination for the structural equations is improved but not very high (.44), and the very low Squared Multiple Correlation for the second equation (.19) suggests that the latent variable Career Choice is still not being very
accurately predicted in this model. That there are problems with the Career Choice variable is supported by low Squared Multiple Correlations for two of its indicators (Prestige = .194, Science-Relatedness = .161), several high Normalized Residuals (including relationships of other variables to the Traditionality and Science-Relatedness indicator variables), and the nonsignificant (t=.262) path from Career Orientation to Career Choice. However, since overall fit was good and other changes did not seem theoretically or statistically justified, no further modifications of this model were made, and it is presented in Figure 7 as the most plausible of the models tested on the combined sample. Next, efforts were made to test Model 4 on the two samples separately; it should be noted that the testing of the separate samples was undertaken on the model represented in Figure 6 without the Future Family Priorities (FFP) variable, which had been eliminated from the model as psychometrically inadequate based on the combined sample testing.

**UCSB Sample.** Model 4 (presented in Figure 6 but without the FFP variable) tested on the UCSB sample produced the fit information available in Tables 4 and 5. As can be seen in Table 4, the chi-square value is 298.08 (df=96), indicating that this model is not plausible in the population. The Goodness-of-Fit Index (.903) is reasonably high, but the rho-statistic is quite low (.812) and the Root Mean Square Residual too high (.070), suggesting that this model does not represent very good fit overall. The
Figure 7. Final Model of Women's Career Choice/Combined Sample
Key:

**ABIL** = Ability
  **HSG** = High School GPA
  **COM** = ACT/SAT Composite
  **ACH** = Math Achievement

**AGEN** = Agentic Characteristics
  **MSE** = Math Self-Efficacy
  **INS** = Instrumentality
  **CDM** = Career Decision Making

**SEXR** = Sex Role Orientation
  **ATF** = Attitudes Toward Feminism
  **FEM** = Use of Feminist Label
  **AWR** = Attitudes Toward Work Roles
  **AFR** = Attitudes Toward Family Roles

**CARO** = Career Orientation
  **CAS** = Career Salience
  **CIM** = Career Importance
  **RIM** = Relative Importance of Family

**CACH** = Career Choice
  **TRD** = Traditionality
  **PTG** = Prestige
  **SCI** = Science-Relatedness
detailed fit information presented in Table 5 suggests where problems might lie. The Coefficient of Determination for the Y-variables is not exceptional (.846) and very low for the structural equations (.275), suggesting structural problems with the model (supported by the very low Squared Multiple Correlation of -.038 for Equation 2, suggesting that Career Choice is being very poorly predicted in this model). There is a large Modification Index (34.21) for Math Self-Efficacy/Ability and several high Normalized Residuals involving relationships of other variables to the Math Self-Efficacy variable, suggesting that Math Self-Efficacy might be fit poorly by this model. There also are several nonsignificant t-Values related to Ability or Career Choice, indicating paths related to these variables that should be removed from the model and supporting fit data suggesting structural problems with Model 4.

The first modification of Model 4 on the UCSB sample involved the elimination of the path between Ability and Agentic Characteristics (based on the low t-value of -.24) and the addition of the path between Math Self-Efficacy and Ability (based on the Modification Index of 34.21), allowing the Math Self-Efficacy indicator to load on the Ability variable, consistent with reasoning already presented in the previous section. This modification produced a chi-square 258.93 (df=96), suggesting that this model is not plausible in the population. The Goodness-of-Fit Index, however, has increased to .914 and the Root Mean Square Residual
decreased to .06, suggesting much improvement in overall fit. Detailed fit information indicates that the Coefficient of Determination for the structural equations has increased a bit (to .285) and only one slightly high Modification Index (ACT/SAT Composite/Sex Role Attitudes) remains. The $t$-Values indicate that the path between Career Choice and Career Orientation in nonsignificant ($t=-.539$) as well as the path between Ability and Career Choice ($t=.132$); the Normalized Residuals, however, are all within an acceptable range, indicating that relationships are generally being fit well in this model.

The next modification of Model 4 was to free the path between ACT/SAT Composite and Sex Role Attitudes, allowing the SAT/ACT Composite indicator to load on the Sex Role Attitudes variable as well as the Ability variable. The reasoning for this change (consistent with research literature) is based on the assumption that academic achievement is mediated strongly by sex role attitudes, making it entirely plausible that some proportion of variance in an achievement measure might be accounted for by an underlying sex role construct. This change yielded a chi-square of 248.76 (df=95), suggesting that this model does not hold in the population. The Goodness-of-Fit Index, however, has increased (.917) and the Root Mean Square Residual has decreased (.057), indicating further improvement as a result of these changes. The Coefficient of Determination for the structural equations has decreased
again, however (.278), and the \( t \)-Values still suggest the nonsignificance of the paths between Career Orientation/Career Choice and Ability/Career Choice, suggesting structural problems related to the Career Choice variable. The Normalized Residuals are all within acceptable ranges, indicating that overall, relationships are being well fit in this model, but it seems apparent from other fit information that structural problems remain unresolved.

The next modification of Model 4 consisted of the elimination of the path from Career Choice to Career Orientation, implying a one-way causal direction only. This increased the Coefficient of Determination of the structural equations to .346, indicating structural improvement in particular as a result of this change (overall fit information remained the same). In addition, consistent with the testing of Model 4 on the combined sample, the model was run with a specification search for unusually high Modification Indices in the theta matrices, which might reveal systematic measurement bias interfering with the fit of an otherwise adequate model.

Not surprisingly, a large Modification Index was found for Attitudes Toward Feminism and Feminist Label indicator variables (61.35), indicating the need for freeing a path between the error terms for those variables and allowing them to covary; consistent with the reasoning already presented, that path was freed in Model 4. This change
produced the final model to fit the UCSB sample and the fit information in Tables 4 and 5. As can be seen in Table 4, the chi-square value is 192.66 (df=95) indicating statistical rejection of this model in the population. However, the Goodness-of-Fit Index is high (.937) and the rho-statistic is also acceptable (.908); the Root Mean Square Residual has also dropped to .053, indicating good fit of this model overall. The detailed fit information presented in Table 5, however, suggests that structural problems are still present, demonstrated by the unexceptional Coefficient of Determination for the structural equations (.367), the very low Squared Multiple Correlation for the equation predicting Career Choice (.06), and the nonsignificant path between Ability and Career Choice. Since remaining structural weaknesses seemed unresolvable in this particular model, further changes did not appear to be theoretically or statistically tenable, and this model (represented in Figure 8) is presented as the model achieving best fit to the UCSB sample data.

**OSU Sample.** Like the initial test of Model 4 in the UCSB sample, the testing of Model 4 in the OSU sample was a test of the model represented in Figure 6 without the Future Family Priorities (FFP) variable. Initial testing produced the fit information summarized in Tables 4 and 5. As can be seen in Table 4, the chi-square value is 381.43 (df=96), suggesting that this model is not plausible in the population. This is supported by a poor Goodness-of-Fit
Figure 8. Final Model of Women's Career Choice/ UCSB Sample
Figure 8 (Continued)

Key: See Figure 7
Index (.869) and rho-statistic (.763), as well as a Root Mean Square Residual which is far too high (.091). Detailed fit information summarized in Table 5 indicates some structural difficulties. The Squared Multiple Correlation for Equation 2 (predicting Career Choice) is low (.241), although the Coefficients of Determination are all within acceptable ranges. In addition, there are several Modification Indices which are a bit high, and the path between Career Choice and Career Orientation is nonsignificant ($t=-.067$) suggesting that the Career Choice variable presents problems in this model. There also are several Normalized Residuals which are higher than they should be, especially involving the ACT/SAT Math Achievement variable and the indicators of Sex Role Attitudes (Attitudes Toward Family Roles, Attitudes Toward Work Roles, Attitudes Toward Feminism, and Feminist Label), suggesting these relationships are being ill-fit in the current model.

The first modification of Model 4 using the OSU sample data was the addition of the path between Math Self-Efficacy and Ability, allowing the Math Self-Efficacy variable to load on the Ability variable, consistent with reasoning already presented in this discussion. This change produced and improvement in overall fit; the chi-square value is 327.08 (df=95), suggesting that this model does not hold in the population, but the Goodness-of-Fit Index has increased (.885) and the Root Mean Square Residual has decreased (.077), suggesting improved fit overall. Detailed fit
information indicates, however, that structural fit has decreased (.585) and there are still two high Modification Indices (Attitudes Toward Work Roles/Ability = 26.63 and ACT/SAT Math Achievement/Sex Role Attitudes = 16.56), suggesting the need for additional paths in the model. The t-Values indicate nonsignificant paths between Career Choice/ Career Orientation and Agentic Characteristics/Ability, while the Normalized Residuals indicate several values still a bit high, suggesting relationships still being poorly fit by this model.

The next modification of Model 4 was the addition of the path between Attitudes Toward Work Roles and Ability, allowing the Attitudes Toward Work Roles Indicator to load on the Ability variable as well as the Sex Role Attitudes variable, consistent with reasoning already explained. This change again produced an increase in the Goodness-of-Fit Index (.894) and a decrease in the Root Mean Square Residual (.075), suggesting improvement in overall fit. The Coefficient of Determination for the structural equations also increased slightly (.573), suggesting a slight improvement in the structural model, and only one slightly high Modification Index remained (ACT/SAT Math Achievement/ Sex Role Attitudes). The t-Values still indicated nonsignificant paths between Career Choice/Career Orientation and Ability/Agentic Characteristics, and only three Normalized Residuals remained slightly higher than acceptable range, suggesting that, overall, this model
represented reasonably good fit to the OSU sample data.

The next modification of Model 4 involved the elimination of the path from Career Choice to Career Orientation and between Ability/Agentic Characteristics (based on low $t$-Values), as well as a search for high Modification Indices in the theta matrices indicating error term covariances that should be freed. This search located a very high Modification Index (77.29) for the error terms involving the Attitudes Toward Feminism and Feminist Label indicator variables, suggesting that these error terms should be allowed to covary. Using justification previously noted, this path was added to the model. These changes produced the final model for the OSU sample (presented in Figure 9), whose fit information is available in Tables 4 and 5. As can be seen in Table 4, the chi-square value is 204.19 (df=94), indicating statistical rejection of this model in the population. The Goodness-of-Fit index and rho-statistic, however, indicate excellent fit (.926 and .906, respectively) and the Root Mean Square Residual has decreased, although it is still a bit higher than ideal (.082). Detailed fit information presented in Table 5 indicates good fit overall; all paths in the model appear to be significant, and there is only one slightly high Modification Index, suggesting that all salient paths have been included. The Coefficients of Determination are quite adequate, and excessively high Normalized Residuals have been almost entirely eliminated. Since further modification
Figure 9. Final Model of Women's Career Choice/OSU Sample
Figure 9 (Continued)

Key: See Figure 7
of this model did not seem theoretically or statistically justified, it is presented as the model achieving best fit to the OSU sample data.
CHAPTER V

DISCUSSION

Summary of Findings

The present study was designed to test a model of career choice in two samples of college women. In the model, it was hypothesized that the four independent variables Ability, Agentic Characteristics, Feminist Orientation, and Family Orientation predict the three dependent variables Career Orientation, Mathematics Orientation, and Career Choice; Career Choice was also hypothesized to be predicted by the other two dependent variables. In order to test this model, a measurement component consisting of 2-4 indicators for each variable was developed, and the full model was tested using the LISREL VI computer program (Joreskog & Sorbom, 1984). Because the proposed model was not corroborated in data analysis, several revised models were tested; testing was undertaken on both samples separately as well as a combined sample. Four models were tested in all, representing varying arrangements of both the structural and measurement
components of the initial model. Based on fit information generated in each step of data analysis, a final model fitting each sample was accepted as the most plausible given those sample data.

In the final model achieving best fit to all three sample data sets (represented in Figures 7, 8, and 9), three independent latent variables were hypothesized: 1) Ability, measured by High School GPA, ACT/SAT Composite scores, ACT/SAT Math Achievement scores, and Math Self-Efficacy; 2) Agentic Characteristics, measured by Math Self-Efficacy, Instrumentality, and Career Decision-Making; and 3) Sex Role Attitudes, measured by Attitudes Toward Work Roles, Attitudes Toward Family Roles, Attitudes Toward Feminism, and preference for the Feminist Label. These independent variables were hypothesized to predict two dependent latent variables: 1) Career Orientation, measured by Career Salience, Career Importance, and Relative Importance of Career and Family; and 2) Career Choice, measured by occupational Traditionality, Prestige, and Science-Relatedness. The variable Career Choice was also hypothesized to be predicted by the dependent variable Career Orientation, and the independent variables Agentic Characteristics and Sex Role Attitudes were hypothesized to be correlated. Additionally, the error terms for the variables Attitudes Toward Feminism and preference for the Feminist Label were allowed to covary due to systematic
measurement error related to those variables. In the model fitting the combined sample data, Ability was also measured by Attitudes Toward Work Roles and Attitudes Toward Family Roles, and Career Orientation was also affected by Career Choice. In the final model fitting the Ohio State University (OSU) data, Ability was also measured by Attitudes Toward Work Roles, whereas in the final model fitting the University of California/Santa Barbara (UCSB) data, Sex Role Attitudes also was measured by ACT/SAT Composite score.

The final model, then, suggests generally that women's career choices are determined in part by the nature of their career orientation, both of which are determined, in turn, by a combination of ability, agentic personality characteristics, and sex role attitudes. More specifically, high ability (manifested by achievement-related variables), liberal sex role attitudes (related to both work and family roles), and instrumental personality tendencies (including the confidence to make decisions and engage in mathematics tasks) appear to predict high levels of career orientation and a tendency toward career choices which are science-related, high in prestige, and non-traditional for women. Results also suggest strong support for the postulated "new cultural imperative" (Rand & Miller, 1972) for women to combine career and family roles in their adult lives; in both samples tested in this study, the large majority of
women planned to be married career women with children within 15 years, and expected to derive the most satisfaction from family and career pursuits respectively.

In addition, the measurement component of the final model in all three sample data sets suggests a great deal of overlap between ability and sex role variables, as well as the mediational influence of family orientation variables in sex role attitudes and career orientation. This strong overlap among variables may imply a complexity of integration among them which cannot be captured in a linear cause-and-effect model such as the one tested in this study, perhaps due (in part) to the incapacity of such a model to accommodate anomalies. For example, even though the model predicts that more liberal attitudes toward family roles will lead to greater career orientation and less traditional career choice, it fails to account for the strong career orientation of a woman who is an extremely dedicated, work-oriented teacher or nurse (traditional occupation), or a female physician or attorney (nontraditional occupation) whose priorities rest clearly with husband and family. Osipow (1983) notes the difficulty of describing all possible combinations of variables influencing women's career development, and suggests the need for more sophisticated research designs; it may be that even the complexity of the present methodology fails to capture this complicated process.
The mediational influence of family on women's career development also remains unclear and the measurement components of the accepted models in this study are not particularly informative in this regard. The loss of the Future Family Priorities variable in the final model(s) suggests difficulty in determining the effect of this kind of variable on career orientation and choice. Some research (e.g., Stewart, 1980) has suggested that marital and motherhood status moderate effects of other variables (such as self-concept) on women's career development by imposing constraints within which women behave; given those broad limitations, individual variables account for specific behaviors of particular women. If there is merit in Stewart's (1980) argument, it may be that efforts at model-testing must begin with the categorization of women into broad marital/familial categories and then test causal sequences involving individual variables within that framework.

The overlap among variables in the final model also points to difficulty in determining the effect of math-related variables on women's career choice. It may be, as Sherman (1983) concludes, that a complex web of sex role influences makes math and math-related careers seem incongruent with the female role (particularly the responsibilities of motherhood in competition with demanding careers). Sherman states: "When girls see that motherhood
and demanding careers can be combined, a major source of resistance to mathematics will disappear. Research and action to reduce the perceived and real conflict between demanding careers and motherhood is of crucial importance" (p. 342). The overlap between math and sex role variables in the present study may provide support for Sherman's basic argument concerning the integration of mathematics and family considerations in women's lives, but does not offer direction for resolving the causal questions raised by a linear model such as the one tested in this study.

**Issues and Problems**

Although the overall fit of the final models to their respective sample data was quite good according to LISREL analysis information, the models are not without obvious flaws. In all three models, there are problems with the Career Choice variables; Career Orientation is consistently predicted fairly well by the other variables, but Career Choice is not as thoroughly accounted for by the other variables in the model. This may be due, in part, to difficulty with the measure of science-relatedness of career choice and its imperfect relationship with traditionality and prestige of career choice (see Chapter 2). Especially in the OSU sample, a large number of subjects are apparently planning science-related careers, but many are careers in traditionally-female fields (such as nursing or dental hygiene), and may be chosen by women who expect to lead a
somewhat traditional lifestyle in terms of work and family roles. This overall pattern may interfere with the predictive capacity of the hypothesized model since it would tend to cancel out covariances involving this variable. In fact, removing the science-relatedness variable from the model was considered, but fit information did not seem consistent enough to warrant doing so. If sample sizes had been larger, one solution to this problem would have been to group subjects according to the science-relatedness of career choice and then analyze the causal sequences of the other variables within that categorization.

A second problem in the present study involves the difficulty in determining the differential predictive influence of sex roles and ability, since (based on multiple factor loadings and other fit information), they appear to be quite confounded by one another. While it makes intuitive and empirical sense that sex role attitudes mediate and are mediated by ability levels, the results of this study do not offer much direction for sorting out competing hypotheses. The UCSB sample in this study is especially difficult in this regard. The UCSB final model is not structurally very strong, and fit information suggests that the path from Ability to Career Choice is not necessary; however, if true, the implication is that the latent variable Ability is unnecessary in the model, since the path to Career Choice is its only structural path in the
current model! This possibility contradicts large bodies of research which have consistently found ability to be a strong predictor of career behavior. It may be that, beyond a necessary minimum, the ability variable loses its discriminative capacity in a sample consisting of homogeneous, academically successful women. Certainly, the OSU sample seems to incorporate the ability variable more successfully (probably due to greater variability in this sample), but it too is confounded by sex role attitudes. Given similar ability levels, sex role attitudes may become salient in determining career planning and choices, but when ability levels vary, ability itself may become the primary determinent of career choice. Alternatively, it may be that the capacity for academic success (and presumably achievement-related goals) fosters the development of sex role attitudes which will be congruent with the exercise of that capacity for achievement.

A third unresolved difficulty of this study (previously mentioned) is the uncertain position of family orientation variables relative to sex role attitudes and career orientation and choice. Certainly, previous literature (and the study which preceded the present effort, Fassinger, 1985) postulates family orientation and lifestyle plans to be one of the most important predictors in a woman's career orientation and plans (Betz & Fitzgerald, 1987). However, if the societal trend toward combining career and family
roles continues, family orientation may become increasingly inadequate as a predictor of women's career choices because married career women (with or without children) may increasingly characterize the majority of women in society. In that case, measures which tap only the most non-traditional women may become more salient in predicting career choice; certainly, the importance of the Attitudes Toward Feminism measure in this study points to the increasing liberalization of sex role ideology and the need for re-definition of "traditional" and "non-traditional" roles.

In regard to the family/career orientation issue and re-definition of roles, it would seem important in research efforts to carefully distinguish between labor force participation and career achievement when discussing social trends and women's career behavior. For example, the documented relationship between marital/familial status and labor force participation has been weakening as we have witnessed tremendous increases in participation among women in all marital/parental categories (see U.S. Department of Labor, 1984). However, simple increases in labor force participation do not address the nature of that participation or the extent to which family responsibilities remain a priority for many women despite daily work outside the home. Examination of some of the measures in the present study lend support to these concerns; in several of
the measures, subjects responded with clear affirmation of the importance of career or family when asked as separate phenomena, but when asked about their salience relative to each other, responses were less consistent and clear. This suggests that, despite the plans of many women to combine career and family roles, they may be uncertain as to how that integration might occur and how their own priorities will be determined.

Relevant to the issue of priorities in family and career and the integration of these considerations in women's lives may be the work of Gilligan (1977, 1982) and Belenky et al. (1986). Both works explore the ways in which women think, reason, come to know things, and make decisions in their lives. The conclusions of these authors rest on the argument that women may tend to define themselves within the context of a sense of connection and relatedness to others, while men may tend to define themselves more in terms of separation and autonomy (the authors concede that these differences may not be related to gender per se, but to patterns of socialization among males and females in our society). These differences in self-definition (according to the authors) lead to different styles in approaching problems and decisions, with women tending toward more holistic and integrative approaches rather than the sequential, deductive, hierarchical approach favored by men. Thus, in making career decisions for
example, women may demonstrate a greater tendency to incorporate their responsibilities to others into their decisions, and may find it difficult or irrelevant to think in terms of hierarchically-determined priorities or issues of separation/autonomy. If so, a linear model such as the one tested in the present study may not adequately tap women's experience and may be unable to empirically capture women's decisional style.

A fourth issue to consider in evaluating the present research effort (already raised in several other contexts) is the methodological difficulty of the structural equation modeling techniques and the problem in balancing statistical demands with theoretical and empirical goals. As postulated in the previous structural equation modeling study of women's career choice (Fassinger, 1985), it may be that the final models "fit" their respective sample data simply because they were smaller, less complex models, more appropriate for possibly-inadequate sample sizes, and allowing for greater statistical ease in estimating model parameters. In order to be able to generalize to the populations from which these samples were drawn, it is necessary to retest the final models on new samples from those populations to determine whether fit information remains the same or suggests different patterns of relationships among variables. It also may be ultimately impossible to completely incorporate the complexity of the
career choice process in a statistical model, no matter how elaborate. The theoretical need to be heuristically inclusive and the statistical need to be somewhat parsimonious simply may be unresolvable by our present methodologies, no matter how sophisticated.

Implications and Conclusion

The present study represents an effort in the research on women's career development to integrate a large, fragmented body of research and find patterns and relationships within it. It also successfully applies a methodology which has been used relatively infrequently in the behavioral sciences. As such, the study has important theoretical, empirical, and practical implications.

As was discussed in Chapter 2, previous theory and research in the area of women's career development have focused largely on the career versus family orientation distinction, and research has examined such variables as career salience in an attempt to distinguish career-oriented from home-oriented women. The apparent preference of both of these samples, however, for both career and family lifestyle plans may warrant a different investigative focus of career/family dimensions in future research. Concepts such as career salience and family orientation may eventually prove to be inadequate discriminative variables in research because they may increasingly characterize most women in the population. This trend, if accurately
predicted, suggests the need for increased attention to the nature of career choices, rather than simply focusing on the importance of having a career at all. It would seem necessary to examine more carefully the kinds of career choices women are making (not just in terms of traditionality, prestige, and other measures which broadly categorize career choices) but in terms of realism (given individual interests and abilities), congruence with personal values, and other related variables.

It also may become increasingly important to explore the attitudes of women's male partners (where present) in understanding their career behavior. While one study (Zuckerman, 1980) indicates that many women may not view marriage and children as deterrents to strong career orientation and non-traditional careers, the realities of multiple role overload, mobility issues common to dual-career couples, the documented tendency of young men to prefer more traditional marriages, and other difficulties suggest that balancing home and career pursuits is no easy matter. Thus, in examining women's career behavior, it may be important to explore the extent to which a woman's partner facilitates or blocks career orientation and attainment. It also seems important to begin a more thorough exploration of the career choice process in non-college populations to determine whether the large body of literature on women's career development taps the experience
of non-college educated women. The lack of research literature concerning the career development of ethnic minority women also suggests a need for extensive work in this area as well.

The present study also underscores the importance of additional psychometric work in the area of women's career development. The lack of availability of valid and reliable measures of many of the constructs which have been found to be important in women's career development presents difficulties for any investigator undertaking research in this area. The present study also suggests the utility of the structural equation modeling techniques in investigating behavioral science phenomena. The successful application of this methodology in investigating women's career choice demonstrates its capacity to contribute to our understanding in this area.

From a more applied perspective, this study suggests that educational and counseling practices in the future may need to address women's issues in a different manner from the practices of the past. The tremendous trend toward career and family orientation suggests the need for attention to problems such as multiple role overload and the "Superwoman Syndrome" common to many working women, coping with childcare responsibilities and lack of childcare facilities, changing marital roles and dual-career issues, discrimination and sexual harassment in the workplace, and
the need to provide interventions which recognize a woman's career as an integral part of her adult identity. Vocational counselors and educators in particular may need to examine their own assumptions about the role of career pursuits in women's lives and adjust their interventions accordingly.

In summary, the present study of women's career choice makes an important contribution to the research literature on women's career development. Although the study requires replication and refinement, suggesting that its findings should be interpreted cautiously, it represents a significant attempt toward integration of a large body of research literature and provides a comprehensive exploratory study of the relationships among variables found to be predictive in women's career choice. As such, it contributes to the advancement of our theoretical understanding of the process of career development in women.
FOOTNOTES

1 It should be noted that some of the observations of women's career development in relation to that of men (such as income disparity, concentration in low-pay, low-status occupations, etc.) may be true for some groups of men as well (e.g., ethnic minorities, disabled men, etc.). The career development of special groups of both men and women has received little research attention, and this should be taken into consideration in any discussion of "career development," whether that of men or women.

2 The rho-statistic ($\rho$) is computed according to the following formula:

$$\rho = Q_0 - Q_\lambda / Q_0 - 1$$

where

$$Q_0 = \chi^2 / df_0, \quad Q_\lambda = \chi^2 / df_\lambda$$
LIST OF REFERENCES


Eyde, L. (1962). Work values and background factors as predictors of women's desire to work. (Research Monograph, No. 108.) Columbus, OH: Bureau of Business Research, The Ohio State University.


Appendix A

Structural and Measurement Equations for Proposed Model of Women's Career Choice

**Structural Equations**

1) \( \text{CARO} = \gamma_2(\text{ABIL}) + \gamma_4(\text{AGEN}) + \gamma_6(\text{FEMO}) + \gamma_7(\text{FAMO}) + \epsilon_1 \)

2) \( \text{MATH} = \gamma_3(\text{ABIL}) + \gamma_5(\text{AGEN}) + \epsilon_2 \)

3) \( \text{CACH} + \gamma_1(\text{ABIL}) + \gamma_8(\text{FAMO}) + \beta_1(\text{CARO}) + \beta_2(\text{MATH}) + \epsilon_3 \)

**Measurement Equations**

1) \( \text{HSG} = \lambda_1(\text{ABIL}) + \delta_1 \)

2) \( \text{COM} = \lambda_2(\text{ABIL}) + \delta_2 \)

3) \( \text{INS} = \lambda_3(\text{AGEN}) + \delta_3 \)

4) \( \text{CDM} = \lambda_4(\text{AGEN}) + \delta_4 \)

5) \( \text{ATF} = \lambda_5(\text{FEMO}) + \delta_5 \)

6) \( \text{FEM} = \lambda_6(\text{FEMO}) + \delta_6 \)

7) \( \text{TMS} = \lambda_7(\text{FEMO}) + \delta_7 \)

8) \( \text{AFR} = \lambda_8(\text{FAMO}) + \delta_8 \)

9) \( \text{FFP} = \lambda_9(\text{FAMO}) + \delta_9 \)

10) \( \text{IMP} = \lambda_{10}(\text{FAMO}) + \delta_{10} \)

11) \( \text{RIM} = \lambda_{11}(\text{FAMO}) + \delta_{11} \)

12) \( \text{CAS} = 1(\text{CARO}) + \epsilon_1 \)

13) \( \text{AWR} = \lambda_4(\text{CARO}) + \epsilon_2 \)

14) \( \text{CAP} = \lambda_4(\text{CARO}) + \epsilon_3 \)

15) \( \text{CIM} = \lambda_4(\text{CARO}) + \epsilon_4 \)

16) \( \text{HSM} = 1(\text{MATH}) + \epsilon_5 \)

17) \( \text{MSE} = \lambda_5(\text{MATH}) + \epsilon_6 \)

18) \( \text{ACH} = \lambda_5(\text{MATH}) + \epsilon_7 \)

19) \( \text{TRD} = 1(\text{CACH}) + \epsilon_8 \)

20) \( \text{PTG} = \lambda_5(\text{CACH}) + \epsilon_9 \)

21) \( \text{SCI} = \lambda_5(\text{CACH}) + \epsilon_{10} \)
Appendix B

Personal Data Form

Social Security # ________________  Age ______

Date entered USC: _______ Quarter _______ Year

Present class status ______________

Ethnicity: _____ Asian American _____ Black _____ Caucasian
          _____ Hispanic  _____ Native American  _____ Other

Have you chosen a major?  ____ Yes  ____ No

If YES, which major have you chosen?

________________________________________________________________________

If NO, please indicate the major(s) you are currently seriously considering:

________________________________________________________________________
________________________________________________________________________

Please indicate the occupation(s) you are currently planning or considering:

________________________________________________________________________
________________________________________________________________________

High School GPA ______

Number of years of high school mathematics ________

________________________________________________________________________  Do not write in space below

COM ______

ACH ______

TRD ______

PTG ______

SCI ______
# Appendix C

## SAT/ACT Score Equivalency Table

<table>
<thead>
<tr>
<th>ACT Composite</th>
<th>SAT Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>35</td>
<td>1600</td>
</tr>
<tr>
<td>34</td>
<td>1540</td>
</tr>
<tr>
<td>33</td>
<td>1480</td>
</tr>
<tr>
<td>32</td>
<td>1410</td>
</tr>
<tr>
<td>31</td>
<td>1360</td>
</tr>
<tr>
<td>30</td>
<td>1310</td>
</tr>
<tr>
<td>29</td>
<td>1260</td>
</tr>
<tr>
<td>28</td>
<td>1220</td>
</tr>
<tr>
<td>27</td>
<td>1170</td>
</tr>
<tr>
<td>26</td>
<td>1120</td>
</tr>
<tr>
<td>25</td>
<td>1070</td>
</tr>
<tr>
<td>24</td>
<td>1030</td>
</tr>
<tr>
<td>23</td>
<td>990</td>
</tr>
<tr>
<td>22</td>
<td>970</td>
</tr>
<tr>
<td>21</td>
<td>930</td>
</tr>
<tr>
<td>20</td>
<td>900</td>
</tr>
<tr>
<td>19</td>
<td>880</td>
</tr>
<tr>
<td>18</td>
<td>840</td>
</tr>
<tr>
<td>17</td>
<td>810</td>
</tr>
<tr>
<td>16</td>
<td>780</td>
</tr>
<tr>
<td>15</td>
<td>760</td>
</tr>
<tr>
<td>14</td>
<td>730</td>
</tr>
<tr>
<td>13</td>
<td>690</td>
</tr>
<tr>
<td>12</td>
<td>670</td>
</tr>
<tr>
<td>11</td>
<td>640</td>
</tr>
<tr>
<td>10</td>
<td>620</td>
</tr>
<tr>
<td>9</td>
<td>590</td>
</tr>
<tr>
<td>8</td>
<td>540</td>
</tr>
<tr>
<td>7</td>
<td>490</td>
</tr>
<tr>
<td>6</td>
<td>450</td>
</tr>
<tr>
<td>5</td>
<td>400</td>
</tr>
</tbody>
</table>

*ACT is scored in intervals of 1 point, from a minimum of 1 to a maximum of 35.*

*SAT is scored in intervals of 10 points, from a minimum of 400 to a maximum of 1600.*
### Appendix D

**Personality Characteristics Questionnaire**

Listed below are a number of personality characteristics. For each characteristic, place a number from 1 to 7 in the box to the right, indicating how true of you that particular characteristic is. The scale is as follows:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never or almost never true</td>
<td>Usually not true</td>
<td>Sometimes but infrequently true</td>
<td>Occasionally true</td>
<td>Often true</td>
<td>Usually true</td>
<td>Always or almost always true</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Defend my own beliefs</th>
<th>Adaptable</th>
<th>Flatterable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affectionate</td>
<td>Dominant</td>
<td>Theatrical</td>
</tr>
<tr>
<td>Conscientious</td>
<td>Tender</td>
<td>Self-sufficient</td>
</tr>
<tr>
<td>Independent</td>
<td>Conceited</td>
<td>Loyal</td>
</tr>
<tr>
<td>Sympathetic</td>
<td>Willing to take a stand</td>
<td>Happy</td>
</tr>
<tr>
<td>Moody</td>
<td>Love children</td>
<td>Individualistic</td>
</tr>
<tr>
<td>Assertive</td>
<td>Tactful</td>
<td>Soft-spoken</td>
</tr>
<tr>
<td>Sensitive to needs of others</td>
<td>Aggressive</td>
<td>Unpredictable</td>
</tr>
<tr>
<td>Reliable</td>
<td>Gentle</td>
<td>Masculine</td>
</tr>
<tr>
<td>Strong personality</td>
<td>Conventional</td>
<td>Guileble</td>
</tr>
<tr>
<td>Understanding</td>
<td>Self-reliant</td>
<td>Solemn</td>
</tr>
<tr>
<td>Jealous</td>
<td>Yielding</td>
<td>Competitive</td>
</tr>
<tr>
<td>Forceful</td>
<td>Helpful</td>
<td>Childlike</td>
</tr>
<tr>
<td>Compassionate</td>
<td>Athletic</td>
<td>Likable</td>
</tr>
<tr>
<td>Truthful</td>
<td>Cheerful</td>
<td>Ambitious</td>
</tr>
<tr>
<td>Have leadership abilities</td>
<td>Unsystematic</td>
<td>Do not use harsh language</td>
</tr>
<tr>
<td>Eager to soothe hurt feelings</td>
<td>analytical</td>
<td>Sincere</td>
</tr>
<tr>
<td>Secretive</td>
<td>Shy</td>
<td>Act as a leader</td>
</tr>
<tr>
<td>Willing to take risks</td>
<td>Inefficient</td>
<td>Feminine</td>
</tr>
<tr>
<td>Warm</td>
<td>Make decisions easily</td>
<td>Friendly</td>
</tr>
</tbody>
</table>
Appendix E

Career Decision Questionnaire

For each career decision task listed below, circle the number that indicates the degree of confidence you have that you could complete that task. For all questions, the rating scale is as follows:

0 = No confidence at all
1 = Very little confidence
2 = Some confidence
3 = Much confidence
4 = Complete confidence

1. Make a plan of your goals for the next five years.
2. Prepare a good resume.
3. Change occupations if you are not satisfied with the one you enter.
4. Accurately assess your abilities.
5. Determine the steps to take if you are having academic trouble with an aspect of your chosen major.
6. Choose a career in which most workers are members of the opposite sex.
7. Identify some reasonable major or career alternatives if you are unable to get your first choice.
8. Determine what your ideal job would be.
9. Describe the job duties of the career/occupation you would like to pursue.
10. Successfully manage the job interview process.
11. Select one major from a list of potential majors you are considering.
12. Find information in the library about occupations you are interested in.
13. Find out about employment trends for an occupation in the 1980's.
Appendix E (cont'd.)

14. List several majors that you are interested in.  0 1 2 3 4
15. Move to another city to get the kind of job you would really like.  0 1 2 3 4
16. Persistently work at your major or career goal even when you get frustrated or discouraged.  0 1 2 3 4
17. Choose a career that will fit your preferred lifestyle.  0 1 2 3 4
18. Identify employers, firms, institutions relevant to your career possibilities.  0 1 2 3 4
19. Determine the steps you need to take to successfully complete your chosen major.  0 1 2 3 4
20. List several occupations that you are interested in.  0 1 2 3 4
21. Choose a major or career that will suit your abilities.  0 1 2 3 4
22. Find information about graduate or professional schools.  0 1 2 3 4
23. Define the type of lifestyle you would like to live.  0 1 2 3 4
24. Choose a major or career that will fit your interests.  0 1 2 3 4
25. Talk to a faculty member in a department you are considering for a major.  0 1 2 3 4
### Attitudes Toward Feminism Questionnaire

This is a questionnaire about your attitudes toward feminism and the women's movement. Please indicate your opinion by putting an X on the rating scale for each question. The rating scale is as follows:

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

1. The leaders of the women's movement may be extreme, but they have right idea.

2. There are better ways for women to fight for equality than through the women's movement.

3. Feminist principles should be adopted everywhere.

4. More people would favor the women's movement if they knew more about it.

5. The women's movement is too radical and extreme in its views.

6. Feminists are a menace to this nation and the world.
Appendix F (cont'd.)

7. The women's movement has made important gains in equal rights and political power for women.

8. Feminists are too visionary for a practical world.

9. The women's movement will probably lead to the downfall of the American family.

10. I am overjoyed that women's liberation is finally happening in this country.

11. I would label myself a feminist in my beliefs and values.

12. I prefer to use the title "Ms." when referring to myself.
Appendix G

Family Questionnaire

Below are some conditions under which women may work during marriage. Please rate how much you would want to work under each condition by circling the appropriate number next to the item. The scale is as follows:

<table>
<thead>
<tr>
<th>Definitely would not want to</th>
<th>Probably would not want to</th>
<th>Probably would want to</th>
<th>Definitely would want to</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

1. No children, husband's salary adequate, husband's attitude favorable.
2. One or more children pre-school age, husband's salary adequate, husband's attitude favorable.
3. One or more children pre-school age, husband's salary inadequate, husband's attitude favorable.
4. One or more children school age, husband's salary adequate, husband's attitude favorable.
5. One or more children school age, husband's salary inadequate, husband's attitude favorable.
6. One or more adolescent children, husband's salary adequate, husband's attitude favorable.
7. One or more adolescent children, husband's salary inadequate, husband's attitude favorable.
8. Children grown and left home, husband's salary adequate, husband's attitude favorable.
9. No children, husband's salary adequate, husband opposed.
10. One or more pre-school age children, husband's salary adequate, husband opposed.
11. One or more pre-school age children, husband's salary inadequate, husband opposed.
12. One or more school age children, husband's salary adequate, husband opposed.
13. One or more school age children, husband's salary inadequate, husband opposed.
14. One or more adolescent children, husband's salary adequate, husband opposed.
15. One or more adolescent children, husband's salary inadequate, husband opposed.
16. Children grown and left home, husband's salary adequate, husband opposed.
Appendix H

Women's Roles Questionnaire

The statements listed below describe different attitudes toward the role of women in society. There are no right or wrong answers, only opinions. You are asked to express your feelings about each statement by placing a check on the line under the category which best describes your personal attitude. Please respond to every item.

(SA) - Strongly Agree   (A) - Agree   (D) - Disagree   (SD) - Strongly Disagree

1. Women should take increasing responsibility for leadership in solving the intellectual and social problems of the day. 

2. Vocational and professional schools should admit the best qualified students, independent of sex.

3. Women should worry less about their rights and more about becoming good wives and mothers.

4. Women should assume their rightful place in business and all the professions along with men.

5. Under modern economic conditions with women being active outside the home, men should share in household tasks such as washing dishes and doing the laundry.

6. It is insulting to women to have the "obey" clause remain in the marriage service.

7. Sons in a family should be given more encouragement to go to college than daughters.

8. There should be a strict merit system in job appointment and promotion without regard to sex.

9. It is childish for a woman to assert herself by retaining her maiden name after marriage.

10. Society should regard the services rendered by the women workers as valuable as those of men.

11. It is only fair that male workers should receive more pay than women even for identical work.

12. There are some professions and types of businesses that are more suitable for men than women.

13. Women should be concerned with their duties of child rearing and housekeeping rather than with desires for professional and business careers.
Appendix H (cont’d.)

14. The relative amounts of time and energy to be devoted to household duties on the one hand and to a career on the other should be determined by personal desires and interests rather than by sex.

15. The intellectual leadership of a community should be largely in the hands of men.

16. Women should be given equal opportunity with men for apprenticeship in the various trades.

17. On the average, women should be regarded as less capable of contribution to economic production than are men.

18. Women are intellectually equal to men.

19. There are many jobs in which men should be given preference over women in being hired or promoted.

20. Women with children should not work outside the home if they don't have to financially.
Appendix I

3. Please indicate how highly you value the following by checking the appropriate space.

<table>
<thead>
<tr>
<th>Marriage/Family</th>
<th>Career</th>
</tr>
</thead>
<tbody>
<tr>
<td>_____ Very unimportant</td>
<td>_____ Very unimportant</td>
</tr>
<tr>
<td>_____ Unimportant</td>
<td>_____ Unimportant</td>
</tr>
<tr>
<td>_____ Important</td>
<td>_____ Important</td>
</tr>
<tr>
<td>_____ Very important</td>
<td>_____ Very important</td>
</tr>
</tbody>
</table>

4. Please check the statement that is closest to your own feeling regarding the relative importance of career and family:

- Career pursuits are far more important than family pursuits.
- Career pursuits are more important than family pursuits but family is important too.
- Career and family pursuits are equally important.
- Family pursuits are more important than career pursuits but career is important too.
- Family pursuits are far more important than career pursuits.
Appendix J

Career Questionnaire

Please indicate how much you agree or disagree with each of the following statements by placing a check on the line under the appropriate category. Please try not to leave any statement out.

SD = Strongly Disagree
D = Disagree
U = Uncertain
A = Agree
SA = Strongly Agree

1. I intend to pursue the job of my choice even if it cuts deeply into the time I have for my family.

2. It is more important to have some leisure time after work, and to enjoy some of the adventures of the mind (art, music, literature, etc.) than to have a job in your chosen field, be devoted to it, and be a success at it.

3. If you work very hard on your job, you can't enjoy the better things in life.

4. Work is one of the few areas in life where you can gain real satisfaction.

5. I intend to pursue the job of my choice, even if it limits my personal freedom to enjoy life.

6. To me, a job should be viewed primarily as a way of making good money.

7. I enjoy thinking about and making plans about my future career.

8. It is difficult to find satisfaction in life unless you enjoy your job.

9. Work is one of those necessary evils.

10. Deciding on a career is just about the most important decision a young person makes.

11. I don't think too much about what type of job I'll be in ten years from now.

12. I'm ready to make many sacrifices to get ahead in my job.

13. I look at a career as a means of expressing myself.

14. I would consider myself extremely "career minded."
Appendix J (cont’d.)

15. I could never be truly happy in life unless I achieved success in my job or career.

16. I intend to pursue the job of my choice, even if it allows only very little opportunity to enjoy my friends.

17. I want to be able to pretty much forget my job when I leave work in the evenings.

18. I started thinking about jobs and careers when I was young.

19. I intend to pursue the job of my choice, even if it leaves me little time for my religious activities.

20. It is more important to have a job in your chosen field of interest, be devoted to it, and be a success at it than to have a family that is closely knit and that shares many experiences.

21. The whole idea of working and holding a job is kind of distasteful to me.

22. Planning for and succeeding in a career is my primary concern.

23. I often find myself thinking about whether I will enjoy my chosen field.

24. It is more important to be liked by others, devote your energies for the betterment of society, and be at least some help to someone than to have a job in your chosen field of interest, be devoted to it and be a success at it.

25. Planning for a specific career usually is not worth the effort; it doesn’t matter too much what you do.

26. I would move to another part of the country if I thought it would help advance my career.

27. I never really thought about these types of questions very much.

28. Rank the following activities in terms of how much satisfaction you expect they will give you in your life. Rank them from 1 (most satisfaction) to 6 (least satisfaction).

- Family relationships
- Leisure time recreational activities
- Religious beliefs and activities
- Your career or occupation
- Participation as a citizen in affairs of your community
- Participation in activities directed toward the betterment of national or international affairs
Appendix K

Career and Family Plans Questionnaire

1. Several typical career patterns are listed below. Please check the one you consider most likely for yourself:

   [ ] Continuous full-time paid employment from school completion to retirement.

   [ ] Full-time paid employment after school completion followed by a period of part-time employment and then a return to full-time paid employment.

   [ ] Full-time paid employment after school completion followed by a period of non-employment and then a return to full-time paid employment.

   [ ] Full-time paid employment after school completion followed by a period of non-employment and then a return to part-time paid employment.

   [ ] Full or part-time employment after school completion for a few years then no further employment.

   [ ] No paid employment after school completion.

2. Fifteen years from now, would you like to be: (check one)

   [ ] Homemaker with no children.

   [ ] Homemaker with one or more children.

   [ ] Married career woman with one or more children.

   [ ] Married career woman without children.

   [ ] Unmarried career woman with one or more children.

   [ ] Unmarried career woman without children.
Appendix L

**College Course Questionnaire**

For each college course listed below, circle the number that indicates the degree of confidence you have that you could complete the course with a final grade of "A" or "B". For all questions, the rating scale is as follows:

- **0** = No confidence at all
- **1** = Very little confidence
- **2** = Some confidence
- **3** = Much confidence
- **4** = Complete confidence

<table>
<thead>
<tr>
<th>Course</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Basic College Math</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>2. Nursing</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>3. Economics</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>4. Linguistics</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>5. Photography</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>6. Statistics</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>7. Physiology</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>8. Education</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>9. Theology</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>10. Calculus</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>11. Dietetics</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>12. Business Administration</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>13. Algebra II</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>14. Social Work</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>15. Philosophy</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>16. Geometry</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>17. Computer Science</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>18. Accounting</td>
<td>0 1 2 3 4</td>
</tr>
</tbody>
</table>
### Appendix L (cont'd.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>19. Art Appreciation</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>20. Zoology</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>21. Algebra I</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>22. Home Economics</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>23. Comparative Literature</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>24. Trigonometry</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>25. Advanced Calculus</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>26. Physical Therapy</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>27. Biochemistry</td>
<td>0 1 2 3 4</td>
</tr>
</tbody>
</table>
Dear Participant:

Thank you for your cooperation in this study of factors affecting women's career choices. In addition to understanding personal and environmental variables that contribute to particular kinds of career plans and choices, it is hoped that this study will add to the effectiveness of career advising and counseling programs for women students.

The enclosed survey packet should take approximately 30-40 minutes of your time. Please complete each questionnaire in the packet in total and then sign your name at the bottom of this page (do not detach this page from the packet). This form records your consent to participate in this study, and will be detached from your survey before scoring and data analysis, thereby preserving your anonymity and confidentiality. Your participation is, of course, fully voluntary.

If you are interested in the results of this research (available Fall Quarter, 1986), you may contact the investigator indicated below. Thank you again for your assistance with this important study of women's career choice.

Sincerely,

Ruth E. Fassinger, M.A.
Counseling and Career Services
(805) 961-4411

I have read the information about this study and agree to participate in this research.

Full name _______________________
Social Security # ________________