

THE WOMAN DOCTORAL RECIPIENT: A STUDY OF  
THE DIFFICULTIES ENCOUNTERED IN  
PURSUING GRADUATE DEGREES

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## CHAPTER I

### THE NATURE OF THE PROBLEM

#### The Problem

This dissertation reports a survey study which examined the number and variety of difficulties that the women doctoral recipients of 1963-1964 identified as having encountered while in pursuit of graduate study beyond the master's degree.

The investigation sought to determine whether women doctoral recipients from public institutions of higher education differed significantly from those who pursued their doctoral studies in private institutions, on the number and variety of problems encountered. The research also examined the relationship of those groups in the various disciplines, as well as groups classified according to the type of degree earned. Comparisons were also made of the marital status of the doctoral recipient. Recipients, with or without progeny, were also studied in an effort to determine whether there exists various cultural factors, in interaction with certain variables in the educational environment, which tend to operate against women pursuing doctoral studies.

The study herein reported was instituted for several reasons. Among them was the realization that only a small portion of the women capable of entering doctoral programs do attempt to earn the degree.

Little, if anything, is being done in a systematic way to encourage women to pursue doctoral programs. Notable exceptions are certain phases of the Minnesota Plan for Continuing Education, and special programs developed at Radcliffe, Sarah Lawrence and Bryn Mawr.

Another factor involved in attempting this study was the writer's interest in the reasons why the attrition rate was so high for women in doctoral programs. A third reason was related to a desire to discern the determinants that move or deter women scholars in attaining higher degrees.

Acting in the present capacity of counselor to women and with the eventual hope of teaching graduate women in the field of counseling and guidance, it was important to the writer to attempt to gain an understanding of the specific acquisitions or modifications of the behavior of women conducive to their attainment of higher degrees.

#### General Background and Need for the Study

Opportunities for women to enter advanced graduate programs are unprecedented today, yet a smaller percentage of women choose to enter doctoral programs today than in 1920. According to findings reported by Ells (22, p. 111) in Table I, during the period from 1920 to 1924, and again in the period from 1935 to 1939, women earned 15 per cent of the total doctorates awarded. In the year 1963-64, the specific year in question in this study, the U. S. Office of Education (61, p. 3) reports that although the number (1535) of women doctorates has increased, the proportion is only 11 per cent

of the total number (14,490) of the doctorates conferred.

Statistics compiled on women in graduate programs show that approximately one per cent of all women college graduates earn the doctor's degree, in comparison to approximately 6 per cent of all male college graduates. (49, p. 10). Parrish (47, p. 83) in his study of women doctorates, concludes that there has been only a "slow absolute growth in women's doctorates since 1900."

Bay (4, p. 973) defines a problem as "any discrepancy between what is and what is desired." Certainly the above condition existing in graduate education today leaves much to be desired. The problem suggests certain implications. In view of the nation's stated need for more trained brainpower, why do women not supply more of this potential? Gardner (59, p. 47) former president of the Carnegie Foundation for the Advancement of Teaching and presently Secretary of the U. S. Department of Health, Education and Welfare, forecasts that the nation will need 35,700 new college professors by 1970, but that the universities will be producing only 9,000 who will be entering the teaching field during this period. He sees one means of increasing the academic pool as that of encouraging more women to pursue higher degrees.

Berelson (6, p. 135) tends to minimize the contribution women will make in the area of college teaching. He quotes a foundation officer as saying, "It may be we are losing half our brains in this way, but it is hard to see what can be done about it." This attitude of resignation about women in doctoral programs prevails among many in the professional fields.

Terman and Oden (57) reported a 35 year follow-up study of 1,500 gifted children and found that 14 per cent of the men and four per cent of the women earned the doctorate. Even this report, however, hints at the cultural bias at work in a society that accepts the fact that bright men can and should pursue higher degrees, but that the "traditional role" may be preferable for gifted women. Without deprecating the role of the "feminine mystique" there still remain few ways to combat the logic in the report by Terman and Oden:

Our gifted women, in the main, however, are housewives, and many who work outside the home do so more to relieve the monotony of household duties or to supplement the family income rather than through a desire for a serious career. There are many intangible kinds of accomplishment and success open to the housewife, and it is debatable whether the fact that a majority of gifted women prefer housewifery to more intellectual pursuits represents a net waste of brain-power. Although it is possible by means of rating scales to measure with fair accuracy the achievement of a scientist or a professional business man, no one has yet devised a way to measure the contribution of a woman who makes her marriage a success, inspires her husband, and sends forth well trained children into the world. (57, p. 826).

Granted that the above is more than desirable, the question is raised as to whether the women in this study reached the highest level of development of which they were capable. May they not have also been capable, in many cases, of accomplishing the above, plus making an additional contribution to society through other productive channels? Should they have been encouraged to do so by some facilitating agent in their environment? These questions can no longer be ignored if it is considered crucial that we should tap the creative resources of all people in the nation without regard to sex.

One of the major concerns of society is: If a married woman

TABLE I - NUMBER OF EARNED DOCTORATES BY SEX, U. S., 1900-60

Year	Annual Total	Av. No. (Figures Rounded)		Percent Women of Total	Percent Increase Over Previous Period	
		Men	Women		Men	Women
1900-04	342	312	30	9	0	0
1905-09	389	351	38	10	12.5	26.7
1910-14	507	450	57	11	28.2	50.0
1915-19	586	514	72	12	14.2	26.3
1920-24	831	704	127	15	37.0	76.4
1925-29	1,489	1,276	213	14	81.3	67.7
1930-34	2,600	2,206	394	15	72.9	85.0
1935-39	2,893	2,481	412	14	12.5	4.6
1940-44	3,077	2,637	440	14	6.3	6.8
1945-49	3,224	2,774	450	14	5.2	2.3
1950-54	7,792	7,064	728	9	154.7	61.8
1955-59	8,960	8,039	921	10.3	13.8	26.5
*1963-64	14,490	12,955	1,535	11.0	--	--

Source: Walter Crosby Ells, "Earned Doctorates in American Institutions of Higher Education," 1861-1955, vo. XII, 1956, p. 111 and Circular of U. S. Office of Education.

\*Source: U. S. Department of Health, Education and Welfare, U. S. Office of Education, "Summary Report: On Bachelor's and Higher Degrees Conferred During the Year 63-64," p. 3.

pursues the doctorate, what effect does this have on the marriage relationship and on the children? Or, put another way, how will this pursuit affect society through possible familial disorganization?

Budner and Meyer (11, p. 216) found that in their study of social scientists "7 per cent of the women and 1 per cent of the males were divorced." In the Bryan and Boring (13, p. 216) of the 880 subjects in Psychology "5.3 per cent of the women and 1.6 per cent of the men were in the divorced status."

From the findings of these two studies Bernard (7, p. 216) concludes:

On the basis of the above two samples, either the marriages of academic men are more stable than those of academic women, and of the general public, and those of academic women much less stable; or else academic men remarry sooner after divorce than academic women and the general population; or divorce brings back into the professional ranks women who had left their positions at marriage.

Nye and Hoffman (46, p. 316) found that among the population in general "more employed than unemployed mothers are reported as considering divorce and more employed than unemployed are actually divorced."

In regard to the effects of a professional woman's career on her children, the following studies were reported by Bernard:

Dr. Aberta Siegel's search of the literature with regard to the professional women and their children turned up an unpublished dissertation at Yale University in 1954 on "The Effect of Employment of Married Women on Husband and Wife Roles: A Study in Culture Change," by Deborah Kligler. This study suggested that 'the difference in the importance and affect assigned to the mother and homemaker roles is striking. The special sanctions against neglect of the former function in favor of other interests are extremely powerful.' Kligler also

found that her working mothers exhibited some guilt about possible neglect of their children, but displayed little comparable concern about neglect of other tasks traditionally associated with homemaking. Both working wives and their husbands were significantly more willing to admit a decline in performance in the homemaker role than in the mother role. Lawrence Dennis notes: 'If society accords a special and primary significance to the mother role, it would seem possible that academic women - with children are caught in the conflicting role-expectations. It may be that it is not the children per se who mitigate against a productive academic career, but the internalized societal pressures which dictate that of course the children shall have first call on her time. By the same token, little comparable pressure exists which compels her to attempt to be the best housekeeper on the block.' (7, p. 317).

There have been notable successes and failures among academic women with respect to marriage and family. But with regard to the effect of the studies of the mother on the children specifically, little systematic research has been attempted.

Compounding the problem is a lack of research in the general area of women pursuing doctoral studies, and the effects of this pursuit on the family, and thus, society. This area remains a fertile field for future inquiry.

Assuming then, that it is desirable for American women to earn the doctorate and thereby make a contribution to academic, business and professional areas of the nation needing trained personnel, perhaps the isolation and recognition of the difficulties women encounter in the pursuit of the doctorate might be of some value. Recognition of the existing problem and pinpointing some of the problem areas might bring about the adoption of some remedial measures in an effort to facilitate the entry of more of our intellectually capable women into doctoral programs.



Groups who might be interested in the results of this study are:

1. College counselors, in counseling women with the capability and motivation to seek the doctor's degree
2. Women who, without benefit of counseling, are considering entry into doctoral programs
3. Graduate school administrators, in planning curricula adapted to the specific needs of women
4. Personnel of college counseling clinics, who are beginning to recognize that graduate students, including women, have need of counseling services directed toward their specific problems
5. Families, who must make unusual adjustments should the wife and mother return to college
6. National planners, who recognize the contribution women can make to the national economy.

If these central statements are considered to constitute desirable outcomes of graduate education for women, then the study may be considered to be of some value.

#### Definition of Terms and Concepts

Definitions of the terms and concepts used in this dissertation are explained below.

##### General Terms and Concepts:

- (1) Difficulty -- refers to a "felt" discrepancy between what is and what is desirable in a given situation.
- (2) Doctoral recipient -- refers to women who have earned a doctoral degree from an accredited graduate school during the academic year from September 1, 1963 to August 31, 1964.

- (3) Public institution -- is defined as a school of higher education which is controlled and financed by the state or federal government in the United States.
- (4) Private institution -- is defined as a school of higher education which is controlled and financed by an individual or a group of individuals who are affiliated with a religious denomination, a foundation, or with independent resources in the United States.
- (5) Higher education -- is defined in this study as graduate work pursued in a university or college at the doctoral level which results in the conferring of a Doctor of Philosophy degree or its equivalent upon the recipient.
- (6) Frame of Reference -- refers to the reaction that occurs as a result of the "functionally interrelated external and internal factors operating at a given time." (55, p. 80).
- (7) Psychological Structuring -- is "a prototype of all psychological processes (judging, remembering, learning, imagining, decision making, and so on). It is jointly determined by the totality of functionally related external and internal factors in interaction at a given time." (55, p. 79).
- (8) External factors -- are "stimulating situations outside the individual - objects, events, other persons, groups, cultural projects, and the like." (55, p. 80).

- (9) Internal factors -- are "motives, emotions, attitudes, general states of the organism, and effects of past experiences, etc." (55, p. 80).
- (10) Interaction -- is the "conception of experience and behavior as an outcome of interacting influences stemming from the individual himself and impinging from outside." (55, p. 6).
- (11) Anchorage -- refer to the major reference points. (55, p. 44).

Definition of Terms Used as Independent Variables

- (12) Categories -- refer to the various social units of the sample which stand in some kind of relationship to one another and which are classified according to (a) type of institution attended; (b) type of degree earned; (c) field of specialization pursued; (d) marital status; (1) married women versus single women; (2) married women without progeny versus married women with children.

Definition of Terms Used as Dependent Variables

- (13) Background Characteristics
- a. Age of the recipient -- is the subject's age.
  - b. Marital status -- refers to the subject's being married or single.
  - c. Number of children -- refers to the number of children in the family of the recipient.
  - d. Age of the children -- refers to the age of the children who are members of the family of the recipient.

- e. Father's educational attainment -- refers to the recipient's report of the last educational level successfully completed by the father.
- f. Mother's educational attainment -- refers to the recipient's report of the last educational level successfully completed by the mother.
- g. Length of time in study -- refers to the amount of time required to complete the doctoral program, from inception until completion.
- h. Periods of interrupted study -- refer to the number of times the continuity in study was broken while the recipient was enrolled in a doctoral program.

(14) Areas in which the recipients encountered difficulty while enrolled in graduate study were delineated and defined as:

- a. Family Relationships -- refer to the interaction of the doctoral recipient with members of the primary social unit.
- b. Time-management -- refers to the allocation of time by the doctoral recipient to the various demands of daily existence.
- c. Finances -- refer to the financial requirements of the doctoral recipient as it was related to family commitments, and the cost of graduate study.
- d. Educational -- refers to the insistent demands of graduate study in the various stages of progression-- from entry to study through degree attainment.

- e. Health -- refers to the physical well-being of the doctoral recipient, and those of her family unit.
- f. Mobility -- refers to a change in the family residence, or of a graduate institution, by the doctoral recipient.
- g. Personal -- refers to the psychological needs, motives, desires of the doctoral recipient, and her perceptions of these determinants while she was engaged in graduate study.
- h. Vocational -- refers to the attitude of the employer while the doctoral recipient was pursuing graduate study.
- i. Counseling -- refers to the availability of counseling, and the perceived need of counseling by the doctoral recipient.

#### Limitations

Certain limitations were placed on the study and should be recognized. One of these was concerned with the number of graduate schools who returned lists of their women doctoral recipients. Only one of the universities refused to send a roster, as a policy of the university. This university was a large one, and the omission of this graduate school may have made differences in the results of the data.

Another limitation was the number of recipients who returned the questionnaire. More Private-degree recipients than Public-degree recipients responded. This, too, may have influenced the results of the

data.

In an effort to keep the questionnaire objective in nature, some of the specificity may have been sacrificed in an attempt to make the instrument general enough to apply to all recipients. This limitation was minimized somewhat by adding a "supplementary data" item to which the respondents were allowed freedom to supplement any, or all, of the items.

The research design and the hypotheses are often more easily comprehended if their relationship to the concepts of the theoretical and statistical framework from which they are derived, are presented. This approach will be followed in Chapter II.

Chapter III presents a delineation of the sample that participated in the study, in addition to a brief description of the instrument developed, and the procedure followed in conducting the study.

Chapter IV presents an analysis of the findings and an interpretation of the statistical data.

This was followed by the summary and conclusions in Chapter V and an interpretation of the findings.

## CHAPTER II

### THEORY, RESEARCH DESIGN, AND HYPOTHESES

#### Introduction

A basic objective of this study was to discover whether the diverse categories of women doctoral recipients differed significantly in their psychological structuring of responses with regard to the difficulties they encountered while they were enrolled in graduate study, and to what extent the difficulties were a product of interacting internal and external factors. Essentially, the questions receiving consideration were:

1. To what extent were the perceived difficulties a result of the psychological structuring of the individual recipients?
2. To what extent were there certain factors inhering and operating in the environment of the educational institution which precipitated the difficulties?
3. To what extent were the deterrent factors a product of the culture?
4. To what extent were the problems encountered the result of an interaction of both external and internal factors?

The major theoretical basis for this study was drawn from the interdisciplinary approach to social psychology as theorized by Sherif and Sherif (55, pp. 674-679) in which "the group constitutes stimulus situations for the individual member," and supports the view that "psychological structuring is jointly determined by external and internal

factors." Also contributing to the assumptions were the research studies of Sanford and his associates as related in The American College. (51).

The writer's interest, experience, and training have been oriented toward the field of education. For this reason, an attempt was made to apply some of the principles from the field of social psychology to educational research methods.

This chapter sets forth the theoretical framework and statistical model which were applied to this study. The chapter seeks to explain the basic assumptions of the theory and the related literature. In addition to the above, statements of the hypotheses are presented.

#### The Sherif-Sherif Theory (55, pp. 77-99).

The Sherifs' theory of social psychology provides a theoretical model which stresses "a conceptual approach to social-psychological problems." (55, p. 77).

The conceptual approach emphasizes the psychological selectivity engaged in by the individual; and the importance of the structured and unstructured stimulus situations in which the individual acts, reacts, and interacts. (55, p. 160).

Sherif outlines his propositions of the conceptual approach by stating:

1. The conceptual approach starts with the unity of experience and behavior. Discrepancy between verbal statement (behavior) in one situation and behavior in another situation does not mean that attitude and action are unrelated. Such apparent discrepancies have sometimes been taken as evidence for the advantage of a 'phenomenological' (experience) approach, as opposed to an 'objective' (or behavior) approach. Advocating divorce of experience and behavior is akin to saying that the muscles function independently of the central integrative system. (55, p. 77).



It was assumed in our study that the women recipients reported their perceived behavior congruent with their experiences as it occurred in the specific situations.

2. Behavior follows a central psychological structuring or patterning. Action is not a direct function of external stimuli or of internal impulses but follows a patterning of all these factors. (55, p. 78).

The women in our sample demonstrated repeatedly that they sought to maintain balance (the homeostatic principle) between the different environments.

3. Psychological structuring is jointly determined by external and internal factors. Perceptual structuring is a prototype of all psychological processes (judging, learning, remembering, imagining, decision making, and so on). Perceptual functioning is not only a cognitive affair but is determined jointly by the totality of functionally related external factors and internal factors coming into the structural process at a given time. (55, p. 79).

Below is a diagrammatic model of the "frame of reference" of an observed behavior as depicted by Sherif:

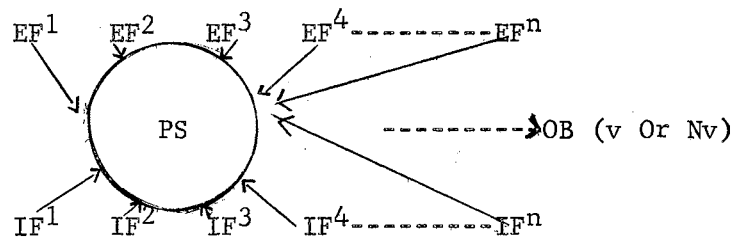


Figure 1. Diagrammatic Representation of the Frame of Reference of an Observed Behavior.

- OB (v or nv): Observed behavior (verbal or nonverbal).  
 EF: External factors (objects, cultural products, persons, groups, etc., in the external stimulus situation).  
 IF: Internal factors (motives, attitudes, emotions, various states of the organism, effects of past experiences, etc.).  
 PS: Psychological (perceptual) structuring.

- (a) The functionally interrelated external and internal factors operating at a given time constitute the frame of reference of the ensuing reaction.
- (b) The external factors are stimulating situations outside the individual -- objects, events, other persons, groups, cultural products and the like.
- (c) The internal factors are motives, emotions, attitudes, general states of the organism, and effects of past experience.
- (d) The limit between the two sets of factors is the skin of the individual--the skin being on the side of the organism. (55, p. 80).

The above proposition under number 3, formed the structure for the basic theoretical formulation of this study, and is examined in further detail in a succeeding section of the chapter.

- 4. Internal factors (motives, attitudes, etc.) and experience are inferred from behavior. (55, p. 80).

The observed behavior in this study refers to the verbal responses indicated on the questionnaire by the degree-recipients. The tying together of behavior and experience is again implied.

- 5. The psychological tendency is toward structuring in the experience of present objects and events (perception) and also in the experience of objects and events not immediately present (remembering, imagining and the like). (55, p. 80).

Our subjects were asked to "remember" certain difficulties encountered while they pursued graduate study. This procedure was asked of them after they had successfully earned the doctor's degree. Sherif (55, p. 81) admits that in remembering, the corrective reality checks are absent and may reduce the role of the objective factors, but that it does not eliminate them entirely. He states that "In time, our memory of them structured events may be modified and even transformed, but yet still further structured." In this study it was felt that any

modifications in remembering which may have occurred would tend toward the "pleasant" end of the continuum, as the intensity of the difficulties encountered by the degree-recipients would tend to be minimized once the degree had successfully been earned.

6. Structured stimulus situations set limits to alternatives in psychological structuring-- objective properties of stimulus situations limit the possible alternatives in experiencing them. (55, p. 81).

The subjects in our sample were faced with limited alternatives as to the course-work pursued, the institution attended, and the doctoral-program planned. Over these fairly rigid situations, they could exercise few choices.

7. In unstructured stimulus situations, alternatives in psychological structuring are increased. Objects and events are not clearly defined in this situation, and lack stable objective anchorages. Therefore, alternatives for perceptual structuring increased. (55, p. 81).

In these unstructured stimulus situations represented in our sample by the subjects' interactions in the educational setting between the faculty, and among the graduate students, and in the home and community environments among friends and family, there were many difficulties encountered. Especially were numerous problems posed relative to their changing role in these environments, while the subjects were engaged in graduate study.

8. The more unstructured the stimulus situation, the greater the relative contribution of the internal factors in the frame of reference. The relative contribution of internal factors (motives, attitudes, identification of the person, other products of past learning) become greater to the ensuing psychological structure. (55, p. 82).

There was evidence accumulated from the sample in this study that, as the difficulties increased during graduate study, the motivational factors manifested by the subjects' attitudes of persistence, high or low morale, and the desire for exceptional achievement, were intensified, and assumed greater significance.

9. The more unstructured the stimulus situation, the greater the relative contribution of external social factors in the frame of reference. In situations providing few physical reference points, social influences tend to become effective anchorages because of their relevance to the individuals motivations, attitudes toward persons, groups or social products involved. (55, p. 82).

Evidence from these data presented in this study showed that as difficulties encountered in graduate study increased, the women doctoral recipients sought emotional support, or the aid of a facilitating agent in the educational, community or home environments.

10. Various factors in the frame of reference have differing relative weights. These limiting, weighty factors are referred to as the main anchorages in the frame of reference. Change in the major group anchorage of an individual, that is, a change of reference groups, brings about alterations in many other attitudes... (55, p. 83).

It appeared evident that as the degree-recipients began placing greater emphasis on the educational goals they tended to change reference groups. Their referents had previously been anchored solely in the community and home environments, but gradually shifted to the graduate student-faculty groups with whom they interacted in the educational environments. Some of the degree-recipients made this transition more smoothly than others. Those who did not accomplish this task early tended to experience more difficulty in the early completion of the degree.

11. Psychological activity is selective. Those objects or persons that are perceived are likely to be the ones related to our motives, attitudes, preoccupations at the time, in addition to those whose structural properties are sufficiently compelling so that they 'hit' almost everyone in the eye. (55, p. 84.)

As the doctoral recipients progressed in their programs they tended to become more selective and discriminant in the responses that were relevant to their field of specialization. Preoccupation with objects and events that facilitated the attainment of the degree increased in strength as the subjects approached closer to the goal of degree-attainment. Until, in the last stages of the program, irrelevant stimuli tended to be excluded.

One woman doctorate in our sample described the effect of this narrowing process on the individual:

Difficulty was posed in family, friends, and social life -- too busy to write the note of sympathy, congratulations, to write letters, to visit, to buy and send gifts, etc. At times I felt as if I had taken "a holiday from living" in a sense, as if I had entered a monastery and was cut off from outside friends and relatives; hard to find time to read newspapers, and magazines, and keep up with what was going on in the world. This is partly a matter of morale, but something different, too. A sort of social isolation enforced by the pressure of study, I think.

#### Theoretical Design of the Study

The research design for this study, as shown in Figures 2 and 3, was based on the concepts postulated in the Sherif-Sherif theory as they were adapted to the problem chosen for investigation. The identification of the difficulties encountered by the five groups who pursued graduate study, and the psychological structuring that occurred as the individual recipients interacted with the external and internal factors elicited in

the problem situations, were the major concerns of the research.

The following categories of the sample were established as the major independent variables in the research design:

- Group I - Private and Public Institution Degree-Recipients;
- Group II - Recipients Who Earned the Different Types of Degrees;
- Group III - Recipients Who Majored in the Different Areas of Specialization;
- Group IV - Recipients Who Were Married or Unmarried;
- Group V - A Select Sample Composed of Married Recipients Who Did or Did Not Have Children.

Data concerning the dependent variables were obtained by means of a questionnaire relating to the difficulties encountered while the groups were pursuing doctoral programs. This instrument was developed by the investigator, with the adaptation of the Sherif-Sherif premise that the experiences which tend to stand out as focal are determined by "The facts of selectivity [that] have to be analyzed in terms of external and internal factors and the interplay of these two sets of factors." Using Sherifs' broad classification of these factors as a guide, the specific items were developed. Sherifs' classification included:

I. External factors.

1. Intensity, size, novelty, repetition, contrast, movement, and change of objects and events.
2. Social influences, such as instructions, suggestions, group pressures, and group participation.

II. Internal factors.

1. Momentary set, personal interest, motives (hunger, thirst, sexual desire, and the like), states of the organism (emotion, fatigue and the like).
2. Socially derived factors, such as positive or negative social attitudes, identification with or prejudice against persons or groups, linguistic repertory, internalized social norms, and the like. (55, p. 91).

Thus, the instrument, described in a later chapter, was developed to include items pertaining to certain background characteristics (dependent

variables) of the groups such as: age, marital status, number and age of the children, and father's or mother's educational level, periods of intermittent study, and the number of years in study. Items were also included which pointed up the difficulties encountered in specific areas while the groups pursued graduate study. These areas included: family relationships, time management, finances, educational setting, health, mobility, personal structuring, vocational, and counseling needs.

An adaptation of the Sherifs' model, as depicted in Figure 1 earlier in this chapter, is presented below in Figure 2, and is used to explain the psychological structuring that occurred within the individual degree-recipients' while they pursued graduate study. The interaction of the external and internal factors inhering in the problem situations is also depicted below.

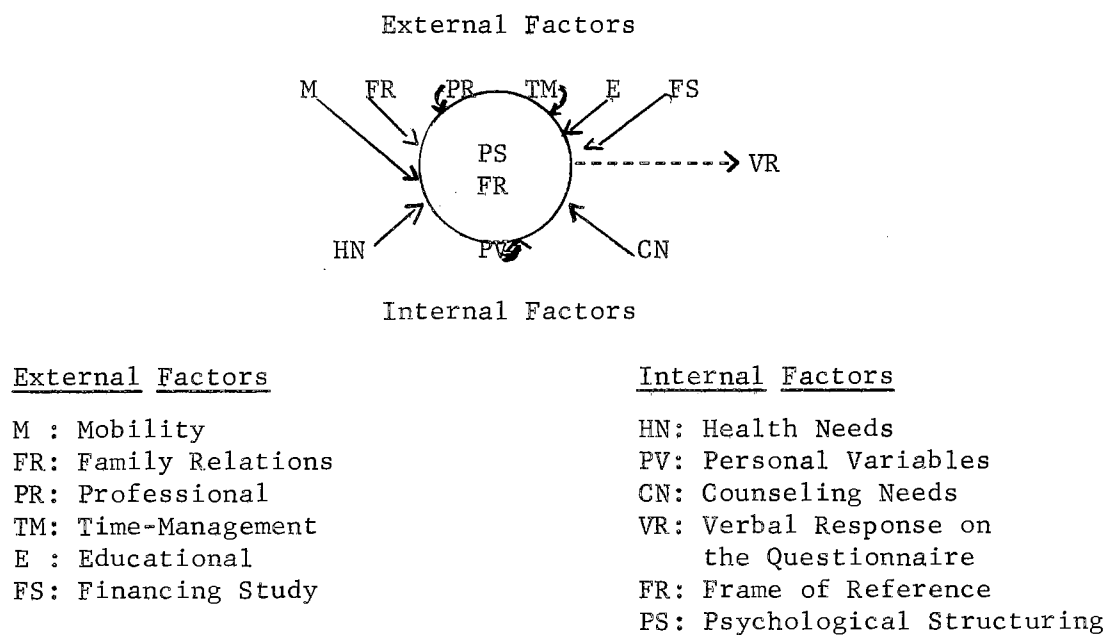


Figure 2. The Psychological Structuring of Women Doctoral Recipients (An adaptation of Sherif's Sherif's Model, Fig. 3-1, in An Outline of Social Psychology, p. 79).

Breaking down the independent and dependent variables into smaller units, the following research design evolved. The five group-categories are presented as the independent variables with eighteen sub-groups of the degree-recipients represented in the design. These groups reacted to the stimulus situation which is presented in the form of the questionnaire. The psychological structuring of the degree-recipients is viewed as their reaction to the perceived difficulties represented by the dependent variables. (See Figure 3, p. 23).

By examining the questionnaire, (Appendix, Exhibit F) and the design presented in Figure 3, it can be determined that the variables were translated into the format of the questionnaire. The instrument was designed to yield subscores from the responses of the subjects concerning their psychological structuring of the occurrence in the problem situations.

The woman doctoral candidate has many external factors impinging upon her. Stubborn and persistent assumptions about "women's roles," (48, p. 13) and "women's interests," (48, p. 13) are projected upon her from the familial, educational and community environments which tend to alter her feelings of personal adequacy. Interacting with these factors are intervening variables arising from personal and physical needs.

Williams (65, p. 31) writes of the conditioning process of the personality that occurs as a result of the "rigorous and extended training" of the academic environment. He contends that the product of the graduate school

is typically underlain with a deep sense of inferiority, fear and maladjustment, yet overlain by an almost frantic sense of superiority. This deep split in the personality is further complicated by a latent hostility to that



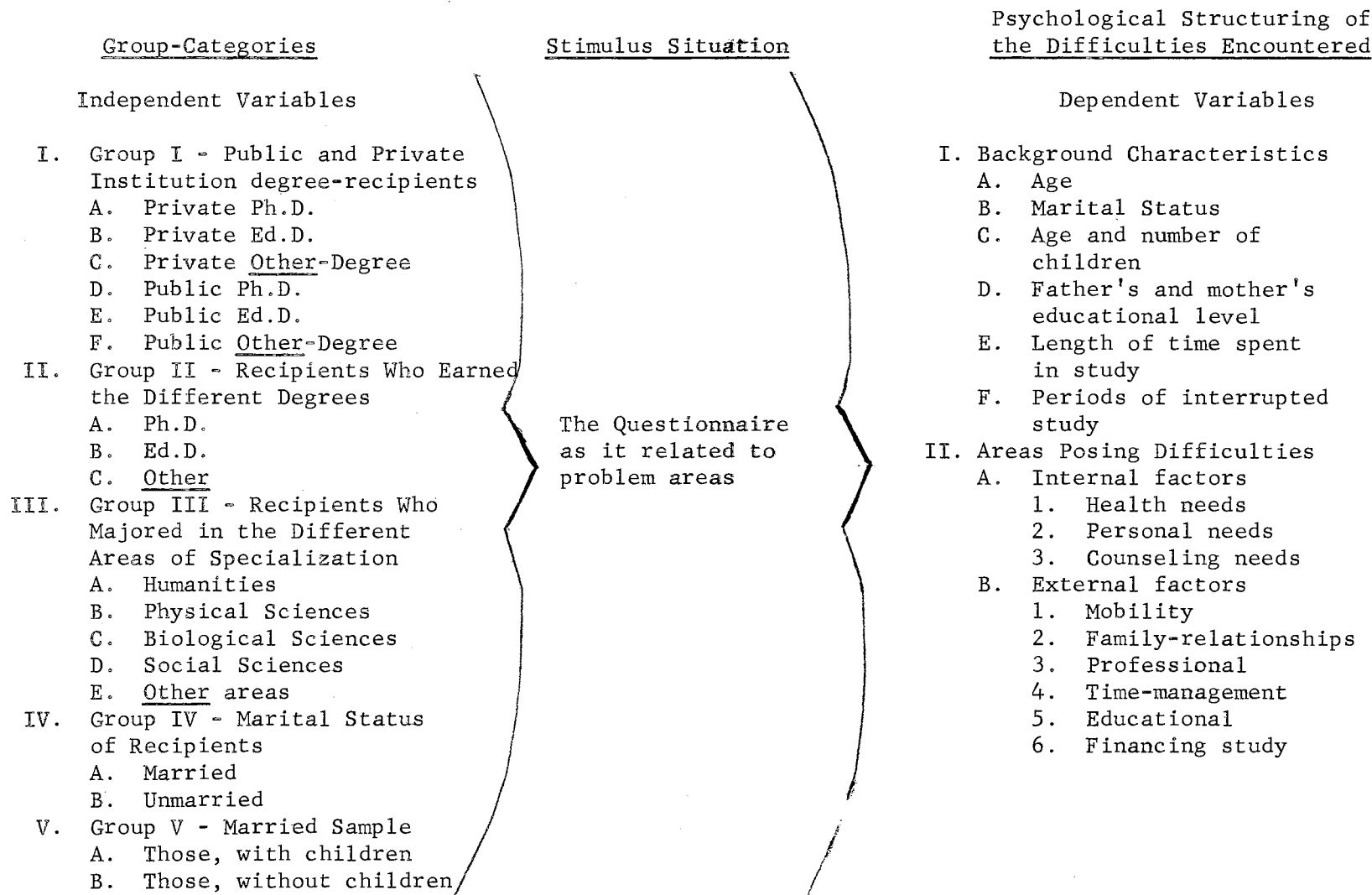


Figure 3. The Basic Elements of The Research Design

which is nonbookish and nonintellectual, and a fluttery insecurity that creates morbid fear of any criticism that may endanger hard-won academic place. (65, p. 31).

In spite of the pressures involved, the doctoral recipients as a group seemed to have maintained a fairly consistent and effective personality structuring. This was attested to by the fact that the graduates successfully completed doctoral studies, and earned the degree. The culminating action of earning the degree was conceptualized as jointly determined through the interaction of internal and external factors.

#### Basic Assumptions and Related Studies

The following section of the study demonstrates how the generalized statements of the theory were adapted to the specific environment of the individual recipients, and substantiated by related studies.

The basic assumptions establish some of the relationships that inhere between the independent and dependent variables as to (1) the characteristics of the women who pursue the doctorate; (2) the educational climate of the graduate school; (3) the educational setting as represented by the two types of educational institutions--private and public; (4) the intellectual factor as it relates to women pursuing doctoral programs and to their choice of institution; (5) the different "frame-of-reference", and personality traits of women who seek the PhD., Ed.D., and Other degrees, and who major in the different fields of specialization; and (7) the differences pointed up by the marital status of the doctoral candidates, in addition to the presence or absence of children among the married subjects.

Assumption I-A: Achievement-oriented women tend to be atypical in the

American culture. Implications drawn from the research on this subject show that a woman tends to be "different" from the cultural female prescription, if she is to succeed as a scholar. That the male scholar is also considered atypical has been supported by research from McKee's (37) study, in which the graduate male is pictured as having embraced interests characterized in our culture as "feminine."

There are other ways, however, that women doctoral candidates differ from the male doctoral candidates. Bernard (7) found the following differences:

1. Class Background. The processes selecting the academic man frequently result in the choice of a person who came from a fairly low socioeconomic background. In the case of academic women the selective processes appear to be somewhat different, for the result is often a person of a higher class-background. (7, p. 77).
2. Selectivity. The test-type superiority of women doctoral recipients can be explained in part by the relative greater selectivity operating among them. All along the line, the selective factors are more stringent than those at work to produce academic men (7, p. 79). Gropper and Fitzpatrick, found that,

Women appear to be less influenced by their grades in deciding in favor of advanced education. But they are more influenced than men by their low grades in deciding against advanced education. (7, p. 285).

3. Age. Academic women tend to be older than academic men. This is in part a result of a relatively smaller influx of young women in the academic professions in recent years. (7, p. 80).
4. Personality. Harmon (7, p. 83) found that academic women tend to be compliant, rather than aggressive. Davis (7, p. 83) found them to be more interested in people and in areas which were politically liberal and unconventional.

Brown, in his study, addressed himself to the motivation of high achievement among college women. In all cases of high achievement he found that:

...one or the other of the parents was highly educated or placed a high value upon scholarly attainments, and held high expectations and hopes for the daughter. . . there was early involvement with the parents and early awkwardness in social relations with peers . . . in each case it seems that early relations with parents had a problematic aspect. Special tensions were generated and emotional drives were channeled into the scholastic motive. Yet this channelization could have hardly occurred had not one or the other parent represented intellectual values.

In 1956, Brown (10, pp. 545-550) conducted a study in which he obtained ratings on fifty alumnae of Vassar, twenty to twenty-five years out of college. He analyzed the ratings and found the emergence of five patterns of college behavior. He then compared these to certain background, developmental, and status factors. Brown found the five basic orientations to be: social and peer group orientation, over-achievers, under-achievers with family orientation, high achievers, and seekers of identity. Regarding the high achieving group, Brown makes the following conclusions:

This group is high on capacity now and at entrance to college. They performed well at college, graduating at or near the top of their classes. They were low in social-peer group orientated activity while in college, but high in orientation toward professional role and in identification with faculty values...In early adolescence, they have experienced conflicts arising from domineering and talented mothers, against whom there is considerable repressed hostility associated with strong guilt...They rate their fathers more favorably, but accept the opinions of their mothers... The intellectual development of this kind of woman may be described as early, intense and continuing. They report an inclination toward intellectual activity dating from their earliest years and consequently they are quite decided on an intellectual career before coming to college. (5, p. 549).

Here we have a picture of a woman who places achievement above the peer group norms. Disturbed relations with mother is also evident, and yet--the girl seems to adopt the mother's high-achievement values during

the early developmental period.

Supplementary data supplied by the subjects in our sample seemed to indicate that they were goal-directed toward scholarly achievement, and in this regard were atypical from the traditional female-role orientation emphasizing marriage and family.

Typical responses from the recipients included:

There was no difficulty in maintaining a desire for excellence, the problem was in modifying this desire in accord with what was feasible and realistic.

I believe a strong commitment to intellectual interests is necessary for the attainment of the Ph.D.

It was difficult when, because of pressures, previous standards of perfection could not be maintained.

Disturbed relations with the mother were noted throughout the responses. Typical were the following:

My mother wanted me to remain her dependent child. I was unable to continue to live with her while in graduate school. . .

At all times I have had the responsibility of my elderly mother. Time-consuming to say the least...

Assumption II: The graduate school is viewed as a subdivision of a social organization known as higher education. Bay (4, p. 978) suggests that a student's social surroundings are "a social system. . . a set of related components constituting a whole that is separated from other systems by a boundary of some kind. . . Higher education in the United States, too, is one social system of which many colleges and universities are the most obvious subsystems."

In spite of its prestige in the larger society, the graduate school, as a smaller unit of this subsystem, does not always carry the same import within its own university system. Berelson describes the dilemma

of the graduate school in the following terms:

...administrative and organizational problems have characterized graduate work so long that most people have become used to them. The subordination of the graduate school to the undergraduate college, the intermingling of graduate and undergraduates in the same courses, the uneven struggle between the dean's office and the departments, the weakness of the dean with no budgetary or appointive authority-- these matters have been remarked by generations of commentators on the graduate scene. (6, p. 119).

The subordinate position accorded the graduate school and the administrator-dean is enigmatic when the high objectives of graduate education are considered. Nichols (45, p. 119) contends that the dean is treated as a registrar or counselor. . . "Yet he and his part-time associates are responsible for the highest quality of the university instruction and for carrying out some of the most difficult objectives of higher education."

The confusion that often inheres at the administrative and organizational levels in the graduate schools also affects its educational climate which, in turn, affects the functioning of the graduate students. The dissatisfaction and frustration often felt were openly expressed by many of the subjects who supplemented their responses as follows:

'Difficulty' is not the right word for my experience in graduate school. 'Illogical' or 'senseless' is a better word.

My 'work' in improving Foreign Language teaching methodology showed how bad their department was at teaching the language.

There was intra-faculty disagreement about 'standards' on my project. I found myself 'caught', or felt so -

I would never want to repeat my experience in graduate school. It was not a test of academic excellence - - but politics.

Assumption II-A: The public and private institutions of higher education are a contrast in educational climate, as each tends to be more productive of scholars from different intellectual fields of study.

When the woman graduate student enters a doctoral program, does she search for a particular type of institution to fit her specific need or field of study? Is there a relationship between student personality and college environmental factors? Thistlethwaite (58, p. 556), who had access to data on 9,600 students in the National Merit program, adapted a Talent Supply Index to colleges where a sufficient number of students had enrolled. He found that those institutions that are highly productive of Doctors of Philosophy graduates have certain structural features in that:

. . . the type of student body is the characteristic most closely related to productivity . . . the high standing of coeducational schools suggests that a mixed student body may be favorable to the development of the motivation to seek advanced degrees in these fields /the arts, humanities and social sciences/.  
 . . . Natural science productivity is associated with large freshmen enrollments, graduate programs offering the Ph.D., public support and absence of religious affiliation... These characteristics are typical of the state university, which . . . tend to be outstandingly effective in stimulating achievement in the natural sciences. It is more difficult to characterize the institutions which are most productive of the Ph.D.'s in the arts, humanities, and social sciences. They tend to be located in small cities and --contrary to expectations--to have a relatively large number of students per faculty number. (58, p. 556).

Thus, from this study it is concluded that scholars who pursue different fields of study thrive better in different environments. Humanism, breadth of interest, and reflectiveness are more characteristic of humanistic settings where achievement is inhibited by aggressiveness. On the other hand, Thistlethwaite (58, p. 560) concludes that achievement

in the natural sciences is facilitated by aggressiveness in the institutional culture, and inhibited by social conformity.

Bereiter and Freedman (5, p. 575) using the Vassar Attitude Inventory Scale (with the first battery devised by Sanford and the second battery revised by Webster), found a correlation between attitude and personality measures among women. Students in literary fields scored higher on "unconventionality" than students in the natural and applied sciences. Women in the social sciences showed a greater degree of "social confidence" than women in the natural science and literary fields.

Teevan (57, p. 578) using the Blacky Pictures Test, found evidence that natural science majors showed less psychological disturbance than those in the social sciences and in the humanities. The humanities major found sensual gratification in "oral, including verbal, activities." The social scientists showed aggressive tendencies indicative of "disturbed relations with the mother." Roe (52, p. 578) corroborated this finding that "social scientists reported more intense and disturbing childhood relations with their mothers..." The latter finding was also supported by Thistlethwaite as was previously reported under Assumption I-A.

Bereiter and Freedman (5, p. 579) summarized the research on the relationship of personality to fields of specialization:

- (1) Personality differences and fields of study are related to the person's inner life which are overtly manifested through "psychological disturbance, unconventionality and awareness of psychological problems."
- (2) Personality differences and fields of study are related to the person's social life - his "sociability, confidence in social situations, and interests in people."

These findings form a supportive basis for assuming that through



psychological structuring, a person's intellectual activity suggests ways the recipient relates to other people (55, p. 79), through the interaction of variables.

Roe (51, p. 578) reported personality differences among scientists. Using projective techniques she found that "social scientists were more productive and showed less intellectual restraint than were natural scientists."

Most revealing was Roe's findings that social scientists were more concerned with people and the natural scientists were more interested in abstractions. (51, p. 579).

One doctoral candidate in the present study made the following comment with respect to choosing an educational institution, and a major discipline:

I found the pace and pressures too hectic at the institution where I earned my first graduate degree. I shopped around for my 'doctoral' institution and have found the latter institution geared to my temperament, and to my preference for the field of humanities.

Assumption II-B: Universities at the doctoral level demand a higher intellectual quality from students than do colleges with only one or two levels. Wolfle's (39, p. 233) study reported differences among students in academic aptitude on the American Council on Education Psychological Examination scores as follows:

	<u>Mean Aptitude</u>
Level IV (granting doctorates)	112.7
Level III (granting masters)	106.3
Level II (granting bachelors)	101.6
Level I (two-year college)	93.8

Bernard (7, p. 78) reports from her study that "with respect to

intellectual ability as measured by tests, data showed that women both as undergraduates and as Ph.D.'s were superior to men on the average."

The semi-selective process occurring at the doctoral level seems to support the assumption that women doctoral recipients are intellectually adequate because they have survived the attrition rate, and because the academically weak are seldom able to meet the requirements of graduate study.

Many of the doctoral candidates in this study indicated that they had encountered little difficulty with regard to the graduate course work.

I was always a good student so I had few problems here.

More of a challenge!

In retrospect one recalls the pleasant and forgets the unpleasant. I probably experienced greater problems with my work than I have indicated. However, I had few fears of complete failure.

One individual states humorously:

Academically, of course, I was as the rest of humanity. Exam to Exam,-- crisis to crisis. But I came through with flying colors!

Assumption III: It is assumed that the various types of degrees (Ph.D., Ed.D., and Other) are oriented toward different objectives.

Berelson (6, p. 84) comments:

The question has been concretely drawn in the case of the degree itself - should the Ph.D. be awarded in professional fields?-- and has received various answers. ... this issue first arose in connection with education, and has never been really settled: both the Ph.D. and the Ed.D. are given, sometimes in the same institution.

Many graduate deans recommend that the professional fields establish their own degrees--"Doctor of Business Administration, Doctor of

Engineering, Doctor of Social Work, Doctor of Library Science--and leave the Ph.D. alone." (6, p. 84).

Berelson (6, p. 87) found that some academic deans believe that the medical and law schools train students more effectively. However, the majority felt that graduate schools do a better job because of the research dissertation. Its purpose is to train scholars and not practitioners. One graduate dean underlines this belief:

The modish comparison of the Ph.D. (to its discredit) with the medical and legal programs of study disregards the differences in aim and traditional structure. The curricula for these professions are more completely standardized because they are determined by the needs of a single profession, they are guided by recommendations of professional associations, and they are shaped by the demands of state accrediting examinations. They can therefore be organized into a set body of courses and other educational experiences. The Ph.D., on the other hand, rests on a great variety of initial preparations, it aims at a progressive cultivation of independence and individuality, and it ends in a piece of investigation whose limits, while they may be practically circumscribed, cannot be arbitrarily fixed in advance without ruining its usefulness.

Much criticism has been aimed at the Ed.D. degree where the dissertation is often replaced by various reports that are said to produce educational practitioners rather than researchers. (6, p. 87). A contemptuous attitude toward the Ed.D. degree is often shared by those in the arts and sciences who tend to view the degree as reserved for students in "methods" courses. (6, p. 86).

Berelson's (6, p. 92) data show the following distribution among scholars in the different fields on the question of doctoral degrees and the subject of the research requirement:

'Doctoral work suffers because many students don't really want to be researchers but have to go through research programs in order to get the 'union badge' for college

teaching,' is agreed to by  
 70% of the recent recipients in the humanities and  
 55% in the social sciences . . .  
 as against only 30% in the natural sciences and engi-  
 neering.

Berelson (6, p. 92) leaves us with the question about the doctoral degree: "Is it academic or professional?"

One subject pursuing the Ph.D. commented:

Knowing that my primary concern is teaching, I found it difficult to motivate myself to accomplish all the requirements of a research-oriented degree. I see this conflict as especially acute in mathematics where the ability to do original research depends on a rare creative gift.

A woman pursuing the Ed.D. responded:

It would not have mattered which degree I was pursuing, they were equally difficult. My dissertation would have met requirements for either.

Whether the tone of the statement above denotes defensiveness, or whether the trend is actually occurring that the requirements for the two degrees are merging, is a matter deserving further research and inquiry.

A medical degree-recipient replied:

Although I did not experience the pressures of a research dissertation requirement - the pressures of pursuing the degree in medicine are equally present.

Assumption IV: Married women, and married women with children tend to encounter more difficulties in pursuing doctoral studies than other classified groups.

A study by Hansl (27, p. 40) gives some indication for the slow growth in the doctoral ranks among women. She found that married women tend to encounter difficulties which result in a pattern of two or more

periods of interrupted study. Difficulties most often encountered which tended to interrupt study were: early marriage and the birth of children, mobility, illness, lack of financial resources, and lack of time.

In research conducted by Brown (51, p. 549) it was found that high achievers among women tended to score low on "future family orientation", while they were still in college. Twenty-five years later it was found that few of the women married, and even fewer had children. Brown concludes, "Rather they attain advanced degrees and hold responsible positions." (51, p. 549). It might be reasoned from the above studies that one cause for the slow growth in the attainment of the doctor's degree among women arises from the culture. With marriage and the birth of children, the difficulties encountered by women in the pursuit of graduate study are multiplied. Only the highly motivated "achiever" seems willing to forego marriage in preference to advanced graduate study. Only the unmarried woman seems able to pursue with "single-minded" purpose the advanced degree in our society.

Bernard (7, p. 212) characterizes the single academic woman as one who,

devotes herself almost exclusively to her work. She is a woman who has time for her students and time to sponsor organizations, time to talk to them. She is the woman without competing demands from husband or children.

Bernard (7, p. 206) notes that "as a result of changing values, more academic women to-day are more likely to be married than were those in the past." Even to-day, however, with the rise in proportion of women doctorates who are married, they are still "less likely to be married than the men." (7, p. 206).

The question is raised as to whether or not the married male candidates meet the same difficulties while pursuing graduate study as do the married female doctoral candidate. The answer seems to be a matter of degree rather than one of comparison.

Byran and Boring (13, p. 221) summarized their findings regarding the effects of marriage and children on graduate women and men as follows:

If we compare marriage and children as professional assets and liabilities, we find that marriage and children are about equal as assets for women and as liabilities for men. Marriage (72 per cent) is a greater asset for men than children (29 per cent). Children (60 per cent) are a greater liability for women than is marriage (34 per cent). That all makes sense. The men are helped professionally by the social status of marriage and in that respect a wife is more important than children. -- It is clear that the careers of women are balked to a considerable degree by the responsibilities of childless marriage, and even more by motherhood.

Bernard (7, p. 223) drew much the same conclusion when she suggested that:

It is, understandably, more difficult for the academic woman to brush aside her obligations to her family than it is for the academic man. The enormous preoccupation which academic work requires is hard enough for the family to bear when it is the husband and father who is so absorbed. It can be catastrophic when it is the wife and mother. If a man resigns from the world to carry on in the field of his profession, his wife can keep him anchored. It takes two to make a career. . . . But the academic woman cannot expect the same support. However much understanding her husband may show of the demands on her time and energy, her children, at least when they are small, can hardly be expected to do the same. . . . Like many other working mothers, the academic woman is likely to make special effort to counteract any of the anticipated hazards of her work in relation to her children. . . .

Davis adds this note by saying "while a man's graduate training can be considered an important investment, graduate training for married women

is an economic luxury." (19, p. 212).

Although ingrained attitudes arising from the culture seem to imply that the wife will help her husband progress in his preparation for a career, the reverse is not implied. A case from our sample illustrates this point:

My greatest problem while working on my degree was the conflict between the demands of my husband's graduate study and my own. In the beginning I took for granted that his financial, emotional, and study needs should come first. But as I grew more mature as a scholar, I felt otherwise and the change in my attitude was never accepted by my husband. The change in my attitude may have been caused by being influenced by Northern or more urban ideas, while my husband remained less influenced. (We were both from the South).

Pressures in trying to do an adequate job in several areas are manifest more often in the behavior of the female rather than the male. Few males would be faced with the problem of mediating between the following conditions:

In an explanation of the mother-child relationship-- the baby was born before the degree was completed and the tension of trying to finish apparently transferred to her. She had colic until my work was completed, and it then disappeared. My pediatrician felt this tension of balancing my various lives was a great deal of the reason for the child's colic.

Other areas constituting problems for the married recipient were relative to women's roles, and family relationships.

Typical of some of the responses of the married sample with regard to the difficulties encountered while pursuing the doctorate were:

About women's role;

Time to play all roles well is the key problem with a family. Emotional drain of pressure to excel in all roles - student, mother, wife, educator, community worker, etc. is almost unbelievable and only the unusual person can survive.

The real difficulty for the academic woman lies in juggling all her "lives" because each segment (family, community, job, etc.) fails to appreciate the demands of the other segment.

As to family relationships;

My course in pursuit of the doctorate was not typical as it took 12 years from the time I passed my preliminaries until graduation. My main concern during these years have been my home and my children and my academic career has thus moved very slowly.

When a candidate is married and has children, she needs not only her own stubbornness and her husband's financial support; but also his cooperation, enthusiasm, and persistence. Without his all-around support, she will encounter many more difficulties.

Concerning the birth of children;

Both children were born during my graduate study which began at the time of my marriage. Both pregnancies caused in themselves minimum difficulties, but the birth of the first child restricted my attendance of classes, and use of the library, while the birth of my second four weeks early necessitated the rescheduling of my final oral exam (the 'preliminary' exam deferred by petition) and almost caused me to get a September rather than a June degree. The first child showed certain bad effects, eg. loss of toilet training in the last month before my final oral, when my tension was very great. I was very pregnant and he was at the babysitter's five days a week, instead of the usual three.

From the above reports it can be noted that the difficulties seem to increase, more for the married female than for the married male, with the advent of marriage and the birth of children.

#### Summary

The basic and most significant assumption in this study was that the difficulties encountered by women engaged in doctoral studies were a result of the interactions of external and internal factors, and that



the problems were perceived with different degrees of "difficulty" in accordance with the psychological structuring of the situation by each individual. This structuring was determined by the different systems of needs of the individual, in addition to certain cultural pressures.

#### Statistical Design of the Study

Based on Siegel's (54, p. 344) assumptions for the behavioral sciences, a nonparametric technique was chosen to analyze the data. A technique of inference was chosen which did not

make as numerous or stringent assumptions about parameters. These newer 'distribution-free' or nonparametric technique/s/ result in conclusions which require fewer qualifications. Having used one of them we can say that 'Regardless of the shape of the population(s), we may conclude that . . . .'

Another assumption of our statistical model was that only an ordinal or ranking level of measurement was achieved by the instrument used in the research. An ordinal level of measurement implies that "the objects in one category of a scale are not just different from objects in other categories of that scale, but they stand in some kind of relation to them." (54, p. 4).

In choosing the statistical tests to be used in the research, the following logic stated by Siegel (54, p. 3) was the determining factor:

In computation of parametric tests, we add, divide, and multiply the scores from the samples. When these processes are used on scores which are not truly numerical, they naturally introduce distortions in those data and thus throw in doubt any conclusions of the test.

Siegel (54, p. 3) says that "many non-parametric tests focus on the order or ranking of scores not on their 'numerical values'." The

Mann-Whitney U statistic is such a test and was, for this reason, chosen to analyze the forty-five items on the questionnaire. In addition, the Mann Whitney U test has the most "power-efficiency" for ordinal data. Siegel (54, p. 3) supported this by saying, "We can avoid the dilemma of having to choose between power and generality by selecting a statistical test which has broad generality and then increasing the power to that of the most powerful test available by enlarging the size of the sample...

The Mann Whitney U test is one of the most powerful of the non-parametric tests, and it is the most useful alternative to the parametric t test. . ." The Mann Whitney U scores were derived from formulas 6.7a and 6.8 as they were translated into z scores. (54, p. 123). This procedure permitted the use of Table A (54, p. 247) in Siegel's book which gave the "probabilities associated with values as extreme as observed values of z in the normal distribution." (54, p. 247). Since Table A presented the one-tailed probabilities, the probabilities used in this study were doubled in order to provide a two-tailed interpretation of the data.

By selecting the non-parametric test with the most "power-efficiency," and by enlarging the sample, the investigator believes the results of the research are more reliable.

The Chi-square test was used to test for differences among the groups relative to the dependent variables of age of the subjects, number and age of the children of the recipients, and the fathers' and mothers' educational levels. Chi-squares were also computed for the variables with respect to the length of time the recipient remained in study, and for the periods of interruptions encountered.

Siegel says that the "chi-square test represents a useful method by comparing experimentally obtained results with those to be expected experimentally." (54, p. 178).

When entries are large Siegel (54, p. 178) believes that Chi-square:

- (1) Gives an estimate of the divergence from the hypothesis which is close to that obtained by other methods.
- (2) Makes possible the assumption that adjacent frequencies are connected and smooth like the normal curve.
- (3) Provides a useful estimate if we wish to investigate relationship between traits or attributes which may be classified into two or more categories.
- (4) Has the additional advantage of providing estimates with additive properties.

Siegel (54, p. 179) in commenting on the power of the Chi-square test, admits that there is no alternative in using this test, and therefore the power efficiency is hard to assess. He quotes Cochran as having demonstrated, however, that "the limiting power of Chi-square tends to change as N becomes large." Since the N in our study has been large in most cases, the investigator believes this requirement has been met.

In disposing of the hypothesis the procedure recommended by Siegel (54, pp. 6-17) was followed:

- (1) The null hypothesis was stated for each general hypothesis.
- (2) The statistical tests were selected and the results presented in tabular form.
- (3) The level of significance was selected in advance at the .05 level of confidence.
- (4) The sampling distribution was dependent upon and interpreted from the statistical tables presented in the Appendix of Siegel's Non-Parametric Statistics, Table A, for the Mann Whitney U as they were transformed into z scores, and Table C for the Chi-square test.

- (5) The region of rejection was predicted in advance and lay at either end of the distribution, and thus implied a two-tailed region of rejection.
- (6) The decision or disposition of the hypothesis in this study was stated after the presentation of the results of the data.

Statement of Hypotheses Concerning the Difficulties Encountered  
by Doctoral Recipients While in Graduate Study

The independent variables considered in this research were the group compositions of women doctoral recipients as they are classified and compared on the number and variety of problems encountered while in the pursuit of graduate study. Examples of these group comparisons included: doctoral degree recipients of public institutions versus doctoral recipients of private institutions; Doctors of Philosophy recipients versus Doctors of Education recipients; recipients in the field of the biological sciences versus those in the physical sciences; recipients in the humanities versus those in the social sciences; recipients in the humanities versus those in other miscellaneous fields; married women versus single women; and the married women with and without children.

The dependent variables were expressed in terms of the reported difficulties encountered while the recipients were enrolled in a doctoral program. An examination of the difficulties with regard to the background characteristics of the recipients were: age, marital status, number and age of the children, educational attainment of the parents, family relationships, education, financial, mobility, personal, counseling, and other areas.

The hypotheses of this study attempted to examine the relationships

between the specific sets of the variables described above. Relationships existing between the independent variables, between the dependent variables, and the interaction between the two, were considered.

The following general hypotheses were tested at the .05 level of probability, in order to determine the differences among the sample drawn from women doctoral recipients in graduate schools in the United States during the year 1963-64:

- Null hypothesis: 1. There is no significant difference among women doctorates who are graduated from public institutions from those who are graduated from private institutions in terms of the number and variety of problems they identify as having encountered while in pursuit of graduate study.

Problems considered when comparing the two groups included the following dependent variables: problems stemming from (a) age; (b) marital status; (c) number of children in the family; (d) age of the children; (e) father's educational attainment; (f) mother's educational attainments; (g) family relationships; (h) time-management; (i) finances; (j) educational; (k) health; (l) mobility; (m) personal; (n) vocational; (o) counseling; (p) length of time in study and (q) periods of interrupted study.

- Alternative hypothesis: 1. There is a significant difference among women doctorates who are graduated from public institutions from those who are graduated from private institutions in terms of the number and variety of problems they identify as having encountered while in pursuit of graduate study.

Problems considered when comparing the two groups included the following dependent variables: problems stemming from (a) age; (b) marital status; (c) number of children in the family; (d) age of the children; (e) father's educational attainment; (f) mother's educational attainments; (g) family relationships; (h) time-management; (i)

finances; (j) educational; (k) health; (l) mobility; (m) personal; (n) vocational; (o) counseling; (p) length of time in study, and (q) periods of interrupted study.

Other hypotheses tested included:

- Null hypothesis: 2. There is no significant difference in the difficulties encountered by the women Doctor of Philosophy graduates and the Doctor of Education graduates on the dependent variables enumerated above.

Also contrasted were the following:

- (a) The woman Doctor of Philosophy graduate versus the doctorates called by other titles; (b) the woman Doctor of Education graduate versus the doctorates called by other titles, on the dependent variables enumerated above.

- Alternative hypothesis: 2. There is a significant difference in the difficulties encountered by the women Doctor of Philosophy graduates and the Doctor of Education graduates on the background variables enumerated above.

Also contrasted were the following:

- (a) The woman Doctor of Philosophy graduate versus the doctorates called by other titles; (b) the woman Doctor of Education graduate versus the doctorates called by other titles, on the dependent variables enumerated above.

- Null hypothesis: 3. There is no significant difference in the difficulties encountered by women doctoral recipients in the humanities and the doctoral recipients in the social sciences on the dependent variables enumerated above.

Other comparisons were made between the following groups:

- (a) The woman doctoral recipient in the humanities versus the doctoral recipients in the physical sciences;
- (b) The doctoral recipients in the humanities versus the doctoral recipients in the biological sciences;
- (c) The doctoral recipients in the humanities versus those in other miscellaneous fields;
- (d) The doctoral recipients in the social sciences versus the doctoral recipients in the physical sciences;
- (e) The doctoral recipients in the social sciences versus the doctoral recipients in the biological sciences;
- (f) The doctoral recipients in the social sciences versus the doctoral recipients in other miscellaneous fields;
- (g) The doctoral recipients in the physical sciences versus the doctoral recipients in the biological sciences;
- (h) The doctoral recipients in the physical sciences versus the doctoral recipients in other miscellaneous fields;
- (i) The doctoral recipients in the biological sciences versus the doctoral recipients in other miscellaneous fields, on the dependent variables listed above.

Alternative hypothesis: 3. There is a significant difference in the difficulties encountered by women doctoral recipients in the humanities and the doctoral recipients in the social sciences on the dependent variables enumerated above.

Other comparisons were made between the following groups:

- (a) The woman doctoral recipient in the humanities versus the doctoral recipients in the physical sciences;
- (b) The doctoral recipients in the humanities versus the doctoral recipients in the biological sciences;
- (c) The doctoral recipients in the humanities versus those in other miscellaneous fields;
- (d) The doctoral recipients in the social sciences versus the doctoral recipients in the physical sciences;

- (e) The doctoral recipients in the social sciences versus the doctoral recipients in the biological sciences;
- (f) The doctoral recipients in the social sciences versus the doctoral recipients in other miscellaneous fields;
- (g) The doctoral recipients in the physical sciences versus the doctoral recipients in the biological sciences;
- (h) The doctoral recipients in the physical sciences versus the doctoral recipients in other miscellaneous fields;
- (i) The doctoral recipients in the biological sciences versus the doctoral recipients in other miscellaneous fields,

on the dependent variables listed above.

Null hypothesis: 4. There is no significant difference in the difficulties encountered by women doctoral recipients who are married and the doctoral recipients who are unmarried on the dependent variables listed above.

Alternative hypothesis: 4. There is a significant difference in the difficulties encountered by women doctoral recipients who are married and the doctoral recipients who are unmarried on the dependent variables listed above.

Null hypothesis: 5. There is no significant difference in the difficulties encountered by women doctoral recipients who are married with progeny and the doctoral recipients who are married and without children on the dependent variables listed above.

Alternative hypothesis: 5. There is a significant different in the difficulties encountered by women doctoral recipients who are married, with progeny, and the doctoral recipients who are married and without children on the dependent variables listed above.



## CHAPTER III

### PERSONNEL, INSTRUMENTATION AND PROCEDURE

The description of the sample population, the instrument used, and the procedure followed in testing the hypotheses that were listed in Chapter II are presented in this chapter.

#### Subject: Population and Sample

The population under study consisted of all females in the United States who earned a doctoral degree in the calendar year beginning September 1, 1963 and ending August 31, 1964, from an accredited graduate school as listed in the American Universities and Colleges. (2, pp. 1283-1304). The parameter for this period was 1535 women doctoral recipients for the year of 1963-1964. (61, pp. 3-6).

The sample was obtained by the following procedure: inquiries were mailed to one hundred and eighty-six deans of graduate schools, requesting a list of their 1963-64 women doctoral recipients. The mailing list of the accredited graduate schools was obtained from Section VI of the American Universities and Colleges (2, p. 1302), Level IV. Replies from this mailing were received from one hundred and sixty graduate deans representing 86.02 per cent returns from the inquiry.

Eleven hundred and eighty-nine names of recipients were obtained in this manner, representing a cross section of the nation's graduate

schools. (Over twelve hundred names were received, but addresses were not available for some recipients on the list.)

Of the eleven hundred eighty-nine questionnaires mailed during the month of November, eight hundred fifty-five were returned. Of this number, eight hundred forty-two questionnaires were useable, or met the cut-off date of April 1st for the compilation of the data. With this number (eight hundred forty-two) a percentage "return" of 71.06 per cent was obtained. Forty letters were returned "address unknown," so that of the eleven hundred eighty-nine questionnaires mailed, it was assumed that eleven hundred forty-nine reached the respondents.

In February, three hundred follow-up letters were mailed. As a result of this mailing, fifty-four questionnaires were returned. This procedure accounted for eighteen per cent of the total returns.

The adequate "returns" of the questionnaire (71.06 per cent) were attributed to the short length and objectivity of the instrument, which permitted ease in responding. Research has shown that women answer questionnaires more readily than men; and that with the higher educational attainment there is a greater tendency for subjects to respond. The sample in this study met both of these conditions.

*Subject  
Research  
Source  
unintentional*

The subjects that responded were categorized as follows:

Group I.

A. Private Institutions Recipients	458
B. Public Institution Recipients	384
(1) Private Ph.D.'s	347
(2) Public Ph.D.'s	290
(3) Private Ed.D.'s	89
(4) Public Ed.D.'s	87
(5) Private <u>Other</u> S.'s	22
(6) Public <u>Other</u> S.'s	7

Group II.	Ph.D.'s	636
	Ed.D.'s	177
	<u>Other</u> S.'s	29
Group III.	Humanities S.'s	176
	Biological Scientists	146
	Physical Scientists	74
	Social Scientists	421
	<u>Other</u> Discipline S.'s	25
Group IV.	Married S.'s	478
	Unmarried S.'s	283
Group V.	Married S.'s, Without Children	195
	Married S.'s, With Children	283

#### Instrument Used In The Study

After an extensive review of the literature related to women in graduate education, certain factors residing in the culture were suggested repetitiously as significant in precipitating periods of interrupted study-- and thus lengthening the time required to complete degree requirements.

Some of the factors considered in developing the instrument were: age of the subject; marital status; number and age of the children; and educational level of the mother and father. Forty-five items were developed for the questionnaire which covered nine significant areas in the lives of the individual recipients. Areas which seemed to pose some difficulty for women while pursuing doctoral study were: family relationships, time-management, finances, educational demands, health, mobility, personal needs and motivation, vocational commitments, and counseling needs.

The forty-five items of the instrument were ordered along a five-point scale, denoting the degree of difficulty encountered by the recipient, while pursuing the doctorate. Degrees of difficulty represented

on the scale were:

5	4	3	2	1
Very Difficult	Difficult	Somewhat Difficult	Rarely Difficult	No Problem

The "high" score for a response indicated a "difficult" item for the respondent if she checked 5 and 4. Some difficulty was indicated if the response to an item was checked 3 and 2. A response to an item checked 1 indicated that "no problem" existed.

Assumptions made in the development and utilization of the questionnaire were: (1) that the respondents answered the questionnaire "honestly," rather than in a socially acceptable manner -- the study did not purport to be able to distinguish between the two. (2) It was assumed that each respondent would recall the "difficulties" encountered while engaged in graduate study according to her perception of the event as it occurred, and that her response would be "revealing the special training, desires, or attitudes of the individual in question. The available evidence indicates that such transformations do have a definite direction and relevance to the person's pressing attitudes and motives at the time." (55, p. 63). (3) Recency was considered an important factor in recalling events; therefore, the investigator mailed the questionnaire as soon after the end of the academic year as possible. It was felt that while distortions did occur in remembering, still there was a tendency for the recipients to recall pleasant memories more often than unpleasant ones. Jersild (33, p. 323) found that college students "recalled more pleasant than unpleasant events from a recent period in their lives." Since "difficulties" were considered to be in the "unpleasant" class of

events, and since the recipients had succeeded in the pursuit of the doctoral degree and thus may have forgotten some of the unpleasantness associated with this period it was assumed that the data from the questionnaires were conservative in estimating the difficulties encountered while the recipients were enrolled in study.

#### Procedure Followed in the Study

The procedure followed was first, the development of the questionnaire which had been preceded by extensive reading in the area of women enrolled in higher education. After obtaining approval of the questionnaire from the doctoral committee, eight women who were enrolled in doctoral programs at Oklahoma State University and Louisiana State University evaluated the instrument and made suggestions concerning its clarity. Some minor revisions were made following this procedure of evaluation. The letters to the graduate-deans were mailed on November 2, 1964. Questionnaires, and a cover letter explaining the purpose of the research, were mailed in late November to the recipients listed by the graduate deans. A follow-up letter was mailed the last of February, and the cut-off date was set for April 1st. After this date the data were coded, and the computations were made by the IBM Computer at Louisiana State University, Baton Rouge, Louisiana.

## CHAPTER IV

### DIVERSITY AMONG WOMEN DOCTORAL RECIPIENTS OF 1963-64

#### Introduction

The major purpose of this research has been to demonstrate that important differences do exist among women who earn the doctor's degree. It is hoped that some insight will be gained regarding the nature of these differences and that this increased insight will provide some understanding of the difficulties women encounter, by those groups who plan and administer doctoral programs for women. Another desirable outcome would be that these findings might stimulate further research in this area, as well as encourage a re-examination of the assumptions regarding the specific nature of the problems that graduate women meet as they interact with factors in the educational, societal and home environments.

The five general hypotheses were tested in an effort to determine if there did indeed exist diversity among the groups. This chapter sets forth the results of the analysis of the data and the implications of these findings as tested by the hypotheses. In order to gain a better understanding of the results, the general hypotheses were at times subdivided. This procedure provided a more detailed comparison among the groups on each of the dependent variables to be considered.

A null hypothesis was used for testing the data. When differences were found to be greater at a significant level than was expected from

chance fluctuations in the sampling, then the null hypothesis was said to be rejected and the alternative hypothesis confirmed. By affirming the alternative hypothesis the observed differences were attributed to differences in the sample and were not believed to be the result of chance.

### Findings and Disposition of Hypotheses

#### I. Diversity Among the Public and Private Institutional Groups on the Dependent Factors:

Hypothesis I stated that subjects who attended public institutions of higher education would not differ significantly from the subjects who attended private institutions, on the various dependent variables as reported in the returned questionnaire. Table II shows the overall composite of the "age" variable of the recipients who attended the two types of institution. The age of the subjects who attended the Public and Private institutions were cast into a frequency distribution, with cells representing the following five categories: (1) subjects who were born in the decade from 1900-09 (ages 65-56); (2) subjects who were born in the decade from 1910-19 (ages 55-46); (3) subjects who were born in the decade from 1920-29 (ages 45-36); (4) subjects who were born in the decade from 1930-39 (ages 35-26); and (5) subjects who were born in the decade from 1940-49 (ages 25-16).

A more detailed analysis of the data was executed to see if there was a significant difference between the Ph.D. recipients who attended public versus private institutions. A similar analysis was made for the recipients of the Ed.D., and Other degrees.

TABLE II

CHI-SQUARES FOR THE INDICES OF THE WOMEN  
DOCTORATES WHO EARNED DEGREES FROM  
PUBLIC AND PRIVATE INSTITUTIONS

Groups and Direction of Difference	Decade in Which Recip- ient Born	Observed Frequency	Expected Frequency	Mean Age	Number
Private-Degree Recipients	1900-09	22	25	39.01	458 <sup>?</sup>
	1910-19	87	88		
	1920-29	172	163		
	1930-39	174	179		
	1940-49	2	1		
Public-Degree Recipients	1900-09	25	21	39.00	384
	1910-19	71	69		
	1920-29	128	137		
	1930-39	159	145		
	1940-49	1	1		

Tab.  $x^2$  between groups = 2.79

Sub-Groups

Private Ph.D.'s	1900-09	10	13	37.6	347
	1910-19	50	46		
	1920-29	135	128		
	1930-39	150	156		
	1940-49	2	1		
Public Ph.D.'s	1900-09	11	11	36.7	286
	1910-19	35	38		
	1920-29	101	107		
	1930-39	138	131		
	1940-49	1	1		

Tab.  $x^2$  between groups = 4.31

Private Ed.D.'s	1900-09	9	9	45.2	89
	1910-19	35	31		
	1920-29	38	35		
	1930-39	7	12		
	1940-49	0	0		
Public Ed.D.'s	1900-09	9	8	43.3	87 <sup>?</sup>
	1910-19	28	21		
	1920-29	23	35		
	1930-39	17	11		
	1940-49	0	0		

Tab.  $x^2$  between groups = 5.27



TABLE II (Continued)

Groups and Direction of Difference	Decade in Which Recipient Born	Observed Frequency	Expected Frequency	Mean Age	Number
Private <u>Other-</u> Degrees	1900-09	3	2	39.9	22
	1910-19	2	1		
	1920-29	7	5		
	1930-39	10	9		
	1940-49	0	3		
Public <u>Other-</u> Degrees	1900-09	1	1	29.9	12
	1910-19	0	0		
	1920-29	2	3		
	1930-39	4	4		
	1940-49	5	1		

Tab.  $\chi^2$  between groups = 11.39\*\*\*

\*\*\* Probability of obtaining a Chi-Square equal to or greater than 11.34 = .01 level of confidence.  
Degrees of freedom = 4.  
> = Greater than.

The null hypothesis was only partially rejected for the variable of the "age" of the recipients, since it was found that there was a significant difference between the recipients who earned Other degrees from the Private institutions over those who earned Other degrees and were graduated from Public institutions. The Private-degree recipients of Other degrees were older, with a mean age of 39.9, than were their counterparts who attended Public institutions, (mean age of 29.9).

Table III presents the findings of the statistical test for differences among the groups who attended the Public and Private institutions, with respect to the number of children in the families of the degree-recipients. The responses relative to the number of children were divided into the following categories: (1) no children; (2) 1 child; (3) 2 children; (4) 3 children; (5) 4 children; (6) 5 children;

and (7) over five children.

The results of the statistical analysis show that no significant difference was found among the groups on the "number of children" variable. Thus, the null hypothesis was not rejected.

TABLE III

CHI-SQUARES FOR THE INDICES OF THE NUMBER OF CHILDREN  
OF WOMEN DOCTORATES WHO EARNED THE DEGREE  
FROM PUBLIC AND PRIVATE INSTITUTIONS

Groups and Direction of Difference	Number of Children	Observed Frequency	Expected Frequency	Mean Number of Children	N
Public-Degree Recipients	0	239	252	2.40	149
	1	53	50		
	2	58	54		
	3	25	18		
	4	7	6		
	5	4	4		
	over 5	2	0		
Private-Degree Recipients	0	315	301	1.07	147
	1	57	59		
	2	62	65		
	3	16	22		
	4	7	7		
	5	5	4		
	over 5	0	1		

Tab.  $x^2$  between groups = 8.41

Sub-Groups

Public Ph.D.'s	0	185	190	2.56	105
	1	35	34		
	2	43	42		
	3	17	14		
	4	6	5		
	5	4	2		
	over 5	0	0		

TABLE III (Continued)

Groups and Direction of Difference	Number of Children	Observed Frequency	Expected Frequency	Mean Number of Children	N
Private Ph.D.'s	0	234	228		
	1	41	41	1.38	
	2	50	50		
	3	14	16		
	4	5	5		
	5	2	3		
	over 5	1	0		113
Tab. $\chi^2$ between groups = 3.71					
Public Ed.D.'s	0	50	56		
	1	11	11		
	2	15	11		
	3	8	4	3.9	
	4	1	0		
	5	0	0		
	over 5	2	0		37
Private Ed.D.'s	0	64	57		
	1	12	11	1.0	
	2	9	12		
	3	2	5		
	4	1	1		
	5	1	0		
	over 5	0	1		25
Tab. $\chi^2$ between groups = 9.84					
Private <u>Other-</u> Degrees	0	17	15		
	1	2	3	1.60	
	2	3	2		
	3	0	0		
	4	0	0		
	5	0	0		
	over 5	0	0		5

TABLE III (Continued)

Groups and Direction of Difference	Number of Children	Observed Frequency	Expected Frequency	Mean Number of Children	N
Public <u>Other-</u> Degrees	0	4	5	1.00	
	1	3	1		
	2	0	0		
	3	0	0		
	4	0	0		
	5	0	0		
	over 5	0	0		

Tab.  $x^2$  between groups = 4.76

Degrees of freedom = 6.  
> Greater than.

Table IV graphically presents the data for the variable "the age of the children" of the doctoral recipients. The frequency distribution representing this variable was categorized as follows: (1) no children; (2) children, ages 1 through 9; (3) children, ages 10 through 17; (4) children, 18 years and older.

TABLE IV

CHI-SQUARES FOR THE INDICES OF THE AGE OF THE CHILDREN  
OF WOMEN DOCTORATES WHO EARNED DEGREES FROM  
PUBLIC AND PRIVATE INSTITUTIONS

Groups and Direction of Difference	Age of Children	Observed Frequency	Expected Frequency	Mean Age (with children)	Number
Public-Degree Recipients	0	239	246	12.4	144
	1-9	51	57		
	10-17	65	57		
	18 & over	28	21		
Private-Degree Recipients	0	314	306	10.8	163
	1-9	79	72		
	10-17	63	70		
	18 & over	21	27		

Tab.  $x^2$  between groups = 7.04

TABLE IV (Continued)

Groups and Direction of Difference	Age of Children	Observed Frequency	Expected Frequency	Mean Age	Number (with children)
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Sub-Groups

Public Ph.D.'s >	0	185	190	11.57	105
	1-9	44	52		
	10-17	46	35		
	18 & over	15	11		

Private Ph.D.'s	0	233	227	8.7	113
	1-9	72	63		
	10-17	31	41		
	18 & over	11	14		

Tab.  $x^2$  between groups = 10.79\*\*

Public Ed.D.'s >	0	50	56	12.20	37
	1-9	5	4		
	10-17	19	14		
	18 & over	13	11		

Private Ed.D.'s	0	64	57	11.39	25
	1-9	5	5		
	10-17	10	14		
	18 & over	10	11		

Tab.  $x^2$  between groups = 4.88

Public <u>Other-</u> Degrees >	0	4	5	8.6	5
	1-9	3	1		
	10-17	0	0		
	18 & over	0	0		

Private <u>Other-</u> Degrees	0	17	15	7.7	3
	1-9	2	3		
	10-17	3	2		
	18 & over	0	0		

Tab.  $x^2$  between groups = 4.76

\*\* Probability of obtaining a Chi-Square equal to or greater than 9.84 = .02 level of confidence.

Degrees of freedom = 3.

> = Greater than.

The null hypothesis is only partially rejected for this factor. The Public Ph. D. recipients have older children, with a mean age of 11.57, than do the Ph.D.'s who attended Private institutions. Group-differences show a Chi-square of 10.79, with this statistic significant at the .02 level of confidence. The overall trend suggests that the women doctoral recipients who pursue degrees at Public institutions tend to have older children than do those who attend Private institutions.

Table V presents the data relative to the differences in "the number of years in study" that the recipients of the Public versus Private institutions required to earn the doctorate. Responses representing "the number of years in study" were categorized as follows: (1) one year in study; (2) two years in study; (3) three years in study; (4) four years in study; (5) five years in study; (6) six years in study; and (7) over six years in study.

TABLE V  
CHI-SQUARE FOR THE INDICES OF THE YEARS SPENT  
IN DOCTORAL STUDY BY WOMEN DOCTORATES  
AT PUBLIC AND PRIVATE INSTITUTIONS

Groups and Direction of Difference	Years in Study	Expected Frequency	Observed Frequency	Mean Number of Years	Number
Private-Degree Recipients	1	5	8	4.10	434
	2	63	69		
	3	105	110		
	4	115	107		
	5	50	46		
	6	48	40		
	over 6	48	49		

TABLE V (Continued)

Groups and Direction of Difference	Years in Study	Expected Frequency	Observed Frequency	Mean Number of Years	Number
Public-Degree Recipients	1	12	8	3.49	358
	2	69	62		
	3	106	100		
	4	90	97		
	5	29	41		
	6	47	36		
	over 6	5	45		

Tab.  $x^2$  between groups = 10.33

Sub-Groups

Private Ph.D.'s }	1	3	4	4.44	347
	2	38	48		
	3	86	91		
	4	96	94		
	5	35	33		
	6	39	33		
	over 6	50	41		
Public Ph.D.'s	1	5	3	2.73	290
	2	51	40		
	3	82	76		
	4	77	78		
	5	27	28		
	6	22	27		
	over 6	26	34		

Tab.  $x^2$  between groups = 12.93\*

Private Ed.D.'s }	1	2	1	4.31	89
	2	18	20		
	3	18	19		
	4	12	10		
	5	11	11		
	6	7	8		
	over 6	21	16		

TABLE V (Continued)

Groups and Direction of Difference	Years in Study	Expected Frequency	Observed Frequency	Mean Number of Years	Number
Public Ed.D.'s	1	1	1	3.85	87
	2	23	20		
	3	21	19		
	4	9	10		
	5	11	10		
	6	10	8		
	over 6	12	16		
Tab. $\chi^2$ between groups = 4.56					
Private <u>Other-</u> Degrees	1	0	0	3.82	22
	2	7	5		
	3	1	3		
	4	7	8		
	5	4	3		
	6	2	1		
	over 6	1	0		
Public <u>Other-</u> Degrees	1	0	0	2.58	7
	2	0	1		
	3	3	2		
	4	4	0		
	5	0	0		
	6	0	0		
	over 6	0	0		

Tab.  $\chi^2$  between groups = 11.00

- 
- \* Probability of obtaining a Chi-square equal to or greater than 12.59 = .05 level of confidence.  
Degrees of freedom = 6.  
> = Greater than.

The null hypothesis was only partially rejected for this variable as it was found that the Ph.D.'s who attended Private institutions spent more years in pursuit of the doctoral degree than did those who earned the degree in Public universities. This index was significant at the .05 level of confidence. The mean number of years spent in study by



the Private Ph.D.'s was 4.44, while only 2.73 mean number of years was required by the average Public Ph.D. to earn the doctorate.

A trend was also noticeable in the overall data with regard to the Private university attendants who earned Other degrees in comparison with their counterparts who attended Public institutions. However, the diversity between the two groups did not reach the .05 level of confidence and the null hypothesis was not rejected.



TABLE VI

CHI-SQUARE FOR THE INDICES OF THE PERIODS OF INTERRUPTED  
STUDY EXPERIENCED BY WOMEN DOCTORATES AT  
PUBLIC AND PRIVATE INSTITUTIONS

Groups and Direction of Difference	Periods of Interrupted Study	Expected Frequency	Observed Frequency	Mean Periods of Interrupted Study	N
Public-Degree Recipients	0	194	195	2.57	190
	1	72	72		
	2	43	42		
	3	16	20		
	4	17	16		
	5	40	34		
6 and over	2	0			
Private-Degree Recipients	0	234	232	2.39	224
	1	88	87		
	2	51	51		
	3	30	25		
	4	20	20		
	5	35	40		
6 and over	0	1			

Tab.  $x^2$  between groups = 6.40

TABLE VI (Continued)

Groups and Direction of Difference	Periods of Interrupted Study	Expected Frequency	Observed Frequency	Mean Periods of Interrupted Study	N
<u>Sub-Groups</u>					
Public Ph.D.'s 	0	152	150		
	1	55	57		
	2	32	32	2.49	
	3	12	14		
	4	9	10		
	5	28	23		
	6 and over	2	0		138
Private Ph.D.'s	0	178	179		
	1	72	69		
	2	39	38	2.28	
	3	20	17		
	4	15	13		
	5	23	27		
	6 and over	0	1		169
Tab. $\chi^2$ between groups = 5.95					
Public Ed.D.'s 	0	39	39		
	1	15	14		
	2	10	10	2.80	
	3	4	6		
	4	8	5		
	5	11	10		
	6 and over	0	0		48
Private Ed.D.'s	0	41	40		
	1	14	14		
	2	11	10	2.70	
	3	9	6		
	4	3	5		
	5	11	11		
	6 and over	0	0		48

Tab.  $\chi^2$  between groups = 4.30

TABLE VI (Continued)

Groups and Direction of Difference	Periods of Interrupted Study	Expected Frequency	Observed Frequency	Mean Periods of Interrupted Study	N
Public <u>Other-</u> Degrees	0	3	5	3.16	9
	1	2	1		
	2	1	0		
	3	0	0		
	4	0	0		
	5	3	1		
	6 and over	0	0		
Private <u>Other-</u> Degrees	0	15	12	2.86	22
	1	2	2		
	2	1	1		
	3	1	0		
	4	2	1		
	5	1	2		
	6 and over	0	0		

Tab.  $\chi^2$  between groups = 7.94

Degrees of freedom = 6.

> = Greater than.

In Table VI there is found no significant difference between the groups who attended Public and Private institutions in regard to the number of "periods of interrupted study" they experienced.

A frequency distribution was computed with the following categories representing the responses of the degree recipient: (1) no periods of interrupted study; (2) one period of interrupted study; (3) two periods of interrupted study; (4) three periods of interrupted study; (5) four periods of interrupted study; (6) five periods of interrupted study; and (7) six periods, and over, of interrupted study.

In considering this variable the null hypothesis was not rejected and the alternative hypothesis was infirmed. These indices did not discriminate between the groups, as all the groups experienced an

average of approximately two periods of interrupted study.

Table VII reveals that there is a significant difference at the .001 level of confidence found within the Public Ed.D. recipients with respect to the father's higher educational level than is found within the Private Ed.D. recipients, when the two groups are contrasted.

The responses were cast into a frequency distribution representing the following categories: (1) fathers, whose level of educational attainment was reached in grades 1 through 8; (2) fathers, whose level of educational attainment was reached in grades 9 through 12; (3) fathers, whose educational attainment was reached at the college level, 13 through 16; and (4) fathers, whose educational attainment was reached at the graduate levels, 17 and above. The alternative hypothesis was only partially supported on this variable, however, as the other groups did not prove to be significantly different.

TABLE VII

CHI-SQUARE FOR THE INDICES OF THE FATHER'S EDUCATIONAL  
ATTAINMENT OF THE WOMEN DOCTORATE WHO EARNED  
DEGREES AT PUBLIC AND PRIVATE INSTITUTIONS

Groups and Direction of Difference	Level of Educational Attainment	Observed Frequency	Expected Frequency	Mean Level	N
Private-Degree Recipients	1-8	125	127	11.76	458
	9-12	131	128		
	13-16	114	113		
	17 and over	88	88		
Public-Degree Recipients	1-8	113	110	11.20	398
	9-12	109	111		
	13-16	98	98		
	17 and over	78	77		

Tab.  $x^2$  between groups = 0.227

TABLE VII (Continued)

Groups and Direction of Difference	Level of Educational Attainment	Observed Frequency	Expected Frequency	Mean Level	N
<u>Sub-Groups</u>					
Public Ph.D.'s >	1-8	75	77	11.6	290
	9-12	79	79		
	13-16	80	75		
	17 and over	56	57		
Private Ph.D.'s	1-8	95	92	11.52	347
	9-12	95	94		
	13-16	86	90		
	17 and over	71	69		
Tab. $\chi^2$ between groups = 0.718					
Private Ed.D.'s >	1-8	20	28	13.36	87
	9-12	35	29		
	13-16	27	19		
	17 and over	5	9		
Public Ed.D.'s	1-8	37	28	10.92	86
	9-12	24	29		
	13-16	12	18		
	17 and over	13	8		
Tab. $\chi^2$ between groups = 16.44****					
Private <u>Other-</u> Degrees >	1-8	1	0	13.16	22
	9-12	6	6		
	13-16	6	6		
	17 and over	9	7		
Public <u>Other-</u> Degrees	1-8	0	0	12.84	7
	9-12	3	2		
	13-16	3	2		
	17 and over	1	2		
Tab. $\chi^2$ between groups = 2.24					

\*\*\*\* Probability of obtaining a Chi-square equal to or greater than 16.27 significant at .001 level of confidence.

Degrees of freedom = 3.

> = Greater than.

In Table VIII, the categories of the responses with respect to the educational attainment level of the mother is identical to the categories used in Table VII relative to the father's educational level. These are: (1) level of education, one through eight grades; (2) level of education, ninth through twelfth grades; (3) college level, (13-16); and, (4) graduate level, grade 17 and above.

The overall null hypothesis was rejected for this variable and the alternative hypothesis was confirmed as it was found that the mother's educational level proved to be a significant factor at the .001 level of confidence between the doctoral recipients who attended the Public versus those who attended the Private institutions. A closer look at the data in Table VIII reveals that it is in the Public Ph.D. group that this factor is especially significant at the .02 level of confidence.

TABLE VIII

CHI-SQUARE FOR THE INDICES OF THE MOTHER'S EDUCATIONAL  
ATTAINMENT OF THE WOMEN DOCTORATES WHO EARNED  
DEGREES AT PUBLIC AND PRIVATE INSTITUTIONS

Groups and Direction of Difference	Level of Educational Attainment	Observed Frequency	Expected Frequency	Mean Level	N
Public-Degree Recipients	1-8	102	94	10.95	383
	9-12	120	146		
	13-16	131	124		
	17 and over	30	118		
Private-Degree Recipients	1-8	122	129	10.55	458
	9-12	158	200		
	13-16	151	169		
	17 and over	27	161		

Tab.  $x^2$  between groups = 13.64\*\*\*

TABLE VIII (Continued)

Groups and Direction of Difference	Level of Educational Attainment	Observed Frequency	Expected Frequency	Mean Level	N
<u>Sub-Groups</u>					
Public Ph.D.'s }	1-8	62	72	11.81	309
	9-12	93	101		
	13-16	118	107		
	17 and over	36	27		
Private Ph.D.'s	1-8	91	80	10.72	347
	9-12	123	114		
	13-16	110	120		
	17 and over	23	31		
Tab. $\chi^2$ between groups = 10.64***					
Public Ed.D.'s }	1-8	20	23	10.76	87
	9-12	35	32		
	13-16	27	27		
	17 and over	5	3		
Private Ed.D.'s	1-8	28	24	10.24	89
	9-12	30	32		
	13-16	29	28		
	17 and over	2	3		
Tab. $\chi^2$ between groups = 3.05					
Private <u>Other-Degrees</u> }	1-8	3	4	11.4	22
	9-12	5	6		
	13-16	12	9		
	17 and over	2	1		
Public <u>Other-Degrees</u>	1-8	3	1	11.12	7
	9-12	3	1		
	13-16	1	3		
	17 and over	0	0		

Tab.  $\chi^2$  between groups = 5.52

\*\* Probability of obtaining a Chi-square equal to or greater than 9.84 signifies at .02 level of confidence.

\*\*\* Probability of obtaining a Chi-square equal to or greater than 11.34 is significant at .01 level of confidence.

> = Greater than.

No significant difference was found between the Public versus Private Ed.D.'s and between the Public as compared to the Private Other degree recipients. For these latter groups the null hypothesis was not rejected.

The five areas of specialization considered in this research were: (1) the Humanities; (2) the Biological Sciences; (3) the Physical Sciences; (4) the Social Sciences; and (5) Other miscellaneous fields. Recipients from the Public and Private educational institutions were classified according to these fields of specialization. The results are shown in Table IX, in addition to the percentage totals for each specific group in each category.

In examining Table IX it is noted that there is a significant difference found at the .05 level of confidence between the Private Ph.D.'s and the Public Ph.D.'s in the area of academic specialization. The Private Ph.D.'s selected most often the disciplines of Social Science (45.6 per cent) and Physical Science (16.6 per cent), while the Public Ph.D.'s chose to major in the Humanities (25.1 per cent), Biological Sciences (24.8 per cent), and Other miscellaneous areas (4.4 per cent). This same trend was manifest in the overall composite of the Public versus Private groups, but these data did not attain significance. Once again, the null hypothesis was not completely rejected, as the alternative hypothesis was confirmed for the Ph.D. group at the .05 level of confidence.

II. Diversity Among the Doctor of Philosophy, Doctor of Education and Other Degree Recipients on the Dependent Factors as Measured by the Questionnaire:



TABLE IX

CHI-SQUARES FOR THE INDICES OF THE FIELDS OF SPECIALIZATION  
OF THE WOMEN DOCTORATES WHO EARNED DEGREES FROM  
PUBLIC AND PRIVATE INSTITUTIONS

Groups	Fields of Specialization	Observed Frequency	Expected Frequency	Per Cent of Group Total	N
Public-Degree Recipients	Humanities	80	82	20.4	392
	B. S.	81	73	20.6	
	P. S.	28	34	7.1	
	S. S.	151	160	38.5	
	<u>Other</u>	52	11	13.3	
Private-Degree	Humanities	95	96	20.7	458
	B. S.	73	84	15.9	
	P. S.	47	40	10.2	
	S. S.	233	223	50.8	
	<u>Other</u>	10	13	2.1	

Tab.  $x^2$  between groups = 8.91

Public Ph.D.'s	Humanities	73	71	25.1	290
	B. S.	72	59	24.8	
	P. S.	27	32	9.3	
	S. S.	113	123	38.9	
	<u>Other</u>	5	3	4.4	
Private Ph.D.'s	Humanities	82	83	24.3	337
	B. S.	56	68	16.6	
	P. S.	43	47	12.7	
	S. S.	154	143	45.6	
	<u>Other</u>	2	3	.59	

Tab.  $x^2$  between groups = 10.29\*

Public Ed.D.'s	Humanities	10	8	11.4	87
	B. S.	2	6	2.2	
	P. S.	1	1	1.1	
	S. S.	68	65	78.1	
	<u>Other</u>	6	4	6.8	

TABLE IX (Continued)

Groups	Fields of Specialization	Observed Frequency	Expected Frequency	Per Cent of Group Total	N
Private Ed.D.'s	Humanities	7	8	7.8	89
	B. S.	11	6	12.3	
	P. S.	3	2	3.3	
	S. S.	64	66	71.9	
	<u>Other</u>	4	5	4.4	

Tab.  $\chi^2$  between groups = 8.26

Public <u>Other-</u> Degrees	Humanities	1	1	14.2	7
	B. S.	1	1	14.2	
	P. S.	0	0		
	S. S.	1	1	14.2	
	<u>Other</u>	4	1	44.9	
Private <u>Other-</u> Degrees	Humanities	6	5	27.2	22
	B. S.	6	5	27.2	
	P. S.	1	0	4.5	
	S. S.	5	4	22.7	
	<u>Other</u>	4	6	18.1	

Tab.  $\chi^2$  between groups = 4.16

\* Probability of obtaining a Chi-square equal to or greater than 9.49 is = .05 level of confidence.

Degrees of freedom = 4.       $\blacktriangleright$  = Greater than.

Hypothesis II states that women doctoral recipients who earned the Ph.D. degree did not differ significantly from those who earned the Ed.D. or Other degrees on the dependent variables.

Table X presents the results of the comparison of groups on the "age" variable. Here the groups are again compared on their ages, classified according to the decade in which they were born: (1) 1900-09; (2) 1910-19; (3) 1920-29; (4) 1930-39; and (5) 1940-49.

The null hypothesis was only partially rejected for this variable as a significant difference at the .001 level of confidence was found

TABLE X

CHI-SQUARES FOR THE INDICES OF THE AGE OF  
WOMEN DOCTORATES WHO EARNED  
THE DIFFERENT DEGREES

Groups and Direction of Difference	Decade in Which Recipient Born	Observed Frequency	Expected Frequency	Mean Age	N
Ed.D.'s	1900-1909	18	9	44.0	177
	1910-1919	64	32		
	1920-1929	71	66		
	1930-1939	24	67		
	1940-1949	0	0		
Ph.D.'s	1900-1909	25	33	37.5	636
	1910-1919	84	115		
	1920-1929	236	240		
	1930-1939	288	244		
	1940-1949	3	2		

Tab.  $x^2$  between groups = 87.73\*\*\*\*

Other-Degrees	1900-1909	4	1	38.6	29
	1910-1919	2	3		
	1920-1929	9	10		
	1930-1939	14	0		
	1940-1949	0	0		
Ph.D.'s	1900-1909	25	27	37.5	636
	1910-1919	84	82		
	1920-1929	236	234		
	1930-1939	288	288		
	1940-1949	3	2		

Tab.  $x^2$  between groups = 7.50

Ed.D.'s	1900-1909	18	18	44.0	177
	1910-1919	64	56		
	1920-1929	71	68		
	1930-1939	24	32		
	1940-1949	0	0		

TABLE X (Continued)

Groups and Direction of Difference	Decade in Which Recipient Born	Observed Frequency	Expected Frequency	Mean Age	N
<u>Other</u> -Degrees	1900-1909	4	3	38.6	29
	1910-1919	2	9		
	1920-1929	9	11		
	1930-1939	14	5		
	1940-1949	0	0		

Tab.  $\chi^2$  between groups = 23.77\*\*\*\*

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\*\*\*\* Probability of obtaining a Chi-square equal to or greater than 18.46 = .001 level of confidence.  
 Degrees of freedom = 4.  
 > = Greater than.

between the Ph.D. and Ed.D. recipients, and between the Other degree and Ed.D. recipients. The Ed.D. recipients were found to be older than the Ph.D. and Other degree-recipients. There was no significant difference found between the Ph.D. and Other degree recipients on this characteristic. For the first two portions of the sub-hypothesis, the null hypothesis was rejected, and the alternative hypothesis was confirmed.

In Table XI, the different degree-recipients are classified with respect to the number of children represented in their families. Categories with regard to the number of children are: (1) no children; (2) one; (3) two; (4) three; (5) four; (6) five; (7) and over five. The average mean number of children for all groups approximates 2.5. It might be noted here that the first category (no children) was eliminated before computing the mean.

Table XI revealed that no significant differences existed between the three contrasting groups on the number of children reported in

their families by the doctoral recipients. Therefore, the null hypothesis was not rejected for this variable.

TABLE XI

CHI-SQUARES FOR THE INDICES FOR THE NUMBER OF  
CHILDREN OF WOMEN DOCTORATES WHO EARNED  
THE DIFFERENT DEGREES

Groups and Direction of Difference	Number of Children	Observed Frequency	Expected Frequency	Mean Number	N
Ph.D.'s	0	418	416	2.74	636
	1	76	77		
	2	93	91		
	3	31	32		
	4	11	10		
	5	6	5		
	over 5	1	2		
Ed.D.'s	0	115	116	2.66	177
	1	23	21		
	2	24	25		
	3	10	8		
	4	2	2		
	5	1	1		
	over 5	2	0		
Tab. $x^2$ between groups = 4.50					
Ph.D.'s	0	418	419	2.74	636
	1	76	77		
	2	93	91		
	3	31	29		
	4	11	10		
	5	6	5		
	over 5	0	0		
<u>Other-Degrees</u>	0	21	19	2.45	29
	1	5	3		
	2	3	4		
	3	0	1		
	4	0	0		
	5	0	0		
	over 5	0	0		

Tab.  $x^2$  between groups = 3.41

TABLE XI (Continued)

Groups and Direction of Difference	Number of Children	Observed Frequency	Expected Frequency	Mean Number	N
Ed.D.'s	0	115	116		
	1	23	24		
	2	24	23	2.66	
	3	10	8		
	4	2	1		
	5	1	0		
	over 5	2	1		177
<u>Other-Degrees</u>	0	21	19		
	1	5	3		
	2	3	3	2.45	
	3	0	1		
	4	0	1		
	5	0	0		
	over 5	0	0		29

Tab.  $\chi^2$  between groups = 3.19

Degrees of freedom = 6.

> = Greater than.

In Table XII the responses of the degree-recipients relative to the age of the children are classified in the following manner: (1) no children; (2) children, ages one through nine; (3) children, ages ten through seventeen; and (4) children, 18 and above.

The results of the Chi-square test of differences between the groups of degree recipients on the factor of the "age of children" are presented in Table XII. There is found a significant difference at the .001 level of confidence between the Ph.D. and the Ed.D. recipients with the latter group having older children with a mean age of 12.9. The data also reveals that the Ed.D. recipients have older children than do the Other degree recipients. This statistic is significant at the .05 level of confidence.

The null hypothesis was rejected among only one of the three groups as no significant difference was found between the Ph.D. and Other degree recipients on this variable. For the remaining groups the alternative hypothesis was confirmed.

TABLE XII

CHI-SQUARE FOR THE INDICES FOR THE AGE OF THE CHILDREN OF WOMEN DOCTORATES WHO EARNED THE DIFFERENT DEGREES

Groups and Direction of Difference	Age of Children	Observed Frequency	Expected Frequency	Mean Age	N
Ed.D.'s	0	115	115	12.90	117
	1-9	10	27		
	10-17	29	23		
	18 and above	23	10		
Ph.D.'s	0	417	416	7.6	636
	1-9	116	98		
	10-17	77	82		
	18 and above	26	38		
Tab. $x^2$ between groups = 34.33****					
<u>Other-Degrees</u>	0	21	19	9.6	29
	1-9	5	5		
	10-17	3	3		
	18 and above	0	1		
Ph.D.'s	0	417	418	7.6	636
	1-9	116	115		
	10-17	77	76		
	18 and above	26	24		

Tab.  $x^2$  between groups = 1.47

TABLE XII (Continued)

Groups and Direction of Difference	Age of Children	Observed Frequency	Expected Frequency	Mean Age	N
Ed.D.'s	0	115	116		
	1-9	10	12		
	10-17	29	27	12.90	
	18 and above	23	29		117
<u>Other-Degrees</u>	0	21	19		
	1-9	5	2	9.6	
	10-17	3	4		
	18 and above	0	3		29

Tab.  $\chi^2$  between groups = 9.16\*

\*\*\*\* Probability of obtaining a Chi-square equal to or greater than 16.27 = .001 level of confidence.

\* Probability of obtaining a Chi-square equal to or greater than 7.82 = .05 level of confidence.

Degrees of freedom = 3.

> = Greater than.

In Table XIII the three groups are compared on the number of years required to earn the doctorate. The years are classified as follows: (1) one; (2) two; (3) three; (4) four; (5) five; (6) six; and (7) over six years.

Table XIII provides information about the groups' performance while enrolled in doctoral studies. The Doctor of Education recipients require a longer period of time to earn the degree than do the Doctor of Philosophy recipients. This  $\chi^2$  of 28.95 is significant at the .001 level of confidence. This same finding proves significant when the Doctor of Education recipients are contrasted with those who earned Other degrees, at the .02 level of confidence.

The alternative hypothesis was confirmed when considering these two contrasting groups. However, there was no significant difference



found between the Ph.D. and Other degree recipients on the variable "years in study," which seemed to indicate they were more homogeneous. For these groups the null hypothesis was not rejected.

Prolonged years in study, and periods of interrupted study, often seem to be the result of some difficulty encountered by the recipients in the educational, familial, or community environment. Taking a closer look at these occurrences it can be seen that the degree-recipients were classified on the variable "periods of interrupted study" according to the number of times they experienced a break in their doctoral program. These periods are categorized as: (1) no interruptions; (2) one period of interruption; (3) two periods of interruption;

TABLE XIII

CHI-SQUARES FOR THE INDICES OF THE YEARS SPENT  
IN DOCTORAL STUDY BY WOMEN DOCTORATES  
WHO EARNED THE DIFFERENT DEGREES

Groups and Direction of Difference	Years in Study	Expected Frequency	Observed Frequency	Mean Number of Years	N
Ed.D.'s	1	3	2	4.13	177
	2	42	28		
	3	39	45		
	4	21	42		
	5	22	18		
	6	17	16		
	over 6	33	23		
Ph.D.'s	1	8	8	3.88	636
	2	88	101		
	3	168	161		
	4	173	151		
	5	62	65		
	6	61	61		
	over 6	76	85		

Tab.  $\chi^2$  between groups = 28.95\*\*\*\*

TABLE XIII (Continued)

Groups and Direction of Difference	Years in Study	Expected Frequency	Observed Frequency	Mean Number of Years	N
Ph.D.'s	1	8	0	3.88	636
	2	88	90		
	3	168	164		
	4	173	175		
	5	62	63		
	6	61	60		
	over 6	76	73		
<u>Other-Degrees</u>	1	0	0	3.77	29
	2	7	4		
	3	4	7		
	4	11	8		
	5	4	2		
	6	2	2		
	over 6	1	3		

Tab.  $\chi^2$  between groups = 7.68

Ed.D.'s	1	3	2	4.3	177
	2	42	42		
	3	39	36		
	4	21	27		
	5	22	22		
	6	17	16		
	over 6	33	29		
<u>Other-Degrees</u>	1	0	0	3.77	29
	2	7	6		
	3	4	6		
	4	11	4		
	5	4	3		
	6	2	2		
	over 6	1	4		

Tab.  $\chi^2$  between groups = 15.92\*\*

\*\*\*\* Probability of obtaining a Chi-square equal to or greater than 22.46 = .001 level of confidence.

\*\* Probability of obtaining a Chi-square equal to or greater than 15.03 = .02 level of confidence.

Degrees of freedom = 6.

> = Greater than.

(4) three periods of interruption; (5) four periods of interruption; (6) five periods of interruption; and (7) over five periods of interruption.

Table XIV reveals that all groups under analysis tended to experience one or more periods of interruption while pursuing their doctor's degree.

When considering this variable, there was no significant difference found among the Ph.D., Ed.D., and Other degree recipients and, therefore, the null hypothesis was not rejected. A mean average of approximately 2.5 number of periods of interruption in graduate study were experienced by all the groups analyzed.

Table XIV

CHI-SQUARES FOR THE INDICES OF THE PERIODS OF INTERRUPTED  
STUDY EXPERIENCED BY WOMEN DOCTORATES WHO  
EARNED THE DIFFERENT DEGREES

Groups and Direction of Difference	Periods of Interrupted Study	Expected Frequency	Observed Frequency	Mean Periods of Interrupted Study	N
Ed.D.'s	0	81	88	2.78	177
	1	29	33		
	2	21	19		
	3	13	9		
	4	11	7		
	5	22	15		
	over 5	0	1		
Ph.D.'s	0	329	321	2.20	636
	1	127	122		
	2	71	72		
	3	32	35		
	4	24	27		
	5	51	57		
	over 5	5	3		

Tab.  $\chi^2$  between groups = 9.63

TABLE XIV (Continued)

Groups and Direction of Difference	Periods of Interrupted Study	Expected Frequency	Observed Frequency	Mean Periods of Interrupted Study	N
Ph.D.'s	0	329	331	2.20	636
	1	127	125		
	2	71	69		
	3	32	31		
	4	24	24		
	5	51	50		
	over 5	2	1		
<u>Other-Degrees</u>	0	18	15	2.17	29
	1	4	5		
	2	2	3		
	3	1	1		
	4	2	1		
	5	2	2		
	over 5	0	0		

Tab.  $\chi^2$  between groups = 2.53

Ed.D.'s	0	81	85	2.78	177
	1	29	28		
	2	21	19		
	3	13	12		
	4	11	11		
	5	22	20		
	over 5	0	0		
<u>Other-Degrees</u>	0	13	13	2.17	29
	1	4	4		
	2	3	3		
	3	1	1		
	4	1	1		
	5	3	3		
	over 5	0	0		

Tab.  $\chi^2$  between groups = 10.71

Degrees of freedom = 6.

> = Greater than.

In Table XV the father's educational attainment level is examined to see if this variable is a distinguishing factor among the recipients

who earned the different degrees. Levels of attainment under consideration are: (1) grades 1 through 8; (2) grades 9 through 12; (3) college level; and (4) graduate level.

Table XV reveals data that appear to be a highly significant factor in the academic success of the women doctoral recipients. For all groups considered, the father's educational level proves to be a significant factor in the following directions: the Ph.D. recipient over the Ed.D. recipient at the .01 level of confidence; the Other degree recipients over the Ph.D. recipients at the .05 level of confidence; and the Other degree recipients over the Ed.D. recipients at the .001 level of confidence.

Reading from the computer analyses the results indicated that fathers of Other degree recipients have earned more education at the high school, college and graduate school level than have the fathers

TABLE XV

CHI-SQUARES FOR THE INDICES OF THE FATHER'S EDUCATIONAL ATTAINMENT OF THE WOMEN DOCTORATES WHO EARNED THE DIFFERENT DEGREES

Groups and Direction of Difference	Level of Educational Attainment	Observed Frequency	Expected Frequency	Mean Level	N
Ph.D.'s	1-8	169	184	11.6	636
	9-12	174	178		
	13-16	166	157		
	17 and over	127	115		
Ed.D.'s	1-8	67	51	10.2	177
	9-12	54	49		
	13-16	35	53		
	17 and over	21	32		

Tab.  $x^2$  between groups = 13.79\*\*\*

TABLE XV (Continued)

Groups and Direction of Difference	Level of Educational Attainment	Observed Frequency	Expected Frequency	Mean Level	N
<u>Other</u> -Degrees	1-8	1	7	13.46	29
	9-12	9	7		
	13-16	9	7		
	17 and over	10	5		
Ph.D.'s	1-8	169	162	11.6	636
	9-12	174	175		
	13-16	166	167		
	17 and over	127	131		

Tab.  $\chi^2$  between groups = 9.03\*

<u>Other</u> -Degrees	1-8	1	9	13.46	29
	9-12	9	8		
	13-16	9	6		
	17 and over	10	4		
Ed.D.'s	1-8	67	58	10.2	177
	9-12	54	54		
	13-16	35	37		
	17 and over	21	26		

Tab.  $\chi^2$  between groups = 18.88\*\*\*\*

\* Probability of obtaining a Chi-square equal to or greater than 7.82 = .05 level of confidence.

\*\*\* Probability of obtaining a Chi-square equal to or greater than 11.34 = .01 level of confidence.

\*\*\*\* Probability of obtaining a Chi-square equal to or greater than 16.27 = .001 level of confidence.

Degrees of freedom = 3.

> = Greater than.

of the Ed.D. recipients. The Ph.D. recipients fathers accomplished a higher education at the college and graduate levels than did the Ed.D. recipients' fathers. And the fathers of Other degree recipients acquired more education at the graduate level than was experienced by the fathers of the Ph.D. recipients.

For the variable of "the father's education level" the null hypothesis was rejected and the alternative confirmed. This factor attained a high level of significance.

In Table XVI the mother's educational attainment level is examined for differences among the different degree-recipients. Levels considered are: (1) grades 1 through 8; (2) 9-12; (3) college level; and (4) graduate level.

In considering the significance of the mother's educational level, Table XVI reveals that the Ph.D. recipients show a significant difference at the .01 level of confidence over the Ed.D. recipients' in

TABLE XVI  
CHI-SQUARES FOR THE INDICES OF THE MOTHER'S EDUCATIONAL  
ATTAINMENT OF THE WOMEN DOCTORATES WHO  
EARNED THE DIFFERENT DEGREES

Groups and Direction of Difference	Level of Educational Attainment	Observed Frequency	Expected Frequency	Mean Level	N
Ph.D.'s	1-8	99	114	11.64	636
	9-12	215	218		
	13-16	228	212		
	17 and over	40	36		
Ed.D.'s	1-8	48	32	10.26	177
	9-12	66	62		
	13-16	46	61		
	17 and over	7	10		

Tab.  $x^2$  between groups = 15.61\*\*\*

Ph.D.'s	1-8	99	99	11.64	636
	9-12	215	213		
	13-16	288	288		
	17 and over	40	40		

TABLE XVI (Continued)

Groups and Direction of Difference	Level of Educational Attainment	Observed Frequency	Expected Frequency	Mean Level	N
<u>Other</u> -Degrees	1-8	5	4	11.28	29
	9-12	8	9		
	13-16	13	12		
	17 and over	2	1		

Tab.  $\chi^2$  between groups = 0.34

<u>Other</u> -Degrees	1-8	5	7	11.28	29
	9-12	8	10		
	13-16	13	8		
	17 and over	2	1		
Ed.D.'s	1-8	48	45	10.26	177
	9-12	66	63		
	13-16	46	50		
	17 and over	7	7		

Tab.  $\chi^2$  between groups = 5.08

\*\*\* Probability of obtaining a Chi-square equal to or greater than 11.34 = .01 level of confidence.  
 Degrees of freedom = 3.  
 = Greater than.

the level of educational attainment experienced by their mothers. Mothers of Ph.D. subjects earn more college degrees and attend graduate school more often than do the mothers of the Ed.D. subjects. This portion of the alternative hypothesis was confirmed.

In considering the Ph.D. recipients versus the Other degree recipients, and in the case of the Other recipients in contrast with the Ed.D. recipients, there were no significant differences found. Therefore, for these groups the null hypothesis was not rejected.

In Table XVII the responses of the recipients who earned the different degrees are classified according to the following fields of



academic specialization: (1) the Humanities; (2) the Biological Sciences; (3) the Physical Sciences; (4) the Social Sciences, and (5) Other miscellaneous fields. Percentages are shown below for each specific group.

A strong trend was noted in the data among those acquiring the different degrees for the doctoral recipients to select varying fields of academic specialization. Among all contrasting groups the null hypothesis was rejected and the alternative hypothesis was confirmed. These results can be noted by examining Table XVII.

Here we find that in contrasting the Ph.D. versus the Ed.D. subjects, the Ph.D. recipients major with greater frequency in the Humanities (24.05 per cent); Biological Sciences (17.6 per cent); and Physical Sciences (11.0 per cent); while the Ed.D. recipients choose the Social Sciences (75.7 per cent); and Other disciplines (5.6 per cent). In contrasting the Ph.D. subjects with the Other degree subjects, the Ph.D. recipients select most often the Humanities, (24.37 per cent); Physical Sciences (11.0 per cent); and Social Sciences (43.86 per cent); in contrast to the Other degree recipients who major in the Biological Sciences, (24.13 per cent); and Other miscellaneous areas (27.58 per cent) exclusively. In considering the Other degree subjects and the Ed.D. subjects, the Ed.D. recipients major overwhelmingly in the Social Sciences (75.7 per cent) and in the Physical Sciences (4.71 per cent); and the Other degree recipients major in the remaining disciplines, Humanities (24.1 per cent); Biological Sciences (24.13 per cent); and Other (27.58 per cent).

The variable of "fields of study" proved to be a highly signifi-

cant factor in all three contrasting groups at the .001 level of confidence; therefore, the null hypothesis was rejected and the alternative hypothesis was confirmed for this variable.

III. Diversity Among the Doctoral Recipients Who Chose the Humanities, Physical Sciences, Biological Sciences, Social Sciences or Other Miscellaneous Fields of Specialization on the Dependent Variables As

TABLE XVII

CHI-SQUARES FOR THE INDICES OF THE FIELDS OF SPECIALIZATION OF THE WOMEN DOCTORATES WHO EARNED THE DIFFERENT DEGREES

Groups	Fields of Specialization	Observed Frequency	Expected Frequency	Per Cent of Group Total	N
Ph.D.'s	Humanities	153	132	24.05	636
	B. S.	112	97	17.60	
	P. S.	70	56	11.00	
	S. S.	279	321	43.86	
	<u>Other</u>	7	13	1.10	
Ed.D.'s	Humanities	17	37	9.60	177
	B. S.	13	27	7.34	
	P. S.	3	16	4.71	
	S. S.	134	91	75.70	
	<u>Other</u>	10	3	5.64	

Tab.  $x^2$  between groups = 76.91\*\*\*\*

Ph.D.'s	Humanities	155	152	24.37	636
	B. S.	112	113	17.60	
	P. S.	70	67	11.00	
	S. S.	277	272	43.86	
	<u>Other</u>	7	14	1.10	
<u>Other-Degrees</u>	Humanities	7	7	24.13	29
	B. S.	7	5	24.13	
	P. S.	1	3	3.44	
	S. S.	6	12	20.68	
	<u>Other</u>	8	0	27.58	

Tab.  $x^2$  between groups = 89.88\*\*\*\*

TABLE XVII (Continued)

Groups	Fields of Specialization	Observed Frequency	Expected Frequency	Per Cent of Group Total	N
Ed.D.'s	Humanities	17	20	9.60	177
	B. S.	13	17	7.34	
	P. S.	3	3	4.71	
	S. S.	134	120	75.70	
	<u>Other</u>	10	15	5.64	
<u>Other-Degrees</u>	Humanities	7	3	24.13	29
	B. S.	7	2	24.13	
	P. S.	1	0	3.44	
	S. S.	6	19	20.68	
	<u>Other</u>	8	2	27.58	

Tab.  $\chi^2$  between groups = 36.97\*\*\*\*

\*\*\*\* Probability of obtaining a Chi-square greater than or equal to 18.46 = .001 level of confidence.  
Degrees of freedom = 4.      > = Greater than.

Reported on the Questionnaires:

Hypothesis III stated that no significant differences would be found among the women doctoral recipients who majored in the Humanities, Biological Sciences, Physical Sciences, Social Sciences and Other miscellaneous disciplines on the dependent variables.

The results of the findings of the doctoral recipients in the various disciplines relative to the "age" of the subject are presented in Table XVIII. The degree-recipients are classified according to the decade in which they were born. These categories are represented by recipients who were born in the decades: (1) from 1900 to 1909; (2) from 1910 to 1919; (3) from 1920 to 1929; (4) from 1930 to 1939; and (5) from 1940 to 1949.

In Table XVIII it should be noted that significant differences do appear in the following contrasting groups: the doctoral recipients in the Humanities are older than the recipients who major in the Biological Sciences at the .05 level of confidence; the Humanities majors are older than the Physical Scientists at the .001 level of confidence; the Biological Scientists are older than the Physical Scientists at the .01 level of confidence; the Social Scientists are older than the Biological Scientists at the .001 level of confidence; the Social Scientists are older than the Physical Scientists at the .001 level of confidence; and those in the Other disciplines are older than those in the Physical Sciences at the .001 level of confidence. Under the null hypothesis six of the contrasted groups show significant differences, and for these groups the null hypothesis is rejected

TABLE XVIII

CHI-SQUARES FOR THE INDICES OF THE AGE OF WOMEN  
DOCTORATES WHO MAJORED IN THE DIFFERENT  
FIELDS OF ACADEMIC SPECIALIZATION

Groups and Direction of Difference	Decade in Which Re- cipient Born	Observed Frequency	Expected Frequency	Mean Age	N
Humanities	1900-09	8	6	39.38	176
	1910-19	33	29		
	1920-29	75	66		
	1930-39	60	73		
	1940-49	0	0		
Biological Sciences	1900-09	4	5	36.8	145
	1910-19	21	24		
	1920-29	46	54		
	1930-39	74	60		
	1940-49	1	0		

Tab.  $x^2$  between groups = 10.71\*

TABLE XVIII (Continued)

Groups and Direction of Difference	Decade in Which Recipient Born	Observed Frequency	Expected Frequency	Mean Age	N
Humanities	1900-09	8	6	39.38	176
	1910-19	33	23		
	1920-29	75	63		
	1930-39	60	81		
	1940-49	0	0		
Physical Sciences	1900-09	1	2	32.6	74
	1910-19	1	10		
	1920-29	15	26		
	1930-39	56	34		
	1940-49	1	0		

Tab.  $\chi^2$  between groups = 42.09\*\*\*\*

Social Sciences	1900-09	34	29	40.92	421
	1910-19	92	88		
	1920-29	167	170		
	1930-39	127	131		
	1940-49	1	0		
Humanities	1900-09	8	12	39.38	176
	1910-19	33	36		
	1920-29	75	71		
	1930-39	60	55		
	1940-49	0	0		

Tab.  $\chi^2$  between groups = 4.06

Humanities	1900-09	8	7	39.38	176
	1910-19	33	31		
	1920-29	75	77		
	1930-39	60	60		
	1940-49	0	0		
<u>Other</u> Fields	1900-09	0	0	37.6	25
	1910-19	3	4		
	1920-29	13	10		
	1930-39	9	8		
	1940-49	0	0		

Tab.  $\chi^2$  between groups = 2.15

TABLE XVIII (Continued)

Groups and Direction of Difference	Decade in Which Recipient Born	Observed Frequency	Expected Frequency	Mean Age	N
Biological Sciences	1900-09	4	3	36.8	145
	1910-19	21	14		
	1920-29	46	40		
	1930-39	74	86		
	1940-49	3	2		
Physical Sciences	1900-09	1	1	32.6	74
	1910-19	1	7		
	1920-29	15	20		
	1930-39	56	43		
	1940-49	1	1		

Tab.  $\chi^2$  between groups = 16.38\*\*\*

Social Sciences	1900-09	34	28	40.92	421
	1910-19	92	83		
	1920-29	167	157		
	1930-39	127	148		
	1940-49	1	2		
Biological Sciences	1900-09	4	9	36.8	145
	1910-19	21	29		
	1920-29	46	55		
	1930-39	74	52		
	1940-49	3	1		

Tab.  $\chi^2$  between groups = 27.31\*\*\*\*

Other Fields	1900-09	0	0	37.6	25
	1910-19	3	3		
	1920-29	13	8		
	1930-39	9	1		
	1940-49	0	0		
Biological Sciences	1900-09	4	3	36.8	145
	1910-19	21	20		
	1920-29	46	50		
	1930-39	74	71		
	1940-49	3	2		

Tab.  $\chi^2$  between groups = 4.87

TABLE XVIII (Continued)

Groups and Direction of Difference	Decade in Which Recipient Born	Observed Frequency	Expected Frequency	Mean Age	N
Social Sciences	1900-09	34	29	40.92	421
	1910-19	92	79		
	1920-29	167	154		
	1930-39	127	155		
	1940-49	1	1		
Physical Sciences	1900-09	1	5	32.6	74
	1910-19	1	13		
	1920-29	15	27		
	1930-39	5	27		
	1940-49	1	0		

Tab.  $\chi^2$  between groups = 61.73\*\*\*\*

<u>Other Fields</u>	1900-09	0	0	37.6	25
	1910-19	3	1		
	1920-29	13	3		
	1930-39	9	6		
	1940-49	0	4		
Physical Sciences	1900-09	1	0	32.6	74
	1910-19	1	2		
	1920-29	1	10		
	1930-39	15	17		
	1940-49	56	41		

Tab.  $\chi^2$  between groups = 60.30\*\*\*\*

Social Sciences	1900-09	34	32	40.92	42
	1910-19	92	91		
	1920-29	167	164		
	1930-39	127	131		
	1940-49	1	0		

TABLE XVIII (Continued)

Groups and Direction of Difference	Decade in Which Recipient Born	Observed Frequency	Expected Frequency	Mean Age	N
Other Fields	1900-09	0	1	37.6	25
	1910-19	3	3		
	1920-29	3	5		
	1930-39	9	4		
	1940-49	0	0		

Tab.  $\chi^2$  between groups = 6.84

\* Probability of obtaining a Chi-square equal to or greater than 9.49 = .05 level of confidence.

\*\*\* Probability of obtaining a Chi-square equal to or greater than 13.28 = .01 level of confidence.

\*\*\*\* Probability of obtaining a Chi-square equal to or greater than 18.46 = .001 level of confidence.

Degrees of freedom = 4.

> = Greater than.

on the variable of the "age" of the subject.

For the remaining four of the contrasting groups, no significant differences in the "age" of the subjects were found, and the null hypothesis for these groups was not rejected.

Table XIX presents the data for the various doctoral recipients in the different disciplines on the variable of "the number of children." Recipients are classified according to the number of children they reported as members of their families. The categories are represented as presented below: (1) no children; (2) one child; (3) two children; (4) three children; (5) four children; (6) five children; (7) over five children.

There appeared no significant differences among the groups on this variable although the general trend moved toward the recipients in the Social Sciences having more children, and the recipients in



Other miscellaneous disciplines having the least number of children.

However, the null hypothesis was not rejected for this variable as the results did not show that a significant difference existed.

TABLE XIX

CHI-SQUARES FOR THE INDICES OF THE NUMBER OF THE CHILDREN  
OF WOMEN DOCTORATES WHO MAJORED IN THE  
DIFFERENT FIELDS OF SPECIALIZATION

Groups and Direction of Difference	Number of Children	Observed Frequency	Expected Frequency	Mean Number of Children	N
Humanities	0	121	120	2.69	176
	1	19	18		
	2	24	25		
	3	8	7		
	4	2	2		
	5	1	0		
	over 5	1	0		
Biological Sciences	0	99	99	2.67	146
	1	15	15		
	2	23	21		
	3	6	6		
	4	3	2		
	5	0	0		
	over 5	0	0		

Tab.  $x^2$  between groups = 2.40

Humanities	0	121	122	2.69	176
	1	19	20		
	2	24	24		
	3	8	5		
	4	2	1		
	5	1	1		
	over 5	1	0		

TABLE XIX (Continued)

Groups and Direction of Difference	Number of Children	Observed Frequency	Expected Frequency	Mean Number of Children	N
Physical Sciences	0	52	50	2.62	74
	1	10	8		
	2	10	9		
	3	1	2		
	4	0	0		
	5	1	0		
	over 5	0	0		

Tab.  $\chi^2$  between groups = 5.39

Humanities	0	121	112	2.69	176
	1	19	22		
	2	24	25		
	3	8	10		
	4	2	2		
	5	1	1		
	over 5	1	0		

Social Sciences	0	260	268	2.67	421
	1	57	53		
	2	63	61		
	3	27	24		
	4	7	6		
	5	5	4		
	over 5	2	2		

Tab.  $\chi^2$  between groups = 3.29

Other Fields	0	22	17	2.89	25
	1	3	2		
	2	0	2		
	3	0	0		
	4	0	0		
	5	0	0		
	over 5	0	0		

TABLE XIX (Continued)

Groups and Direction of Difference	Number of Children	Observed Frequency	Expected Frequency	Mean Number of Children	N
Humanities	0	121	125	2.69	176
	1	19	19		
	2	24	21		
	3	8	7		
	4	2	1		
	5	1	0		
	over 5	1	0		

Tab.  $\chi^2$  between groups = 6.28

Biological Sciences	0	99	100	2.67	146
	1	15	16		
	2	23	21		
	3	6	3		
	4	3	2		
	5	0	0		
	over 5	0	0		

Physical Sciences	0	52	50	2.62	74
	1	10	8		
	2	10	11		
	3	0	2		
	4	1	1		
	5	1	0		
	over 5	0	0		

Tab.  $\chi^2$  between groups = 5.80

Social Sciences	0	260	266	2.67	421
	1	57	53		
	2	63	63		
	3	27	24		
	4	7	7		
	5	5	3		
	over 5	2	1		

Biological Sciences	0	99	92	2.67	146
	1	15	18		
	2	23	22		
	3	6	8		
	4	3	2		
	5	0	1		
	over 5	0	0		

Tab.  $\chi^2$  between groups = 5.09

TABLE XIX (Continued)

Groups and Direction of Difference	Number of Children	Observed Frequency	Expected Frequency	Mean Number of Children	N
Other Fields	0	22	17	2.89	25
	1	3	2		
	2	0	3		
	3	0	0		
	4	0	0		
	5	0	0		
	over 5	0	0		
Biological Sciences	0	99	103	2.67	146
	1	15	15		
	2	23	19		
	3	6	5		
	4	3	2		
	5	0	0		
	over 5	0	0		

Tab.  $x^2$  between groups = 6.77

Social Sciences	0	260	265	2.67	421
	1	57	56		
	2	63	62		
	3	27	22		
	4	7	6		
	5	5	5		
	over 5	2	1		
Physical Sciences	0	52	46	2.62	74
	1	10	10		
	2	10	19		
	3	0	10		
	4	1	4		
	5	1	1		
	over 5	0	0		

Tab.  $x^2$  between groups = 5.96

Other Fields	0	22	18	2.89	25
	1	3	3		
	2	0	2		
	3	0	0		
	4	0	0		
	5	0	0		
	over 5	0	0		

TABLE XIX (Continued)

Groups and Direction of Difference	Number of Children	Observed Frequency	Expected Frequency	Mean Number of Children	N
Physical Sciences	0	52	55	2.62	74
	1	10	9		
	2	10	7		
	3	0	0		
	4	1	0		
	5	1	0		
over 5	0	0			

Tab.  $\chi^2$  between groups = 4.87

Other Fields	0	22	15	2.89	25
	1	3	3		
	2	0	3		
	3	0	1		
	4	0	0		
	5	0	0		
over 5	0	0			

Social Sciences	0	260	266	2.67	421
	1	57	56		
	2	63	59		
	3	27	25		
	4	7	6		
	5	5	4		
over 5	2	1			

Tab.  $\chi^2$  between groups = 8.78

Degrees of freedom = 6.

> = Greater than.

Table XX presents the results of the analysis among the ten groups on the variable of the "age" of the children. Recipients in the different disciplines are classified with respect to the age of the children they reported as members of their families. Categories include: (1) no children; (2) children, ages one through nine; (3) children, ages ten through seventeen; (4) children, ages eighteen and older.

TABLE XX

CHI-SQUARES FOR THE INDICES OF THE AGE OF CHILDREN OF  
WOMEN DOCTORATES WHO MAJORED IN THE DIFFERENT  
FIELDS OF ACADEMIC SPECIALIZATION

Groups and Direction of Difference	Age of Children	Observed Frequency	Expected Frequency	Mean Age	N
Biological Sciences	0	99	101	9.10	146
	1-9	24	24		
	10-17	19	18		
	18 and over	4	1		
Humanities	0	120	117	8.32	168
	1-9	28	27		
	10-17	20	20		
	18 and over	0	2		

Tab.  $x^2$  between groups = 4.82

Humanities	0	120	119	8.32	168
	1-9	28	33		
	10-17	20	15		
	18 and over	0	0		
Physical Sciences	0	52	52	7.66	74
	1-9	20	14		
	10-17	2	6		
	18 and over	0	0		

Tab.  $x^2$  between groups = 7.57

Social Sciences	0	260	281	9.55	421
	1-9	57	60		
	10-17	68	62		
	18 and over	36	25		
Humanities	0	120	108	8.32	168
	1-9	28	24		
	10-17	20	25		
	18 and over	0	10		

Tab.  $x^2$  between groups = 18.37\*\*\*\*

TABLE XX (Continued)

Groups and Direction of Difference	Age of Children	Observed Frequency	Expected Frequency	Mean Age	N
Other Fields	0	22	18	9.64	25
	1-9	2	3		
	10-17	0	2		
	18 and over	1	0		
Humanities	0	120	123	8.32	168
	1-9	28	26		
	10-17	20	17		
	18 and over	0	0		

Tab.  $\chi^2$  between groups = 11.56\*\*\*

Biological Sciences	0	99	100	9.10	146
	1-9	24	29		
	10-17	19	13		
	18 and over	4	2		
Physical Sciences	0	52	50	7.66	74
	1-9	20	14		
	10-17	2	7		
	18 and over	0	1		

Tab.  $\chi^2$  between groups = 10.29\*\*

Social Sciences	0	260	266	9.55	421
	1-9	57	60		
	10-17	68	64		
	18 and over	36	29		
Biological Sciences	0	99	92	9.10	146
	1-9	24	20		
	10-17	19	22		
	18 and over	4	10		

Tab.  $\chi^2$  between groups = 7.15

TABLE XX (Continued)

Groups and Direction of Difference	Age of Children	Observed Frequency	Expected Frequency	Mean Age	N
Other Fields	0	22	17	9.28	25
	1-9	2	3		
	10-17	1	2		
	18 and over	0	0		
Biological Sciences	0	99	103	9.10	146
	1-9	24	22		
	10-17	19	16		
	18 and over	4	3		

Tab.  $\chi^2$  between groups = 6.31

Social Sciences	0	260	265	9.55	421
	1-9	57	65		
	10-17	68	59		
	18 and over	36	30		
Physical Sciences	0	52	46	7.66	74
	1-9	20	11		
	10-17	2	10		
	18 and over	0	5		

Tab.  $\chi^2$  between groups = 22.46\*\*\*\*

Other Fields	0	22	18	9.28	25
	1-9	2	5		
	10-17	1	0		
	18 and over	0	0		
Physical Sciences	0	52	55	7.66	74
	1-9	20	16		
	10-17	2	1		
	18 and over	0	0		

Tab.  $\chi^2$  between groups = 4.56

Social Sciences	0	260	266	9.55	421
	1-9	57	55		
	10-17	68	64		
	18 and over	36	34		



TABLE XX (Continued)

Groups and Direction of Difference	Age of Children	Observed Frequency	Expected Frequency	Mean Age	N
<u>Other</u> Fields	0	22	15	9.28	25
	1-9	2	3		
	10-17	1	3		
	18 and over	0	1		

Tab.  $\chi^2$  between groups = 9.59\*

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Probability of obtaining a Chi-square is equal to or greater than the following levels of confidence.

\*\*\*\* 16.27 = .001 level of confidence.

\*\*\* 11.52 = .01 level of confidence.

\*\* 9.84 = .02 level of confidence.

\* 7.82 = .05 level of confidence.

Degrees of freedom = 3.

> = Greater than.

Results reveal that five of the groups exhibited the following significant differences: the recipients in the Social Sciences had older children than did those in the Humanities and this index was found significant at the .001 level of confidence; the recipients in the Other miscellaneous fields had older children than the recipients in the Humanities and was significant at the .01 level of confidence; the recipients in the Biological Sciences had older children than those in the Physical Sciences and was significant at the .02 level of confidence; the Social Science majors had older children than those in the Humanities at the .001 level of confidence; Social Science majors had older children than those in the Physical Sciences and was significant at the .001 level of confidence; and those in the Social Sciences had older children than those in the Other miscellaneous disciplines and was found significant at the .05 level of confidence.

From the results of these data it seems evident that the Social Scientists have older children, and those in the Physical Sciences have the youngest children.

Chi-squares computed on other contrasting groups were not significant although two other groups approached a significant level of difference.

From the results of the findings in Table XX it seemed that the variable of "age of the children" was a significant factor, although only a portion of the alternative hypothesis was confirmed for the groups on this variable, and the null hypothesis was only partially rejected.

Relative to the years the doctoral recipients spent in pursuit of graduate study, Table XXI reveals that indices for only two of the contrasting groups in the various fields of the academic disciplines reached the level of significance. Recipients were classified according to the number of years they required to complete the doctoral degree. The number of years were categorized as: (1) one year; (2) two years; (3) three years; (4) four years; (5) five years; (6) six years; and (7) over six years.

Significant differences were found to exist between the recipients in the Humanities who spent a longer period of time in their doctoral programs than did the subjects majoring in the Biological Sciences. This factor was significant at the .01 level of confidence. It was found that the recipients who majored in the Social Sciences spent a greater number of years in graduate study than did the Physical Scientists. This difference was significant at the .05 level of

TABLE XXI

CHI-SQUARES FOR THE INDICES OF THE YEARS SPENT IN STUDY  
BY THE WOMEN DOCTORATES WHO MAJORED IN THE  
DIFFERENT FIELDS OF SPECIALIZATION

Groups and Direction of Difference	Years in Study	Observed Frequency	Expected Frequency	Mean Years in Study	N
Humanities	1	1	1	4.38	176
	2	27	30		
	3	34	43		
	4	41	44		
	5	25	17		
	6	22	10		
	over 6	26	1		
Biological Sciences	1	2	1	3.64	146
	2	28	24		
	3	46	36		
	4	40	36		
	5	11	16		
	6	10	14		
	over 6	9	15		

Tab.  $x^2$  between groups = 17.72\*\*\*

Humanities	1	1	0	4.38	176
	2	27	25		
	3	34	38		
	4	41	47		
	5	25	24		
	6	22	18		
	over 6	26	21		
Physical Sciences	1	0	0	3.33	74
	2	9	10		
	3	20	15		
	4	26	19		
	5	10	10		
	6	4	7		
	over 6	5	9		

Tab.  $x^2$  between groups = 10.18

TABLE XXI (Continued)

Groups and Direction of Difference	Years in Study	Observed Frequency	Expected Frequency	Mean Years in Study	N
Humanities	1	1	2	4.38	176
	2	27	28		
	3	34	41		
	4	41	38		
	5	25	19		
	6	22	18		
	over 6	26	26		
Social Sciences	1	8	6	4.11	421
	2	70	68		
	3	106	98		
	4	91	93		
	5	40	45		
	6	42	45		
	over 6	64	63		

Tab.  $\chi^2$  between groups = 6.83

Humanities	1	1	0	4.38	176
	2	27	26		
	3	34	34		
	4	41	42		
	5	25	23		
	6	22	21		
	over 6	26	28		
<u>Other</u> Fields	1	0	0	3.48	25
	2	3	3		
	3	5	4		
	4	7	5		
	5	2	3		
	6	2	2		
	over 6	6	3		

Tab.  $\chi^2$  between groups = 2.68

Biological Sciences	1	2	1	3.64	146
	2	28	24		
	3	46	43		
	4	40	43		
	5	11	13		
	6	10	9		
	over 6	9	9		

TABLE XXI (Continued)

Groups and Direction of Difference	Years in Study	Observed Frequency	Expected Frequency	Mean Years in Study	N
Physical Sciences	1	0	0	3.33	74
	2	9	10		
	3	20	15		
	4	26	19		
	5	10	10		
	6	4	7		
	over 6	5	9		
Tab. $\chi^2$ between groups = 5.78					
Social Sciences	1	8	7	4.11	421
	2	70	72		
	3	106	112		
	4	91	97		
	5	40	37		
	6	42	38		
	over 6	64	54		
Tab. $\chi^2$ between groups = 12.26					
Biological Sciences	1	2	2	3.64	146
	2	28	25		
	3	46	39		
	4	40	33		
	5	11	13		
	6	10	13		
	over 6	9	18		
Tab. $\chi^2$ between groups = 12.26					
Other Fields	1	0	0	3.48	25
	2	3	4		
	3	5	7		
	4	7	6		
	5	2	1		
	6	2	1		
	over 6	6	2		
Tab. $\chi^2$ between groups = 9.68					

TABLE XXI (Continued)

Groups and Direction of Difference	Years in Study	Observed Frequency	Expected Frequency	Mean Years in Study	N
Social Sciences	1	8	6	4.11	421
	2	70	66		
	3	106	109		
	4	91	98		
	5	40	42		
	6	42	38		
	over 6	64	58		
Physical Sciences	1	0	1	3.33	74
	2	9	12		
	3	24	20		
	4	26	18		
	5	10	7		
	6	4	7		
	over 6	5	10		

Tab.  $\chi^2$  between groups = 13.28\*

<u>Other Fields</u>	1	0	0	3.48	25
	2	3	3		
	3	5	6		
	4	7	8		
	5	2	3		
	6	2	1		
	over 6	6	2		
Physical Sciences	1	0	0	3.33	74
	2	9	8		
	3	20	18		
	4	26	24		
	5	10	8		
	6	4	4		
	over 6	5	8		

Tab.  $\chi^2$  between groups = 6.32

Social Sciences	1	8	7	4.11	421
	2	70	68		
	3	106	104		
	4	91	92		
	5	40	39		
	6	42	41		
	over 6	64	66		

TABLE XXI (Continued)

Groups and Direction of Difference	Years in Study	Observed Frequency	Expected Frequency	Mean Years in Study	N
<u>Other</u> Fields	1	0	0	3.48	25
	2	3	4		
	3	5	6		
	4	7	5		
	5	2	2		
	6	2	2		
	over 6	6	3		

Tab.  $\chi^2$  between groups = 2.79

\* Probability of obtaining a Chi-square equal to or greater than 12.59 is equal to the .05 level of confidence.

\*\*\* Probability of obtaining a Chi-square equal to or greater than 16.81 is equal to the .01 level of confidence.  
Degrees of freedom = 6.

> = Greater than.

confidence. None of the other contrasting groups spent an excessive length of time in the pursuit of graduate study.

The null hypothesis was only partially rejected for this factor as two of the contrasting groups showed significant differences. For these groups the alternative hypothesis was confirmed.

Table XXII presents the findings with regard to the "periods of interrupted study" experienced by the doctoral recipients who pursued the various disciplines. The classifications for this factor were presented in the following way: (1) no periods of interrupted study; (2) one period of interrupted study; (3) two periods of interrupted study; (4) three periods of interrupted study; (5) four periods of interrupted study; (6) five periods of interrupted study; and (7) over five periods of interrupted study.

TABLE XXII

CHI-SQUARE FOR THE INDICES OF THE PERIODS OF INTERRUPTED STUDY  
EXPERIENCED BY THE WOMEN DOCTORATES WHO MAJORED IN  
THE DIFFERENT FIELDS OF SPECIALIZATION

Groups and Direction of Difference	Periods of Interrupted Study	Observed Frequency	Expected Frequency	Mean Periods of Interrupted Study	N
Humanities	0	81	94	2.75	176
	1	38	34		
	2	18	14		
	3	12	8		
	4	5	6		
	5	22	16		
	over 5	0	0		
Biological Sciences	0	91	77	2.69	146
	1	25	28		
	2	9	12		
	3	4	7		
	4	7	5		
	5	9	14		
	over 5	1	0		

Tab.  $\chi^2$  between groups = 14.37\*

Humanities	0	81	83	2.75	176
	1	38	41		
	2	18	18		
	3	12	11		
	4	5	3		
	5	22	17		
	over 5	0	0		
Physical Sciences	0	37	34	2.41	74
	1	21	17		
	2	8	7		
	3	5	5		
	4	0	1		
	5	3	7		
	over 5	0	0		

Tab.  $\chi^2$  between groups = 7.02



TABLE XXII (Continued)

Groups and Direction of Difference	Periods of Interrupted Study	Observed Frequency	Expected Frequency	Mean Periods of Interrupted Study	N
Social Sciences	0	205	205	3.16	421
	1	72	79		
	2	58	56		
	3	24	24		
	4	22	18		
	5	39	35		
	over 5	1	0		
Humanities	0	81	26	2.75	176
	1	38	31		
	2	18	36		
	3	12	30		
	4	5	13		
	5	22	18		
	over 5	0	18		

Tab.  $\chi^2$  between groups = 22.75\*\*\*\*

Humanities	0	81	83	2.75	176
	1	38	36		
	2	18	16		
	3	12	11		
	4	5	7		
	5	22	21		
	over 5	0	0		
<u>Other</u> Fields	0	14	11	2.36	25
	1	4	5		
	2	1	2		
	3	1	1		
	4	3	0		
	5	2	2		
	over 5	0	0		

Tab.  $\chi^2$  between groups = 6.94

Biological Sciences	0	91	84	2.69	146
	1	25	30		
	2	9	11		
	3	4	5		
	4	7	4		
	5	9	7		
	over 5	1	0		

TABLE XXII (Continued)

Groups and Direction of Difference	Periods of Interrupted Study	Observed Frequency	Expected Frequency	Mean Periods of Interrupted Study	N
Physical Sciences	0	37	43	2.41	74
	1	21	15		
	2	8	5		
	3	5	3		
	4	0	2		
	5	3	4		
	over 5	0	0		
Tab. $\chi^2$ between groups = 12.02					
Social Sciences	0	205	219	3.16	421
	1	72	72		
	2	28	49		
	3	24	20		
	4	22	21		
	5	39	35		
	over 5	1	1		
Biological Sciences	0	91	76	2.79	146
	1	25	24		
	2	9	17		
	3	4	7		
	4	7	7		
	5	9	12		
	over 5	1	0		
Tab. $\chi^2$ between groups = 12.89*					
Biological Sciences	0	91	89	2.67	146
	1	25	24		
	2	9	8		
	3	4	4		
	4	7	8		
	5	9	9		
	over 5	1	0		
<u>Other</u> Fields	0	14	15	2.36	25
	1	4	4		
	2	1	1		
	3	1	0		
	4	3	1		
	5	2	1		
	over 5	0	0		
Tab. $\chi^2$ between groups = 2.62					

TABLE XXII (Continued)

Groups and Direction of Difference	Periods of Interrupted Study	Observed Frequency	Expected Frequency	Mean Periods of Interrupted Study	N
Social Sciences	0	205	205	3.16	421
	1	72	79		
	2	58	56		
	3	24	24		
	4	22	18		
	5	39	35		
	over 5	1	0		
Physical Sciences	0	37	36	2.41	74
	1	21	13		
	2	8	9		
	3	5	4		
	4	0	3		
	5	3	6		
	over 5	0	0		

Tab.  $\chi^2$  between groups = 10.87

Physical Sciences	0	37	38	2.41	74
	1	21	18		
	2	8	6		
	3	5	4		
	4	0	2		
	5	3	3		
	over 5	0	0		
<u>Other</u> Fields	0	14	12	2.36	25
	1	4	4		
	2	1	3		
	3	1	1		
	4	3	1		
	5	2	2		
	over 5	0	0		

Tab.  $\chi^2$  between groups = 11.90

Social Sciences	0	205	206	3.16	421
	1	72	71		
	2	58	55		
	3	24	23		
	4	22	23		
	5	39	38		
	over 5	1	0		

TABLE XXII (Continued)

Groups and Direction of Difference	Periods of Interrupted Study	Observed Frequency	Expected Frequency	Mean Periods of Interrupted Study	N
Other Fields	0	14	12	2.36	25
	1	4	4		
	2	1	3		
	3	1	1		
	4	3	1		
	5	2	2		
	over 5	0	0		

Tab.  $x^2$  between groups = 4.13

\* Probability of obtaining a Chi-square equal to or greater than 12.59 = .05 level of confidence.

\*\*\*\* Probability of obtaining a Chi-square equal to or greater than 22.46 = .001 level of confidence.

Degrees of freedom = 6.

> = Greater than.

Table XXII reveals that three of the contrasting groups reflected significant differences. The recipients majoring in the Humanities experienced more interruptions than did the subjects who majored in the Biological Sciences. This index was significant at the .05 level of confidence. The recipients in the Social Sciences experienced more numerous periods of interruption than did the Humanities majors and this finding was significant at the .001 level of confidence. The Social Scientists were interrupted more frequently while in graduate study than were those in the Biological Sciences. This index was significant at the .05 level of confidence. The trend reflected in the data seems to suggest that the Biological Scientists and Physical Scientists experienced the least interruption in study, while the Social Scientists experienced the greatest number of periods of intermittency while engaged in doctoral study.

For this variable the null hypothesis was only partially rejected. The alternative hypothesis showed significant strength so that a portion of the hypothesis for three contrasting groups was confirmed. For the remaining groups however, only suggestive trends are noted from these data.

Table XXIII shows the results with reference to the variable, "Father's education level" for the recipients in the various disciplines. Categories included in this table were: (1) Fathers, who attained a grade level one through eight; (2) fathers, who attained a grade level nine through twelve; (3) fathers, who attained a college level thirteen through sixteen; and (4) fathers, who attained a graduate level of seventeen years and above. None of the groups proved to be significantly different on this factor. It might be noted, however, that the higher educational level of fathers for the Physical

TABLE XXIII

CHI-SQUARES FOR THE INDICES OF THE FATHERS' EDUCATIONAL LEVEL  
OF THE DOCTORAL WOMEN WHO MAJORED IN THE DIFFERENT  
FIELDS OF ACADEMIC SPECIALIZATION

Groups and Direction of Difference	Level of Educational Attainment	Observed Frequency	Expected Frequency	Mean Level	N
Biological Sciences	1-8	33	41	11.88	146
	9-12	45	42		
	13-16	34	34		
	17 and over	34	26		
Humanities	1-8	53	56	11.24	172
	9-12	45	45		
	13-16	41	43		
	17 and over	33	27		

Tab.  $\chi^2$  between groups = 3.83

TABLE XXIII (Continued)

Groups and Direction of Difference	Level of Educational Attainment	Observed Frequency	Expected Frequency	Mean Level	N
Physical Sciences	1-8	14	19	11.64	74
	9-12	19	18		
	13-16	27	20		
	17 and over	14	15		
Humanities	1-8	53	47	11.24	172
	9-12	45	45		
	13-16	41	47		
	17 and over	33	35		

Tab.  $\chi^2$  between groups = 5.88

Humanities	1-8	53	52	11.24	172
	9-12	45	48		
	13-16	41	41		
	17 and over	33	29		
Social Sciences	1-8	129	129	11.04	421
	9-12	121	117		
	13-16	101	100		
	17 and over	70	73		

Tab.  $\chi^2$  between groups = 0.73

Humanities	1-8	53	52	11.24	172
	9-12	45	48		
	13-16	41	41		
	17 and over	33	29		
Social Sciences	1-8	129	129	11.04	421
	9-12	121	117		
	13-16	101	100		
	17 and over	70	73		

Tab.  $\chi^2$  between groups = 0.75

Other Fields	1-8	8	7	11.80	25
	9-12	7	6		
	13-16	7	6		
	17 and over	3	4		

TABLE XXIII (Continued)

Groups and Direction of Difference	Level of Educational Attainment	Observed Frequency	Expected Frequency	Mean Level	N
Humanities	1-8	53	53	11.24	172
	9-12	45	45		
	13-16	41	41		
	17 and over	33	31		

Tab.  $x^2$  between groups = 0.81

Biological Sciences	1-8	33	41	11.88	146
	9-12	45	42		
	13-16	34	34		
	17 and over	34	26		
Social Sciences	1-8	129	120	11.04	421
	9-12	121	123		
	13-16	101	100		
	17 and over	70	77		

Tab.  $x^2$  between groups = 4.27

Biological Sciences	1-8	33	35	11.88	146
	9-12	45	44		
	13-16	34	35		
	17 and over	34	31		
Other Fields	1-8	8	5	11.80	25
	9-12	7	7		
	13-16	7	5		
	17 and over	3	5		

Tab.  $x^2$  between groups = 2.97

Biological Sciences	1-8	33	31	11.88	146
	9-12	45	42		
	13-16	34	40		
	17 and over	34	31		
Physical Sciences	1-8	14	15	11.64	74
	9-12	19	21		
	13-16	27	20		
	17 and over	14	16		

Tab.  $x^2$  between groups = 4.27

TABLE XXIII (Continued)

Groups and Direction of Difference	Level of Educational Attainment	Observed Frequency	Expected Frequency	Mean Level	N
Physical Sciences	1-8	14	21	11.64	74
	9-12	19	20		
	13-16	27	19		
	17 and over	14	12		
Social Sciences	1-8	129	121	11.04	421
	9-12	121	119		
	13-16	101	108		
	17 and over	70	71		

Tab.  $x^2$  between groups = 7.19

Other Fields	1-8	8	5	11.80	25
	9-12	7	6		
	13-16	7	8		
	17 and over	3	4		
Physical Sciences	1-8	14	16	11.64	74
	9-12	19	19		
	13-16	27	25		
	17 and over	14	12		

Tab.  $x^2$  between groups = 2.39

Other Fields	1-8	8	7	11.80	25
	9-12	7	7		
	13-16	7	6		
	17 and over	3	4		
Social Sciences	1-8	129	129	11.04	421
	9-12	121	120		
	13-16	101	101		
	17 and over	70	68		

Tab.  $x^2$  between groups = 0.48

Degrees of freedom = 3.

> = Greater than.



Scientists over the Social Scientists almost reached a level of significance at the .05 confidence limits. The null hypothesis was not rejected for the variable, "Father's educational level."

In considering the variable of the "Mother's educational level," Table XXIV presents the findings for the women doctoral recipients in the various areas of academic specialization. Educational levels were categorized as follows: (1) mothers, who attained a grade level one through eight; (2) mothers, who attained a grade level nine through twelve; (3) mothers, who attained a college level thirteen through sixteen; and (4) mothers, who attained a graduate level of seventeen years and above.

No significant differences or trends were noted. For this variable the null hypothesis was not rejected, and the alternative hypothesis was infirmed.

TABLE XXIV

CHI-SQUARES FOR THE INDICES OF THE MOTHER'S EDUCATIONAL LEVEL OF THE DOCTORAL WOMEN WHO MAJORED IN THE DIFFERENT FIELDS OF SPECIALIZATION

Groups and Direction of Difference	Level of Educational Attainment	Observed Frequency	Expected Frequency	Mean Level	N
Humanities	1-8	43	44	11.16	172
	9-12	50	50		
	13-16	65	63		
	17 and over	14	11		
Biological Sciences	1-8	40	38	10.76	146
	9-12	46	44		
	13-16	52	53		
	17 and over	8	10		

Tab.  $x^2$  between groups = 1.23

TABLE XXIV (Continued)

Groups and Direction of Difference	Level of Educational Attainment	Observed Frequency	Expected Frequency	Mean Level	N
Physical Sciences	1-8	15	17	11.18	74
	9-12	26	22		
	13-16	29	28		
	17 and over	4	5		
Humanities	1-8	43	40	11.16	172
	9-12	50	53		
	13-16	65	65		
	17 and over	14	12		

Tab.  $\chi^2$  between groups = 1.66

Social Sciences	1-8	103	103	11.32	421
	9-12	154	144		
	13-16	142	146		
	17 and over	22	25		
Humanities	1-8	43	42	11.16	172
	9-12	50	59		
	13-16	65	60		
	17 and over	14	10		

Tab.  $\chi^2$  between groups = 4.30

Other Fields	1-8	6	6	11.76	25
	9-12	13	7		
	13-16	5	8		
	17 and over	1	1		
Humanities	1-8	43	42	11.16	172
	9-12	50	55		
	13-16	65	61		
	17 and over	14	13		

Tab.  $\chi^2$  between groups = 6.03

Physical Sciences	1-8	15	18	11.18	74
	9-12	26	23		
	13-16	29	27		
	17 and over	4	4		

TABLE XXIV (Continued)

Groups and Direction of Difference	Level of Educational Attainment	Observed Frequency	Expected Frequency	Mean Level	N
Biological Sciences	1-8	40	36	10.76	146
	9-12	46	43		
	13-16	52	53		
	17 and over	8	7		

Tab.  $\chi^2$  between groups = 1.89

Social Sciences	1-8	103	107	11.32	421
	9-12	154	146		
	13-16	142	145		
	17 and over	22	22		
Biological Sciences	1-8	40	35	10.76	146
	9-12	46	48		
	13-16	52	48		
	17 and over	8	7		

Tab.  $\chi^2$  between groups = 2.68

Other Fields	1-8	6	6	11.76	25
	9-12	13	8		
	13-16	5	8		
	17 and over	1	1		
Biological Sciences	1-8	40	39	10.76	146
	9-12	46	45		
	13-16	52	48		
	17 and over	8	7		

Tab.  $\chi^2$  between groups = 5.44

Social Sciences	1-8	103	100	11.32	421
	9-12	154	153		
	13-16	142	145		
	17 and over	22	22		
Physical Sciences	1-8	15	17	11.18	74
	9-12	26	26		
	13-16	29	25		
	17 and over	4	3		

Tab.  $\chi^2$  between groups = 1.05

TABLE XXIV (Continued)

Groups and Direction of Difference	Level of Educational Attainment	Observed Frequency	Expected Frequency	Mean Level	N
Other Fields	1-8	6	5	11.76	25
	9-12	13	9		
	13-16	5	8		
	17 and over	1	1		
Physical Sciences	1-8	15	15	11.18	74
	9-12	26	29		
	13-16	29	25		
	17 and over	4	3		

Tab.  $\chi^2$  between groups = 3.54

Other Fields	1-8	6	6	11.76	25
	9-12	13	9		
	13-16	5	8		
	17 and over	1	1		
Social Sciences	1-8	103	102	11.32	421
	9-12	154	157		
	13-16	142	138		
	17 and over	22	21		

Tab.  $\chi^2$  between groups = 2.91

Degrees of freedom = 3.

>= Greater than.

No results are shown for the ten contrasting groups relative to the variable "fields of specialization," as each would prove highly significant if shown. To illustrate, the recipients majoring in the Humanities would show great contrast with recipients in Physical Science, as all subject matter areas were categorized under the general headings of Humanities, Physical Sciences, etc.

IV. Diversity Among the Doctoral Recipients Who Were Married or Unmarried and for Those Who Were With Children and Without Children:

Hypothesis IV and Hypothesis V state that no significant differences are found between the recipients who are married when contrasted with the unmarried subjects, and between the recipients with and without children, on the various dependent variables. Data obtained from these four groups are shown in the same tables so they can be compared.

In Table XXV recipients were classified on the "age" variable by placing them into the following categories: (1) recipients born in the first decade 1900-09; (2) recipients born in the second decade 1910-19; (3) recipients born in the third decade 1920-29; (4) recipients born in the fourth decade 1930-39; and (5) recipients born in the fifth decade 1940-49.

In presenting the results in Table XXV on the "age" of the

TABLE XXV

CHI-SQUARES FOR THE INDICES OF THE AGE OF THE WOMEN  
DOCTORATES WHO WERE MARRIED OR UNMARRIED,  
AND THOSE WITH AND WITHOUT CHILDREN

Groups and Direction of Difference	Decade in Which Recipient Born	Observed Frequency	Expected Frequency	Mean Age	N
Unmarried Subjects	1900-09	19	20	40.55	364
	1910-19	68	64		
	1920-29	156	136		
	1930-39	120	140		
	1940-49	1	1		
Married Subjects	1900-09	28	26	38.50	476
	1910-19	82	85		
	1920-29	160	179		
	1930-39	206	185		
	1940-49	2	1		

Tab.  $\chi^2$  between groups = 10.86\*

TABLE XXV (Continued)

Groups and Direction of Difference	Decade in Which Recipient Born	Observed Frequency	Expected Frequency	Mean Age	N
Married, With Children	1900-09	17	16	39.54	283
	1910-19	56	48		
	1920-29	109	94		
	1930-39	99	121		
	1940-49	2	1		
Married, Without Children	1900-09	11	11	37.0	195
	1910-19	26	33		
	1920-29	51	65		
	1930-39	107	84		
	1940-49	0	0		

Tab.  $\chi^2$  between groups = 20.07\*\*\*\*

\* Probability of obtaining a Chi-square equal to or greater than 9.49 = .05 level of confidence.

\*\*\*\* Probability of obtaining a Chi-square equal to or greater than 18.46 = .001 level of confidence.

Degrees of freedom = 4.

> = Greater than.

recipients it was found that the unmarried subjects were older than the married subjects. This index was significant at the .05 level of confidence. A higher degree of significance, at the .001 level of confidence, was found among the married recipients "with children." They proved to be older than the subjects who were childless. For this variable the null hypothesis was rejected and the alternative hypothesis was confirmed.

No results are presented for the married and married "with children," groups relative to the two variables, "number of children," and "age of the children." This omission is a result of an artifact of the questionnaire which would naturally depict the "married," and "with children" recipients as highly significant with

regard to these two factors, when contrasted with the "unmarried," and "without children" subjects.

Table XXVI shows the results of the data with reference to the "number of years" the doctoral recipients were enrolled in doctoral study. On this variable the recipients were classified with respect to the number of years they required to complete the doctoral program. These classifications were: (1) one year; (2) two years; (3) three years; (4) four years; (5) five years; (6) six years; and (7) over six years. There are found no significant differences existing between the two contrasting groups, although there is a trend to be noted regarding the recipients "with children." They tend to prolong

TABLE XXVI

CHI-SQUARES FOR THE INDICES OF THE YEARS SPENT IN STUDY BY THE WOMEN DOCTORATES WHO WERE MARRIED OR UNMARRIED, AND THOSE WITH OR WITHOUT CHILDREN

Groups and Direction of Difference	Years in Study	Observed Frequency	Expected Frequency	Mean Years in Study	N
Unmarried Subjects	1	5	4	4.56	364
	2	64	61		
	3	97	91		
	4	83	88		
	5	34	38		
	6	33	34		
	over 6	48	47		
Married Subjects	1	5	5	4.21	476
	2	75	77		
	3	113	118		
	4	120	116		
	5	54	49		
	6	47	45		
	over 6	62	62		

Tab.  $x^2$  between groups = 2.21

TABLE XXVI (Continued)

Groups and Direction of Difference	Years in Study	Observed Frequency	Expected Frequency	Mean Years in Study	N
Married, With Children	1	5	3	4.56	283
	2	46	44		
	3	73	67		
	4	63	71		
	5	26	31		
	6	32	27		
	over 6	38	36		
Married, Without Children	1	1	2	4.15	195
	2	29	30		
	3	41	46		
	4	57	48		
	5	28	22		
	6	15	19		
	over 6	24	25		

Tab.  $\chi^2$  between groups = 9.30

Degrees of freedom = 6.

> = Greater than.

years in study over the group reporting "without children." The null hypothesis was not rejected for this variable and the alternative hypothesis was infirmed.


Married and unmarried recipients, and those with, and without, children were classified according to the number of periods of interrupted study they experienced while engaged in graduate study. The periods of interrupted study were classified as: (1) no periods of interruption; (2) one; (3) two; (4) three; (5) four; (6) five; and (7) over five periods of interruption.

Table XXVII reveals a trend in the data for "married" recipients and those "with children" to experience more "periods of interrupted




TABLE XXVII

CHI-SQUARE FOR THE INDICES OF THE PERIODS OF INTERRUPTED STUDY OF  
THE WOMEN DOCTORATES WHO WERE MARRIED OR UNMARRIED, AND  
THOSE WITH AND WITHOUT CHILDREN

Groups and Direction of Difference	Periods of Interrupted Study	Observed Frequency	Expected Frequency	Mean Periods of Interrupted Study	N
Married Subjects 	0	228	244		
	1	96	90		
	2	62	53	2.91	
	3	22	26		
	4	23	42		
	5	45	42		
	over 5	0	1		476
Unmarried Subjects	0	198	185		
	1	64	69		
	2	32	40	2.71	
	3	24	19		
	4	24	15		
	5	20	32		
	over 5	2	0		364

Tab.  $\chi^2$  between groups = 10.39

Married, With Children 	0	123	136		
	1	57	56		
	2	40	36	2.78	
	3	15	13		
	4	13	13		
	5	35	26		
	over 5	0	0		283
Married, With- out Children	0	107	93		
	1	39	39		
	2	22	25	2.65	
	3	7	8		
	4	10	9		
	5	10	18		
	over 5	0	0		195

Tab.  $\chi^2$  between groups = 11.07

Degrees of freedom = 6.

> = Greater than.

study" than those subjects who are in the "unmarried" and "without children" categories. However, the findings did not reach the level of significance and the null hypothesis was not rejected for this variable.

Recipients were also classified with respect to the educational attainment level of their fathers. These levels were: (1) grades one through eight; (2) grades nine through twelve; (3) college level, (13-16); and (4) graduate level, (17 and above).

Table XXVIII provides information about the two contrasting groups on the "father's educational level." This variable proved to be significant at the .01 level of confidence as it was found that the "married" recipients' fathers had a higher level of education and held more college and graduate degrees than did the "unmarried" recipients' fathers. "Father's educational level" for the recipients

TABLE XXVIII

CHI-SQUARES FOR THE INDICES OF THE FATHER'S EDUCATIONAL ATTAINMENT OF THE DOCTORAL WOMEN WHO WERE MARRIED OR UNMARRIED, AND THOSE WITH AND WITHOUT CHILDREN

Groups and Direction of Difference	Level of Educational Attainment	Observed Frequency	Expected Frequency	Mean Level	N
Married Subjects	1-8	112	132	11.88	476
	9-12	129	134		
	13-16	131	119		
	17 and over	104	89		
Unmarried Subjects	1-8	123	102	10.68	364
	9-12	108	102		
	13-16	79	90		
	17 and over	54	68		

Tab.  $x^2$  between groups = 15.75\*\*\*

TABLE XXVIII (Continued)

Groups and Direction of Difference	Level of Educational Attainment	Observed Frequency	Expected Frequency	Mean Level	N
Married, With Children	1-8	38	56	12.22	195
	9-12	60	58		
	13-16	52	45		
	17 and over	45	34		
Married, Without Children	1-8	100	81	10.64	283
	9-12	85	86		
	13-16	46	62		
	17 and over	51	41		

Tab.  $\chi^2$  between groups = 15.27\*\*\*

\*\*\* Probability of obtaining a Chi-square equal to or greater than 11.34 = .01 level of confidence.  
Degrees of freedom = 3.  
> = Greater than.

"with children" were higher at the high school, college, and graduate levels than for the subjects who reported no children in their families.

The null hypothesis for this variable was rejected and the alternative hypothesis was confirmed.

In Table XXIX mothers of the recipients were classified with regard to the highest level of education attained. These levels were: (1) one through eighth grades; (2) nine through twelfth grades; (3) college level (13-16); and (4) graduate level (17 and over).

Table XXIX presents data relative to the "educational level of the mothers" of the women doctoral recipients.

This variable proved to be significant at the .01 level of confidence with the "married" subjects having mothers with a higher level of attainment at the high school, college and graduate levels than had the "unmarried" recipients. This same finding was consistent at the

TABLE XXIX

CHI-SQUARES FOR THE INDICES OF THE MOTHER'S EDUCATIONAL ATTAINMENT  
OF THE WOMEN DOCTORATES WHO WERE MARRIED OR UNMARRIED,  
AND THOSE WITH OR WITHOUT CHILDREN

Groups and Direction of Difference	Level of Educational Attainment	Observed Frequency	Expected Frequency	Mean Level	N
Married Subjects	1-8	94	116	11.36	478
	9-12	167	163		
	13-16	181	168		
	17 and over	34	27		
Unmarried Subjects	1-8	111	88	10.36	364
	9-12	122	125		
	13-16	116	128		
	17 and over	15	21		

Tab.  $x^2$  between groups = 15.83\*\*\*

Married, With Children	1-8	31	50	11.56	195
	9-12	70	66		
	13-16	80	68		
	17 and over	14	10		
Married, Without Children	1-8	86	66	10.44	283
	9-12	94	97		
	13-16	88	99		
	17 and over	15	18		

Tab.  $x^2$  between groups = 17.21\*\*\*\*

\*\*\* Probability of obtaining a Chi-square equal to or greater than 11.34 = .01 level of confidence.

\*\*\*\* Probability of obtaining a Chi-square equal to or greater than 16.27 = .001 level of confidence.

Degrees of freedom = 3.

> = Greater than.

.001 level of confidence when considering the recipients "with children", and those "without children". Mothers of the "with children" subjects achieved a higher educational level than did the mothers of the subjects "without children." The null hypothesis was rejected for

this variable, while the alternative hypothesis was confirmed.

In Table XXX recipients who were married and unmarried, and who did, or did not have children were categorized according to their

TABLE XXX

CHI-SQUARES FOR THE INDICES OF THE FIELDS OF SPECIALIZATION  
FOR THE WOMEN DOCTORATES WHO WERE MARRIED OR UNMARRIED,  
AND THOSE WITH AND WITHOUT CHILDREN

Groups and Direction of Difference	Fields of Academic Specialization	Observed Frequency	Expected Frequency	Percentage of the Group in the Field	N
Married Subjects	Humanities	92	86	19.3	476
	B. S.	89	93	18.6	
	P. S.	41	50	8.6	
	S. S.	245	221	51.14	
	<u>Other</u>	9	14	1.89	
Unmarried Subjects	Humanities	85	61	23.35	364
	B. S.	70	54	19.23	
	P. S.	44	28	12.08	
	S. S.	151	148	41.48	
	<u>Other</u>	16	10	4.39	

Tab. x between groups = 24.92\*\*\*\*

Married, With Children	Humanities	56	54	19.78	283
	B. S.	44	46	15.54	
	P. S.	23	25	8.12	
	S. S.	157	150	55.47	
	<u>Other</u>	3	5	1.06	
Married, Without Children	Humanities	36	37	18.46	195
	B. S.	35	32	17.94	
	P. S.	20	17	10.05	
	S. S.	98	104	50.25	
	<u>Other</u>	6	3	3.07	

Tab.  $x^2$  between groups = 4.17

\*\*\*\* Probability of obtaining a Chi-square equal to or greater than 18.46 = .001 level of confidence.

Degrees of freedom = 4.

> = Greater than.

fields of specialization in an attempt to determine if significant differences existed between the groups.

Table XXX portrays the "fields of specialization," along with the percentage of the groups in the various disciplines who earned the doctoral degree.

No significant differences were found between the recipients "with children" and those "without children," who majored in the different field of specialization, therefore the null hypothesis was not rejected.

A highly significant difference at the .001 level of confidence was found between the "married" recipients when contrasted with the "unmarried" subjects. The married recipients majored in the Social Sciences and the Humanities with greater frequency than did the "unmarried" subjects. The latter group majored more frequently in the Biological Sciences, Physical Sciences, and in Other miscellaneous fields.

For this variable the null hypothesis was rejected, and the alternative hypothesis confirmed.

#### Findings of the Mann Whitney U Test

Rather than report all the statistical findings from the questionnaire data, it was decided to present in tabular form only the results of the data that were statistically significant.

The tables in this section have summarized the results of the Mann Whitney U scores derived from formula 6.7a and 6.8 as they are translated into a z score. (54, p. 123). This procedure permitted

the use of Table A in Siegel's book which gave the "probabilities associated with values as extreme as observed values of  $z$  in the normal distribution." (54, p. 247). Since Table A gave the one-tailed probabilities, the probabilities used in this study have been doubled in order to provide a two-tailed interpretation of the data.

Items on the questionnaire that were found to be significant when contrasting the five major groups, were combined according to the areas that constituted specific problems for the recipients. Recipients were asked: to what degree did you experience difficulty in the following areas while pursuing graduate study beyond the Master's degree? These areas and the related items on the questionnaire were:

A. FAMILY RELATIONSHIPS; (1) The mother-child relationship, (2) The husband-wife relationship, (3) The homemaker-domestic help relationship, (4) The number of children, (5) The age of the children.

B. TIME-MANAGEMENT; (6) Time and family responsibility, (7) Time and school travel; (8) Time and personal grooming, (9) Time and household duties, (10) Time and community responsibilities, (11) Time and professional responsibilities, (12) Time and professional society duties.

C. FINANCES; (13) Financial requirements and family, (14) Financial requirements and cost of graduate study.

D. EDUCATIONAL; (15) The completion of the doctoral dissertation, (16) The graduate course-work, (17) The specific requirements of your field of study, (18) The language or statistical requirement,

(19) The preliminary examination, (20) The doctoral committee relationship, (21) The type of degree earned, (22) The length of time in graduate study, (23) The periods of interrupted study, (24) The type of institution attended (public, private), (25) Finding a quiet place to study, (26) The scheduling of classes.

E. HEALTH; (27) Personal illness, (28) Family illness, (29) Illness among relatives.

F. MOBILITY; (30) A change in family residence, (31) A change in institutions attended.

G. PERSONAL; (32) Maintaining an attitude of persistence, (33) Maintaining an adequate feeling of morale, (34) Maintaining a desire for excellence in achievement, (35) Discrimination encountered against you as a woman, (36) Interpersonal relationship with the faculty, (37) Interpersonal relationship with other students, (38) Receiving the emotional support of your family, (39) Subject's age, (40) Educational attainment of the father, (41) Educational attainment of the mother.

H. VOCATIONAL; (42) The attitude of your employer, (43) Obtaining a "leave of absence."

I. COUNSELING; (44) Availability of adequate counseling services, (45) Your utilization of counseling facilities.

J. SUPPLEMENTARY ITEM; Please write in any supplementary information which you believe would be helpful in explaining or completing your answer, referring to the number of the item below. (See exhibit in the appendix for an example of the questionnaire.)

Table XXXI shows that ten of the forty-five items on the questionnaire proved to be significant at the .02, .01, and .001 levels



TABLE XXXI

SIGNIFICANT MANN WHITNEY U SCORES TRANSFORMED TO z SCORES  
FOR THE INDICE ON THE QUESTIONNAIRE RELATIVE TO THE  
DEGREE OF DIFFICULTY ENCOUNTERED WHILE IN  
DOCTORAL STUDIES BETWEEN PRIVATE VERSUS  
PUBLIC INSTITUTION RECIPIENTS

Direction of Differences	Item	Mann Whitney U Score	z Scores
<u>The Educational Area</u>			
Private S.'s > Public S.'s	15	100787.0	3.66***
Private S.'s > Public S.'s	16	96909.0	2.55**
Private S.'s > Public S.'s	17	96380.0	2.40**
Private S.'s > Public S.'s	20	97812.0	2.81***
Private S.'s > Public S.'s	22	102389.0	4.11****
Private S.'s > Public S.'s	23	98726.0	3.07***
Private S.'s > Public S.'s	26	99055.0	3.16***
<u>The Personal Area</u>			
Private S.'s > Public S.'s	32	103408.0	4.40****
Private S.'s > Public S.'s	33	102731.0	4.21****
Private S.'s > Public S.'s	34	102326.0	4.09****

\*\* Significant at the .02 level of confidence.

\*\*\* Significant at the .01 level of confidence.

\*\*\*\* Significant at the .001 level of confidence.

>= Greater than.

of confidence, when contrasting subjects from the Public versus Private Institutions. Seven items were found to be significant in the educational area in the regard that these factors constituted the most difficult area for the groups while they were pursuing the doctorate. The only other area posing difficulty was the personal

variable. This finding seemed to point up the fact that factors in the external and internal environments were interacting continually throughout graduate study.

All the significant differences presented in Table XXXI vary in the same direction. Evidence indicates that the women doctorates who attended private institutions reported having encountered a greater degree of difficulty while engaged in graduate study than did the recipients attending public institutions of higher education.

In responding, the subjects scaled each item on the questionnaire by checking one of the following categories: "Very Difficult," "Difficult," "Somewhat Difficult," "Rarely Difficult," and "No Problem." Factors in the educational area constituting difficulties for the recipients are represented below.

The first item that proved to be significant after applying the statistical test was Item 15 which states: "To what degree did you experience difficulty in the completion of the doctoral dissertation while pursuing graduate study?" In referring to Table A in Siegel's book it was found that  $z > 3.66$  has a two-tailed probability under the null hypothesis of  $p < .0026$ . Since this  $p$  is less than the .01 level of significance, the decision is made to reject the null hypothesis in preference for the alternative hypothesis. It is concluded that women doctoral recipients from private institutions had greater difficulty completing the doctoral dissertation than the recipients who attended public institutions.

Another significant item in differentiating between the two groups is Item 16, Table XXXI, in which the doctoral recipients were

asked, "To what degree did you experience difficulty in pursuing the graduate course work?"

Referring to Table A in Siegel it was found that the  $z > 2.55$  for this item has a two-tailed probability under the null hypothesis of  $p < .0108$ . Thus, the probability is less than the .02 level of significance and the decision is made to reject the null hypothesis in favor of the alternative hypothesis. From these results it is inferred that women doctorates from private institutions experienced more difficulty with the graduate course work than did the women doctorates who attended public institutions.

Item 17 asks of the respondents: "To what degree did you experience difficulty in fulfilling the specific requirements of your field of study?" Table A reveals that a  $z > 2.40$  has a two-tailed probability under the null hypothesis of  $p < .0164$ . This  $p$  is smaller than the .02 level of significance and, therefore, a decision is made to reject the null hypothesis and affirm the alternative hypothesis.

It is thus presumed that doctoral recipients from Private institutions had more difficulty fulfilling the specific requirements of their field of study than did doctoral recipients who attended public institutions.

Item 20 states, "To what degree did you experience difficulty with the doctoral committee relationship while pursuing graduate study?" Table A in Siegel shows that a  $z > 2.81$  has a two-tailed probability under the null hypothesis of  $p < .0052$ . This  $p$  is less than the .01 level of significance. Consequently, the decision is made to reject the null hypothesis and to affirm the alternative

hypothesis. From the results of the data it would seem that women who received the doctor's degree from private institutions experienced a greater degree of difficulty with the doctoral committee relationship than did the doctoral recipients who attended public institutions.

Item 22 asks of the recipients, "To what degree did you experience difficulty as a result of the length of time spent in graduate study?" Table A in Siegel shows that a  $z > 4.11$  has a two-tailed probability under the null hypothesis of  $p < .00006$ . This probability is less than the .001 level of significance and the decision is made to reject the null hypothesis in favor of the alternative hypothesis. From these results it is concluded that women doctoral recipients who attended private institutions experienced more difficulty which resulted in a greater length of time needed to complete the doctoral program than did the recipients who attended public institutions.

Item 23 queries, "To what degree did you experience difficulty as a result of the periods of interrupted study?" Reference to Siegel's Table A reveals that a  $z > 3.07$  has a two-tailed probability under the null hypothesis of  $p < .0022$ . This  $p$ , being less than the .01 level of significance, permits us to reject the null hypothesis and affirm the alternative hypothesis. Results indicated that women doctoral recipients who attended private institutions had a greater degree of difficulty with factors which resulted in a greater number of periods of interrupted study than did women doctoral recipients who attended public institutions.

Item 26 refers to, "To what degree did you experience difficulty in the scheduling of classes during graduate study?" Table A in

Siegel shows that a  $z > 3.16$  has a two-tailed probability under the null hypothesis of  $p < .0016$ . Since this  $p$  is less than the .01 level of significance, the decision is made to reject the null hypothesis in preference for the alternative hypothesis. These results indicated that women doctoral recipients from private institutions experienced greater difficulty in scheduling classes than did women doctorates who were graduated from public institutions.

When considering significant "personal" factors posing difficulties for the recipients, the following items were significant:

Item 32 asks of the recipients: "To what degree did you experience difficulty in maintaining an attitude of persistence while pursuing graduate study?" Table A in Siegel shows that a  $z > 4.40$  has a two-tailed probability under the null hypothesis of  $p < .00006$ . Since this  $p$  value is less than the .001 level of significance, the null hypothesis is rejected and the alternative hypothesis is affirmed. From these results it was concluded that women doctoral recipients who attended private institutions had more difficulty in maintaining a persistent attitude while pursuing graduate study than did the doctoral recipients who attended public institutions.

Item 33 states: "To what degree did you experience difficulty in maintaining an adequate feeling of morale while pursuing graduate study?" Table A in Siegel shows that a  $z > 4.21$  has a two-tailed probability under the null hypothesis of  $p < .00006$ . This  $p$  is less than the .001 level of significance and permits a rejection of the null hypothesis and an affirmation of the alternative hypothesis. Results indicated that women doctoral recipients who attended private

institutions had greater difficulty in maintaining morale while pursuing graduate study than did women doctoral recipients who were graduated from public institutions.

Item 34 asks the recipients, "To what degree did you experience difficulty in maintaining a desire for excellence in achievement while in graduate study?" Reference to Table A shows that a  $z > 4.09$  has a two-tailed probability under the null hypothesis of  $p < .00006$ . This  $p$  is less than the .001 level of significance and allows us to reject the null hypothesis and affirm the alternative hypothesis. Results showed that women doctoral recipients who attended private institutions had more difficulty maintaining a desire for excellence in achievement than did women doctoral recipients who attended public institutions.

The next groups to be contrasted were the recipients who earned the different degrees. Specifically, these were recipients of the Doctor of Philosophy degree, recipients of the Doctor of Education degree, and recipients of the Other degrees. The latter category included all other degree recipients not covered by the Ph.D. and Ed.D. degree titles.

Specific areas posing difficulty for the degree-recipients were: (1) time-management; (2) finances; (3) educational; (4) health; and (5) personal.

In contrasting the recipients who earned the Ph.D., Ed.D., and Other miscellaneous degrees, eleven of the forty-five indices on the questionnaire proved to be significant at the .05, .02, .01, and .001 levels of confidence. Table XXXII shows that in considering the

TABLE XXXII

SIGNIFICANT MANN WHITNEY U SCORES TRANSFORMED TO z SCORES  
 FOR THE INDICES ON THE QUESTIONNAIRE RELATIVE TO  
 THE DEGREE OF DIFFICULTY ENCOUNTERED WHILE  
 IN GRADUATE SCHOOL AMONG RECIPIENTS  
 WHO EARNED THE PH. D., ED. D.,  
 AND OTHER DEGREES

Direction of Differences	Item	Mann Whitney U Scores	z Scores
<u>Time-Management</u>			
Ph.D.'s > <u>Other</u> S.'s	8	6763.0	-2.43**
Ed.D.'s > <u>Other</u> S.'s	8	1864.0	-2.36**
Ed.D.'s > <u>Other</u> S.'s	10	3223.0	2.21*
Ph.D.'s > Ed.D. S.'s	7	50160.0	-2.22*
Ph.D.'s > Ed.D. S.'s	11	45171.0	-4.02****
Ph.D.'s > Ed.D. S.'s	12	42489.0	-4.99****
<u>Finances</u>			
Ph.D.'s > Ed.D. S.'s	14	47194.0	-3.29***
<u>Educational</u>			
Ed.D.'s > <u>Other</u> S.'s	25	1899.0	-2.24*
Ph.D.'s > Ed.D. S.'s	26	48948.0	-2.66***
<u>Health</u>			
Ed.D.'s > <u>Other</u> S.'s	28	3166.0	2.01*
<u>Personal</u>			
Ph.D.'s > Ed.D. S.'s	37	62158.0	2.12*

\* Significant at the .05 level of confidence.

\*\* Significant at the .02 level of confidence.

\*\*\* Significant at the .01 level of confidence.

\*\*\*\* Significant at the .001 level of confidence.

> = Greater than.

diversity between the Ph.D. subjects and Other degree subjects, the area of time-management is significant. Item 8 is significant and states: "To what degree did you experience difficulty in time management and personal grooming while pursuing graduate study?" In referring to Table A in Siegel it was found that  $z > -2.43$  has a two-tailed probability of  $p < .0150$ . Since this  $p$  is less than the .02 level of significance, the decision was made to reject the null hypothesis for Item 8 and affirm the alternative hypothesis. It is concluded that the Ph.D. subjects experienced difficulty in finding the time for personal grooming while engaged in graduate study. None of the other indices proved significant when contrasting the Ph.D. and Other degree recipients.

When examining the diversity between the Ed.D. recipients and Other degree recipients, the area of time-management is significant. Item 8, Table XXXII, proved to be significant with the Ed.D. subjects finding time and personal grooming an area for concern while pursuing graduate study. Table A in Siegel shows that for these two groups a  $z$  score of  $> -2.36$  for Item 8 has a two-tailed probability of  $p < .0182$  at the .02 level of significance. Thus, the decision is made to reject the null hypothesis and affirm the alternative hypothesis.

Item 10 also showed diversity between the Ed.D. and Other degree subjects. Table A, Siegel, shows that a  $z$  score of  $> 2.21$  has a two-tailed probability of  $p < .0272$  at the .05 level of significance. It is decided to reject the null hypothesis and affirm the alternative hypothesis, that the Ed.D. recipients had more difficulty with time and community responsibilities while engaged in graduate study than



did Other degree recipients.

In considering the diversity between the Ph.D. and Ed.D. recipients the following indices proved significant in the area of time-management.

Item 7 was an item of significance. Table A in Siegel, shows that  $z > -2.22$  has a two-tailed probability of  $p < .0264$  at the .05 level of significance. Thus, the decision is made to reject the null hypothesis in favor of the alternative hypothesis. The Ph.D. recipients found time and school travel a more difficult problem during graduate study than did the Ed.D. recipients.

Table XXXII shows Item 11 to be significant. Siegel's Table A shows that a z score of  $> -4.02$  has a two-tailed probability of  $p < .00006$  at the .001 level of confidence. Since this is a highly significant level of confidence the null hypothesis is rejected and the alternative hypothesis is affirmed. The Ph.D. recipients had more difficulty with time and professional responsibilities than did the Ed.D. recipients.

Item 12 also proved significant when considering the Ed.D. and Ph.D. recipients. Table A, Siegel, shows that a z score of  $> -4.99$  has a two-tailed probability of  $p < .00006$  at the .001 level of confidence. Since this index is highly significant the decision is made to reject the null hypothesis and affirm the alternative hypothesis. The Ph.D. subjects had more difficulty in the area of time and professional society duties while engaged in graduate study than did the Ed.D. recipients.

In the area of financial problems a significant difference was

manifested between the Ph.D. and Ed.D. recipients.

Item 14 is shown as significant in Table XXXII of this study. Table A in Siegel reveals that a z score of  $> -3.29$  has a two-tailed probability of  $p < .0014$  at the .01 level of confidence. The decision is made to reject the null hypothesis and affirm the alternative hypothesis. It is concluded that the Ph.D. recipients had more difficulty financing graduate study than did the Ed.D. recipients.

Diversity among the Ph.D.'s, the Ed.D.'s and Other degree recipients was apparent in the difficulties encountered in the educational and health areas.

Item 25 proved to be significant as shown in Table XXXII. A z score of  $> -2.24$  has a two-tailed probability of  $p < .0250$  according to Table A in Siegel. This probability proves significant at the .05 level of confidence. The null hypothesis is rejected for Item 25 and the alternative is affirmed. The Ed.D. recipients experienced more difficulty in finding a quiet place to study than did the Other degree recipients, while they were engaged in graduate study.

Item 28 has a z score of  $> 2.01$ . According to Table A in Siegel this score has a two-tailed probability of  $p < .0444$  at the .05 level of significance. The decision is made to reject the null hypothesis and affirm the alternative hypothesis. The Ed.D. recipients reported a higher incidence of family illness than did the Other degree recipients while they were engaged in graduate study.

Item 26 is shown as significant in Table XXXII. From Table A in Siegel it was found that a z score of  $> -2.66$  has a two-tailed probability of  $p < .0078$  at the .01 level of confidence. Thus, the decision

is made to reject the null hypothesis and affirm the alternative hypothesis. The Ph.D. recipients experienced more difficulty in scheduling their classes during graduate study than did the Ed.D. subjects.

The recipients of the Ed.D. and Ph.D. degrees manifested differences in the personal area.

Item 37 in Table XXXII is shown as significant. Table A, Siegel, shows that a z score of  $\lambda$  2.12 has a two-tailed probability of  $p < .0240$  at the .05 level of confidence. The decision is made to reject the null hypothesis and affirm the alternative hypothesis. The Ph.D. recipients experienced more difficulty with their interpersonal relationships with other students during graduate study than did the Ed.D. recipients.

In contrasting the degree recipients who majored in the Humanities, Biological Sciences, Physical Sciences, Social Sciences, and Other miscellaneous fields of study, forty-four indices proved to be significant.

Areas that posed difficulties for the recipients while pursuing graduate study were: (1) time-management; (2) financial; (3) educational; and (4) personal.

Table XXXIII presents the results of the Mann Whitney U test transformed into z scores for the groups majoring in the various disciplines. Data are broken down into four different areas, and the Tables will be identified as follows: (1) Table XXXIII-A, Time-Management; (2) Table XXXIII-B, Finances; (3) Table XXXIII-C, Educational; and (4) Table XXXIII-D, Personal.

Using Table XXXIII-A as an example, the description of Tables

TABLE XXXIII-A

SIGNIFICANT MANN WHITNEY U SCORES TRANSFORMED TO z SCORES FOR  
THE INDICES ON THE QUESTIONNAIRE RELATIVE TO THE DEGREE  
OF DIFFICULTY ENCOUNTERED WHILE IN GRADUATE STUDY  
BETWEEN RECIPIENTS WHO WERE IN THE HUMANITIES,  
BIOLOGICAL SCIENCES, PHYSICAL SCIENCES,  
SOCIAL SCIENCES AND OTHER  
ACADEMIC FIELDS

(Time-Management)

Direction of Difference	Item	Mann Whitney U Scores	z Scores
	<u>Time-Management</u>		
Humanities S.'s > <u>Other</u> S.'s	11	1639.0	-2.06*
Humanities S.'s > <u>Other</u> S.'s	12	1530.0	-2.46**
Biological S.S.'s > <u>Other</u> S.'s	11	1156.0	-2.92***
Biological S.S.'s > Phys.S.S.'s	10	6379.0	2.19*
Biological S.S.'s > Phys.S.S.'s	12	6346.0	2.12*
Social S. S.'s > B. S.'s	7	34852.0	2.41**
Social S. S.'s > B. S. S.'s	11	35203.0	2.62***
Physical S.S.'s > <u>Other</u> S.'s	11	563.0	-2.92***
Physical S.S.'s > <u>Other</u> S.'s	12	557.0	-2.96***
Social S.S.'s > Humanities S.'s	12	42327.0	2.75***
Social S.S.'s > Phys. S. S.'s	10	18195.0	2.31*
Social S.S.'s > Phys. S. S.'s	12	19337.0	3.31***
Social S.S.'s > Phys. S. S.'s	11	18472.0	2.55***

\* Significant at the .05 level of confidence.

\*\* Significant at the .02 level of confidence.

\*\*\* Significant at the .01 level of confidence.

>= Greater than.

XXXIII-B, C, and D will be similar in explanation. For the items showing significant differences among the groups majoring in the

different fields of academic specialization, thirteen items show diversity in the area of time-management. The indices are significant at the .05, .02, and the .01 levels of confidence.

Specific problems reported by the recipients within the time-management area were lack of time to participate in professional, community, and professional society activities. The recipients reported that time and school travel also posed a difficulty.

In considering the diversity between the two groups--the Humanities majors and the majors in Other miscellaneous fields--it is found that on Item 11 in Table XXXIII-A there are significant differences. Item 11 shows a z score of  $> -2.06$ . Since this score is shown to have a two-tailed probability in Table A (Siegel) of  $p < .0194$  at the .05 level of confidence, the decision is made to reject the null hypothesis. In affirming the alternative hypothesis, differences are recognized between the two groups with the Humanities' majors experiencing more difficulty with time and professional responsibilities while pursuing graduate study than was experienced by those in Other fields of specialization.

For Item 12 in Table XXXIII-A, a z score of  $> -2.46$  is shown. This score has a two-tailed probability of  $p < .0138$  at the .02 level of confidence when referring to Table A in Siegel. Thus, the decision is made to reject the null hypothesis and affirm the alternative hypothesis. Humanities majors experienced more difficulty than did majors in Other fields of specialization in completing the doctoral dissertation.

The next groups to be contrasted were the Biological Scientists

versus those majors in Other miscellaneous fields. Reading from Table XXXIII-A, it is noted that Item 11 is a significant item with a z score of  $\lambda -2.92$ . The two-tailed probability for this score is  $p < .0032$  (Table A--Siegel) which reaches the .01 level of significance. This level permits us to reject the null hypothesis in favor of the alternative hypothesis. It is concluded that the Biological Scientists experienced more difficulty with regard to time and professional responsibilities than did the majors in Other miscellaneous fields.

In considering diversity between the Biological and Physical Scientists the following results were found.

Relative to Item 12 in Table XXXIII-A, it is found that a z score of  $\lambda 2.12$  is presented for this item. This score is shown to have a two-tailed probability of  $p < .0340$  at the .05 level of confidence when consulting Table A in Siegel. Thus, the decision is made to reject the null hypothesis and affirm the alternative hypothesis. The Biological Scientists experienced more difficulty while pursuing graduate study with regard to time and professional society responsibilities than did the Physical Science majors.

Table XXXIII-A reveals that for Item 10 the z score is  $\lambda 2.19$ . Since a glance at Table A in Siegel reveals that this score has a two-tailed probability of  $p < .0286$  at the .05 level of confidence, allowing us to reject the null hypothesis and affirm the alternative hypothesis, it is concluded that the Biological Science majors had more difficulty with regard to time and community responsibilities while pursuing graduate study than did the Physical Science majors.

The next groups in which differences were noted were the Social Scientists versus the Biological Scientists. Table XXXIII-A reveals that for Item 7 a z score of  $> 2.41$  is shown. This z score in Table A of Siegel has a two-tailed probability of  $p < .0160$  at the .02 level of confidence. The decision was made to reject the null hypothesis and affirm the alternative hypothesis. It is inferred that time and school travel presented more of a difficulty for the Social Scientists while pursuing doctoral studies, than for the Biological Scientists.

Table XXXIII-A also reveals that Item 11 posed a difficulty for the Social Scientists. A glance at Table A in Siegel shows that a z score of  $> 2.62$  has a two-tailed probability of  $p < .0088$  at the .01 level of confidence. Thus, the decision is made to reject the null hypothesis and affirm the alternative hypothesis. It is concluded that the Social Science majors had more difficulty in regard to time and professional responsibilities while pursuing graduate study than did the Biological Scientists.

In contrasting the Physical Science group with the majors in Other fields of academic specialization, results are presented in Table XXXIII-A. The first item that attains a degree of significance for these two groups is Item 11 with a z score of  $> -2.92$ . This score has a two-tailed probability of  $p < .0036$  according to the A Table in Siegel and reaches the .01 level of probability. The decision is made to reject the null hypothesis and affirm the alternative hypothesis. It is concluded that the Physical Scientists had more difficulty in the area of time and professional responsibilities than did those recipients who majored in Other miscellaneous fields of specialization.

Item 12 in Table XXXIII-A also discriminates between the two groups with a z score of  $> -2.96$ . Since this score has a two-tailed probability of  $p < .0030$  as found in Table A (Siegel), the decision is made to reject the null hypothesis and affirm the alternative hypothesis as this probability is less than the .01 level of significance. It is concluded that the Physical Scientists encountered more difficulty with time and professional society duties while in graduate school than was encountered by recipients who majored in Other miscellaneous fields of study.

In contrasting the Humanities majors with the Social Science majors, areas of diversity were noted. Among these is Item 12 which shows a z score of  $> 2.75$  in Table XXXIII-A. Siegel's A table shows that this score has a two-tailed probability of  $p < .0060$ . Since this is significant at the .01 level of confidence the decision is made to reject the null hypothesis. The Social Science majors experienced more difficulty in relation to time and professional society duties during their period of doctoral studies than did the Humanities majors.

Contrasting the Physical Scientists and the Social Scientists proved interesting in the number of items that showed diversity. Table XXXIII-A shows nine significant indices with the first, Item 10, receiving a z score of  $> 2.31$ . A look at Table A (Siegel) reveals that this score has a two-tailed probability of  $p < .0208$  which shows a significance at the .05 level of confidence. This level allows us to reject the null hypothesis and affirm the alternative. It is concluded that the Social Scientists had more difficulty with time and community responsibilities than did the Physical Scientists while the



two groups were engaged in graduate study.

Item 11 also proved to be significant as shown in Table XXXIII-A, as it received a z score of  $> 2.55$ . Table A (Siegel) reveals that this score has a two-tailed probability of  $p < .0108$  at the .02 level of significance. It is decided to reject the null hypothesis and to affirm the alternative hypothesis, that the Social Scientists reported more difficulty with time and professional responsibilities while in graduate study than did the Physical Scientists.

Item 12 in Table XXXIII-A shows a significant z score of  $> 3.31$ . This z score has a two-tailed probability of  $p < .0010$ , which reaches the .01 level of significance, allowing a rejection of the null hypothesis and an affirmation of the alternative hypothesis. Conclusion is made that the Social Scientists experienced more difficulty with time and professional society duties than did the Physical Scientists, while both groups were engaged in graduate study.

Table XXXIII-B presents the items that proved significant in the financial area when contrasting the groups majoring in the various academic fields.

Item 14 is the first item shown to be significant when contrasting the subjects who majored in the Humanities and the Biological Sciences. Table A reveals that a z score of  $> 2.64$  has a two-tailed probability of  $p < .0082$  at the .01 level of confidence. The decision is made to reject the null hypothesis in preference for the alternative hypothesis. Results show that the Humanities majors had more difficulty meeting the financial cost of graduate study than did those recipients who majored in the Biological Sciences.

TABLE XXXIII-B

SIGNIFICANT MANN WHITNEY U SCORES TRANSFORMED TO z SCORES  
FOR THE INDICES ON THE QUESTIONNAIRE RELATIVE TO THE  
DEGREE OF DIFFICULTY ENCOUNTERED WHILE IN GRADUATE  
STUDY AMONG RECIPIENTS WHO WERE IN THE  
HUMANITIES, BIOLOGICAL SCIENCES,  
PHYSICAL SCIENCES, SOCIAL  
SCIENCES AND OTHER  
ACADEMIC FIELDS

(Financial)

Direction of Differences	Item	Mann Whitney U Scores	z Scores
<u>Financial</u>			
Humanities > Biological Sciences	14	15043.0	2.64***
Humanities > Physical Sciences	14	8053.0	2.95***
Biol. Sciences > <u>Other</u> Subject's	14	1272.0	-2.42**
Physical Sciences > <u>Other</u> Subject's	14	591.0	-2.69***
Social Sciences > Biol. Sciences	14	35843.0	3.00***
Social Sciences > Physical Sciences	14	19186.0	3.18***

\*\* Significant at the .02 level of confidence.

\*\*\* Significant at the .01 level of confidence.

> = Greater than.

In considering the comparisons of the Humanities and the Physical Science majors in Table XXXIII-B, it is revealed that Item 14 received a z score of > 2.95. Table A in Siegel shows that this score has a two-tailed probability of  $p < .0032$  at the .01 level of significance. Since this is a significant level the decision is made to reject the null hypothesis and affirm the alternative hypothesis that the Humanities majors had more difficulty meeting the financial requirements of graduate study than did the Physical Science majors.

In considering the Biological Scientists and Other majors, Table XXXVIII-B reveals another significant item in Item 14 which received a z score of  $> -2.42$ . Table A in Siegel reveals that this z score has a two-tailed probability of  $p < .0156$  at the .02 level of significance which permits a rejection of the null hypothesis and an affirmation of the alternative hypothesis. Thus, there is a significance difference between the two groups with the Biological Scientists experiencing more difficulty with the cost of graduate study than did majors in Other miscellaneous fields.

With respect to the Physical Scientists and Other majors, Item 14 in Table XXXVIII-B was the item that proved significant with a z score of  $> -2.69$ . Since this score in Table A (Siegel) has a two-tailed probability of  $p < .0072$ , it was judged significant at the .01 level of confidence. This level permits us to reject the null hypothesis and affirm the alternative hypothesis. It is concluded that the Physical Scientists had more difficulty with the cost of graduate study than did the majors in Other miscellaneous fields of study.

In considering the Biological Scientists and the Social Scientists, Table XXXVIII-B also shows that for these two groups Item 14 indicates a significant relationship. A z score of  $> 3.00$  has a two-tailed probability in Table A (Siegel) of  $p < .0026$  at the .01 level of significance. This level allows a rejection of the null hypothesis and an affirmation of the alternative hypothesis. The conclusion is made that the Social Scientists had more difficulty with the cost of graduate study than did the majors in Biological Sciences.

With regard to the Social Scientists and the Physical Scientists,

Item 14 in Table XXXIII-B is also a significant item with a z score of  $> 3.18$ . An inspection of Table A (Siegel) shows that a score of  $> 3.18$  has a two-tailed probability of  $p < .0014$ , which gains significance at the .01 level of confidence. This level allows us to reject the null hypothesis and affirm the alternative hypothesis. Significant differences do occur among two groups, with the Social Scientists finding the cost of graduate study more difficult than did the Physical Scientists.

Table XXXIII-C presents the items that proved significant in the educational area when contrasting the groups majoring in the different academic fields.

TABLE XXXIII-C

SIGNIFICANT MANN WHITNEY U SCORES TRANSFORMED TO z SCORES FOR THE INDICES ON THE QUESTIONNAIRE RELATIVE TO THE DEGREE OF DIFFICULTY ENCOUNTERED WHILE IN GRADUATE STUDY AMONG RECIPIENTS WHO WERE IN THE HUMANITIES, BIOLOGICAL SCIENCES, PHYSICAL SCIENCES, SOCIAL SCIENCES AND OTHER EDUCATIONAL FIELDS

(Educational)

Direction of Differences	Item	Mann Whitney U	
		Scores	z Scores
	<u>Educational</u>		
Social S.S.'s $>$ <u>Other</u> S.'s	15	7211.0	3.11***
Social S.S.'s $>$ P. S. S.'s	15	17910.0	2.06*
Social S.S.'s $>$ P. S. S.'s	16	13287.0	-2.02*
Social S.S.'s $>$ P. S. S.'s	18	20027.0	3.92****
Social S.S.'s $>$ P. S. S.'s	26	18162.0	2.28*

TABLE XXXIII-C (Continued)

Direction of Differences	Item	Mann Whitney U Scores	z Scores
Humanities S.'s > <u>Other</u> S.'s	15	2905.0	2.59***
Humanities S.'s > B. S. S.'s	15	14493.0	1.98*
Humanities S.'s > B. S. S.'s	22	1559.5	3.30***
Humanities S.'s > B. S. S.'s	23	16195.0	4.02****
Humanities S.'s > P. S. S.'s	18	7794.0	2.46**
Biological S. S.'s > <u>Other</u> S.'s	22	1356.0	-2.05*
Physical S. S.'s > <u>Other</u> S.'s	15	1170.0	1.97*
Physical S. S.'s > <u>Other</u> S.'s	18	993.0	-2.43**
Social S.S.'s > Humanities S.'s	18	40798.0	1.96*
Social S.S.'s > Humanities S.'s	25	32155.0	-2.55**
Social S. S.'s > B. S. S.'s	15	36176.0	3.19***
Social S. S.'s > B. S. S.'s	18	35562.0	2.83***
Social S. S.'s > B. S. S.'s	22	35633.0	2.87***
Social S. S.'s > B. S. S.'s	23	36919.0	3.63***

- \* Significant at the .05 level of confidence.  
 \*\* Significant at the .02 level of confidence.  
 \*\*\* Significant at the .01 level of confidence.  
 \*\*\*\* Significant at the .001 level of confidence.  
 > = Greater than.

In contrasting the Social Science group with the group who majored in Other miscellaneous fields of study, only Item 15 received a high z score. This score was > 3.11 and has a two-tailed probability, as read in Table A of Siegel, of  $p < .0018$ , reaching the .01 level of significance. Thus, the decision is made to reject the null hypothesis and affirm the alternative hypothesis that the Social Scientists encountered

more difficulty in the completion of the doctoral dissertation than did the recipients who majored in Other miscellaneous fields of study.

In considering the Social Scientists and the Physical Scientists, Item 15 in Table XXXIII-C is shown to have a z score of  $> 2.06$ , with a two-tailed probability from Table A (Siegel) of  $p < .0394$ . This probability is significant at the .05 level of confidence and permits us to reject the null hypothesis in preference for the alternative hypothesis. The conclusion is made that the Social Scientists encountered more difficulty in the completion of the doctoral dissertation than was encountered by the Physical Scientists.

Table XXXIII-C shows that Item 16 has a z score of  $> -2.02$ . Siegel's A Table reveals that this z score has a two-tailed probability of  $p < .0424$ , which reaches the .05 level of significance, allowing a rejection of the null hypothesis and an affirmation of the alternative hypothesis. It is concluded that the Social Scientists had more difficulty with the graduate course work than was experienced by the Physical Science majors.

Item 18 in Table XXXIII-C is also another significant item with a z score of  $> 3.93$ . Table A (Siegel) reveals that a score of this size has a two-tailed probability of  $p < .00010$  at the .001 level of significance. This level permits us to reject the null hypothesis and affirm the alternative that the Social Scientists had more difficulty with the languages or statistical requirement than was encountered by the Physical Scientists.

Item 26 was another item presented in Table XXXIII-C showing a significant z score of  $> 2.28$ . The two-tailed probability associated

with this score in Table A (Siegel) shows a probability of  $p < .0226$ , reaching the .05 level of significance. This level allows us to reject the null hypothesis and affirm the alternative hypothesis. A conclusion is made that the Social Scientists experienced more difficulty in the scheduling of classes during doctoral study than was experienced by the Physical Scientists.

In considering Other majors versus Humanities majors, Item 15 in Table XXXIII-C was another item in the educational area that is shown to be significant with a z score of  $> 2.59$ . Table A in Siegel reveals that a score of this size has a two-tailed probability of  $p < .0048$  at the .01 level of confidence. The attainment of this level allows a rejection of the null hypothesis and a confirmation of the alternative hypothesis. It is concluded that the Humanities majors experienced more difficulty with the doctoral dissertation than did the majors in Other disciplines.

In contrasting the Humanities majors with the Biological Science majors the following diversity was noted: Item 15 in Table XXXIII-C shows a z score of  $> 1.98$ . Table A in Siegel shows this z score to have a two-tailed probability of  $p < .0478$  at the .05 level of confidence. Thus, the decision is made to reject the null hypothesis and affirm the alternative hypothesis. The Humanities majors had more difficulty in completing the doctoral dissertation than did the Biological Science majors.

Item 22 is shown as significant in Table XXXIII-C with a z score of  $> 3.30$ . Table A in Siegel shows this z score has a two-tailed probability of  $p < .0010$  at the .01 level of confidence. The decision is

made to reject the null hypothesis and affirm the alternative hypothesis. The Humanities majors encountered difficulties that resulted in longer periods spent in graduate study than did the Biological Science majors.

Item 23 reached the level of significance with a z score of  $> 4.02$ . A look at Table A in Siegel reveals that this score has a two-tailed probability of  $p < .00003$  at the .001 level of confidence, making a decision to reject the null hypothesis and affirm the alternative hypothesis that the Humanities majors encountered more difficulties while engaged in graduate study which resulted in more periods of interrupted study than were encountered by the Biological Science majors.

In analyzing the data concerning the Humanities' majors and the Biological Scientists the following differences were found: Item 18 is revealed as significant in Table XXXIII-C, with a z score of  $> 2.46$ . Siegel's Table A shows this score has a two-tailed probability of  $p < .0138$  at the .02 level of confidence. The null hypothesis is rejected and the alternative hypothesis is affirmed for this index as the Humanities majors showed a significant difference in the difficulties encountered in meeting the language or statistical requirement than was encountered by the Physical Science majors.

In considering the Biological Scientists when contrasted with the Other miscellaneous specialists the following difference was noted: Item 22 as shown in Table XXXIII-C has a z score of  $> -2.05$ . The A Table in Siegel states that this z score has a two-tailed probability of  $p < .0404$ , which reaches the .05 level of significance.



Hence, we reject the null hypothesis and affirm the alternative hypothesis by concluding that the Biological Scientists encountered more difficulties than majors in Other miscellaneous fields which resulted in a longer length of time in graduate study.

When comparing the majors in Other miscellaneous fields with the Physical Scientists the following differences were found to exist: Table XXXIII-C reveals that Item 15 obtained a significant z score of  $> 1.97$ . Two-tailed probabilities from Siegel's A Table shows that this score has a probability of  $p < .0488$ . This level is sufficiently significant to allow a rejection of the null hypothesis and an affirmation of the alternative hypothesis. Physical Scientists evidently had more difficulty with the completion of the doctoral dissertation than did the majors in Other miscellaneous fields of study.

Item 18 was also a discriminant item between the two groups, obtaining a z score of  $> -2.43$ . This score has a two-tailed probability of  $p < .0150$ , reaching the .02 level of significance. This level of attainment permits a rejection of the null hypothesis and an affirmation of the alternative hypothesis. The evidence points to the Physical Scientists having a greater degree of difficulty with the language or statistical requirement than was found among the majors in Other miscellaneous fields of study.

In contrasting the Social Scientists with the Humanities majors the following diversities were noted: Item 18 in Table XXXIII-C shows that this item has a z score of  $> 1.96$ . Since Table A in Siegel shows a two-tailed probability of  $p < .0500$  at the .05 level of confidence, the decision is made to reject the null hypothesis and affirm the

alternative hypothesis. The Social Science majors encountered more difficulty with the language or statistical requirement while engaged in graduate study than did the Humanities majors.

Item 25 in Table XXXIII-C shows that a z score of  $> -2.55$  is recorded for this item. Since Table A, Siegel, reveals that this score has a two-tailed probability of  $p < .0108$  at the .02 level of confidence, the decision is made to reject the null hypothesis and affirm the alternative hypothesis. Results show that the Social Science majors had more difficulty finding a quiet place to study than did those who majored in the Humanities.

In considering the differences between the Social Scientists and the Biological Scientists the following differences were pointed up: a look at Table XXXIII-C shows that Item 15 has a z score of  $> 3.19$ . Table A (Siegel) reveals that this z score has a two-tailed probability of  $p < .0014$  at the .01 level of significance which permits a rejection of the null hypothesis and an affirmation of the alternative hypothesis. Results infer that the Social Scientists experienced more difficulty in the completion of the doctoral dissertation than did the Biological Scientists.

These groups also differ with regard to Item 18 as shown in Table XXXIII-C. Examining Table A (Siegel) it is determined that a z score of  $> 2.83$  has a two-tailed probability of  $p < .0046$  at the .01 level of significance. This level of significance allows us to reject the null hypothesis and affirm the alternative hypothesis. The Social Scientists reported having experienced more difficulty with the language or statistical requirement while in graduate study than did

the Biological Science majors.

Item 22 in Table XXXIII-C shows a z score of  $> 2.87$  which also distinguishes between the two groups. This score has a two-tailed probability of  $p < .0042$  at the .01 level of significance, thus allowing us to reject the null hypothesis and affirm the alternative hypothesis. The Social Scientists experienced more difficulties which lengthened the time spent in graduate study. The Biological Scientists did not experience as much difficulty in this area.

Table XXXIII-C shows that for Item 23 a significant z score of  $> 3.62$  is recorded. This score has a two-tailed probability of  $p < .0032$  and is significant at the .01 level of confidence which permits us to reject the null hypothesis and affirm the alternative hypothesis. Thus, it is concluded that the Social Scientists experienced more periods of interrupted graduate study than did the Biological Scientists.

Table XXXIII-D presents the indices relative to the personal factors that presented difficult areas for the majors in the different fields of specialization while they were pursuing graduate study.

In contrasting the Humanities majors and the Biological Scientists the following diversity was noted:

Item 32 was a significant item in Table XXXIII-D with a z score of  $> 2.46$ . Table A, Siegel, shows that such a score has a two-tailed probability of  $p < .0138$  at the .02 level of confidence. Thus, rejecting the null hypothesis and affirming the alternative hypothesis, it is concluded that the Humanities majors had more difficulty in maintaining a persistent attitude while engaged in graduate study than

TABLE XXXIII-D

SIGNIFICANT MANN WHITNEY U SCORES TRANSFORMED TO z SCORES FOR THE INDICES ON THE QUESTIONNAIRE RELATIVE TO THE DEGREE OF DIFFICULTY ENCOUNTERED WHILE IN GRADUATE STUDY BETWEEN RECIPIENTS WHO WERE IN THE HUMANITIES, BIOLOGICAL SCIENCES, PHYSICAL SCIENCES, SOCIAL SCIENCES AND OTHER ACADEMIC FIELDS

(Personal)

Direction of Differences	Item	Mann Whitney U Scores	z scores
	<u>Personal</u>		
Humanities S.'s > B. S. S.'s	32	14890.0	2.46**
Humanities S.'s > <u>Other</u> S.'s	39	2743.0	2.00*
Biological S.S.'s > <u>Other</u> S.'s	32	1219.0	-2.65***
Physical S. S.'s > <u>Other</u> S.'s	36	1179.0	2.05*
Social S. S.'s > B. S. S.'s	32	34391.0	2.14*
Social S. S.'s > P. S. S.'s	37	13037.0	-2.24*

\* Significant at the .05 level of confidence.  
 \*\* Significant at the .02 level of confidence.  
 \*\*\* Significant at the .01 level of confidence.  
 >= Greater than.

did those recipients who majored in the Biological Sciences.

The Humanities majors, when compared to the majors in the Other miscellaneous fields, showed the following diversity:

Table XXXIII-D presents the results of the statistical test for differences among the Humanities subjects and the subjects in Other fields of specialization on Item 39. This item shows a z score of > 2.00, with a two-tailed probability of  $p < .0456$  at the .05 level of confidence. Since this score is of sufficient magnitude to reject

the null hypothesis, the alternative is affirmed. The Humanities majors experienced more difficulty because of their age than did the majors in Other fields of specialization.

Item 32 in Table XXXIII-D also shows a significant difference with a z score of  $> -2.65$ . This score in Table A of Siegel has a two-tailed probability of  $p < .0080$ , reaching the .01 level of significance. A probability at this level allows us to reject the null hypothesis and affirm the alternative hypothesis. The Biological Scientists experienced more difficulty while in graduate study maintaining an attitude of persistence than did the majors in Other miscellaneous fields of study.

In contrasting the Physical Scientists with the majors in Other miscellaneous fields, the following diversity was shown to exist:

Item 36 in Table XXXIII-D shows a z score of  $> 2.05$ , with a two-tailed probability of  $p < .0404$ . Since this is less than the .05 level of significance the decision is made to reject the null hypothesis and affirm the alternative hypothesis. It is concluded that the majors in the Physical Sciences had more difficulty in their interpersonal relationships with the graduate faculty members than did their counterparts who majored in Other miscellaneous fields of study.

In contrasting the Social Scientists with the Biological and Physical Scientists, the following differences were noted:

Table XXXIII-D reveals that these groups differ with regard to Item 32 which received a z score of  $> 2.14$ . This score has a two-tailed probability in Table A (Siegel) of  $p < .0324$  which attains

the .05 level of significance. It is possible to reject the null hypothesis at this level and affirm the alternative hypothesis. It is significant that the Social Scientists reported a greater difficulty in maintaining a persistent attitude while in graduate study than was reported by the Biological Scientists.

Item 37 was another significant item when comparing the two groups, showing a z score of  $> -2.24$  in Table XXXIII-D. A look at Table A (Siegel) reveals that a z score of this denomination has a two-tailed probability of  $p < .0250$ , attaining the .05 level of significance. The decision is thus made to reject the null hypothesis and affirm the alternative hypothesis that the Social Scientists had greater difficulty in their interpersonal relationships with other students than did the Physical Scientists while both groups were engaged in graduate study.

Group IV of the sample was composed of the Married and Unmarried women doctoral recipients. In comparing these two groups, sixteen of the items showed diversity. The high significance associated with the first five items presented in Table XXXIV is the result of an artifact of the questionnaire. Naturally, this area which relates to family relationships would pose more difficulty for the married recipients than the unmarried recipients while they were engaged in graduate study. Since, however, these results have a bearing on the overall findings of the study in showing just how significant this area was for the married recipients, it was decided to include these results in the overall treatment of the statistical findings.

The six areas that presented difficulty while the recipients

were engaged in graduate study were: (1) family relationships; (2) time-management; (3) finances; (4) educational; (5) mobility; and (6) personal.

TABLE XXXIV

SIGNIFICANT MANN WHITNEY U SCORES TRANSFORMED TO z SCORES FOR THE INDICES ON THE QUESTIONNAIRE RELATIVE TO THE DEGREE OF DIFFICULTY ENCOUNTERED WHILE IN GRADUATE SCHOOL BETWEEN MARRIED AND UNMARRIED DEGREE RECIPIENTS

Direction of Differences	Item	Mann Whitney U Scores	z Scores
<u>Family Relationships</u>			
Married S.'s > Unmarried S.'s	1	112588.0	7.32****
Married S.'s > Unmarried S.'s	2	120793.0	9.67****
Married S.'s > Unmarried S.'s	3	116955.0	8.57****
Married S.'s > Unmarried S.'s	4	97896.0	3.12****
Married S.'s > Unmarried S.'s	5	106949.0	5.71****
<u>Time-Management</u>			
Married S.'s > Unmarried S.'s	6	127396.0	11.56****
Married S.'s > Unmarried S.'s	7	100455.0	3.85****
Married S.'s > Unmarried S.'s	8	103035.0	4.59****
Married S.'s > Unmarried S.'s	9	119950.0	9.43****
Married S.'s > Unmarried S.'s	10	100748.0	3.93****
<u>Finances</u>			
Married S.'s > Unmarried S.'s	13	107008.0	5.72****
Married S.'s > Unmarried S.'s	14	78207.0	-2.51**

TABLE XXXIV (Continued)

Direction of Differences	Item	Mann Whitney U Scores	z Scores
<u>Educational</u>			
Married S.'s > Unmarried S.'s	16	77106.0	-2.83***
Married S.'s > Unmarried S.'s	25	97612.0	3.04***
<u>Mobility</u>			
Married S.'s > Unmarried S.'s	30	96274.0	2.65***
<u>Personal</u>			
Married S.'s > Unmarried S.'s	34	77998.0	-2.57**

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\*\* Significant at the .02 level of significance.  
 \*\*\* Significant at the .01 level of significance.  
 \*\*\*\* Significant at the .001 level of significance.  
 > = Greater than.

In the area of family of family-relationships the following differences were noted between the married and unmarried subjects:

Item 1 in Table XXXIV shows a significant z score of  $> 7.32$ . This score has a two-tailed probability of  $p < .00006$  in Table A of Siegel. This probability is significant at the .001 level of confidence and permits a decision to reject the null hypothesis and affirm the alternative hypothesis. Married recipients had more difficulty with the mother-child relationship during graduate study than did the unmarried recipients. (The latter sample included some divorcees with children.)

Item 2 with a z score of  $> 9.62$  is invalid as the husband-wife relationship was non-existent for unmarried subjects.

Results for Item 3 regarding the homemaker-domestic help rela-



tionship are also dubious and can be read from Table XXXIV, if desired.

Item 4 shows a z score of  $> 3.12$  in Table XXXIV, attaining a two-tailed probability of  $p < .00006$  (Table A, Siegel). This probability is significant at the .001 level of confidence and permits a rejection of the null hypothesis and an affirmation of the alternative hypothesis that the married recipients encountered more difficulty during graduate study because of the number of children than did the unmarried doctoral recipients.

Item 5 is shown in Table XXXIV to have a significant z score of  $> 5.71$ . This score has a two-tailed probability of  $p < .00006$ , reaching the .001 level of significance as read from Table A (Siegel). The decision is made to reject the null hypothesis and affirm the alternative hypothesis that the married recipients encountered difficulty as the result of the age of the children over the unmarried recipients.

In the area of time-management, the following indices showed significant differences. Item 6 was a significant item as presented in Table XXXIV, with a z score of  $> 11.56$ . The two-tailed probability for this score is  $p < .00006$ , which reaches the .001 level of significance. The decision is made to reject the null hypothesis and affirm the alternative that married women had more difficulty during graduate study because of the demands of time and family responsibilities than did unmarried recipients.

Item 7 presented in Table XXXIV obtained a significant z score of  $> 3.85$  with a two-tailed probability of  $p < .00014$ , attaining significance at the .001 level of confidence. This level allows us to reject the null hypothesis and affirm the alternative that married

recipients experienced more difficulty with time and school travel while in graduate school than was experienced by the unmarried recipients.

Item 8 in Table XXXIV was shown to be significant with a z score of  $> 4.59$ . This score has a two-tailed probability of  $p < .00006$  and attained significance at the .001 level of confidence. The decision was made to reject the null hypothesis and affirm the alternative hypothesis that married subjects encountered more difficulty while in pursuit of graduate study relative to time and personal grooming than was experienced by the unmarried subjects.

Item 9, Table XXXIV, obtained a significant z score of  $> 9.43$ , with a two-tailed probability of  $p < .00006$ . This probability signifies a difference at the .001 level of confidence, permitting a rejection of the null hypothesis and an affirmation of the alternative hypothesis. The married subjects experienced more difficulty during graduate study as a result of time needed for household duties than was experienced by the unmarried subjects.

Item 10, Table XXXIV, received a significant z score of  $> 3.93$ . Since the two-tailed probability for this score is  $p < .00010$ , the probability reached the .001 level of significance. The decision is made to reject the null hypothesis and affirm the alternative hypothesis that the married subjects had more difficulty while pursuing graduate study with time and community responsibilities than did the unmarried subjects.

In the area of finances, the following items proved significant: Item 13 is presented in Table XXXIV as having obtained a significant z

score of  $> 5.72$ . Two-tailed probabilities in Table A (Siegel) show a probability of this score at  $p < .00006$ , thus attaining significance at the .001 level of confidence. This permits a decision to reject the null hypothesis in favor of the alternative hypothesis that married subjects had more difficulty during graduate study meeting the financial requirements of the family than did the unmarried subjects.

Item 14 presented in Table XXXIV shows a significant z score of  $> -2.51$ . Table A in Siegel shows this score has a two-tailed probability of  $p < .0120$ , attaining a significance at the .02 level of confidence. With this significant level reached, the decision is made to reject the null hypothesis and affirm the alternative that the married subjects had more difficulty in financing the cost of graduate study than did the unmarried subjects.

In the area of educational factors the following items proved significant: Item 16, Table XXXIV, presents a significant factor with a z score of  $> -2.83$ . A look at Table A in Siegel shows the two-tailed probability of this score to be  $p < .0046$ , reaching the .01 level of significance. The decision is made to reject the null hypothesis and affirm the alternative hypothesis that the married subjects had more difficulty with the graduate course work than did the unmarried subjects.

Item 25 in Table XXXIV was another significant item in distinguishing between the two groups with a z score of  $> 3.04$ . Two-tailed probabilities in Siegel's Table A shows this score as having  $p < .0024$ , attaining the .01 level of significance. This level permits a rejection of the null hypothesis and an affirmation of the alternative

hypothesis that married subjects found it more difficult to find a quiet place to study while engaged in graduate study than was experienced by the unmarried subjects.

In the area of family mobility the following item proved significant: Table XXXIV, Item 30, presents a significant z score of  $> 2.65$ , with a two-tailed probability of  $p < .0080$ . From Table A in Siegel it was found that this probability reached the .01 level of significance and permits the rejection of the null hypothesis, and the affirmation of the alternative hypothesis. Married subjects experienced more difficulty while in graduate study relative to a change in family residence than did unmarried subjects.

In the area of personal variables the following item proved significant: Item 34, Table XXXIV, presents a z score of  $> -2.57$ . Table A in Siegel reveals that this score has a two-tailed probability of  $p < .0102$ . This level allows us to reject the null hypothesis at the .02 level of significance, and affirm the alternative hypothesis. Married subjects experienced more difficulty maintaining a desire for excellence in academic pursuits during graduate study than was experienced by the unmarried subjects.

The last two groups contrasted were a select sample composed of married recipients with children, and those without children. Table XXXV presents the findings which resulted from an application of the Mann Whitney U test transformed into z scores. Of the forty-five items, thirteen proved highly significant when considering the diversity between the two groups.

The five areas that presented difficulty for the recipients while

they were in graduate study were: (1) family relationships; (2) time-management; (3) finances; (4) educational; and (5) mobility.

Results obtained for Items 1, 4 and 5 result in spurious conclusions as an artifact of the instrument would naturally show the groups different with regard to children. These results are presented in Table XXXV for inspection only, but will not be treated in the explanations.

TABLE XXXV

SIGNIFICANT MANN WHITNEY U SCORES TRANSFORMED TO z SCORES FOR THE INDICES IN THE QUESTIONNAIRE RELATIVE TO THE DEGREE OF DIFFICULTY ENCOUNTERED WHILE IN GRADUATE SCHOOL BETWEEN MARRIED DEGREE RECIPIENTS WITH AND WITHOUT CHILDREN

Direction of Difference	Item	Mann Whitney U Scores	z Scores
<u>Family Relationships</u>			
Married With Children S.'s > Married Without Children S.'s	1	42689.0	10.17****
Married With Children S.'s > Married Without Children S.'s	2	32850.0	3.54****
Married With Children S.'s > Married Without Children S.'s	3	36202.0	5.80****
Married With Children S.'s > Married Without Children S.'s	4	33568.0	4.03****
Married With Children S.'s > Married Without Children S.'s	5	37990.0	7.01****
<u>Time-Management</u>			
Married With Children S.'s > Married Without Children S.'s	6	37401.0	6.61****
Married With Children S.'s > Married Without Children S.'s	7	31626.0	2.72***

TABLE XXXV (Continued)

Direction of Difference	Item	Mann Whitney U Scores	z Scores
Married With Children S.'s > Married Without Children S.'s	10	32711.0	3.45****
<u>Finances</u>			
Married With Children S.'s > Married Without Children S.'s	13	32495.0	3.30***
<u>Educational</u>			
Married With Children S.'s > Married Without Children S.'s	15	31150.0	2.40**
Married With Children S.'s > Married Without Children S.'s	25	32200.0	3.10***
Married With Children S.'s > Married Without Children S.'s	26	32029.0	2.99***
<u>Mobility</u>			
Married With Children S.'s > Married Without Children S.'s	30	30585.0	2.02*

\* Significant at the .05 level of confidence.

\*\* Significant at the .02 level of confidence.

\*\*\* Significant at the .01 level of confidence.

\*\*\*\* Significant at the .001 level of confidence.

> = Greater than.

In considering the area of family relationships, the following factors proved significant:

Item 2, Table XXXV, obtained a significant z score of  $> 3.54$ . Table A in Siegel reveals that a score of this size has a two-tailed probability of  $p < .00046$ , attaining a significance of .001 level of confidence. This level permits a rejection of the null hypothesis and an affirmation of the alternative hypothesis. The conclusion is made that married subjects with children experienced more difficulty

in the husband-wife relationship during graduate study than was experienced by the married subjects without children.

Item 3 also received a significant z score, in Table XXXV, of  $> 5.80$ . The two-tailed probability for this score is  $p < .00006$ , reaching an .001 level of significance. The decision is clear in this instance to reject the null hypothesis and affirm the alternative hypothesis that married recipients with children experienced more difficulty during the pursuit of graduate study with the homemaker-domestic help relationship than did married recipients without children.

In the area of time-management the following factors proved significant:

Item 6 in Table XXXV is presented as a significant item with a z score of  $> 6.61$ . Two-tailed probabilities from Siegel's Table A reveal that this score has a probability of  $p < .00006$ , reaching an .001 level of significance. Thus, the decision is made to reject the null hypothesis and affirm the alternative hypothesis. Married women with children have more difficulty while engaged in graduate study with time and family responsibilities than do the married subjects without children.

Item 7, Table XXXV, is presented with a z score of  $> 2.72$ . This score has a two-tailed probability of  $p < .0066$  in Siegel's Table A. A probability of this magnitude is significant at the .01 level of confidence and permits the rejection of the null hypothesis and affirmation of the alternative hypothesis that married subjects with children experience more difficulty while enrolled in graduate study regarding time and school travel than do married subjects without children.

Table XXXV reveals that Item 10 has a significant z score of  $> 3.45$ , and attains a two-tailed probability in Table A (Siegel) of  $p < .00006$ , reaching the .001 level of significance. The decision is made to reject the null hypothesis in favor of the alternative hypothesis that married subjects with children experienced more difficulty during graduate study relative to time and community responsibilities than did the unmarried women with children.

In the financial area the following item proved significant when contrasting the two groups:

Item 13 is presented in Table XXXV as significant. The item obtained a z score of  $> 3.30$ , with a two-tailed probability according to Table A in Siegel of  $p < .00006$ , reaching the .001 level of significance. Thus, the decision is made to reject the null hypothesis and affirm the alternative hypothesis. The married subjects with children experienced more difficulty while engaged in graduate study with regard to financial requirements and the family than did the married subjects without children.

In considering the educational area the following factors showed significant differences:

Table XXXV reveals that Item 15 received a significant z score of  $> 2.40$ . The two-tailed probability for this score (Table A, Siegel) is  $p < .0146$ , thus obtaining a significant level of confidence at .02. This allows a decision to reject the null hypothesis and affirm the alternative hypothesis that married subjects with children experienced more difficulty in completing the doctoral dissertation than did the married subjects without children.



Item 25 received a significant z score of  $> 3.10$  as shown in Table XXXV. Table A in Siegel reveals that this score has a two-tailed probability of  $p < .0014$ , reaching significance at .01 level of confidence. This level is high enough to allow a rejection of the null hypothesis in favor of the alternative hypothesis. Married recipients with children experienced more difficulty finding a quiet place to study while pursuing graduate study than was experienced by the married recipients without children.

Table XXXV reveals that Item 26 obtained a significant z score of  $> 2.99$ . Two-tailed probabilities from Table A in Siegel show that this score has a probability of  $p < .0028$  reaching the .01 level of significance and allowing a rejection of the null hypothesis in favor of the alternative hypothesis. Married subjects with children experienced more difficulty scheduling their classes than was experienced by the married subjects without children.

In considering the area of mobility the following item proved significant. Table XXXV shows that Item 30 received a significant z score of  $> 2.02$ , with a two-tailed probability (Table A, Siegel) of  $p < .0434$ . This probability allows us to reject the null hypothesis in favor of the alternative hypothesis at the .05 level of significance. Married subjects with children experienced more difficulty during graduate study relative to a change in family residence than did married subjects without children.

#### CHI SQUARES FOR THE SUPPLEMENTARY ITEM

The questionnaire allowed space at the end of the instrument for the respondent to supplement any of the forty-five items, or to comment

on any of their experiences that seemed appropriate while they were engaged in graduate study.

Since only a portion of the subjects supplemented their responses, some of the categories received a small N. Therefore, in treating the data all responses were dichotomized into the "positive" or "negative" aspects of their experiences while enrolled in graduate study for the group of Public versus Private degree-recipients. This approach permitted the use of the two-by-two contingency table, and the application of the Yates (Garrett, p. 265) correction for continuity, since most of the N's were quite small.

Most responses in this section of the questionnaire supplemented or explained the scaling of items one through forty-five. However, four other categories were added because of the number of responses received. These were: the explanation of a "No Problem" response and, "Was the degree worth the effort?" category; comments about the positive or negative aspects of the "questionnaire"; and comments of a "general information" nature that did not fit precisely into other categories. Reading from Table XXXVI, of the forty-eight categories in the supplementary section, only five chi-squares proved significant. Direction of differences were also shown for those categories or items for which the chi-squares approached significance.

The five significant items in Table XXXVI were as follows: Item 4 shows that the Private degree recipients found the age of their children presented more of a difficulty while they were enrolled in graduate study than did the Public degree recipients. The null hypothesis was rejected and the alternative hypothesis affirmed for

TABLE XXXVI

CHI-SQUARES WITH THE YATES CORRECTION FOR THE SUPPLEMENTARY  
DATA FOR THE PUBLIC VERSUS PRIVATE RECIPIENTS

Direction of Difference	Item	$\chi^2$	df
Private > Public	4	9.52**	1
Private > Public	11	2.62	1
Private > Public	17	2.45	1
Public > Private	18	4.08*	1
Public > Private	19	3.96*	1
Private > Public	22	2.42	1
Public > Private	26	3.16	1
Public > Private	31	3.37	1
Public > Private	36	3.32	1
Public > Private	43	7.85**	1
Private > Public	Positive Comments About Questionnaire	8.47**	1

\* Significant at the .05 level of confidence.

\*\* Significant at the .01 level of confidence.

> = Greater than.

this index at the .01 level of confidence.

Item 18 in Table XXXVI was also a significant item at the .05 level of confidence, allowing a rejection of the null hypothesis and an affirmation of the alternative hypothesis. The degree recipients of Public institutions found the language or statistical requirement more difficult while they were enrolled in graduate study than did the degree recipients from Private institutions.

Item 19 in Table XXXVI was also presented as a significant item at the .05 level of confidence which allowed a rejection of the null hypothesis and an affirmation of the alternative hypothesis. The respondents who supplemented this item and who were graduated from the Public institutions found the preliminary examinations more difficult than did the respondents who were graduated from Private institutions.

Item 43 (shown in Table XXXVI) is significant at the .01 level of confidence and permits a rejection of the null hypothesis and an affirmation of the alternative hypothesis. Degree recipients from Public institutions reported that their employer had a more "positive" attitude toward a year's leave than did the degree recipients who attended the Private institutions.

The last significant index shown in Table XXXVI is a supplementary comment on the "positive" aspects of the questionnaire. This indice, which was significant at the .01 level of confidence and permitted a rejection of the null hypothesis and an affirmation of the alternative hypothesis, showed that more of the degree recipients from the Private institutions commented on the positive aspects of the questionnaire than did the degree recipients from the Public institutions.

The remaining indices shown in Table XXXVI present the direction of difference, although none reach a significant level of confidence and thus the null hypothesis may not be rejected for these items.

The Private degree recipients had more difficulty than the Public degree recipients while they were enrolled in graduate study in the following areas: (Item 11) difficulty with regard to time and

professional responsibilities; difficulty meeting the specific requirements of their field of study (Item 17); and difficulty as a result of the length of time in graduate study (Item 22).

The Public degree recipients had more difficulty than the Private degree recipients while enrolled in graduate study with regard to the following areas: difficulty with scheduling the necessary classes (Item 26); difficulty as a result of a change in the educational institution attended (Item 31), and difficulty arising from their interpersonal relationships with the faculty (Item 36).

Since the last six items did not reach the level of significance, only trends are noted and direction may be due to chance fluctuations in sampling.

## CHAPTER V

### SUMMARY AND CONCLUSIONS

#### Review of the Purpose and Statistical Design

The design for this dissertation was initiated in an attempt to determine whether there were indeed differences existing between women doctoral recipients with regard to the difficulties they reported having encountered while enrolled in doctoral studies. The results of this investigation have been reported in an effort to gain a better understanding of the characteristics of the recipients who attended the public and private institutions; who earned the different types of degrees; who specialized in the various academic fields; who were married or single; and who were married and did or did not have children. Pinpointing the specific areas of difficulty that acted as deterrents while the recipients were pursuing the degree may facilitate the decision-making process of those who guide, plan, and evaluate the educational experiences of women doctoral candidates beyond the speculative stage.

The theoretical basis for this study was taken from Sherif and Sherif's interdisciplinary approach to social psychology in which factors operating within the group and within the individual, are conceptualized as interacting units. Writings from The American College also generated much of the impetus for this study. In the beginning of the investigation it was deduced that difficulties arising from the interaction of

the subject with her familial, social and educational environment operated against the doctoral candidate as she pursued the degree.

Subjects were self-selective in the sense that of the 1189 questionnaires mailed from a prepared list obtained from 160 graduate schools, eight hundred and forty-two chose to respond. However, this procedure did provide a sample that corresponded approximately to a geographical cross section of the nation's graduate schools (see Appendix, Exhibit A).

The instrument developed consisted of a two-paged, structured questionnaire which provided information from forty-five scaled items; a supplementary item, and a section devoted to the background characteristics of the subjects.

Statistical techniques used in analyzing the data were the Mann Whitney U test and Chi-Square. The computational data for the study were prepared at the Louisiana State University Computer Center, Baton Rouge, Louisiana.

The hypotheses tested were related to the background characteristics of the subjects in interaction with certain problem areas in the environment that posed difficulties for the subjects while they were engaged in graduate study. Problems stemming from the age of the subject, the number and age of the children, marital status, family and educational background, time management, family relationships, finances, educational variables, health, mobility, personal characteristics, vocational, length of time in study, and periods of interrupted study were examined.

Much data were analyzed for this study regarding the difficulties encountered by the groups while they were enrolled in graduate study.

The writer finds it difficult to summarize all the results accurately without qualifying to the extent that scientific brevity would be sacrificed. Therefore, only the significant results, conclusions and implications are stated. It is understood that some oversimplifying may result from this procedure.

### Summary of Results

#### I. Diversity Between the Public and Private Institutional Groups on the Dependent Variables.

This section of the study summarizes the most important findings of the statistical tests between the Public and Private institutional groups while they were enrolled in graduate study. The investigator attempts to present a "composite" summary of the difference between the groups on the variables. At times the groups were subdivided in an effort to approximate a more precise difference.

The Public degree recipients who earned Other miscellaneous degrees were younger than their counterparts who attended the Private Institutions. The Public Ph.D.'s had older children than was found among the recipients who attended the Private universities. The Private Ph.D.'s required a longer period of time to complete their degree program than did the Public Ph.D.'s. The fathers of the Ed.D.'s from Public institutions attained a higher level of education than did the fathers of those attending Private institutions. The mothers of the Public Ph.D. group attained a higher level of educational advancement than did the mothers of the Private Ph.D. recipients. This latter finding remained consistent when the overall groups from the Public and Private institutions were considered, with the mothers of the recipients from the Public



institutions advancing further in educational pursuits. The Public Ph.D. differed from the Private Ph.D. in choosing to major in the Humanities, Biological Sciences and Other miscellaneous fields, while the Private Ph.D. group majored most often in the Social and Physical Sciences.

The Private degree recipients reflected more difficulty with respect to the following variables than was found among the Public degree recipients: (1) Completing the dissertation; (2) finishing the graduate course work; (3) meeting the specific requirements of their field of study; (4) interacting with the doctoral committee; (5) finishing the doctoral program; (6) experiencing more periods of interrupted study; (7) scheduling classes; (8) maintaining an attitude of persistence; (9) maintaining an adequate feeling of morale; and (10) sustaining a desire for academic excellence. From these results it can be noted that areas posing difficulties for the recipients attending the Private and Public universities were: (1) educational; and (2) personal.

## II. Diversity Among the Doctor of Philosophy, the Doctor of Education and the Other Degree Recipients on the Dependent Variables.

The Ph.D. degree recipients and the Other degree recipients were found to be younger than the Ed.D. degree recipients. The Ed.D. group also had older children than did the other two groups. Recipients of the Ed.D. degree spent a longer period of time in doctoral programs than was experienced by the other groups.

The educational attainment level of the father was the highest for the Other degree recipients; was the next highest for the Ph.D. recipients; and was the lowest for the Ed.D. degree recipients. The Ph.D. subjects were found to have mothers with a higher level of education than was

found among the other two groups.

In contrasting the Ph.D. and Ed.D. degree recipients with regard to fields of specialization, the Ph.D. recipients chose most often to major in the fields of the Humanities, Physical Sciences and Biological Sciences, while the Ed.D. subjects chose most often the fields of Social Sciences and Other miscellaneous fields. When contrasting the Ph.D. subjects with Other degree subjects the former chose the Humanities, Physical Sciences and Social Sciences, while the Other degree recipients selected the Biological Sciences and Other miscellaneous fields. In contrasting the Other degree subjects with the Ed.D. recipients the latter chose to major in the Social Sciences and the Physical Sciences, and all other fields were the choice of the Other degree recipients.

The Ph.D.'s reported greater difficulty when contrasted with the Ed.D. recipients with respect to the following variables while the groups were enrolled in graduate studies: (1) time-management and school travel; (2) time-management and professional responsibilities; (3) time and professional society duties; (4) financial cost of graduate study; (5) difficulty in scheduling classes; and (6) greater difficulty in interpersonal relationships with other students. The Ph.D. group showed greater diversity when contrasted with the Other degree group concerning time and personal grooming.

The Ed.D. subjects when compared with Other degree recipients encountered difficulties with respect to the following variables: (1) time and personal grooming; (2) time and community responsibilities; (3) finding a quiet place to study; and (4) difficulty concerning family illness. From the results of these data it was found that the several groups of

degree-recipients' experienced difficulties in the following areas:

- (1) time-management; (2) financial; (3) educational; (4) health; and
- (5) personal variables.

III. Diversity Among the Doctoral Recipients Who Majored in the Humanities, Biological Sciences, Physical Sciences, Social Sciences, and Other Miscellaneous Fields of Specialization on the Dependent Variables.

The recipients majoring in the Humanities were found to be older than the subjects majoring in the Physical and Biological Sciences, and were older than those majoring in Other miscellaneous fields. The Social Scientists were older than the Humanities' majors as well as those majoring in the Physical Sciences, Biological Sciences and Other fields of specialization. Subjects in the Biological Sciences were older than the degree recipients who majored in Physical Sciences and Other fields. Majors in the Other fields were older than the majors in the Physical Sciences and in the Biological Sciences. These results delineated the Physical Scientists as the youngest of the degree recipients, and the Social Scientists as the oldest.

The recipients in the Other miscellaneous fields had older children than did the recipients in the Humanities. The Social Scientists had older progeny than did the recipients in the Humanities, Physical Sciences and Other fields of specialization. The Biological Scientists had older children than the Physical Scientists.

The Humanities' recipients spent a longer period of time in graduate study than did the Biological Scientists. The Social Scientists spent a longer period in graduate study than did the Physical Scientists.

The Social Scientists were interrupted with greater frequency in

pursuing their doctoral program than was found between the Biological Scientists; and between the Social Scientists and Humanities majors; whereas the majors in the Humanities were interrupted in pursuit of study more often than the Biological Scientists.

With respect to the dependent variables, the following difficulties were encountered by the contrasting groups majoring in the different fields of specialization.

The Humanities majors encountered greater difficulty than did the Biological Scientists concerning: (1) financial requirements and the cost of graduate study; (2) the completion of the doctoral dissertation; (3) the length of time in graduate study; (4) the number of periods of interrupted study; and (5) maintaining an attitude of persistence. The Humanities majors, when compared to the Physical Scientists, experienced more difficulty with: (1) the cost of graduate study; and (2) the language or statistical requirement. When contrasting the Humanities' majors with Other miscellaneous majors, the Humanities' majors reported the following difficulties as paramount: (1) time and professional responsibilities; (2) time and professional society duties; (3) the completion of the doctoral dissertation; and (4) the subject's age.

The Social Scientists experienced more difficulties than the Humanities' majors when considering: (1) time and professional society duties; (2) the language or statistical requirement; and (3) finding a quiet place to study.

The Social Scientists met more difficulty than did the majors in the Biological Sciences with regard to: (1) time and school travel; (2) time and professional responsibilities; (3) the cost of graduate

study; (4) the completion of the doctoral dissertation; (5) the language or statistical requirement; (6) the length of time in graduate study; (7) the periods of interrupted study; and (8) maintaining an attitude of persistence.

The Social Scientists showed greater difficulty than did the Physical Scientists in the following areas: (1) time and community responsibilities; (2) time and professional responsibilities; (3) time and professional society duties; (4) the cost of graduate study; (5) the completion of the doctoral dissertation; (6) the graduate course work; (7) the language or statistical requirement; (8) the scheduling of classes; and (9) interpersonal relationships with other students.

The Social Scientists also experienced greater difficulty with respect to the completion of the doctoral dissertation than was experienced by the majors in Other miscellaneous fields.

In contrasting the Biological Scientists with the majors in the Physical Sciences the following areas presented problems: (1) time and community responsibilities and (2) time and professional duties.

The Biological Scientists also reported more difficulty than did the Other field specialists in the following areas: (1) time and professional responsibilities; (2) the cost of graduate study; (3) the length of time in graduate study; and (4) maintaining an attitude of persistence.

The Physical Scientists when contrasted with the Other field specialists encountered the following problems: (1) time and professional responsibilities; (2) time and professional society duties; (3) the cost of graduate study; (4) the completion of the doctoral dissertation;

(5) the language or statistical requirement; and (6) interpersonal relationships with the faculty. Thus, it was concluded that the recipients majoring in the different disciplines encountered difficulties in four major areas: (1) time-management; (2) financial; (3) educational; and (4) personal.

#### IV. Diversity Between the Doctoral Recipients Who Were Married and Those Who Were Unmarried on the Dependent Variables.

When comparing the married with the unmarried subjects the following diversity was noted:

Unmarried subjects were older than the married subjects. The married subjects were found to have fathers and mothers who achieved a higher level of educational attainment than was found among the unmarried subjects. Married subjects majored more frequently in the Social Sciences and Humanities, whereas the unmarried subjects majored more often in the Biological and Physical Sciences, and in Other miscellaneous fields.

In considering the dependent variables the married subjects experienced more difficulty in certain areas than did the unmarried subjects.

The married degree recipients had more difficulty with the first five items relating to family relationships, and with: (1) time and family responsibility; (2) time and school travel; (3) time and personal grooming; (4) time and household duties; (5) time and community responsibilities; (6) financial requirements and the family; (7) the cost of graduate study; (8) the graduate course work; (9) finding a quiet place to study; (10) a change in family residence; and (11) maintaining a desire for excellence in achievement. From these findings it was noted that the areas posing difficulties for the married versus the unmarried

subjects were: (1) family relationships; (2) time-management; (3) finances; (4) educational; (5) mobility; and (6) personal.

V. A select sample of all married subjects was categorized according to "married, with children," and "married, without children." In contrasting these two groups the following variables were revealed to be significant.

Married subjects in the sample "with children," proved to be older than those subjects "without children." Subjects "with children" also had fathers and mothers who had attained a higher level of education than was found for the subjects "without children."

On the dependent variables of the questionnaire the following differences were noted for the "with children" and "without children" groups.

The married subjects "with children" found more difficulty while engaged in doctoral studies over the "without children" group in these areas: (1) the first five items regarding family relationships; (2) time and family responsibility; (3) time and school travel; (4) time and community responsibilities; (5) financial requirements and family; (6) the completion of the doctoral dissertation; (7) finding a quiet place to study; (8) the scheduling of classes; and (9) a change in family residence.

From the results of these data it was found that the areas presenting difficulties for the marriage sample "with children," and "without children" were: (1) family-relationships; (2) time-management; (3) finances; (4) educational; (5) mobility; and (6) personal.

### Conclusions

Some evidence has been accumulated from this survey that differences existed between women who attended the different types of institutions;

who earned the various degrees; who pursued the different fields of specialization; who were married or single; and who were with and without children, on the dependent variables as represented by the familial educational background, educational pursuit, the cost of study, mobility, and personal attitudes. It was recognized that while these differences did exist, the results of this study were not construed as a solution to the problems. Perhaps the results might be used as a help in clarifying and focusing attention upon the problem areas. These objective data might also be suggestive in facilitating administration decisions for those who are concerned with the planning of graduate education for women.

The major conclusions, resulting from an interpretation of the findings, are related to the four basic questions posed in Chapter II as they are relevant to the Sherifs' interdisciplinary approach to social psychology.

The basic premise of this viewpoint asserted that psychological structuring was the result of an interaction between internal and external factors.

When considering the comprehensive groups who attended the Public and Private educational institutions, evidence from these data indicated that the two areas constituting the most difficulty while the doctoral recipients were engaged in study were: (1) the educational; and (2) the personal.

In considering the basic questions, the first one stated: To what extent were the perceived difficulties a result of the psychological structuring of the individual recipients?

In contrasting the overall groups of degree-recipients who were



enrolled in the two types of institution the personal factors that proved significant were: (1) maintaining an attitude of persistence; (2) maintaining an adequate feeling of morale; and (3) sustaining a desire for academic excellence.

Evidence from these data seemed to support the Sherifs' premise that internal factors were significant variables in the individual's attempt to structure psychologically experience and behavior while they were engaged in study.

Question two stated: To what extent were there certain factors inhering and operating in the environment of the educational institution which precipitated the difficulties?

The difficulties in the educational area which tended to precipitate prolonged years in study, and periods of interrupted study for the recipients were: (1) the interaction with the doctoral committee; (2) the completion of the doctoral dissertation; (3) the meeting of the specific requirements of the field of specialization; (4) the scheduling of the classes; and (5) the completion of the doctoral course work.

As might be expected, the educational setting proved the most significant area for the groups while they were pursuing doctoral studies. Agents in this setting influenced to a great extent the goal-directed behavior of the recipients. These data seemed to support Berelson's findings concerning the indecision that often existed at the administrative and organizational levels in the graduate school. Action at these levels tended to have an observable effect on the behavior of the subjects in our study during the pursuit of their degrees. Difficulties that they met in their interaction with the doctoral committee, with

graduate students, and with their instructors were often significant factors in delaying the receipt of the degree.

Question three stated: To what extent were the deterrent factors a product of the culture?

Recipients, and particularly, married recipients in this study were successful in shortening the number of years required to complete the doctorate to the extent that they were able to balance the community and familial environments with the demands of their educational requirements. Difficulties encountered in these areas were: (1) family relationships; (2) time and management; (3) mobility; (4) health; and (5) finances.

When the demands of the educational environment became insistent to the extent that important factors in the community and familial environments had to be neglected, the recipients followed the pattern of discontinuing study until the environments were reconciled and were once again in balance. These findings corroborated Bernard's study which concluded that academic women made a special effort "to counteract the anticipated hazards of their work in relation to their families."

Results of our study also seemed to support findings from Kligler's study which stated that it was the "internalized societal pressures" that operated against women in academic pursuits.

Question four stated: To what extent were the problems the result of an interaction of both external and internal factors? This question proved to be the most significant. Although factors inhering in the various areas were isolated as important it was not until the interaction of the external and internal factors was considered that a comprehensive

view of the problem was gained.

The interaction that seemed to occur might be described in the following manner. Educational factors tended to pose problems for the recipients that in turn often elicited personal reaction that resulted in periods of intermittent study. Factors in the cultural environment presented difficulties that tended to prolong the number of years required to earn the degree. Personal reactions to the problem situations often reduced the effective functioning of the individual until factors in the environments regained balance. Only then did the recipients re-enter and continue to pursue their educational objectives.

To recapitulate: an interaction of internal and external factors seemed to increase the problems encountered by the different groups of women while they were engaged in doctoral studies. Two areas were concluded as significant when considering the overall findings: (1) the personal aspects of morale, attitudes of persistence, and a desire for excellence in achievement, were affected by the interaction occurring in (2) the educational setting relative to the course work, dissertation, doctoral committee relationship and the scheduling of classes. The psychological structuring of these factors seemed to affect the subjects' performance in the education area, often lengthening the period of time spent in the doctoral program, and resulting in several periods of interrupted study.

When the groups were broken down into smaller units, time management, and the financial cost of study assumed equal difficulty with the problems of an educational and personal nature.

It was not until the data were analyzed with respect to the married

sample, and particularly the married sample "with children" that it was concluded that almost all areas presented difficulties for the doctoral aspirants. In this regard, it was found that family relationships, cost of study, mobility, and family illness assumed a significance, in addition to the personal and education factors. The only two areas that did not demonstrate differences were the "vocational," and "counseling needs." From these results it seemed evident that when factors in the familial, educational and community environment generated conflict, the interaction of these factors tended to alter feelings of personal adequacy while the candidate was engaged in doctoral studies. Ultimate success in attaining the degree appeared to be dependent upon a facilitating agent in the educational or home environment, in addition to the persistence and intelligence of the recipient.

The data suggested that women who were single had fewer difficulties. They were found to be older than the married subjects, and deferred marriage until the doctoral program was completed. In this regard they were atypical from the "traditional" cultural prescription for women.

In considering other important aspects of the findings, evidence suggested that the women in this study who attended the Private institutions encountered more difficulty in completing the degree than was encountered by their counterparts who attended the Public institutions. These data indicated that while the graduate school faculty in Public institutions expected a certain scholarly independence of the aspirant, they also exhibited a facilitating attitude toward the candidate by providing a stimulating and competitive environment. They also "facilitated" by placing a time limit on the length of time in the degree program, and

by nudging the aspirant toward an early completion of their program.

The findings seemed to indicate that the graduate personnel in Private institutions assumed a tolerant attitude toward the doctoral aspirant, expecting a high degree of independence of the individual that often resulted in less supervision by the faculty. The faculty also seemed to nurture a contemplative atmosphere that did not place immediate demands on the fulfillment of degree requirements. The student paced herself. These facts were in agreement with Thistlethwaite's findings and were substantiated by supplementary comments from the present study. It must be noted, however, that these existing conditions may have added to the difficulties encountered by the recipient by lengthening the time required to complete the degree.

The data pointed up the fact that the graduate faculty in certain fields of specialization were more tolerant of the length of time the candidate spent on the research project. The Humanities and Social Science majors spent longer periods of time on their projects than did the majors in the Physical Sciences, Biological Sciences and Other miscellaneous fields.

There was strong evidence supplied by the data indicating that the Ph. D. recipients experienced more difficulty throughout their degree programs over the other two groups.

An interesting finding of the study provided evidence that the married women "with children" come from families indicative of a higher level of educational attainment by both parents than was found among the other groups. When choosing an institution these recipients chose Private institutions more often than Public colleges. They also selected with

greater frequency the Humanities and Social Sciences as their major fields of specialization. Majors within these fields were primarily enrolled in psychology, education, English, and foreign languages.

Their purpose for making the above choices seemed to be an attempt to reconcile the demands of the numerous environments impinging upon them by seeking degrees at institutions that allowed latitude as to when the degree could be completed, and that allowed flexibility in scheduling. They also appeared to major in areas in which the faculty exhibited a more tolerant attitude with respect to fulfilling the research requirement.

This procedure allowed the subjects a latitude in time available to devote to family and community commitments, thus resulting in frequent periods of interrupted study, and lengthening the time necessary to complete the degree program. Stated differently, it provided the women with the only practicable pattern for earning the degree. This finding seemed to contradict the one concluded by Berelson which stated that the less capable remain in the doctoral programs longer. For married women "with children" this conclusion may not be valid.

The above findings demonstrated the following relevance with a larger body of research studies. Thistlethwaite in his study found that the student seeks a school to fit her needs. This finding was partially supported in our study. Thistlethwaite suggested that students go to the Public institution to pursue the natural sciences. Those in the Arts, Humanities and Social Sciences chose the Private institutions in which to pursue the doctorate. The present study found that women recipients attended Private institutions to study the Social Sciences and the Physical Sciences; and they attended the Public institutions to study

in the fields of the Biological Sciences, Humanities and Other miscellaneous disciplines. It was only when considering the Ph. D. recipients in contrast with the Other degree recipients that Thistlethwaite's findings were confirmed throughout. Berelson's statement that those who pursued the research degree experienced greater difficulty than those who pursued the other degrees, was supported by the data from the present study. It was also found that the majors in the Humanities and Social Sciences reported more difficulty in the completion of the dissertation than was found among the Physical and Biological Scientists.

Evidence accumulated from this study was consistent with Brown's findings in the following ways: (1) "There was early awkwardness in social relations with peers" . . . Suggestive evidence from our study supported this statement as the Ph. D. recipients found that their interpersonal relationships with other graduate students constituted a difficult area; (2) the educational attainment level of both parents, and especially of the mother, was high. This finding suggested that the women doctoral recipients had internalized at an early developmental period the educational aspirations of their mothers. Data from the present study were consistent with findings in Bernard's book in the following areas: (1) Married women came from families with a high educational attainment level, and therefore, presumably, from a high socioeconomic level; (2) Stringent selective factors for women were at work throughout graduate study. Of the 14, 490 degrees conferred in 1963-64, only 1535 were women. Davis corroborated the findings in his study that selectivity may operate as the result of a cultural bias in that "a man's graduate training is considered a necessity, whereas a woman's is considered a luxury."

Hansl's research results were corroborated by findings in this study consistently. All areas mentioned in her study that constituted difficulties for women while in study proved significant when considering the subjects and areas in our study. One finding deserving of notice was that the number of children did not seem to present as much difficulty for the recipients as did the age of the children. Presumably, the recipient must wait until the children are older before completing the degree program. The average age of the children in this study was approximately 10 years.

With regard to Brown's finding that single women tended to proceed straight through the doctoral program, no differences were found among the married and unmarried group in our sample. Two and one-half periods of interrupted study and four years of doctoral study were the averages for both groups.

#### Implications

##### 1. Implications for Groups who enter degree programs.

The important findings of this study suggest the following implications: In our sample, it was found that more women were married than unmarried. This may have resulted from the fact that: (1) more married women than unmarried women in the parameter answered the questionnaire, or (2) that changes were actually occurring in the composition of the ranks of the women doctorates, with more married women earning the degree.

If the latter event is occurring, then what conditions are facilitating these changes:

##### 1. Is the married woman primarily pursuing the degree for economic reasons?



2. Is she earning the degree because she is conveniently located near an educational institution?--or is she perhaps the wife of a male graduate student?
3. Is she principally dedicated to intellectual achievement?
4. Is she primarily interested in actualizing her potential in order to function at the highest level of capacity of which she is capable?

All these trends were noted in analyzing the results of the data, in spite of the fact that innumerable obstacles were placed in the path of the married woman seeking the doctoral degree. If a new trend is actually occurring then these data can be utilized for more imaginative and creative planning by educators who execute doctoral programs for women.

Results show that married women "with children" come from homes with a high level of educational attainment by both parents. Should these women be encouraged to earn the doctorate? Many critics say "no," and it is probably true that the attrition rate is higher for this group. The fact that over one-third of our sample in this category persisted in spite of the difficulties encountered recommends women scholars as a group for their intelligence, persistence and motivation. Perhaps constructive planning could increase the number in this category substantially.

The finding that over a third of the sample consisted of married women "with children" was not as surprising as the fact that this group had internalized their parents' educational values to a higher degree than was found among any of the other groups. If it is concluded that their counterparts in the population should be encouraged to continue their education at the doctoral level, encouragement could come from admission officers in the graduate school (who see them first); or they

should be referred to the college counseling agency where counselors could acquaint them with a realistic appraisal of demands that will impinge upon them from the various environments. Counselors also need to be aware of the multiple roles these women "juggle" in an attempt to provide constructive counsel in this area.

Families must be educated to the demands made upon the time, energy and intellectual capacities of the wife and mother. Tolerance and support from all environments are needed if the women are to actualize their potential.

National planners must be made cognizant of the contribution that the scholastically superior women can make to varying national endeavors. Funds should be channeled into this area in an effort to ease some of the financial stress that occurs between the family commitments and educational requirements. Stipends should be made available which are intended to provide women with the financial resources to buy the "time" to pursue graduate study while maintaining their domestic responsibilities.

Day-care nurseries for children could release more women to pursue doctoral studies. This arrangement would help relieve the anxiety and guilt felt by many women as they leave their children daily to engage in graduate study. Domestic and adequate child care help is almost nonexistent. This finding was corroborated by the supplementary data and suggests that attention at the national and state levels of planning is needed.

## II. Implications for Future Study.

The conclusions and implications suggest that more refined and extensive investigations are required in this area. Clearly there is a

pressing need for the enlargement of the context within which women pursuing doctoral programs is viewed.

If the assumption is made that the apportionment of "brains" in the population is approximately half for women, why then, is there only a ten per cent distribution of females annually among the total population of doctoral recipients?

Scientific interest in this problem has been slight. Compounding the issue has been the fact that many educators have repeatedly dismissed the problem as "no problem."

Reliable information has been difficult to obtain on women who enter doctoral programs. Some universities make it impossible to collect the data, although the university as a social institution, in essence, is dedicated to research activity. The administrative personnel of the universities have an urgent need to re-examine their policies with regard to the releasing of research data through inter-university channels. Perhaps clearing houses located in geographical sections of the country could be established to collect and disseminate the information. Clearly, this area requires vigorous research activity.

The present study has pointed up other areas and groups that should be examined: (1) Greater diversity would probably be revealed in a five-year study composed of matched groups who began their doctoral programs in the same year, one group successfully earning the degree and the other still pursuing the degree. The present investigation may lose that segment of the sample that would be prone to scale the items of the questionnaire "Very Difficult." This group may have "dropped out," or may still be struggling with their doctoral programs. Herein lies a

fertile area for longitudinal research; (2) A stratified group of men and women doctoral candidates, beginning their programs the same year, could be studied for differences on the variables tested in this study, to see if there exists a diversity between the successful and unsuccessful candidates over a stated period of time; (3) It would be interesting to design a study contrasting single women candidates pursuing the doctorate with men candidates to see if there exists any real difference with respect to difficulties encountered while in study.

Some of the vital questions deserving consideration when studying these groups might be: (1) Are the requirements for the different degrees (Ed. D., Ph. D., and Other degrees) merging? (2) What is the effect of the pursuit of doctoral studies of married women on her children, and thus, on society? What are the differences of these effects on the male, and on his family? (3) In the academic area, are the sexes coming closer together with regard to personality traits and attitudes? (4) Is a change actually occurring within the composition of the ranks of women doctorates, with more married women earning the degree?

From the above observations it would appear that the entire area of women pursuing doctoral studies needs reviewing. Findings from the present study indicate that this subject remains a provocative area for future research.

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APPENDIX

Exhibit A

GRADUATE SCHOOLS CONTACTED FOR A LIST  
OF WOMEN DOCTORAL RECIPIENTS

1963-64

Name of Institution	Control	Responses Received	No. of Women Recipients listed	Number Replying
1. Auburn University	Public	No	---	---
2. University of Alabama	Public	Yes	5	4
3. University of Alaska	Public	Yes	0	0
4. Arizona State University	Public	No	---	---
5. University of Arizona	Public	Yes	4	4
6. University of Arkansas	Public	Yes	6	3
7. California Institute of Technology	Private	Yes	1	1
8. Claremont Graduate School	Private	Yes	4	3
9. Loma Linda University	Private	Yes	0	0
10. Occidental College	Private	Yes	1	1
11. Stanford University	Private	Yes	31	18
12. University of California, Berkley	Public	Refusal		
13. University of California, Los Angeles	Public	Yes	30	12
14. University of California, Davis	Public	Yes	5	3
15. University of California, Riverside	Public	Yes	0	0
16. University of California, San Diego	Public	Yes	1	1
17. University of California, Santa Barbara	Public	Yes	0	0
18. University of the Pacific	Private	Yes	0	0
19. University of Southern California	Private	Yes	0	0
20. Colorado School of Mines	Public	Yes	0	0

Name of Institution	Control	Responses Received	No. of Women Recipients listed	Number Replying
21. Colorado State College	Public	Yes	9	8
22. Colorado State University	Public	Yes	0	0
23. University of Colorado	Public	Yes	29	17
24. University of Denver	Private	Yes	3	3
25. University of Connecticut	Public	Yes	6	5
26. University of Delaware	Public	Yes	1	1
27. American University (D.C.)	Private	Yes	0	0
28. Catholic University of America	Private	Yes	26	20
29. Georgetown University	Private	No	---	---
30. George Washington University	Private	Yes	5	3
31. Howard University	Private	Yes	2	2
	with Federal support			
32. Florida State University	Public	No	---	---
33. University of Florida	Public	Yes	14	12
34. University of Miami	Private	Yes	3	3
35. Emory University	Private	Yes	6	4
36. Georgia Institute of Technology	Public	Yes	0	0
37. Georgia Southern College	Public	Yes	0	0
38. University of Georgia	Public	Yes	11	9
39. University of Hawaii	Public	Yes	0	0
40. University of Idaho	Public	No	---	---
41. Illinois Institute of Technology	Private	No	---	---
42. Loyola University	Private	No	---	---
43. Northern Illinois University	Public	Yes	0	0
44. Northwestern University	Private	Yes	18	9
45. Southern Illinois University	Public	Yes	1	1
46. University of Chicago	Private	Yes	25	19
47. University of Illinois	Public	Yes	36	28
48. Ball Teachers College	Public	Yes	4	4
49. Indiana University	Public	Yes	41	23
50. Purdue University	Public	Yes	20	13
51. St. Mary's College	Private	Yes	5	1
52. University of Notre Dame	Private	Yes	18	14
53. Iowa State University	Public	Yes	4	3
54. State University of Iowa	Public	Yes	4	3
55. Kansas State University	Public	Yes	1	1
56. University of Kansas	Public	Yes	8	3
57. Wichita State University	Public	Yes	0	0
58. University of Kentucky	Public	Yes	4	4
59. University of Louisville	Public	Yes	1	1
60. Louisiana State University	Public	Yes	12	11

Name of Institution	Control	Response Received	No. of Women Recipients listed	Number Replying
61. Tulane University	Private	Yes	5	2
62. University of Maine	Public	No	---	---
63. John Hopkins University	Private	No	---	---
64. Peabody Conservatory of Music	Private	No	---	---
65. University of Maryland	Public	Yes	6	4
66. Boston College	Private	Yes	3	3
67. Boston University	Private	Yes	26	19
68. Brandeis University	Private	Yes	5	3
69. Clark University	Private	Yes	4	2
70. Harvard University	Private	Yes	41	23
71. Lowell Technological Institute	Public	Yes	0	0
72. Massachusetts Institute of Technology	Private	Yes	6	4
73. Springfield College	Private	Yes	2	1
74. Tufts University	Private	Yes	2	1
75. University of Massachusetts	Public	Yes	4	3
76. Michigan State University	Public	Yes	17	14
77. University of Michigan	Public	Yes	36	28
78. University of Minnesota	Public	Yes	19	11
79. Wayne State University	Public	Yes	21	15
80. University of Minnesota Morris Campus	Public	No	---	---
81. University of Minnesota Duluth Campus	Public	No	---	---
82. Mississippi State University	Public	Yes	2	2
83. University of Mississippi	Public	Yes	4	2
84. University of Southern Mississippi	Public	Yes	4	4
85. St. Louis University	Private	Yes	16	12
86. University of Missouri	Public	Yes	1	1
87. University of Missouri at Kansas City	Public	Yes	1	1
88. Washington University	Private	Yes	12	9
89. Montana State College	Public	Yes	1	1
90. Montana State University	Public	Yes	0	0
91. University of Nebraska	Public	Yes	6	4
92. University of Nevada	Public	Yes	0	0
93. Dartmouth College	Private	Yes	0	0
94. University of New Hampshire	Public	No	---	---
95. Drew University	Private	No	---	---
96. Newark College of Engineering	Public	Yes	0	0
97. Princeton University	Private	Yes	0	0

Name of Institution	Control	Response Received	No. of Women Recipients Listed	Number Replying
98. Rutgers	Public	Yes	22	18
99. Stevens Institute of Technology	Private	Yes	0	0
100. New Mexico Highlands University	Public	Yes	0	0
101. New Mexico Institute of Mining & Technology	Public	Yes	0	0
102. New Mexico State University	Public	Yes	0	0
103. University of New Mexico	Public	Yes	0	0
104. Adelphi University	Private	Yes	2	1
105. Alfred University	Private	Yes	0	0
106. City University of New York	Public	Yes	0	0
107. Columbia University	Private	Yes	55	34
108. Columbia University (Teacher's College)	Private	Yes	71	51
109. Cornell University	Private	Yes	20	10
110. Fordham University	Private	Yes	44	35
111. New School of Social Research	Private	Yes	0	0
112. New York University	Private	Yes	72	59
113. Polytechnic Institute of Brooklyn	Private	Yes	2	1
114. Rensselaer Polytechnic Institute	Private	Yes	1	---
115. St. Bonaventure University	Private	Yes	---	---
116. St. John's University	Private	Yes	6	5
117. State University of New York Albany	Public	Yes	0	0
118. State University at Buffalo	Public	Yes	10	5
119. State University at Stony Brook	Public	No	---	---
120. Syracuse University	Private	Yes	10	7
121. University of Rochester	Private	Yes	12	12
122. Union College & University	Private	Yes	0	0
123. Yeshiva University	Private	Yes	10	8
124. Duke University	Private	Yes	0	0
125. North Carolina College	Public	Yes	0	0
126. North Carolina State at Raleigh	Public	Yes	1	1
127. University of North Carolina, Chapel Hill	Public	Yes	20	14
128. University of North Carolina, Greensboro	Public	Yes	2	1

Name of Institution	Control	Response Received	No. of Women Recipients Listed	Number Replying
129. North Dakota State University	Public	Yes	1	1
130. Case Institute of Technology	Private	Yes	1	1
131. Kent State University	Public	Yes	1	1
132. Ohio State University	Public	No	---	---
133. Ohio University	Public	Yes	3	2
134. University of Akron	Public	Yes	1	1
135. University of Cincinnati	Public	Yes	4	2
136. University of Toledo	Public	Yes	1	1
137. Western Reserve University	Private	Yes	10	8
138. Oklahoma State University	Public	Yes	3	2
139. University of Oklahoma	Public	Yes	11	6
140. University of Tulsa	Private	Yes	3	3
141. Oregon State University	Public	Yes	8	6
142. University of Oregon	Public	No	---	---
143. University of Portland	Private	No	---	---
144. Bryn Mawr College	Private	Yes	13	9
145. Carnegie Institute of Technology	Private	Yes	0	0
146. Dropsie College for Hebrew & Cognate Learning	Private	No	---	---
147. Duquesne University	Private	Yes	3	2
148. Lehigh University	Private	No	---	---
149. Pennsylvania State University	Public	No	---	---
150. Philadelphia College of Pharmacy	Private	Yes	0	0
151. Temple University	Private	Yes	9	7
152. University of Pennsylvania	Public	No	---	---
153. University of Pittsburgh	Private	Yes	16	10
154. Brown University	Private	Yes	5	2
155. University of Rhode Island	Public	Yes	1	1
156. Clemson College	Public	Yes	0	0
157. University of South Carolina	Public	Yes	1	1
158. South Dakota State College	Public	Yes	0	0
159. University of South Dakota	Public	Yes	0	0
160. George Peabody College for Teachers	Private	Yes	5	3
161. University of Tennessee	Public	Yes	8	5
162. Vanderbilt University	Private	Yes	6	5
163. Baylor University	Private	Yes	3	2

Name of Institution	Control	Response Received	No. of Women Recipients Listed	Number Replying
164. East Texas State University	Public	Yes	0	0
165. North Texas State	Public	Yes	5	4
166. Rice University	Private	No	---	---
167. Southern Methodist University	Private	Yes	0	0
168. Texas Christian University	Private	Yes	1	1
169. Texas Technological College	Public	Yes	2	1
170. Texas Women's University	Public	No	---	---
171. University of Houston	Public	Yes	4	3
172. University of Texas	Public	Yes	22	18
173. Brigham Young University	Private	Yes	1	1
174. University of Utah	Public	Yes	6	4
175. Utah State University	Public	Yes	1	1
176. Middlebury College	Private	Yes	0	0
177. University of Vermont	Public	No	---	---
178. University of Virginia	Public	Yes	3	3
179. Virginia Polytechnic Institute	Public	Yes	2	0
180. University of Washington	Public	Yes	16	13
181. Washington State University	Public	Yes	4	4
182. West Virginia University	Public	Yes	4	1
183. Lawrence College	Private	Yes	0	0
184. Marquette University	Private	Yes	0	0
185. University of Wisconsin	Public	Yes	0	0
186. University of Wyoming	Public	Yes	1	1

## Exhibit B

Classifications of Fields of Study as Found  
In American Universities and Colleges,  
Ninth Edition (Part IV, pp. 1266-1278)

## Humanities:

1. Architecture
2. Classical Languages
3. English
4. Fine Arts
5. French
6. German
7. Journalism
8. Music
9. Philosophy
10. Religious Education
11. Russian
12. Spanish
13. Speech and Drama
14. Theology
15. Foreign Language

## Biological Sciences:

16. Agriculture
17. Anatomy
18. Bacteriology
19. Biochemistry
20. Biology
21. Botany
22. Home Economics
23. Nursing
24. Pharmacy
25. Physiology
26. Public Health
27. Veterinary Medicine
28. Zoology
29. Biological Science Other



Physical Sciences:

30. Astronomy
31. Chemistry
32. Aeronautical Engineering
33. Civil Engineering
34. Electrical Engineering
35. Mechanical Engineering
36. Engineering Other
37. Geography
38. Geology
39. Mathematics
40. Metallurgy
41. Meteorology
42. Physics
43. Physical Science Other

Social Sciences:

44. Anthropology
45. Business and Commerce
46. Economics
47. Education
48. History
49. International Relations
50. Law
51. Library Science
53. Public Administration
54. Social Work
55. Sociology
56. Psychology
57. Social Science Other

Miscellaneous, Other Fields

58. Includes degrees in Arts without Majors, sciences without Majors, and other. (Medicine, P.E., etc.)

EXHIBIT C  
Letter to Graduate  
Deans

Dear Sir :

In connection with my doctoral research at Oklahoma State University, I have planned to study the problems peculiar to women candidates for a terminal degree. The study, involving graduates in the 1963-64 school year, concentrates on difficulties encountered in specific areas while in graduate study beyond the master's degree.


You can be of great assistance to me in this regard by providing me with a list of the women graduates who earned the doctorate (Ph.D., Ed.D., or other title) at your institution during that year.

I am enclosing a copy of the questionnaire for your perusal. Specific information will be kept in confidence without reference to the individual or institution concerned.

Dr. Harry K. Brobst, Director of Bureau of Test and Measurements, and Professor of Psychology at Oklahoma State University, is Chairman of my Committee and you may contact him for verification of the project. I shall be happy to assume any of the cost which might accrue to you in the preparation of such a list.

Thanking you for your cooperation, I remain

Sincerely yours,



(Mrs.) Gail C. Goodwin  
Counselor to Women,  
LSU at Alexandria

GCG:emh

Enclosure

## EXHIBIT D

## Letter to Recipients

Dear Mrs.


For some time I have been interested in the delineation of the specific difficulties peculiar to women engaged in graduate study.

Dr. Harry K. Brobst, Director of Bureau of Tests and Measurements and Professor of Psychology at Oklahoma State University, is directing my study of this topic in connection with my dissertation research. It is felt that the results might be of some significance to individuals and institutions planning graduate programs.

You can assist me a great deal in this regard by completing the short questionnaire enclosed. The respondents will not be identified so as to preserve individual confidence. If you will complete the form with as much detail as possible, I will be very grateful.

Thanking you for your cooperation, I remain

Sincerely yours,

  
(Mrs.) Gail C. Goodwin  
Counselor to Women,  
LSU at Alexandria

GCG:emh

Enclosure

Exhibit E

LOUISIANA STATE UNIVERSITY AT ALEXANDRIA  
Alexandria, Louisiana

February 9, 1965

Dear Dr.

Some time ago I mailed you a questionnaire entitled Survey of Earned Doctorates by Women Recipients.

*Would  
be better*

Could you assist me <sup>?</sup> in completing this form and responding by return mail? Your response would be helpful in the completion of the survey.

If you have already mailed the questionnaire, please accept my thanks.

Sincerely yours,

*Gail C. Goodwin*

(Mrs.) Gail C. Goodwin  
Counselor to Women

EXHIBIT F

SURVEY OF EARNED DOCTORATES BY WOMEN RECIPIENTS

- A. Date of Birth \_\_\_\_\_
- B. Married \_\_\_\_\_ Not Married \_\_\_\_\_
- C. Number of children: 1 2 3 4  
5 over 5
- D. Age of children: 1 2 3 4 5 6 7  
8 9 10 11 12 13 14  
15 16 17 18 and above
- E. Title of degree held: Ph.D. \_\_\_\_\_  
Ed.D. \_\_\_\_\_ Other: (Name) \_\_\_\_\_
- F. Indicate the highest grade attained by your parents (by circling)
- |              |                   |   |   |   |   |   |   |   |             |    |    |    |         |   |   |   |          |    |     |     |          |
|--------------|-------------------|---|---|---|---|---|---|---|-------------|----|----|----|---------|---|---|---|----------|----|-----|-----|----------|
| Father: None | 1                 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9           | 10 | 11 | 12 | 1       | 2 | 3 | 4 | MA       | MD | PhD | EdD | Doctoral |
|              | Elementary School |   |   |   |   |   |   |   | High School |    |    |    | College |   |   |   | Graduate |    |     |     | Post     |
- |              |                   |   |   |   |   |   |   |   |             |    |    |    |         |   |   |   |          |    |     |     |          |
|--------------|-------------------|---|---|---|---|---|---|---|-------------|----|----|----|---------|---|---|---|----------|----|-----|-----|----------|
| Mother: None | 1                 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9           | 10 | 11 | 12 | 1       | 2 | 3 | 4 | MA       | MD | PhD | EdD | Doctoral |
|              | Elementary School |   |   |   |   |   |   |   | High School |    |    |    | College |   |   |   | Graduate |    |     |     | Post     |
- G. Number of actual calendar years in graduate study (beyond the Master year):  
1 2 3 4 5 6 and over
- H. Type of institution from which you received the doctorate: Public \_\_\_\_\_ Private \_\_\_\_\_
- I. Major discipline: Humanities \_\_\_\_\_ Biological Science \_\_\_\_\_ Physical Science \_\_\_\_\_  
Social Science \_\_\_\_\_ Other \_\_\_\_\_
- J. Major subject \_\_\_\_\_ K. Periods of intermittency in study: 1 2 3 4 over 4
- L. Post doctoral employer (check one): University or college \_\_\_\_\_; elementary or secondary school \_\_\_\_\_;  
state, local or federal government \_\_\_\_\_; foreign \_\_\_\_\_; non-profit organization \_\_\_\_\_; industry or business  
\_\_\_\_\_; self-employed \_\_\_\_\_; none \_\_\_\_\_; other \_\_\_\_\_

.....

You are asked to indicate the degree of difficulty encountered as you pursued graduate study (beyond the Master's degree), as these difficulties related to the areas listed below. Please place an "X" in the space that best represents the degree of difficulty you encountered, ranging on a five-point scale from "Very Difficult" to "No Problem." Place an "X" in only one space opposite each item.

Item	To what degree did you experience difficulty in the following areas while pursuing graduate study (beyond the Master's Degree)?	Scale				
		Very Difficult	Somewhat Difficult	Rarely Difficult	No Problem	
Family Relationships						
1	The mother-child relationship	_____	_____	_____	_____	_____
2	The husband-wife relationship	_____	_____	_____	_____	_____
3	The homemaker-domestic help relationship	_____	_____	_____	_____	_____
4	The number of children	_____	_____	_____	_____	_____
5	The age of the children	_____	_____	_____	_____	_____
Time-Management						
6	Time and family responsibility	_____	_____	_____	_____	_____
7	Time and school travel	_____	_____	_____	_____	_____
8	Time and personal grooming	_____	_____	_____	_____	_____
9	Time and household duties	_____	_____	_____	_____	_____
10	Time and community responsibilities	_____	_____	_____	_____	_____
11	Time and professional responsibilities	_____	_____	_____	_____	_____
12	Time and professional society duties	_____	_____	_____	_____	_____
Finances						
13	Financial requirements and family	_____	_____	_____	_____	_____
14	Financial requirements and cost of graduate study	_____	_____	_____	_____	_____

(over)

## EXHIBIT F (Cont'd)

Item		Very Difficult	Difficult	Somewhat Difficult	Rarely Difficult	No Problem
Educational						
15	The completion of the doctoral dissertation	_____	_____	_____	_____	_____
16	The graduate course-work	_____	_____	_____	_____	_____
17	The specific requirements of your field of study	_____	_____	_____	_____	_____
18	The language or statistical requirement	_____	_____	_____	_____	_____
19	The preliminary examination	_____	_____	_____	_____	_____
20	The doctoral committee relationship	_____	_____	_____	_____	_____
21	The type of degree earned	_____	_____	_____	_____	_____
22	The length of time in graduate study	_____	_____	_____	_____	_____
23	The periods of interrupted study	_____	_____	_____	_____	_____
24	The type of institution attended (public, private)	_____	_____	_____	_____	_____
25	Finding a quiet place to study	_____	_____	_____	_____	_____
26	The scheduling of classes	_____	_____	_____	_____	_____
Health						
27	Personal illness	_____	_____	_____	_____	_____
28	Family illness	_____	_____	_____	_____	_____
29	Illness among relatives	_____	_____	_____	_____	_____
Mobility						
30	A change of family residence	_____	_____	_____	_____	_____
31	A change in institutions attended	_____	_____	_____	_____	_____
Personal						
32	Maintaining an attitude of persistence	_____	_____	_____	_____	_____
33	Maintaining an adequate feeling of morale	_____	_____	_____	_____	_____
34	Maintaining a desire for excellence in achievement	_____	_____	_____	_____	_____
35	Discrimination encountered against you as a woman	_____	_____	_____	_____	_____
36	Interpersonal relationship with the faculty	_____	_____	_____	_____	_____
37	Interpersonal relationship with other students	_____	_____	_____	_____	_____
38	Receiving the emotional support of your family	_____	_____	_____	_____	_____
39	Subject's age	_____	_____	_____	_____	_____
40	Educational attainment of the father	_____	_____	_____	_____	_____
41	Educational attainment of the mother	_____	_____	_____	_____	_____
Vocational						
42	The attitude of your employer	_____	_____	_____	_____	_____
43	Obtaining a "leave of absence"	_____	_____	_____	_____	_____
Counseling						
44	Availability of adequate counseling services	_____	_____	_____	_____	_____
45	Your utilization of counseling facilities	_____	_____	_____	_____	_____

Please write in any supplementary information which you believe would be helpful in explaining or completing you answer, referring to the number of the item below.

Vita

Gail Crow Goodwin

Title: THE WOMAN DOCTORAL RECIPIENT: A STUDY OF THE DIFFICULTIES ENCOUNTERED IN PURSUING GRADUATE DEGREES.

Major field: Higher Education with an Emphasis in Student Personnel, Counseling and Guidance.

Biographical:

Personal data: Born at Peach Orchard, Arkansas, November 25, 1918, the daughter of the Rev. and Mrs. Clarence Crow. Married to James W. Goodwin in 1941 and the mother of five sons.

Education: Attended grade school in Newark and El Dorado, Arkansas, and Mansfield and Fort Worth, Texas; was graduated from Arkansas High School; earned the Bachelor of Arts degree from Ouachita Baptist College, Arkadelphia, Arkansas with a major in Voice and Public School Music in 1940. Received the Master of Education degree with a major in Guidance from Northwestern State College, Natchitoches, Louisiana, in 1960. Completed additional graduate work at Oklahoma State University from 1961-1965 toward a doctor's degree.

Professional Education: Taught fourth grade and school music at Falfurrias, Texas in 1941; served as Public School Music Supervisor of Madison Parish, Tallulah, Louisiana in 1947; taught a musical kindergarten, Monroe, Louisiana in 1948. From 1960 - 1962 served as Guidance Counselor at Buckeye High School, Buckeye, Louisiana; since 1963 have been engaged in student personnel work as Counselor to Women and director of the Testing Center at Louisiana State University at Alexandria, Louisiana.

Professional Organizations: A member of the American Personnel and Guidance Association, American College Personnel Association, American Association of University Women, Louisiana Guidance Association, Louisiana Teachers Association, and Psychological Division of the Louisiana College Conference.