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The Classroom Modification of Children's Gender Stereotyping of Careers

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THE CLASSROOM MODIFICATION OF CHILDREN'S GENDER STEREOTYPING OF CAREERS

by

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DEDICATION

To, for, and because of

Sara

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Paul Vance Campbell

PREFACE

The purpose of this study is to investigate the mechanisms of changing gender stereotyping of careers by school children and then to examine the extent of that change over time. The focus is on only one part of the socialization process, the school, and uses elements of social learning theory as the vehicle whereby attitudinal manipulation in the classroom is tested.

> ...before a structure of inequality can be dismantled, we must first know the base on which it rests. Thus our...common search for origins is implicitly a search for a strategy with a politicized goal (Reiter, 1976:1).

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by

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This research tested the use of non-sexist occupational modules of teaching activities and toys for preschool, second grade and fourth grade classes. In addition to brief descriptions of biological, cognitive development and social learning theories of gender role development, the literature review also focuses on factors which contribute to gender stereotyping in schools: teachers, teacher training, toys, teaching materials and activities. Several hypotheses were tested comparing project members as presenters of modules versus module use by regular classroom teachers and a module-free control group in each grade. Also, second graders were tested in third grade to assess persistence of module effect. Findings suggest teaching modules and materials do produce reduced stereotyping in each grade but the effect is more pronounced among females than among males. Those tested one year after module use showed module effect persists but was diminishing over time.

The study concludes non-sexist teaching modules are effective intervention to change occupational aspirations and stereotypes, particularly for girls.

(247 pages)

CHAPTER I

INTRODUCTION

OVERVIEW

The research project described herein is an examination of the mechanism of changing gender stereotyping of careers by children using teaching materials designed to alter perceptions about careers and alter children's personal aspirations for careers. Do the teaching modules used in preschool, second grade and fourth grade classrooms result in changes in the children's perceptions and aspirations? If change exists are there any effect differences between grade levels, genders, or research design conditions? These questions are addressed by this research. Furthermore, if various effects are found, the utility of such an intervention program is enhanced if the module effect has some lasting effect on the students. Career attitudes are measured a year later in order to assess intervention effects over time. The discussion about using teaching modules centers around the tenets of social learning theory in explaining why the module intervention should be effective.

RATIONALE

Some time in the late 1970s to early 1980s the nonemployed wife became a nonconformist role, a statistical minority (48.4%, cf. Bureau of the Census, 1986:390) recognized for the 1980 Census of the United States wherein the husband no longer was automatically termed "head of household." The fact of life in the 1980s no longer

reflects the homilies of the folk wisdom which demanded males be educated to become the family provider while females were educated to become the nurturant supporters who had little or no occupational experience and seldom had any status of her own (Bernard, 1982). To the contrary, the projected experience facing today's school children is a world in which half of the full time labor force will be female and both females and males face the high probability (90%) of full time employment for some portion of their adult lives (U.S. Department of Labor, 1977). For American society of the near future, the growth in the labor force for the next decade will be accounted for largely by women entering the full time labor force (Bureau of Labor Statistics, 1984:14). The huge surge of women entering the job market has not been and is not projected to be uniform - females overwhelmingly are represented in lower paying occupations which also have less social status (AFL-CIO, 1984).

Dr. Eleanor Maccoby (1986) reminds us that the gradual change in sex roles in society is being wrought not by political or philosophical forces so much as by profound demographic factors which lead to women occupying a significant portion of the labor force. She described the 1800s and before as an era wherein women spent most of their adult life in childrearing. Due to early age at marriage, fecundity, lengthy (18 months or more) nursing of children and relatively short life spans, few women had any non-childrearing years wherein full employment was likely. Now, however, changes in marriage, childbearing, nursing and lifespan patterns give women a very high likelihood of thirty or more years of adult life without

childrearing responsibilities - many of those years will be in the full time labor force, particularly for those who are the sole working adult in single parent families. Demographic changes also have altered the previous sole supporter role for many men into a situation of shared support with an employed wife. Both male and female should expect more time together as a childless couple. All of these changes are forcing the gender roles of the immediate future to be more confused and overlapped than even now. The implication for the future is that preparing for change now is a compelling social interest (Maccoby, 1986).

While most of the occupational stereotype research concentrates on females; males, too, face an altered occupational future in which the growth of service industries places high value on many of the social skills long held to be the province of women in our society (Bem, 1974; Appley, 1977). Also, some men may find their traditional labor skills less valued in a non-manufacturing economy, and the changing family roles for males also may lead to the need for increased flexibility in career choices for males. The conclusion drawn from these occupational projections is that males and females should expect life in the 1990s to be an expanded occupational market place which is different than the one we now face.

Most women are not now in the most lucrative careers and are not likely to be so in the immediate future due to stereotyping of occupations by gender (Reid and Stephens, 1985). Perpetuation of occupational gender stereotyping is the product of various social

processes among which are: parenting, school, peer interaction, and media. These processes operate over a considerable time span (Lokan and Biggs, 1982) resulting, by late adolescence, in rather well defined occupational expectations, expectations which clearly reflect perceived gender stereotyped limits in their occupational choices (Beuf, 1974; Riley, 1981).

So, in a dramatically changing work force projection for the immediate future, the current gender division of labor, commonly called occupational stereotyping, must change. But, that change is inhibited by inertia of any social change coupled with rather passionately held perceptions that the division of labor is a natural part of society, and hence, immutable.

GENDER ROLE STEREOTYPING

What is wrong with gender divisions in our society? Linton said:

> [T]he division of a society's members into... sex categories is perhaps the feature of greatest importance for establishing participation of the individual in culture (Linton 1945:63).

Gender is, in our society, a master status (Hughes, 1945), a singularly important trait which is the foundation of status categorization. Mussen asserted, "No other social role directs more overt behavior, emotional reactions, cognitive functioning, covert attitudes and general psychological adjustment" (1969:707).

Walter Lippman (1922) coined the term, stereotypes, in a study about attitudes in reference to racial groups. Mackie, in an impressive literature review of stereotypes, defined the term as: "...folk beliefs about the attributes characterizing a social category on which there is substantial agreement" (1973:435). While many of the attributes subsumed under gender-role stereotype may be positively valued, it is a basic tenet of much of the current research on gender-role research (cf. Bem, 1974; Weitzman, Eifles, Hokada, and Ross, 1972), that many of the gender-role stereotypes include some negatively valued attributes. Specifically, gender-role stereotypes contain exaggerated or even inaccurate characterizations which serve to limit the range of opportunities of those thus labeled labeled. The stereotype presented through socialization may largely be valued but, given the changing nature of the adult world, socialzation which limits opportunity rather than expands opportunity is <u>not</u> valued in relation to the individual's ability to adapt to the occupational change projected for the immediate future.

Along with the vital master status of gender is a collateral set of auxiliary traits - generally described as masculine and feminine traits. Bem (1974) expresses that social changes and society at large generally act as if masculinity and femininity are bi-polar extremes. These auxiliary traits are <u>expected</u> to be present and dichotomous. Bem further develops the position that our culture is in error when we conceptualize gender behaviors as bipolar, masculine or feminine but not both. She asserts strongly gender-typed individuals are severely limited in their own repertoire of behaviors in situations which may demand the "other gender"-typed behavior. The

individual with only gender-typed behaviors thus is constrained against any behavior they consider sex-inappropriate even if such a choice is clearly wrong (Kagan, 1964; and Kohlberg, 1966). Bem refutes the assumption that a highly gender-typed individual epitomizes mental health while those who show less distinct gender roles are less healthy. She predicts the standard of psychological health in the future will reflect gradual movement away from strict stereotyping toward humans who are socialized in both "masculine" and "feminine" characteristics as preparation for adulthood.

The secondary or auxiliary traits associated with a "gender of assignment" generally are termed masculinity and femininity. Maccoby (1986) contends these terms derive their meaning from three somewhat interconnected uses: masculine or feminine are scored on some instrument purported to measure those traits; they are a subjective assessment of the degree of conformity to rather indistinct idealized stereotypes; and, they score some estimation of attractiveness to the opposite sex. In all these operationalizations of the terms feminine and masculine there really is little reference to the auxiliary traits associated with the majority of occupations, yet stereotyping of careers as masculine or feminine persists.

In a culture which accords occupation as a major factor in status assignment for its members, occupations are often highly stereotyped along gender lines. Despite rhetoric claiming "progress" toward equality for women through increased labor force participation, there has actually been little change in occupational segregation by gender; and, more importantly in some respects, gender

differential in employment income suggests even greater gender segregation is occurring (England and McLaughlin, 1977; and Harris and Associates, 1981). Bose and Rossi (1983) report the "gap" seems more pronounced when polar extremes of occupational gender stereotypes are considered than when considering the full range of occupations.

The belief of some that women need only prepare for the homemaker role is clearly constraining in occupational choices yet, "women are...caught in a process of social change, in which the cultural configuration restrains them to traditional roles, while new ones are proffered by economic and social forces" (Sirjamaki, 1948:469). The gender stereotypic socialization pattern experienced by children does not fully prepare them for increased awareness of the range of occupational opportunities.

Given the changing nature of occupations, shifting economic forces impinging on the "traditional" gender division of labor in society, and a gradual development of a "class consciousness" about the gender inequalities in society, that the stereotyped gender dichotomies in society are changing is not surprising. The nature of the change, the direction, the rapidity, the extent, the mechanisms whereby change is affected - are not fully understood. Consequently, there are many research efforts regarding division of labor by gender, gender stereotyping and the nature of sex role development; yet there also is little agreement on these issues.

Chapter Two provides a brief review of the major perspectives on the nature of gender role development, discussing the biological basis of gender differentiation, and the competing explanations of

the cognitive development theory of Kohlberg and a more detailed examination of social learning theory. Also reviewed are the general perspectives on how attitudes influence behavior and how attitudes change according to the theories mentioned above.

Biological determinants of gender role behaviors are controversial because evidence is either inconsistent or unsubstantiated (Bowman, 1978; Etaugh, 1983). The discussion of biologically based views of sex role development in Chapter Two includes the caution that while not conclusively demonstrated to be the determinant of gender role behavior, biological factors cannot be wholely dismissed.

Two general theories provide social explanations of gender role development. Cognitive development theory contends sex roles arise through a maturation process of observing and identifying with a gender role, then adopting that role and elaborating upon its presentation through choices of behavior. Following Piaget (1932), Kohlberg (1966), and others, the cognitive development view considers socialization as the starting point in gender role development, followed by a series of progressions wherein the child becomes self-identified in a gender and behaves in a gender role.

Social learning theory begins explanation of gender role development with the idea of socialization but places the responsibility for directing the child into a particular, culturally defined gender role upon the behavior of various models. Cognitive development has the observing child making choices leading to adult behavior while social learning theory has socialization guided by others intentionally (parents, teachers) or sometimes unintentionally

providing modeled gender role behavior which is imitated by children. What modeled behavior is imitated is a function of rewards, the relationship between the model and observer and other factors in the modeling circumstances.

THE STUDY

A 1977 study (Riley and Powers), in concert with work by Barbara Sprung (1975), Flerx, Fidler and Rodgers (1976), Edelbrock and Sugawara (1978), among others, led to a project funded by Grant #G007800029, Office of Career Education, U.S. Department of Health, Education, and Welfare, reported in Riley and Marotz-Baden (1979). This study involved designing teaching modules utilizing toys and games depicting careers in a relatively nonsexist manner. The experimental design included a control group in each grade level (preschool, second grade, and fourth grade), an experimental group in each grade level using the module, teaching materials, toys and games under the direction of the regular classroom teacher, and an additional experimental group using the same materials under the direction of two research assistants specifically selected for their relatively nonsexist attitudes.

The classroom intervention modules, developed by Dr. Ramona Marotz-Baden, Montana State University, were designed to provide a means of exploring job skills for selected occupations and evaluating personal aspirations based on requisite skills rather than aspirations constrained by cultural conventions. By presenting occupations in nonsexist examples focusing on salient occupational

skills and activities rather than the gender of occupational models, the project follows the general suggestions of Barbara Sprung's books (1975; 1978) on nonsexist early childhood education utilizing some of the materials reviewed in Riley and Powers (1977) and Cohen and Martin (1976), other commercially available toys and games, and some toys specifically commissioned for the project (c.f. Riley and Marotz-Baden, 1979) [See Appendix A for toy descriptions and information].

The study was conducted in second grade and fourth grade classrooms of nearby public schools and in the preschool of the Child Development Laboratory, Department of Family and Human Development, Utah State University, Logan, Utah during the 1978-1979 school year. These schools were selected for their accessibiity to the researchers, their lack of tracking in classroom assignment of children and relatively undifferentiated social status of the students' parents.

Data for each original group for each grade were collected after the experimental groups were exposed to the modules and materials. Pre-schoolers were asked a series of questions (see Appendix B for the questionnaire). Questions included inquiries as to the children's occupational aspirations, asking to verbally list jobs boys and girls could do; and, to specifically test the modules, asking if a girl and/or boy could do each of the occupations covered in the modules. Testing in each grade was done individually, with each subject in a location other than their classroom.

Second graders were asked their occupational aspirations, which module toy was liked the most and to identify their parents' occupations. To test modules, each child was asked whether a girl

and/or boy could do each of the 23 occupations addressed in the modules. Also, each second grader was asked to indicate their own preferences in a two at a time card sort of eight same gender drawings of four traditionally male occupations and four traditionally female occupations. Rankings were assigned a numerical score for each drawing according to the degree of traditionalism of the depicted occupation (Appendix B).

Fourth grade children were tested in a manner similar to the second grade testing except that the listed occupations reflected those discussed in the modules for that grade level (Appendix B).

For the follow-up study of the second graders as third graders a year later, the same instrument used in the second grade was used again, without asking parental occupation information.

HYPOTHESES

The intended effect of the module intervention was to expand career option perceptions for those students exposed to the modules. As developed more fully in Chapter 2, social learning theory suggests children who see behavior by models who are rewarded eventually will imitate the modeled behavior. The expectation of the module intervention is that those who were exposed to the modules would report occupational aspirations and attitudes which are measurably distinct from the aspirations and attitudes of a control group not exposed to the modules.

Accordingly, the basic hypothesis of this study is that the curriculum modules would produce an impact on those children exposed

to modules in comparison with those children not exposed to modules. Further, the modules were intended to reduce children's gender-stereotyping of careers, therefore the first hypothesis is:

> H_1: Experimental Groups will show less gender stereotyping than the Control Group, as measured by occupational aspirations, gendertyping, traditionalism and traditional picture ranking.

The null hypothesis is that there is no module effect. The specific measures to be used are described in a later portion of this chapter, and again in Chapter III.

The second hypothesis, and each remaining hypothesis, assesses an element of the nature of the module impact. Predicated upon the modules having some effect, the second hypothesis focuses on module differences between girls and boys.

> H_2: Girls in each group will show less gendertyping than boys in each group, as measured by occupational aspirations, gendertyping, traditionalism and traditional picture ranking.

The null hypothesis is there is no score difference between girls and boys. The rationale for this hypothesis is discussed in Chapter 2, focusing on demand characteristics, the increased imitation of models which have higher occupational prestige for girls in non-typical occupations but not for boys in non-typical occupations, and the finding (Stein, Pohly and Mueller, 1971) that girls respond more to non-typical models than do boys.

The third hypothesis deals with the possibility of an age related factor in changing stereotypes. The basis for this hypothesis comes from Piaget (with Inhelder, 1969) who posited children show cognitive changes as they mature, leading to less rigid

gender stereotyping among older children (Garrett, Ein and Tremaine, 1977).

H_3: Fourth grade subjects will have less gender stereotyping than second grade subjects and second grade subjects will have less gender stereotyping than preschool subjects, as measured by occupational aspirations, gender-typing, traditionalism and traditional picture ranking.

The null hypothesis would assert no age differences in gender stereotyping. Chapter II contains further discussion of this topic.

The fourth hypothesis, predicated upon the findings of the first hypothesis, examines variation of module effect between delivery types within the experimental condition. Because of the influence of novel models children are expected to be more responsive to the module intervention by the Researchers than by their regular classroom instructors.

H_4: In each grade level Research Group scores will show less gender stereotyping than Teacher Group scores and Teacher Groups scores will show less gender stereotyping than Control Group scores, as measured by occupational aspirations, gendertyping, traditionalism and traditional picture ranking.

The null hypothesis is no difference in scores between the experimental conditions (assuming the first hypothesis has been substantiated).

A concomitant research hypothesis which was only peripherally associated with the module intervention concerns a difference in occupational aspiration range based on whether or not the child's mother is employed out of the home.

H_5: Within each group (Researcher, Teacher, Control) at each grade level, children whose mothers are

employed out of the home are likely to have less gender stereotyping, as measured by occupational aspirations, gendertyping, traditionalism and traditional picture ranking.

A sixth hypothesis is immediately predicated upon the first hypothesis, that the modules would produce an effect and the fourth, that group affects module influence. If such an influence exists, social learning theory suggests the relative lack of reinforcement once the modules cease should result in a gradual diminishment of the effect of modules over time as indicated by more stereotyping one year later.

H_6: Third Grade scores for each Experimental Group will show some module effect persisted from Second grade, as measured by occupational aspirations, gendertyping, traditionalism and traditional picture ranking.

If this relationship is obtained, the expected more pronounced influence of the intervention design of the Researcher Groups over Teachers and Control Groups should be a discernable difference which remains over time (Hypothesis #7).

H_7: In Third Grade scores, Research Group will show less gender stereotyping than the Teacher Group, as measured by occupational aspirations, gendertyping, traditionalism and traditional picture ranking.

The theoretical basis for all of these hypotheses will be developed in the following chapter.

Presentation and Discussion of Findings

Following the literature review and a more detailed discussion of the study methodology, the findings are presented and discussed in relation to the hypotheses. Conclusions regarding social learning

theory, cognitive development and the mechanism of attitude change are drawn therefrom, with suggestions for further inquiry.

A NOTE ON VOCABULARY

Money (1968) points out that our culture seems to use the terms sex and gender as interchangeable, as synonymous, when the terms should be distinct. Sex is a genetic or external genitalia categorization which does not have to be in agreement with the gender of assignment and rearing or the gender identity (1968:11-13). While some more recent authors use gender to denote assignment, rearing and identity, many earlier authors, and casual conversation, use sex and gender interchangeably although the terms are not synonymous. Sex is a biological term, gender is social in nature. The social impact of sex is through gender role and gender identify (Money, 1968:10). However most of the literature cited herein, and in lay usage commonly, sex is the term of choice even when, contextually, gender is more appropriate. Because so many used sex and gender interchangeably or used the term "sex" exclusively it may be more confusing than beneficial now to attempt to correct the vocabularly of the past.

Sex role typing is the individual's relative awareness of those activities behavioral traits and symbols culturally denoted as male and female (Biller and Borstelmann, 1967). One may have sex role (or gender) typing without translating such discernment into active choices of behavior. Actively desiring or acquiring those behaviors associated with one sex or the other is the concept of sex role

preference (Brown, 1956).

Sex role, then, is the internalized set of behavior patterns and expectations socially ascribed to a particular gender (Lynn, 1962). That sex role (gender role) is variable and malleable is a recurring theme in this dissertation.

Gender role stereotyping applies Lippman's classic term "stereotype" to the societal ascriptions of secondary, or auxiliary, traits to the master status of sex or gender. The Women's Educational Equity Act defined sex stereotyping to be "the attribution of behaviors, abilities, intersets, values and roles to a person or group of persons on the basis of their sex" (U.S. Office of Education, 1976:np). Ekstrom (1979) points out the term sex role stereotype presumes individuals with a common gender will have shared interests as well. This research does not consider them to coincide. In this vein, Appley (1977:314) notes: "If maleness and femaleness are so natural, why are there so many sanctions to insure conformity?

CHAPTER II

LITERATURE REVIEW

Examining the mechanism of altering gender role stereotyping of careers by school children requires exploration of the literature of several topics. Gender role development is part of the more general process of socialization. The major theories of socialization are biological, cognitive development and social learning theories. Biological theories contend gender role behavior, and most other behavior, is a reflection of the biological necessities of the individual; a product of the heredity and hormones of the individual. Cognitive development asserts gender roles arise through maturation of the individual who ascertains their own gender identity and categorizes all they see according to its applicability to that identity. Social learning theory emphasizes that gender roles are products of a combination of teaching, rewards, punishment, imitation of others and generalization. Each theory will be discussed below.

Since the study in question does not give a view of how children acquire their gender role stereotyping but deals with how that stereotyping can be changed, another body of literature to be discussed deals with the mechanism of attitude change. The role of the school in developing gender stereotyping by children also is a topic of review in the literature material to this research project.

BIOLOGICAL EXPLANATIONS

Traditionally, many behavioral scientists viewed sex linked behavior as a product of biological forces. This biological determinism permeated much of early psychological literature and even was espoused by some sociologists. In particular, Talcott Parsons and Robert Bales (1955) contended male and female roles are functionally complementary yet distinct and are so organized by what they termed, the "natural order of society."

There is an obvious circularity to discussions of whether having the anatomy of a particular sex determines socialization's path. However, this circularity renders such arguments futile and not very useful in the cummulation of knowledge. To juxtapose such dichotomies as nature versus nurture, innate versus acquired, environmental versus hereditary, is somewhat outmoded. As suggested by Money and Ehrhardt (1972:1), "The basic proposition should be not a dichotomization of genetics and environment, but their interaction" (1972:1). The study of the origin, nature and course of gender identity has reflected a progression toward an eclectic synthesis of many diverse attempts to explain the human condition. Research in recent years has brought into question several earlier held preconceptions. Further, the renewed interest in the range of sex relative behaviors brought about by a resurgence of feminism has prompted researchers to be exacting in their measures and in their descriptions of sex differences. The expression "gender identity" can be discussed in new light; what it is, the process of its acquisition and maintenance, and its significance in the expession of

human development all are topics of interest.

Gender identity is assigned by society as being determined by the genital appearance at or shortly after birth. Society presupposes, therefore imposes, a dimorphism of male or female exclusively, with no recognition of the possible variations in sexual development. On the basis of anatomical differences about 95 percent of the population develop unequivocal gender identity (Oakley, 1973). But, the fact that there is not a foolproof (or public-proof) anatomical basis for gender identification is indicative of decision implications beyond the neonate's external genitalia. Society generally assumes gender to be a polar question, one is either female or male. Humans are not exclusively either male or female, however such terms are defined. The human species is not neatly divisible by sex. A basic restatement of this theme is:

> There is no such biologic entity as sex. What exists in nature is a dimorphism within species into male and female individuals, which differ with respect to contrasting characters for each of which in any given species we recognize a male form and a female form, whether these characters be classed as of the biologic, or psychologic, or social orders. Sex is not a force that produces these contrasts; it is merely a name for our total impression of the differences (Hampson and Hampson, 1961:1430).

Studies of the presumed sexual dichotomy reveal there is a complexity to the determination of gender, a complexity far beyond genital morphology. Hampson and Hampson (1961) stipulate six variables of sex:

1. Chromosomal Sex: Males usually exhibit 46, XY chromosomal pattern, while females usually exhibit a 46, XX pattern. However, there are other chromosomal patterns which may or not confuse the

gender dichotomy at birth. For instance, 45, X/46XY, an example of chromosomal mosaicism, is a male hermaphrodite, having anatomical differentiation of an incomplete male and female. Klinefelter's syndrome, 47, XXY, and 48, XXXY, too, are examples of the range of non- fatal chromosomal variation. The assignment of gender based on the presumption of genital dimorphism may not be concordant with the chromosomal sex which has a range of variation, not a simple dichotomy (Money and Ehrhardt, 1972).

2. Gonadal sex is a matter of glandular morphology. The normal course of embryonic development indicates a differentiation of the fetal gonadal tissue about the sixth week of gestation if the gonad is to become a testis. Ovarian differentiation is a later process. The inference from this differentiation is that the production of a male is dependent on the presence of two chemicals, testosterone which prompts genital development, and a Mullerian-inhibitor which suppresses further female development (Jost, 1972). Seemingly, nature creates a genetic female unless something happens, testiculal differentiation.

3. Fetal hormonal sex usually is concordant with the gonadal differentiation. However, the range of hormonal variation does exist beyond a simple dichotomitization. Exactly how the variation in hormonal sex is expressed anatomically and socially is relatively unknown. There is some indication of hormonal alteration in the development of a cyclic pituitary function and a variation in hypothalmic differentiation in the fetus. Fetal hormonal variation, either accidental or iatrogenicly induced can produce hermaphroditism,

generally expressed as a female (Money and Ehrhardt, 1972).

4. Internal morphologic sex is based on the variation in development of the primordial organs of reproduction. Approximately in the seventh week of gestation, the fetal differentiation of the Mullerian and Wolffian structures begin. To become an internal male the Wolffian proliferates, eventually to become the vas deferens, and seminal vesicles, while the Mullerian structure vestigiates. For female development, the Mullerian proliferates into uterian and fellopian tissues while the Wolffian tissue vestigiates. The mechanism of this differentiation is uncertain, however, it seems to be dependent on testicular function. If testes are present, the differentiation is to male; if absent, a female internal structure develops. Presence of ovaries is not necessary to develop Mullerian tissues, the absence of a testis is sufficient to cause female differentiation (Money and Ehrhardt, 1972). Although internal structure is important in reproductive function, Hampson and Hampson remark, "...there seems no reason to suspect any correlation between gender role and the internal accessory organs (1961:1411)."

5. External genital appearance is the product of the developmental processes involving the previous four stages of sex growth; differentiation of external genitalia is the final step in fetal sexual morphology. The previously described internal differentiation comes from two separate organelles, the Wolffian and Mullerian tissues. In development of the external genitals both male and female develop from the same primordial tissues. In the eighth

gestation week the external genitalia is entirely dependent upon testicular function, production of androgen. Money and Ehrhardt summarize, "mammalian female differentiation of the genital ducts and external genitalia is independent of the presence of ovaries; male differentiation, however, is dependent on androgenic substances, normally produced by the testes (1972:45)." It is unfortunate, in instances of confusion or ambiguity, that visual appearance of external genitals alone gives no accurate clue as to the gonadal or chromosomal sex. Rosenberg and Sutton-Smith (1972:33) relate:

> In the case where twenty-five individuals had been raised in an assigned sex that contradicted their external genital appearance, twenty-three of the subjects had come to terms with their anomalous appearance and had established a gender role consistent with their assigned role and rearing."

Here, the social variable of gender may be in error if based on genital appearance yet society persists in such announcements in the delivery room.

6. Gender of assignment and rearing is the basis of what is more commonly termed gender identity. The foregoing discussion of the variation in sex differentiation indicates the inadequacy of dichotomizing sex or gender identity based on the appearance of external genitals at birth, simply because there is no exact dichotomy externally and because the externals give no accurate assessment of chromosomal, gonadal, hormonal and internal morphologic sex. The morphology of external genitalia exercises its initial, and virtually permanent, influence by way of the doctor and parental responses to the genital appearance.

> "Parents wait for nine months to see whether the mother gives birth to a boy or a girl. They feel themselves so incapable of influencing what nature ordains that it simply never occurs to them that they are also waiting for the first cue as how to behave toward the new baby. Yet, as soon as the shape of the external genitals is perceived, it sets in motion a chain of communication. It's a daughter! It's a son! This communication itself sets in motion a chain of sexually dimorphic responses, beginning with pink and blue, pronominal use, the name choice, that will be transmitted from person to person to encompass all persons the baby ever encounters, day by day, year in and year out, from birth to death. Dimorphism of response on the basis of the shape of the sex organs is one of the most universal and pervasive aspects of human social interaction. It is so ingrained and habitual in most people, that they lose awareness of themselves as shapers of a child's gender-dimorphic behavior, and take for granted their own behavior as a no-option reaction to the signals of their child's behavior which they assume to have preordained by some eternal verity to be gender-dimorphic" (Money and Ehrhardt, 1972:12).

The rather lengthy discussion of variations in the expression of what is loosely termed sex, may seem as a needless digression. The obverse is true, for our cultural expectation is a dichotomy whereas the biological basis for a dichotomy is lacking. "Gender identity and role are not preordained by genetic and intrauterine events alone, but that psychosexual differentiation is largely a post-natal process and highly responsive to social stimulation and experience" (Money, 1968:48). Rather than a nonsequitur based on whim, not morphology, for most of the population, the gender of assignment found on the birth certificate is in agreement with the chromosomal, gonadal, internal and external morphology. But, belaboring the point, external genitalia is no accurate assessment of the fetal development process. Assignment of gender identity directs

the social interaction the baby will subsequently encounter.

There is an argument whether humans are sexually neutral at birth or are genetically or innately sexually predispositioned. Hampson and Hampson (1961) and Money (1973) contend humans are undifferentiated behaviorally at birth. Diamond (1965) argues a contrasting view, that, "Undoubtedly we are dealing with an interaction of genetics and experience; the relative contribution of each, however, may vary with the particular behavior pattern and individual concerned . . . (1965:158)." Further, Diamond concludes:

> . . .Sexual predisposition is only a potentiality setting limits to a pattern that is greatly modifiable by ontogenetic experiences. Life experiences most likely act to differentiate and direct a flexible sexual disposition and to mold the prenatal organization until an environmentally (socially or culturally) acceptable gender role is formulated and established (1965:167).

Which is pre-eminent in the development of humans, nature or nurture, persists as an area of discussion and research. However, both psychological and sociological explanations of gender assignment internalization by the baby are predicated upon the perspective that gender identity is learned, not innate. According to Money:

> The sex of assignment is the product of both an official act in the signing of the birth certificate and a reiterative routine in all the daily acts of rearing that decrees and confirms masculine or feminine expectations (1968:11).

Discussion of gender identity, the self-awareness of an ascriptive label as either female or male, cannot be divorced from discussion of the concomitant behavior patterning and set of expectations learned. In essence, gender identity assumption is also

an automatic, or almost automatic, adoption of a culturally defined behavior set which is associated with the putative gender label. The plastic nature of this behavior set is amply demonstrated in cross-cultural comparisons of sex differences. Margaret Mead, in reflection upon New Guinea tribes which exhibit norms for each sex which are markedly different for each tribe, concludes:

> Human nature is almost unbelievably malleable, responding accurately and contrastingly to contrasting cultural conditions...Standardized personality differences between the sexes are of this order, cultural creations to which each generation, male or female is trained to conform (1935:190-191).

Study of gender identity is based on assignment of gender based on the appearance of external genitalia. However, simultaneous with the assignment of a gender label the child also is saddled with a culturally prescribed set of behavioral expectations closely linked with social conceptions about the nature of "innate" behaviors as well as culturally delimited social behaviors appropriate to males and to females, separately. Thus, when one speaks of gender identity the subject is more than an anatomical decision. The meaning of gender identity is found in the cultural expression of that identity, in the gender roles which comprise the cultural expectations transmitted to the child. The message to the child is more than merely stating, "You are a boy!" or "You are a girl!" The actual message, as in W. I. Thomas' classic phrase, "the definition of the situation," is more than the pure dichotomy boy or girl. The child also receives a set of meanings inherent in the social usage of "boy" or "girl." What "boy" or "girl" means is more than an anatomical

distinction; it includes the set of cultural expectations for behavior appropriate and inappropriate to a particular ascribed status.

Berger and Luckmann (1966) discuss the importance of these social role prescriptions in creating and perpetuating the collective behavior patterns of every day life in any given culture. They state everyday life is taken for granted by most and needs no verification, "by playing roles, the individual participates in a social world. By internalizing these roles, the same world becomes subjectively real to him [sic]" (Berger and Luckmann, 1966:69). These roles become very controlling, compliance is expected and non-compliance becomes socially problematic and personally vulnerable. Social status and function in society largely become socially constructed from cultural expectations following a biological series of events. Seidenberg comments: "Anatomy may be destiny . . . but it must be remembered that these circumstances of anatomy or destiny loom as large or small as the social rules of society make them" (1973:149).

The earlier listing of sex variables by Hampson and Hampson (1961) indicates the dichotomy of male and female is inappropriate biologically. That there are physical differences in males and females (the recipients of those labels hereafter referred to by those labels) is not disputed. Aside from the obvious differences in primary and secondary sex characteristics and reproductive function, there is definite sex-related dimorphism. One difference is in adult hormonal activity. Males secrete androgens and testosterone, in a continuous manner. Females have two sex hormones, estrogen and

progesterone, the relative amount of which varies in a cyclic manner in adults.

In body size, males tend to be larger, heavier, have more musculature, be more active, have a lower tactile sensitivity, have lower metabolism rates and lower resistance to temperature extremes. In all social classes and in all cultures, females usually reach puberty earlier than males and each generation is slightly earlier in pubescence than preceding generations, if nutritional improvement is present. Numerous other differences have been reported, although the method considerations of much of this research renders it inconclusive. It is important to note these physiological differences are differences between gender population means. There is great overlap of trait distribution between males and females; in many instances, the distribution range within each gender often is greater than the differences between genders (Forisha, 1978). Data regarding physiological differences may be misleading if means are reported for comparison. The routine assessment of intragender variability, rather than means, may be a rewarding approach (Korner, 1974b).

Korner (1974b) summarizes numerous reports of physiological response differentiation between male and female infants. Of particular note is her criticism of any research which does not account for the influence of a traumatic surgical procedure which is routinely practiced in the Western World. She doubts the worth of any and all research which does not take into account the effects on the recently circumcised male infant. Unfortunately, the bulk of

current research ignores this factor. Another exogamous variable in virtually all neonatal research is the differential treatment males and females receive. Research of parental behavior immediately following birth, within the first week, indicate mothers smile more at girls than boys, which may not be too important, but they also talk to girls more than boys. Both parents tend to touch males more than females. Korner (1974a:202) concludes: ". . . it is nevertheless noteworthy that a sex-related trend of parent-infant interaction, similar to that prevailing in later months, begins as soon as the baby is born."

Biological explanations of sex differences do indicate that differences exist, but the biological perspective fails to account for the wide range in variation of the significance of behavioral differences which seemingly have little or no etiological ties to the biological variation. Also, in many instances whatever differences which are present are overshadowed by the rearing process which accompanies assignment of a gender. Of particular note is the lack of evidence in support of the contention the male is biologically superior, however superiority is defined. In a review of biological research, Barfield states:

> In summary, while it need not and cannot be argued that the individual human being is a biological tabula rasa at birth, the slate of a prior; assumptions concerning social-biological characteristics should be blank (1976:110).

Studying sex identity really is studying gender identity and gender role within a particular culture. However, researchers, especially in biology and psychology, have produced volumes of

research on the existence of differences between males and females (usually based on genital appearance or gender of assignment which society assumes coincides with genital appearance).

Maccoby and Jacklin (1974) provided perhaps the most widely recognized review of the extant literature on sex differences. They conclude the evidence supports four differences between males and females: 1) males are generally more aggessive; 2) males generally exhibit higher quantitative ability; 3) males seem to have more ability to visualize spatial relationships; and, 4) females appear to have more verbal skills. All other sex differences in behavior or personality either are myths or insufficiently investigated according to Maccoby and Jacklin (1974). The authors emphasized the lack of documentation of consistent differences in early childhood with somewhat more evidence for adolescent differences.

Although widely cited, Maccoby and Jacklin are not without their detractors. Some contend more differences exist, some contend the differences cited are so indistinct as to be negligible.

Aggression studies (cf. Frodi, Macaulay and Thorne, 1977, for a review) generally concur with the Maccoby and Jacklin (1974) finding that males exhibit more aggression than do females. Mischel (1973), too, reviews numerous studies in which there is observational support for concluding males are more aggressive than are females. Some of those studies focus exclusively on the social origin of aggression by males, others (cf. Money, 1973) include a hormonal component in aggressive behavior by males.

Fennema (1977) presents the view that the purported male superiority in mathematical ability reported in Maccoby and Jacklin (1974) is a distinction not well established; and the difference, if any, may well be due to another factor, choice of courses, rather than ability.

Male advantage in spatial ability is supported by Maccoby and Jacklin's review as well as a host of more recent researchers: Sherman, 1974; Goldberg and Meredith, 1975; Hyde, Geringer and Yen, 1975; Yen, 1975. In opposition, Harris (1978) remarked that while males appear generally to out perform females in spatial ability tasks, the difference in performance can be overcome by appropriate training. Parsons (1980) also declared biological factors may favor males in acquisition of spatial skills but the female disadvantage is amenable to change through training.

The female advantage in verbal ability cited in Maccoby and Jacklin is supported by Flerx, Fidler and Rogers (1976); and by Harris (1978). They demonstrate that girls acquire language skills earlier than boys. Maccoby and Jacklin (1974) [as well as Korner, 1974a, b] reported females do seem more responsive to touch, taste and smell stimuli which others (cf. Frieze et al., 1978; Harris, 1978) purport explains girls' apparent superiority in language skill acquisition. Parsons (1980) points out girls are biologically more mature hence language skill superiority may be a function of time advantage; however, this superiority-due-to-maturation perspective does not explain male advantages in other areas.

Some researchers have added to the list of differences provided by Maccoby and Jacklin. For instance, McGlone (1980) adds differences in susceptibility to some diseases, with males usually more susceptible. Also McGlone (1980) describes distinct differences in cerebral organization of thought wherein males are reported to think in a linear manner while females are described as thinking in a pattern described as "gestalten." Gelfand (1962) posits the apparent female verbal skill superiority may be a function of lower self-esteem, as suggested, too, by Peterson (1980). Block (1976), reviewing Maccoby and Jacklin's list of studies, reports the studies in review also support females have higher compliance and males have higher self-esteem. Block also states works cited by Maccoby and Jacklin but not included in their conclusions support concluding males usually score higher than females in measures of dominance, activity and curiosity. Hoffman (1977) said females have lower performance competency; to which Lenney (1977) adds such a conclusion is very situationally constrained. Hoffman also claimed females are more emphathetic than males but only three of the sixteen studies he used for such a conclusion show the conventional .05 level of significance.

Infants begin to demonstrate sex differences in their own behaviors between 12 and 18 months of age although some researchers report earlier evidence, which may be a function of female birth maturity which may equalize with slower maturing males by age two (Parsons, 1980:11-12). Korner (1974a) reported no replication of infant activity (response to faces) differences (Clark-Stewart, 1973; Kagan, 1970) or their responses to others as claimed by Bell (1968).

Maccoby and Jacklin (1974) concluded that attachment-related behaviors in early childhood are not distinguished by gender. Furthermore, they also did not substantiate any advantage in curiosity or exploratory behavior in infants.

Parsons (1980) cautions any discussion of biological distinctions between genders should take into consideration that although most such research deals with young children many behavioral changes may emerge post-pubescently. But,

> "...separating the influence of socialization from the influence of biology at this point in a person's development, however, is extremely difficult...cultural expectations of sex-appropriate behavior patterns also...shift at puberty" (Parsons, 1980:16).

In the adult world many behaviors seem sex specific yet only one factor seems consistant cross-culturally to the extent that it largely is accepted to attribute that distinction to biological causes. Mead's (1935) assertion that males are more aggressive than females has been tested but not refuted (Archer, 1976; Rosenblatt and Cunningham, 1976). Based on bigger bodies, more muscle mass, higher proportion of hemoglobin (hence better able to transport oxygen), stronger long bones (leverage), higher metabolism and higher testosterone levels, males generally are more able to engage in aggression (Scheinfeld, 1958). However, Parsons (1980) issued another warning that studies of aggression have focused upon physical behaviors while verbal aggression has received much less attention; hence, females may be as aggressive as males but may manifest that aggression in another manner.

To be fair, Maccoby and Jacklin's detractors seldom mention Maccoby and Jacklin cautioned against accepting the results or conclusions of any single investigation without rigorous substantiation. For instance, Horner's (1970, 1972) conclusion that women tend to fear success has become enshrined as truth despite an absence of replication by others and severe methodological criticism (Tresemer, 1976). Hargreaves remarked, "It is hardly surprising that clear-cut psychological sex differences do not emerge from studies that use a wide range of experimental subjects, measuring instruments and techniques of analysis" (1979:186).

An important problem in "sex differences" type research is the conclusions are based on aggregate data rather than individual by individual distinctions. As is often in social research, differences between individuals in a group may be greater than differences, if any, between groups (Gelman, 1981). Schneider (1976) presents similar caution in stating there is considerable overlap between males and females in almost every variable.

Sherman (1978) and Hyde (1981) illustate the controversy over drawing sex differences conclusions at all, saying such studies really report negligible differences or are suspect methodologically. Barbara Bowman also criticizes sex differences by drawing on the narrowness of any distinctions in the literature.

> A little more aggressiveness here, a little better visual-spatial perception there, a little better verbal ability or upper chest strength...these are the slim pickings on which a theory of biologically determined... sex role differences would have to be built (Bowman, 1978:30).

In the research cited by Maccoby and Jacklin (1974) and others there remains disagreement about the exact cause or causes of these purported behavior differences between males and females. Bowman reminds us that in the aggregate males and females are alike in 45 chromosomes but differ in only one. To attribute all behavior differences between males and females to the influence of that one chromosome is to assume the 45 we share are less behaviorally influential than the one that is different (1978:45).

Males and females differing anatomically in some respects does not necessarily lead to the conclusion their behavior, too, must differ. This view also assumes there is some direct link between chromosomes and specific behaviors. The literature does not support this assumption (Money, 1986).

Researchers in sex differences in the aggregate do not conclude that such differences are exclusively innate (Hutt, 1972; and Reinisch, 1974), although the male's size, leverage and musculature do provide some differences in some tasks while women's endurance, insulation and brain activity patterns may be task-specific advantages (Tanner, 1972; Durden-Smith[1], 1980; and Gelman, 1981).

Another caution about biological-base theories of sex roles is that social power does not necessarily flow from a biologically superior position. Indeed, Montagu (1968) argued that females are in fact superior to males biologically but that male social superiority

stems from men's striving to dominate in compensation for being inherently inferior. Montagu's female superiority theme is largely ignored by other researchers and has no substantial following.

John Money, a biologist and physician, observes:

> Gender identity and role are not preordained by genetic and intrauterine events alone, but that psychological differentiation is largely a post-natal process and highly responsive to social stimulation and experience (1968:48).

This consideration of "who is superior" poses problems since the level of analysis is important to the discussion. Biological superiority may be a hasty non-sequitur since it could be assessed on many lemmas: size, body fat, longetivity, lifting power, oxygen load, etc.. Furthermore, to discuss aggregate data with behavior implications for individuals may be an ecological fallacy. Perhaps more importantly, Curtis (1986) argues social stratificaiton literature almost always uses individuals as the level of analysis when he claims family is the basic unit of spending power and social status, hence women may have significantly more power than stratification literature assesses. Curtis also reminds us power in families has bases other than income and occupational prestige such as authority, redistribution of resources, and decision making. The idea of social or biological superiority of one gender over the other is not clearly supported but the Darwinian nature of the argument makes it attractive to those for whom biology is the basis of sexual dichotomy.

Money contends that from a biological perspective sex is a term which has at least ten distinctive forms (1968:11). Of all of these

types of "sex," sex of assignment and rearing and gender identity (and role) are the ones which form the basis of social role, status and day-to-day interaction in society. Although sex is based upon external morphologic presentment (genitalia), the gender of assignment is less a part of the birth certificate form and more the product of a reiterative social routine in socialization. Gender identity and role are social creations regardless of genitalia (Money, 1968). Since society constantly is changing, so too are our sex roles, by necessity, and sometimes by choice (Money, 1986).

Holter (1970) reminds us that any sex role theory based upon constitutional factors is unable to promote an understanding of sex role change since change is therein assumed to be prenatal rather than social. The biologists seem to agree that, "With the exception of findings on sex hormones, very few research directions convincingly demonstrate that sex differences come from sources other than societal" (Etaugh, 1983:40). The dearth of convincing biological-factors-only research has lead to the conclusion expressed by Harvard biologist Richard Lewontin," we just don't know any differences except the plumbing features that unambiguously separate men from women" (Gelman, 1981:73). But Barash (1977:277) asserts off-handedly dismissing biological, evolutionary forces in discussions of human behavior is both presumptuous and arrogant. Darrough concludes:

> It is not merely a question of nature vs. nurture as a dichotomous choice. It is rather a question of degree. The biological constraints are real

> and should not be ignored. However strong these constraints are, and whether humans can overcome them if necessary, is another question. In the case of Homo sapiens, the evolutionary force of natural selection seems to have favored more and more "flexible programs" [culture and socialization]... (1983:119)

The biological explanation of sex role behaviors cannot be rejected out of hand. While physiology and endocrinology may be able to explain some of the nature of the sexes; "An individual's sex is obviously both a biological and a social fact...But [the amount of influence of] the biological base cannot be inferred with confidence" (Maccoby and Jacklin; 1974:2).

SOCIAL EXPLANATIONS

The "biology is destiny" perspective was challenged by Margaret Mead's clear statement, "standardized personality differences are...cultural creations to which each generation, male and female, is trained to conform" (1935:190). Her cross cultural examples contradict the view of sex roles as monolithic; sex roles are too variable to be assumed innate and universal. Explaining how and why people do what they do is the topic of the study of sociology and the process of socialization, "the process by which individuals acquire the knowledge, skills, and dispositions that make them...members of their society" (Brim and Wheeler, 1966:3).

Gender is a major role ascription criterion in all cultures and each expresses gender distinctions in their language (Rosaldo and Lamphere, 1974; Rosenblatt and Cunningham, 1976). While role-based

division of labor is an anthropological universal, there is virtually no universality in gender roles beyond child bearing and nursing.

Mead (1935) convincingly established males and females do not act the same in all societies, that gender is not the same as biological sex. The plastic nature of this behavior set is amply demonstrated in cross-cultural comparisons of sex differences. Margaret Mead, in reflection upon New Guinea tribes which exhibit norms for each sex which are markedly different for each tribe, concluded, "Human nature is almost unbelievably malleable, responding accurately and contrastingly to contrasting cultural conditions... (1935:190-191).

Seidenberg comments: "Anatomy may be destiny . . . but it must be remembered that these circumstances of anatomy or destiny loom as large or small as the social rules of society make them" (1973:149). In the Western World, at least, the gender role becomes a master status role:

> No other social role directs more overt behavior, emotional reactions, cognitive functioning, covert attitudes and general psychological adjustment...of the individual into society (Mussen, 1969:707).

Sex differences in socialization begins even prior to birth, in that there is a preference for male children in most cultures (Hoffman, 1977). While not as extreme as in some other nations, this male preference appears in American families, especially those in rural areas (Holter, 1970; Poffenberger and Poffenberger, 1973). Indeed, many families express a desire to continue having children until they have a boy (Coombs, Coombs and McClelland, 1975).

From the moment of birth, whereupon genital examination leads to a declaration of sexual category, sex role socialization continues inexorably toward a culturally constant sex identity we loosely term gender, a social label used to distinguish and classify people as male or female (Unger, 1979). Weigert defines gender as "the socially constructed identities bestowed and presented through sexual appearance" (1983:239). Beyond the expression of which gender is desired, from birth parents treat boys and girls differently (Wylie and Hutchins, 1967; Brook, Whiteman, Peisach and Deutsch, 1974; Birns, 1976).

In comparing the significance of between the physiological label of sex and the socialization process based upon that natal assignment choice, Money and Ehrhardt (1972) strongly contend the essential factor in gender identity is the gender of assignment, rearing and identity rather than any morphological differences.

Two general theories provide social, rather than biological, explanations of sex role development: the cognitive development approach and the social learning perspective. As elaborated primarily by Kohlberg (1966), the cognitive-development perspective holds that sex role differentiation is a natural concomitant of the maturation process, independent of specific training by adults. Differentiation leads to preferences which, in turn, lead to activities, attitudes and adult behaviors. The other theory, social learning, emphasizes that sex roles are products of teaching, rewards and punishment, generalization and imitation of others.

Both social learning and cognitive development have been applied to gender role development with some success. Both views start from the common point in which socialization is, again, "the process by which individuals acquire the knowledge, skills, and dispositions that make them more or less able members of their society" (Brim and Wheeler, 1966:3). The description of the process differs according to theoretical perspective.

Cognitive Development Theory

The cognitive development theoretical position is based on the work of Piaget (1932) and Kohlberg (1966). In this view, children learn at an early age, 18 months to 36 months (Kagan, 1964), that they are labeled "boy" or "girl." This label becomes a categorizing tool by which the child makes sense out of the world. Further, this categorization leads to purposeful selection of activities thus categorized as "my type" rather than "not my type." In effect, Kohlberg (1966:89) contends a boy reasons, "I am a boy, therefore I want to do boy things, therefore the opportunity to do boy things is rewarding." (Presumably girls similarly reason.) The cognitive development position then asserts the child goes through successive "stages" of development which, over time, stabilizes the individual's personality about these seemingly solid perceptions of society as sex-typed. Consistency in applying this gender identity to others based on the child's understanding of manifestations of the requisites appears about age 4 years, while the gender identity and self-concept in the individual becomes stable about age six (Kohlberg, 1966; Kagan, 1964).

Kohlberg (1966) postulates five mechanisms whereby gender identity/gender role concepts become equated with dualistic, stereotypic attitudes:

1. By age two, the child exhibits consistent sex differentiation in interests, activities and personality traits.
2. Three year olds make value judgments consistent with the gender self-concept.
3. The stereotype variables are associated with self values, hence behavior follows a stereotypic pattern.
4. Gender role is adopted as normative and a valid basis for judgments favoring conformity to stereotypes.
5. Modeling or identification is a consequence of adoption of a gender identity and role set. What behaviors are to be modeled are determined by their consistency with the assumed gender role.

When Piaget (1932) and Kohlberg (1966) write about stages of development, typical age of that developmental stage often is associated with a particular stage. Bijou (1968) cautioned age may be a parameter for recording events but is not automatically a causal agent. The association of a specific age with a developmental stage is descriptive rather than explanatory - the stage can happen once the previous stage has been reached, however most children transit each stage at about the same age. Typically, a child reaches a particular stage at a particular age, but the relationship is not causal.

There is a wealth of literature focused on the identification of these stages of development. Kohlberg's theory is based upon the assumption that sex roles are neither wholly biological in origin nor are they purely arbitrary cultural constructs. Instead, Kohlberg (1966:82) asserts the source of sexual attitudes as, "the child's cognitive organization of his [sic] social world along sex-role dimensions." This perspective does include some learning on the part of the child, particularly observational learning, but the learning is less significant than the child's processing of stimuli--the child's cognitive choice and categorization of observations, information and meanings of what has been perceived.

This theory has the adult world as there to be viewed. Since, in the cognitive-developement perspective, that adult world usually is constant in portrayal of adult female and male roles, there is no need for active "teaching" by adults; the child is the active participant who observes and understands.

Labeling the child "boy" or "girl," based on natal genitalia, begins this sex typing experience. Repeatedly hearing themselves characterized as a boy or girl leads to knowing their own self-labels by about 24 months of age (18 to 36 month range, generally) [Kagan, 1964]. This identity becomes overwhelmingly powerful in the evaluation of further perceptions and in the choice of responses to stimuli. Thus, perceived differences in adult size, strength and power become important factors which are observed by the child as

they also learn the cultural sex stereotypes (Kohlberg, 1966). The self-identification self-assessment become the deciding factors in the child's activities and values.

Once established, the sex-self-identity generates more sex-typed attitudes via the postulated mechanisms of Kohlberg's theory. Kohlberg views the child as being an active participant in the socialization process, one who acts according to the stage of development, in deciding what information from the world to store, what to sort and what to reject, in an attempt to maintain and elaborate their sex identity and its associated "appropriate" behavior (Katz, 1979). Kohlberg posits gender identity comes first; the child then is able to find reward and satisfaction in subsequent sex-appropriate behavior (Williams, LaRose and Frost, 1981:5).

Kohlberg's cognitive development theory is not without challenges. There seems little contention with the belief that a child's cognitive abilities in perception and understanding of the adult world they see are a strong influence on sex-role behavior. The question is a matter of emphasis and mechanism. Kohlberg's theory remains largely untested as a whole (Mussen, 1969). A stable sex identity by age five is essential to cognitive development theory yet children at that age still exhibit some inconsistency or instability. Guttentag and Bray (1976) found children (5-6 years old) who were quite positive about their own identity as boy or girl, yet were unsure whether they wished to grow up to be men or women

(although more ambiguity was found among the girls than among the boys). Maccoby and Jacklin (1974) set forth that, contrary to Kohlberg, children seem to exhibit and adopt gender-appropriate behavior without recognizing gender constancy. Conversely, changing gender of assignment after age two is problematic (behavioral and psychological problems, higher suicide rate [Scanzoni, 1986]) in personality development which indicates gender may be a fairly stable factor much earlier than Kohlberg's sexual constancy stage (Constantinople, 1979).

Also, Kohlberg's sex identity categorization is founded upon a view that the child, at least, divides the world into a dichotomy with one set of characteristics for males and another set for females, with little in common. Paul Shiller expressed an objection:

> To think in polarities . . . is merely a habit without regard for the real structure of things, and excusable only as a preliminary step in the explanation of the world. If one observes carefully enough, true opposites are not found . . . Warm is not the opposite of cold. Dark is not the opposite of light, love is not the opposite of hatred . . . There is no polarity between activity and passivity, between aggression and submission, between rest and motion . . . I have never found two opposite strivings as the basis of so-called ambivalence . . . masculinity is not the opposite of feminity. (Paul Schiller, quoted in Lynd, 1966:137-138).)

According to the cognitive development perspective children do see a dichotomous world, however incorrect. They learn both sets of characteristics, but the "opposite" sex's set is learned as proscribed behaviors, negatively valued. Kohlberg (1966) implies the child exists in a concrete world and will persist in this view until they become a bit more flexible in early adulthood. Reigel's (1976) observation that we are in an almost constant condition of change

throughout our lifetimes is a message lost on children whose time sense is limited; to them adult life may seem relatively stable.

As children mature the basic vocabulary and value system about gender they establish as a child becomes the structure against which all incoming information is evaluated. Thus Kohlberg (1966) contends gender identity stabilizes and remains so over time because the initial categorizing effect is established early in life and is the basis for acceptance or rejection of other information. Furthermore, adult attitudes are not novel but are restructurings of childhood attitudes modified by experience (Kohlberg and Ullian, 1974).

Kohlberg's view is descriptive-developmental rather than focusing upon the antecedent-consequent opportunity studied in the research reported herein. Further, cognitive development works of Weitzman (1975) and Kohlberg (1966) tend to pay more attention to aggregate, cross-gender differences rather than individual differences within each gender which, as noted previously, may be more instructive in explaining the process of socialization.

Katz (1979) suggested Kohlberg's stages should be modified to encompass the idea gender role development is a life-long process. She posits three overlapping developmental levels wherein children learn appropriate male and female child behavior; appropriate potential adult female and male behavior (role playing); and, finally, appropriate male and female adult behavior. Katz suggests each stage or phase may contain markedly different tasks for members of each sex and that the socialization mechanism may differ for each stage. Although untested, Katz's work encompasses much of value from

the cognitive development perspective while not being as rigid and childhood-bound as Kohlberg's in describing sex role development.

A similar theory by Constantinople (1979) is based on the sex identity acquisition of cognitive development theory. Her contention is that children use the labels adults give to objects and behaviors in screening information as appropriate or not. She then suggests children continue to follow their sex identities through positive or negative reinforcement of particular behaviors in a life long process, much like the accommodation efforts found in Festinger's cognitive dissonance theory (1957).

Festinger's (1957) cognitive dissonance theory deals with an aspect of earlier cognitive theory which was difficult to reconcile; people's attitudes do change. Rather than being very consistent, people hold a multitude of cognitions, or items of knowledge (attitude, emotion, value), which may form irrelevant, consonant or dissonant relationships with each other. Irrelevant cognitions are those which have no bearning on each other. Consonance is when two cognitions are consistent with each other, they "fit" together. Dissonance is when two conditions do not fit, are inconsistent. Festinger (1957) believed inconsistency, or dissonance, is uncomfortable to individuals therefore the individual is motivated to reduce the dissonance through changing their presently held cognitions or by adding one or more consonant cognitions or by altering the meaning and importance of the cognitions.

These ideas are attempts to bridge the gap between cognitive development and social learning theory. Kohlberg contended social

learning neglected to include the cognitive processes (Mischel, 1970:29) while the social learning proponents contend the cognitive development perspective gives inadequate attention to the potency of reinforcement, modeling and identification in the continuing elaboration of an individual's gender role identity (Mussen, 1969:726).

One of the problems of cognitive development theory is the suggestion by Schleifer and Douglas (1973) that the stages of development can be altered by purposive intervention, indicating moral reasoning by children is subject to social outside influence. Cognitive theory focuses on the child's processing of information but gives little attention to how that information is imparted to the child by society. Cognitive development theory does not appear too useful as a vehicle for intentional efforts toward gender role change - our school systems are not structured to allow children to change attitudes at their own pace or not at all.

Social Learning Theory

The primary exposition of social learning is found in several works by Albert Bandura and Richard H. Walters, with several collaborators (cf. Bandura and Huston, 1961; Bandura, 1962; Bandura and McDonald, 1963; Bandura, Ross and Ross, 1963c; Bandura and Walters, 1963). While the focus of most of this original research is upon the process of developing aggression, the learning principles illustrated are applicable in other situations, in other learned behaviors. Based on Tarde's (1903) The Laws of Imitation, and the general precepts of Skinner's behavior modification research (1953),

social learning theory holds behavior which is reinforced and/or modeled by significant models is likely to be repeated.

Social learning theory, based on operant conditioning, explains human behavior, adult or child, as a product of various forms of reinforcement. Imitation and vicarious learning are important aspects of this learning process. In contrast to the fairly monolithic rearing envisioned in Kohlberg's work, social learning theory research demonstrates children are rewarded for sex-role appropriate behavior and punished for inappropriate behavior.

Social learning is a theoretical perspective which pays greater attention to the mechanisms by which behavior is changed than does cognitive development. Major areas of concern in the social learning school are: differential and selective rewards and punishment, modeling, imitation, generalization, and vicarious learning. In some form or another, these explanations of acquiring and modifying behavior are probably the most widely accepted, ranging from folk wisdom on child rearing practices ("teach boys not to cry") through highly structured explanations of changing behaviors.

Social learning holds that gender is a product of socialization, not a set of given conditions present at birth (Weigert, 1983). Although not all boys or girls receive exactly the same training, the fairly consistent adult stereotypes unique to each culture indicate parents and the rest of society do provide a stereotypical socialization process. Berger and Luckmann (1966) describe the reason why this socialization usually reflects the societal stereotypes. The individual's first definitions of reality come from

the significant others, who usually reflect societal standards. Socialization into stereotypes begins with primary socialization (family, mostly) followed by secondary socialization (school, church, associations) and later by the generalized other represented by career, law and community (Berger and Luckmann, 1966).

Numerous studies (cf. Etaugh, 1983) demonstrate the existence of different patterns of socialization for boys and girls. What remains to be more fully explained are the various influences which have an impact on the socialization. This is the point of social learning theory, to discourse on the means by which infants become enculturated by adults generally expressing the norms of their parent society.

The most important assumption of social learning theory is that behavior is largely controlled by the social consequences of that behavior (Tavris and Offir, 1977:164). Rewarded behavior usually reoccurs, punished behavior usually reoccurs less frequently. Anticipated rewards and punishments produce similar behavior choices. By observing what happens to themselves and to others, children learn "appropriate" and "inappropriate" behaviors and learn to discriminate the situational limits of behavior choices. Parents model behavior, often inadvertantly, which may be imitated by children. Other influences, such as teachers, school materials, peers, the general media, and other people also produce models of behavior from which children learn behavior alternatives.

In explaining sex typing, social learning theory utilizes well established, empirical principles of learning. The use of selective

rewards and punishments, imitation, modeling, vicarious learning and generalization all are components of social learning's approach to explaining sex role development. In rudimentary form, social learning theory says culturally approved behavior is reinforced by parents, schools, peers and significant others in society; and, hence, is more likely to be repeated. Behavior viewed by others as sex-inappropriate is likely to be negatively reinforced, hence is less likely to be practiced, and may be extinguished. In social learning the focus is less upon the children than upon the parents, schools, media, and other social sources of reinforcements for behavior.

The primary socialization process begins with the parents and what they chose to transmit to their children. That at the birth of a child parents and others stereotype is rather amply demonstrated. Parental aspirations even before birth favor boys as more sought than girls, even by mothers (Pohlman, 1969). Parents, family, friends, even the hospitals, begin recognizing a sex difference by using blue items for boys and pink for girls. We know babies respond to stimuli within a few days by turning their heads, smiling and later vocalizing in response to a person. Rheingold (1956) demonstrated babies as young as three weeks are able to discern yet turn away from a stimulus which was previously accompanied by a negative reinforcer. Clothing choices, verbal labeling, toy choices, and other behavioral choices do seem to be differentially regarded by parents (Goldberg and Lewis, 1969; Moss, 1967; Elkin, 1960; Kohlberg, 1966 and others). Maccoby and Jacklin (1974:308-311) present a tabular review of the

then available literature on these points.

Parental behavior with neonates is gender stereotypic (Meyer and Sobieszek, 1972; Rubin, Provenzano and Lauria, 1974). Studies indicate parents, from the outset, train young girls for interpersonal behaviors while young boys are trained for achievement of tasks. Boys receive more physical stimulation; girls receive more verbal attention (Lewis and Weinraub, 1974; Moss, 1974). By the time children arrive in pre-school they have at least a rudimentary view of adult life as gender dichotomous and most of them have some idea of their own niche in the world (Maccoby, 1986).

Weitzman (1975:109) declares three analytic processes occur in the years before school (hence largely due to parental interaction). First, children are rewarded for being able to distinguish male and female, adult and child distinctions and are aware of at least some behavior norms associated with these differentiations. Second, children express culturally appropriate sex role preferences for themselves and are rewarded for those expressions. And, third, children behave generally in concert with sex role standards they recognize. The essential distinction between Weitzman's view and Kohlberg's (1966) cognitive development idea is that Weitzman sets forth her analytic process study as a result of learning by the child, learning rewarded for gender appropriate choices. Her discussion of processes is predicated upon the influence of parents in modeling desired behaviors and rewarding their expression by children.

Because parents present the first view of the world to children their world is internalized as "...the world, the only existant and only conceivable world... It is for this reason...primary socialization is so much more firmly entrenched in consciousness than...secondary socializations" (Berger and Luckmann, 1966:124).

While parents are important to sex role development, their influence is not central to the project discussed here where the concerns are the concomitant influences of school factors: teachers and teaching materials. The mechanism of learning is similar, the setting and specific activities vary.

Sears (1951) studied the acquisition and modification in dyadic and group situations wherein the salient factor which influenced the acquisition of a particular behavior was whether or not the demonstration of the behavior was reinforced. Rotter mentioned,

> the probability of the occurrence of a given behavior in a particular situation is determined by two variables - the subjectively held probability (expectancy) that the behavior in question will be reinforced and the value of the reinforcer to the subject" (Bandura and Walters, 1963:2).

Skinner's (1953) work in operant conditioning focused upon the refinement of description of the circumstances of learning when a stimulus was paired with reinforcer. One of Skinner's findings was that subjects may exhibit novel responses not anticipated and not directly reinforced.

In attempting to explain responses that were not directly reinforced, Bandura and McDonald (1963) relied upon the role of imitation. Earlier, Miller and Dollard had paid particular attention to the mechanism of imitation in social learning (1941).

Bandura and McDonald (1963) explained that children's acquisition of a behavior can be hastened by the use of social models who give reinforcement. Combining models, reinforcement and Skinner's novel responses, Bandura and Walters said, "most children develop a generalized habit of matching the responses of successful models" (1963:4-5) even though there may be no direct reinforcement by the model (Bandura, 1962). Here is the bridge between the child's cognitive activities favored by Kohlberg and the active behavior of the adult world trying to mold the child through teaching and modeling.

Social behavior patterns are most rapidly acquired through the combined influence of models and differential reinforcement" (Bandura and Walters, 1963:5). But there is more to this learning than imitation and reward. Learning may not always be tied to immediate reinforcement; observers may not reproduce modeled behavior right away, hence may have little or no overt reinforcement (Bandura, 1962), although learning may be taking place as evidenced by replication of modeled behavior later.

Generalization, learned patterns of response applied to situations other than those in which the response was learned (Bandura and Walters, 1963:8), is the social learning explanation of why behavior may appear patterned with no discernable instrumental reinforcement at the time of the immediate behavior.

Children imitate some behavior which is modeled for them. Of course there are numerous factors which influence the response to modeling, but modeling does occur. Children seldom get to choose

their models - parents, media, toys, teachers, school material, usually are chosen by adults. What adults overwhelmingly do choose to portray is gender stereotyped portrayals of childhood and adult life, giving children a stereotyped range of behavior. Stereotyping by adults limits the repertoire of behaviors available to children who are observing and learning from what the adults model. Since social learning theory posits modeled behavior leads to imitation of that behavior (Bandura and Walters, 1963), it follows stereotypic models will elicit stereotypical behaviors and non-stereotypic models will elicit non-stereotypic behavior. Such a conclusion is supported by the findings of the Riley and Marotz-Baden (1979) study.

Social learning also addresses whether models who reward or punish imitative behavior influence the imitation (Geen and Stoner, 1971). Various factors about the model may influence modeling by observers. For instance, several researchers have worked on the issue of sex differences between the model and the child (Bandura, Ross and Ross, 1961; 1963a; Rosenblith, 1959; Epstein and Liverant, 1963; Grusec and Brinker, 1972; Maccoby and Wilson, 1957, among others). The same sex model was found to be more likely to be imitated (Bandura, Ross and Ross, 1961) when the modeled behavior is rewarded or rewarding (Bandura and Walters, 1963; Mischel, 1970). This finding is consistent with Mischel's observation, "Boys do not learn baseball by watching girls and girls do not learn about fashions from observing boys" (1970:38). However, research in general personality traits does not conclude children resemble the same sex parent more than the opposite sex parent (Maccoby and

Jacklin, 1974).

But this statement is contrasted by several findings otherwise. For instance, Maccoby and Wilson (1957) found children have better cognitive recall of modeled behavior if the model is of the same sex as the observer, especially when the modeled behavior is adjudged to be sex appropriate (aggression for boys, female heroines in action for girls). A simplistic view of social learning would hold to the expectation that same sex models will be more influential. However, social learning theory explains this apparent discrepancy by contending learning involves much, much more than just having a model, "Effective social learning requires both adequate generalization and sharp discriminations" (Bandura and Walters, 1963:9). Models do not produce identical clones; children have a myriad of models and cannot exactly imitate all they see, and often don't want to emulate all they see. The reward structure influences their choices.

Turner and Berkowitz (1972) reported high status models, of either sex, were more likely to be imitated. This power or prestige factor also was identified by Bandura, Ross and Ross (1963c) as a salient factor in model influence, illustrated by girls imitating cross sex models who were powerful in relation to same sex models. The authors concluded prestige (or rewarding power) of the model shapes behavior. Also Bandura (1965a, b) found rewarding models were more imitated than punishing models. Prince (1962) said a reward from a high prestige source is more effective than the same reward from a lesser prestige source. High prestige models are more

imitated (Asch, 1948). Of course, prestige is a relative, variable matter - what may be seen as high prestige may be less valued by another group; hence, the disparaging remarks of parents contrasted by approving comments of peers may be competing reinforcers, particularly for teens. This idea of the reference group as an influence is supported by Zigler and Kanzer's (1962) discussion of reinforcers and reference group.

Exemplary modeling receives a great deal of attention in child training literature; folk tales and message literature contain positive models for emulation and negative models for avoidance. Sometimes intended modeling may be coupled inadvertently with less desirable modeled behaviors.

> While playing with toys which stimulate imitation of adults, children frequently reproduce not only the appropriate adult-role behavior patterns but also characteristic or idiosyncratic parental patterns of response, including attitudes, mannerisms, gestures, and even voice inflections, which the parents have certainly never attempted directly to teach (Bandura and Walters, 1963:48).

Imitation, the acquisition of new responses or the modification of existing response hierarchies (McBrearty, Marston and Kanfer, 1961), is a function of the contiguity of events, such as reinforcement of the behavior, to the observer or vicarious learning by the observer (Bandura and Walters 1963:57).

Mowrer (1950) makes the distinction that imitation is emulating the behavior when the model is readily available or only recently departed, while "identification" he takes to mean exhibiting the modeled behavior with the model absent.

Mowrer (1960) explains vicarious learning as an individual gaining reinforcement from the reinforcement given to another. In other terms, rewarded models are often imitated (Bandura and Walters, 1963). Bandura and Walters (1963) also discussed the imitation of models who are inferred to have been or will be rewarded. This is of even greater importance in considering, again, the prestige of the model. For instance, Lefkowitz, Blake and Mouton (1955) report that high status models (fashionable clothing) are more likely to be imitated. Part of the earlier research by Walters (and others) also established that observers do seem to categorize occupational statuses of models in considering which modeling is instrumental in imitated behavior (c.f. Miller and Dollard, 1941; Jakubczak and Walters, 1959; Bandura and Kupers, 1964). Mischel and Grusec (1966) demonstrated adults who control resources important to children (cookies, play time) are likely to be imitated models.

The nurturant model is more imitated than the model which was more distant (Bandura and Huston, 1961), a point which will gain more salience in combination with the later discussion of teacher sex-differential treatment. Bandura, Ross and Ross (1963c) mentioned reward power was more important than model gender in determining which model would be imitated. However, when power is clearly modeled by women more than men there seems to be a distinction made among observers - girls more readily imitated the powerful female model than did boys (Bandura, Ross and Ross, 1963b; Pingree, 1978; O'Bryant and Corder-Bolz, 1978; Flerx et al., 1976). When seen as inappropriate or unbelieveable, children would not imitate a model as

readily.

Flerx et al. (1976) point out the danger in expecting cross role modeling, alone, to produce behavior and attitude changes. Identification with the model seems to be an important factor, as well as are power and rewards. Those observers who sense a similarity with the model are likely to continue the belief in the resemblence by imitating the behavior of the model (Burnstein, Stotland and Zander 1961; Stotland and Dunn, 1963). In identifying with others, observers adopt a whole repertoire of attitudes and behaviors, in essence the observer begins to role play.

Role playing, a form of elaborate imitation, involves practicing modeled behaviors. Maccoby (1959), suggested children use role play to act out the behaviors they are expected to display as adults and that play often is rewarded by adults and the child's peers. Usually the behaviors were not expressly modeled by adults; children observe even when models are not "teaching" (as asserted by Kohlberg, 1966). Since role playing often involves numerous stimuli and actors in interaction, those involved may display behavior not included in expressly modeled behavior (Rosenberg and Abelson, 1960).

In experimental settings, Bandura and Walters (1963) report that players may be rewarded for displaying role appropriate behavior. Further, although role playing may facilitate behavior change (Bandura and Walters, 1963:92) the cautions of Flerx et al. (1976) remain--role playing may lead to apparent behavior changes in the sex "appropriateness" of children's activities but changing childhood behaviors does not automatically generalize to attitudes and

behavior change in the same child as an adult. Bandura (1969) discusses the distinction between the acquisition of modeled behavior and the actual choice to perform such behavior.

Maccoby and Wilson (1957) reported children recall media content which is congruent with traditional sex roles and do not as readily recall incongruent material. One's own sex models are better recalled than the other sex unless such models are behaving in a sex-inappropriate manner. Kindergarten children have better recall of sex appropriate than inappropriate behavior and inappropriate behavior of male models was particularly hard to recall (Koblinsky, Cruse, and Sugawara, 1978). McArthur and Eizen (1976), observed that sex of the model was less important than the sex appropriateness of the behavior modeled.

Thus, social learning theory explains the acquisition and performance of sex stereotyped behaviors as a product of the child's social learning history of actively reinforced teaching, observation, and generalization (Flerx et al., 1976). The essential difference between cognitive development theory and social learning is cognitive development posits the child's cognitive activity (active selection and organization of perceptions) is the primary means of explaining sex role development, whereas social learning theory views the child as a selective receptor of that which adult society choses to model or inadvertently models (Mussen, 1969). Social learning gives the child's culture a more active role in socialization than does cognitive development. Lee (1976), in a brief discussion of how schools transmit sex role stereotypes to children, points out the

advantage of viewing sex roles in a societally induced perspective rather than some biological or psychological determinist viewpoint. Specifically Lee (1976:188) comments:

> ...we have replaced our old way of thinking about childhood precisely because it no longer corresponded with what we knew about children. Similarly, traditional notions of sex role are no longer in harmony with important social, technological and economic directions taken by our society. For this entirely pragmatic reason many of us are asking for a newly invented version of sex role.
>
> Removing sex role from the realms of biology, personality and superstition frees us from fixed ways of thinking about the matter and enables us to place it in somewhat better perspective. This new perspective also holds benefits for children. With the constraints of sex role lifted, children can be appreciated more as individuals and less as representatives of one sex or the other. Children whose sex role development is atypical need not be classified as "deviant." With the stigma of deviance removed, new worlds of experience can be opened to children, which they and society would otherwise close. Participation in experiences traditionally reserved for the opposite sex would no longer be viewed as indicative of early abnormality, but as a reaching out for cultural enrichment.
>
> Obviously, schools and teachers cannot hope to induce all these changes alone. But we can examine the particular means we use to transmit sex role and then reconstruct those means so they have a liberating rather than constraining influence on children.

In attempting to explain how sex roles could change from one generation to another, there is a difference in the usefulness of social learning and cognitive development theories as well as theories of sex role based on biology. Bio-developmentalists seem to

fear intimations that sex roles are or should be considered variable,

> That interference with the expression of the 'predispositions, predilictions, and inclinations' may decrease creative functioning, restrict affective expression and impede learning. ...[school and society] should try to maximize the natural inclination of each phase of development (Bowman, 1978:30-31).

Biological and cognitive development perspectives have little to offer in the way of mechanisms for changing gender roles in society.

On the other hand, social learning theory views children's socialization as a product of our creation; society can alter the content of a child's perceptions through the mechanisms of social learning. True, children may combine what they observe into rather novel cognitions, but social learning contends much, if not most, of what children learn is purposefully given to them by adults (Bandura and Walters, 1963). In a sense social learning theorists believe children are the target of much of the socialization information and modeling by adults rather than receptive-observer children as in cognitive development.

It is this interactive view - that socialization involves active modeling, imitation and rewarding by adults - which is essential in the next topic of discussion, how to influence the behavior of children. Discussions of how thoughts and feelings combine with situational influences in such a way as to produce behavior is, perhaps, the central focus of psychology (Seidenberg and Snadowsky, 1976) and certainly of social psychology which once was characterized

as the scientific study of attitudes (Thomas and Znaniecki, 1918; Allport, 1935). Cognitive development does discuss attitude development but not attitude change, whereas the mechanisms by which attitudes change permeate social learning theory research. Changing children's behavior in choosing their adult occupations is based on giving or changing their perceptions about themselves, about adult life and about the nature of occupations (Krech, Crutchfield and Ballachey, 1962:146); therefore this study of influencing behavior through presenting non-stereotypic models is applying precepts of social learning to a process of attitude change.

ATTITUDE CHANGE

An attitude is "a relatively enduring organization of beliefs around an object or situation predisposing one to respond in some preferential manner" (Rokeach, 1968:112). This definition, while not the only definition of attitude available (cf. DeCecco, 1971; Kiesler, Collins, and Miller, 1969), is one which encompasses the work of many social psychologists and one which lends itself to the idea behavior changes as beliefs change.

Allport (1950) suggested attitudes are learned rather than innate, regardless of the mechanism of that learning. Attitudes are not immutable, "although not momentarily transient, they are susceptable to change" (Zimbardo and Ebbesen, 1970:6). By being the enduring but changeable basis for behavior, the thrust of change of behavior is predicated on changing the underlying attitudes which lead to the behavior in question (Zimbardo and Ebbesen, 1970).

Attitudes are based on beliefs about a topic: beliefs are descriptive, evaluative or exhoratory (prescriptive/proscriptive) (Rokeach, 1968). Each belief has three components: cognitive, affective and behavioral (or, more accurately, predispositions toward a behavior choice) [Rokeach, 1968]. Opinions are "verbal expression of an attitude" (Thurstone and Chave, 1929:7). A stereotype is "a socially shared belief that describes an attitude object in an oversimplified or undifferentiated manner" (Rokeach, 1968:125). Thus, changing an attitude would be a change in predisposition toward an object; a change either in the structure of the beliefs or a change in the content of one or more of the beliefs which compose the attitude (Rokeach, 1968).

A further consideration in the discussion of attitude and attitude change is the emphasis found in the several theories on attitude which all seem to contend individuals seek to maintain some semblance of the consistency within a belief, between two or more beliefs or within an attitude system - such concepts as balance, strain and dissonance (Rokeach, 1968). Kiesler, Collins and Miller (1969) divide theoretical approaches to attitude change into four not mutually exclusive categories: consistency, functional, judgmental and learning theories, each of which will be briefly reviewed.

Consistency theories include Heider's (1958) idea of balance and Festinger's (1957) focus on what happens when beliefs are inconsistent or dissonant with one another. Heider (1958) envisions the tendency for people to adjust so that the triangle of the actor (P) another person in some relation to the actor (O) and some object

(X) are in a balance. All three relationships positive or two positives and one negative are in balance; all other arrays are imbalanced. A balanced state is fairly stable, resisting change. Introducing new information into a balanced system will be resisted or it may introduce tension in the balance which is then unstable and likely to result in some adjustment toward balance again. Heider (1958) contends an individual faced with information which is contrary to previous beliefs will seek to return to a balanced position by changing their attitude toward the source of the information, or by changing their attitude toward the object or issue; or by discounting the information as invalid or misunderstood. An unambigous, direct information source makes the latter position less likely; hence, teachers should be forthright while politicians, for very valid political reasons, should be ambiguous in order to avoid alienating voters.

Balance theory provides structure to much of the research on persuasive communication wherein attitude change is facilitated by factual, well liked communicators (e.g., the believability of Walter Cronkite or Ronald Reagan) [Hovland and Weiss, 1951]. However, Seidenberg and Snadowsky (1976) caution that Heider's theory of balance does not allow precision in predicting which of the three responses to imbalance will occur in any given instance. The theory seems explanatory more than predictive; thus it is limited in application.

This lack of precision led to Rosenberg and Abelson's (1960) work on describing the sequence of adjustment by those experiencing

imbalance. Their idea is that imbalance will be reduced by the avenue requiring minimum effort; thus if one of the three choices is easier it is more likely the method of choice in reducing imbalance. Accordingly, changing polarized, intensely valued attitudes may be far more difficult than changing an attitude toward which the individual has little social intellectual or emotional investment - changing basic religious values is more difficult than changing a mild dislike of a particular color or taste. Ego involvement in a position makes change difficult (Sherif and Sherif, 1969). Eric Hoffer points out in his books The True Believer (1951) and the Passionate State of Mind (1955) that pronounced religious or political belief changes may include total refutation of an entire constellation of attitudes and adoption of a replacement set. Massive change may be difficult but, once begun, may be consuming as in "conversion."

A further development out of balance theory is Osgood and Tannenbaum's (1955) congruity theory which "holds that when change in evaluation or attitude occurs it always occurs in the direction of increased congruity with the prevailing frame of reference" (Zajonc, 1960:286). Here, attitude change follows the direction of balance or congruity with prevailing attitudes already in place within the individual; attitudes tend toward a consistency of outlook which resists tangential information or sources of information.

Realizing that any theory which discusses attitude change should also include some analysis of why an attitude might not change led to the construction of cognitive dissonance theory by Festinger (1957).

This theory readdresses the elements of balance and congruity by positing dissonance may be reduced in one of three ways: by changing one or more of the involved elements, by adding new information consistent with existing information, or by decreasing the importance of the dissonant subject. People tend to seek supporting information to sustain a position, or alter their private views in concert with more public but uncomfortable positions, or demote the centrality of an attitude under attack. Brehm and Cohen (1962) further refined Festinger's work by giving emphasis to the relationship of commitment to an attitude and any efforts to reduce dissonance caused by new information.

Discussion of attitude change includes several different perspectives, including a psychological orientation. The functional approach of attitude development deals with personality theories wherein certain attitudes are assumed to be meeting some psychological needs of individuals (Smith, Bruner and White, 1956). Here attitudes are less concerned with rationality as in consistency theories, than with the individual's own self-image. Attitudes, according to Smith, Bruner and White (1956) serve three broad functions in the personality: 1) object appraisal, 2) social adjustment, and 3) externalization. Object appraisal evaluates information against the person's existing beliefs. In this function overwhelming information is needed to induce an attitude change. In social adjustment an attitude change is possible if it facilitates maintenance of existing or sought social relations with significant others. Here the reference group predominates over any question of

rationality. Externalization directs attention to the position that attitudes must be understood in the context of the needs and personality of the individual; an attitude may protect a person "from acknowledging the basic truths about himself [sic] or the harsh realities in his [sic] external world" (Katz, 1960:170).

Judgmental theories are based on the premise that people will tend to conform to personally developed norms of acceptance and rejection against which new information is measured (Sherif, 1936). Upon this research Asch based his classic study of conformity as a drive force behind attitude change. By having experimenter confederates give obviously incorrect answers Asch (1952) demonstrated subjects become confused when faced with social reality differing from their perceived reality; and, to a large degree, the confused subject chose to conform to wrong answers rather than be out of concert with the others in the experimental situation. It is important here to note Asch (1952) found conformity to social influence in about one-third of the subjects. Furthermore Kiesler (1971) and Oskamp (1977) discuss what Oskamp termed the pseudo-inconsistency of attitudes and behavior. While many instances of behavior are consistent with the individual's attitudes some situational factors (demand characteristics) norms, conflicting attitudes and putative risk may result in behavior change without a concomitant attitude change.

Further findings have shown variations on conformity according to size of the group (Asch, 1951; Kidd, 1958; Rosenberg, 1961). Thibaut and Strickland (1956) developed the distinction between

normative and informational social influence. Normative influence is social influence of others' opinions; while informational influence is whether or not the source of the information is trustworthy. Sherif (1936) made use of the autokinetic effect to show how groups will develop norms to guide behavior in ambiguous situations for which no prevailing norms seem to apply.

Deutsch and Gerard (1955) maintained normative influence is strongest in well established social groups, is greater if the subject is identified with the group; and, is noticeably less when the subject is protected by anonymity. Informational influence is relative - those with no information are more likely to accept knowledge provided by others. Relative competence increases confidence in one's own judgments. Judgmental theories suggest new information is accepted if it is congruent with existing ranges of acceptibility, if the group accepts the information, if the group is important to the individual, and if the source of the new information is seen as competent or more competent than the subject. The parallels here to the role of the classroom teacher will be made more apparent later.

Learning theory has focused more upon the acquisition of attitudes than upon the mechanism of attitude change yet the learning perspective is a fruitful means of explaining and directing attitude change. Skinner (1957) considered attitudes to be best manifested in overt behaviors, including verbal behavior. Not only can attitudes be established by learning theory principles (Staats and Staats, 1958), but through modeling and reinforcement principles found in

learning theory attitudes can be modified. Hull (1943) considered learning to be the establishment of stimulus-response connections based on reinforcements such as hunger, thirst, money, fear reduction, and social approval.

To change an attitude, learning theory holds altering the reinforcement system (content, source, frequency, intensity, priority) can produce the desired effect. Approval alters behavior of non-anxious subjects (Stevenson, 1965) and disapproval similarly influences behavior in anxious subject (Lepper, 1970). Rewarded models are imitated (Bandura, 1965b). Even more than imitating models, Zimmerman and Rosenthal (1974) showed subjects learn from models more than that which is modeled - they also adopt the rules of behavior and general cognitive strategies inferred from the model.

Attitudes change because the subject feels or anticipates some reward, because new information leads them to change themselves, or because their self-image of conformity demands it (Schneider, 1976). Several factors are identified as impinging on the attitude change process: credibility of the source, likeability of the source, trust, expertise, attractiveness, status, similarity, confidence in the source (London, 1972) and various personal factors such as same-gender, prestige (Aronson and Golden, 1962) and presumed objectivity of the communicator (Chu, 1967) seem to be important.

Attitudes are predispositions toward a behavior (Rokeach, 1968) but Oskamp (1977) and Fishbein and Ajzen (1975) discuss why many times attitudes actually appear to be inconsistent with behavior. Conformity in behavior is subject to many factors which may or may

not include holding the underyling attitude. Behavior change is facilitated by attitude change but behavior is not dependant upon attitude changes as well.

How to manipulate what people think becomes readily apparent in the subsequent discussion of the institution our culture charges with purposeful attitude establishment and change among our children, the school. The school plays an important function in socialization.

THE SCHOOL IN ATTITUDE FORMATION AND CHANGE

"Education is intervention to change the future" (Anderson and Messick, 1974:284).

Actually, a more appropriate statement would also reflect the idea that education can also be a vehicle for resisting necessary change for the future. For instance, Andreas accurately reminds us the school frequently is a staunch supporter of portraying a gender stereotyped world,

> "Everyday, children are socialized by their parents, by their schools, by the media, through the books they read, by all the socialization agents that have a stake in keeping people in their places by gender (Andreas 1971:42).

Also, Henry (1963) remarks how the school is an institution created to instill in children the necessary cultural orientations to make the child fit the culture as it already exists, yet it also is structured to encourage laxity, originality and spontaneity.

There are many sources of information about adult life which children receive which can be construed to fit either cognitive

development or social learning theories; parents, media, peers, school all have aspects which fit the theories. However, in the school we have an institution specifically organized to impart to children a formal curriculum using active teaching as the primary method. Social learning theory is amply illustrated by processes in the school - teaching, rewards, imitation, modeling, vicarious learning, attitude change intervention - the school as American children usually experience it is social learning theory in application. Although there is ample suggestion gender role stereotyping is unhealthy (Nevill and Vandever, 1977) and societally limiting, the schools remain bastions of gender dichotomy and stereotyping. Lee and Gropper (1974) demonstrated traditional schooling reinforces our current sex-role culture; Saario, Jackin and Tittle (1973) clearly reported the extent to which school teachers, materials, and activities channel children into sex roles not demonstratively different from that of their parents. Because of the central socializing role of schools the understanding of how schools preserve stereotypes and how schools can be used to alter stereotypes is important to understanding how to successfully prepare children for the decades to come. Understanding stereotyping by schools is essential to eliminating sex role stereotypes (Riley and Marotz-Baden, 1979).

By their very structure, schools are stereotyped. Daniels (1975:8) found 85 percent of elementary school teachers were female yet 79 percent of their principals were male. In the schools

involved in the research reported herein all principles were male (except the director of the University's Child Development Laboratory - but her immediate supervisor was male) while only one of the regular classroom teachers involved was male (plus one other male as a student teacher in the Child Development Laboratory).

Teachers are important to the presence or absence of stereotyping in the classroom. Rosenthal and Jacobson's classic work, Pygmalion in the Classroom (1968) indicates teacher expectations are central to determining eventual student behavior and attitudes. Adams and LaVoie (1977) demonstrated teacher expectation behavior is a function of more than just an estimation of intellectual potential. Among the variables used by teachers in predicting success are gender, behavior, attractiveness, physique, race, social class and selected personal characteristics (Brophy and Good, 1974).

Teachers act differentially toward girls and boys. Teachers are more critical and negative in their comments, written records and body language toward boys (Beilin, 1959; Lippitt and Gold, 1959; Sears and Feldman, 1966; Serbin, 1978) yet such attention may be seen as a form of reward to the child, hence criticism-notice may reinforce more disruptive behavior (Serbin, O'Leary, Kent and Tonick, 1973). Leacock (1982) contends teacher attitudes and expectations for students become reality through goal setting, curriculum content choices, application of various teaching styles and classroom management practices in general. Adams and LaVoie (1977) and Brophy and Good (1974) provide extensive reviews of studies of teacher expectancy effects, concluding the classroom teacher is a crucial

determinant of the educational process and largely is responsible for the educational product. The differential subjective explanations of teachers lead them to objective outcomes; teachers treat different (subjective perception) children differently (behavior). In the words of W. I. Thomas, "If men [sic] define situations as real, they are real in their consequences" (cited in Janowitz, 1966:74).

Unfortunately, teacher training fails to deal with the issue of sex role stereotyping. Jacko (1981) decried that while there is moderate to strong agreement among teachers and teacher trainers that sex stereotyping influences students, there virtually is no attention to sex stereotyping as an issue in teacher training programs. Further, Jacko found teachers express desire to counter sex role stereotyping but lack explicit training to do so. McDavid and Harari (1966) report teachers who are sensitized (trained) to their own stereotyping do alter their behavior and do less stereotyping.

Some researchers have utilized teachers as agents of stereotyping alteration but these studies are not comprehensive. Katz (1978) reported most intervention efforts by teachers were based less on rigor in instructional design than on often passionately held ideologies, hence true effects of teacher behavior are difficult to assess. Cohen and Martin (1976) provide suggestions for teachers to examine their own attitudes and for parents to evaluate the teachers. Simmons (1976) also addresses teacher self evaluation as an important early step in restructuring the school presentation of sex roles.

Flerx et al. (1976) showed attitudes of children can be altered by teachers and nonsexist materials. However, Koblinsky and Sugawara

(1979) criticize this, and other studies, as relying far too much on novel curricula and novel teachers.

Other studies have focused on the overwhelming propensity of early grade teachers to be females and advocate recruiting males into preschool teaching assignments in the belief male teachers could alter the assumed feminizing influence of schools (Johnson, 1970; Kendall, 1972; Williams, 1970). But the results have not fulfilled the premise. Etaugh and Hughes (1975), Good and Grouws (1972); and Robinson and Canaday (1978) report both male and female teachers give more preference and reinforcement for 'feminine' behaviors in school. Others (Brophy and Laosa, 1971; Etaugh, Collins and Gerson, 1975; Lee and Wolinsky, 1973; Madsen, 1968) assert males in teaching positions either have virtually no influence on the females in the class or only a marginal masculinization effect on the class as a whole. Such inconsistent findings can be attributed to variations in how effects are measured and the interaction of other classroom factors such as teaching materials, media, toys and so forth.

Several experiments have included non-sexist curriculum intervention in regular classrooms as a short intervention (Cohen and Martin, 1976; Flerx, Fidler and Ekstrom, 1976; Garrett, Ein and Tremaine, 1977; Heathington, 1981; Joffe, 1971; Rogers, 1976; Sprung, 1975) with successful change in stereotyping in evidence. Short term presentations of egalitarian models do influence young children (Davidson, Yasuna and Tower, 1979) suggesting longer term programs of intervention should result in comprehensive changes in gender stereotyping (Koblinsky and Sugawara, 1979). Most of these

interventions involve female teachers and female experimenters, due to the death of males in early childhood education, as noted earlier. Further, with the notable exception of Guttentag and Bray (1976) most non-sexist curriculum interventions have relied upon novel adults rather than the regular classroom instructor.

Intervention programs by experimenters or by the classroom instructor seldom examine the teacher attitudes, assuming interest follows from presumed equalitarianism. That teachers are sources of rewards for reinforcement of non-sexist behaviors (Grusec and Brinker, 1972) does not directly assess the teachers themselves as non-sexist role models as Pogrebin (1978) contends is the essential element in any intervention plan. It is not enough for a few interested, attuned teachers to be aware of their own attitudes (Jacko, 1981) although immediate change requires those in classrooms will be in the forefront of change, if it is to happen.

Of course, teachers alone do not make the school such a major factor in children's acquisition of sex typed behavior (Brooks-Gunn and Matthews, 1979). Most research on the negative effects of stereotypic sex role socialization in schools (cf. Adams and LaVoie, 1977; Dweck, Davidson, Nelson and Enna, 1978; Fagot and Patterson, 1969; Flerx et al., 1976; Levitin and Chananie, 1972; Serbin, O'Leary, Kent and Tonick, 1973); does not fully isolate any one factor in the school setting. Teachers, materials and activities all together are treated as the independent variable leading to changed student sex stereotyping.

There are resources which treat stereotype change as a total prescription involving almost everything in the classroom. For instance, Barbara Sprung (1975), in Non-Sexist Education for the Young Child: A Practical Guide, suggests several exemplary programs for creating a non-sexist classroom environment. Similarly, Simmons (1976) treated the whole environment. Also Guttentag and Bray (1976) describe a range of available materials and activities but they, as well as others (Sadker, Serbin, Greenberg, Ulrey and McNett, 1977), continue to assert the teacher is the key factor in creating a non-sexist classroom. Sadker et al. (1977:8), note:

> The teacher's behavior is probably the most critical factor in determining whether what happens in a classroom will encourage the development of flexibility and proper sex attitudes or the retention of stereotyping practices.

Some researchers have implemented classroom change strategies by focusing on the teacher. For instance, Kurilich (1981) brought in to the classroom exemplars of stereotyped and non-stereotyped adults in the labor force. Porro (1982) implemented the Sprung (1975) suggestions using the regular classroom teacher. The previously mentioned Koblinsky and Sugawara (1979) study also used the classroom teachers, one of which happened to be a male.

Teachers exercise a great deal of control over the materials used in the classroom in addition to control already exercised by school boards, principals and the state. School books frequently portray people in stereotyped roles (Frazier and Sadker, 1973). Weitzman, Eifles, Hokada and Ross (1972) discuss school literature

which portrays males more positively in almost all characterizations while Gardner (1970) found most portrayals of women are stereotypic and largely uninteresting.

School literature about adult careers is particularly stereotypic (Reid and Stephens, 1985), a point which is disturbing when considering the role of the school as the primary source of children's occupational information (Looft, 1971a, 1971b; Stewig and Higgs, 1973). School materials at all levels, not just early or late grades, present a stereotypic world to both genders. Boys do notice the portrayal of limited alternatives for girls (Women on Words and Images, 1975). Girls notice the models even more, selecting (or resigning themselves to) low status occupations for themselves (Britton, 1974; Oliver, 1974). It should be noted this stereotyping in reading materials limits occupational choice range for boys as well as girls (Women on Words and Images, 1975). Mischel (1970) suggested books play an important part of the social learning explanation of acquisition of sex role stereotypes. Exposure to traditional portrayals in children's books is a source of vicarious learning of that which is portrayed - stereotyped sex roles. Analyses of children's books document systematic portrayal of males in action and adventure situations wherein competence is expected and rewarded. Females have much more passive portrayals or have successes attributed to external factors such as luck, magic or the willing help of more competent males (Key, 1977).

Weitzman et al. (1972) point out the message to girls is to have low aspirations since they have few models out of home or

"intellectual" pursuits, with virtual exclusion from sports, politics and science. Boys see models of competency, competition and achievement.

However, as previously noted, (Sprung, 1975; Guttentag and Bray 1977; Weitzman et al. 1972; Wheeler, 1972; Lollipop Power, 1974; and Riley and Marotz-Baden, 1979) nonsexist literature materials are available (except for "slower" learning groups [Rist, 1973]), but their use in school usually is a product of the teacher's initiative rather than in response to parental demands or market concerns of publishers (Simmons, 1976).

In addition to the presentation of stereotyped models in many, or most, school books, television also provides a strong source of stereotyped sex role socialization. Gardner (1970) reported television programming and commercials consistently provide sex role stereotypes, even in cartoons (Sternglanz and Serbin, 1974). Authority voices and figures in television usually are male whereas females are portrayed in "pleasures" derived from rather mundane domestic tasks.

Those who watch television are bound to receive numerous models of rewarded stereotyped behavior. Watching television frequently seems to correlate with holding stronger sex role stereotypes than those who watch less television (Frueh and McGhee, 1975). Williams, LaRose and Frost (1981) reported children with lower levels of television watching are less intransigent in their views about the adult world. Of all of the television programming available to children, perhaps the most influential, and the most stereotyping,

are the near-constant barrage of product commercials (Pingree, 1978) as almost any parent can attest. Henry (1963) even claims advertising gives us a separate world which is presented as culture, to be pursued through purchase of the various products. Children have difficulty distinguishing between the everyday life they experience and the media world they witness.

Yet another influence on children is the use of toys and games. Toy selection by the child has been used as a measure of the child's sex role development and identity (Benjamin, 1932; DeLucia, 1963). Toys available in the common variety store usually are stereotyping (Ball, 1967; Riley and Powers, 1977). Even at a young age children stereotype toy preferences. Katz and Zalk (1974) found little (preschool) girls choose female rather than male dolls (even over race preference) and attribute positive values to female dolls but negative ones to male dolls. Male children demonstrated an analogous doll choice bias to a less pronounced degree.

The conclusion is disturbingly clear: toys frequently stereotype, particularly about the world of work. As noted by Pogrebin (1973:49):

> Job bias is illegal in adult society, but it proliferates among so-called educational toys. Playskool's 'When I Grow Up', a matching game, contains pictures of 21 males in widely varied jobs, from mason to milkman and from sailor to scientist. The three females match up with teacher, violinist, and dancer. 'Occupations', a preschooler's puzzle by Fisher-Price gives boys five role choices; girls can pick 'mother,' 'ballerina,' or 'nurse.' 'People and Jobs' (Questor) has four women out of 24 small puzzles. The women match up with only four jobs: librarian, teacher, waitress and skier.

Boys' toys tend to require manipulation, destruction and construction (Mitchell, 1973), while girls' dolls, kitchen equipment and primping toys reinforce a clearly stereotypic enculturation. Goodman and Lever (1972) found boys receive more and a wider range of toys as gifts; creative toys are chosen for boys, while girls are more likely to receive passive toys. Boys received more expensive toys and more occupational or learning related toys.

The packaging and merchandising of toys is particularly stereotyped by sex role. In a 1972 tabulation of toys in packages Bailey (1972) found boys were depicted on games twice as often as girls; in 'educational' toys boys outnumbered girls 16:1. When both boys and girls were depicted, in almost 95% of the packages girls were relatively passive, often only as onlookers.

Presumably the messages of the preceeding decade should have produced some alteration of the stereotyping by toy manufacturers. In a cursory, non-rigorous examination of one midwestern variety discount store (Pamida, Wayne, NE, January, 1986) a total of 344 different toy items were available; half (171) were aimed at boys (package picture, 'blue' or shelved with others aimed at boys); 104 were items for boys or girls; and, 69 items were in the 'Pink Aisle,' clearly targeted at girls. The visual image of the Pink Aisle is quite noticeably exclusively for girls, and placed next to the infant toy area.

Adults buy most of the toys, but a 1973 report (Riley and Marotz-Baden, 1979) contended a high proportion of purchases are selected in the store rather than planned choices, suggesting the

persuasiveness of packaging. Store layout is effective in molding purchase choices. The resultant purchases are along stereotyped lines (Goodman and Lever, 1972).

In early studies on creativity (1959-1960) Torrance noted six year old boys were reluctant to play with feminized toys (nurse kits) while older girls (third and fourth graders) were hesitant about using science toys (Howe, 1971). When adults supply the labels for toys, 'trucks are for boys,' the expectation is clear to children. Objects labeled as gender-inappropriate are avoided, are less interesting and less remembered than gender-appropriately labeled items, even when such labeling is inaccurate (Bradbard and Endsley, 1983).

This labeling of objects is the subject of several studies which provide evidence children's interest in objects and performance of tasks are heightened when the object or task is labeled sex appropriate (Gold and Berger, 1978; Montemayor, 1974; Stein, Pohly and Mueller, 1971). For instance, Montemayor's (1974) study showed girls' and boys' interest and activity in a marble toss game attenuated when the game was given an opposite sex label. Stein et al. (1971) found boys significantly reacted to labeled activities, performed better on "for boys," intermediate performance on "for both boys and girls," and performed less well on "for girls" labeled tasks. Girls, however, performed equally on tasks regardless of the label. Gold and Berger (1978) found boys do better on appropriate or neutral label tasks than on opposite label tasks and girls were relatively unaffected by labels.

This body of research on the behavioral influence of sex labeling of tasks becomes important in schools since teachers supply and reinforce labels of tasks and objects. The act of supplying a label affects the child's perceptions and sentiments about an object or task. Such labeling can be limiting to children since it oversimplifies their perceptions of reality and restricts the range of learning (Serbin, Tonick and Sternglanz, 1977).

Both cognitive development theory (Kohlberg, 1966) and social learning theory (Mischel, 1970) propose the child's selective attention plays some role in development of sex role knowledge (Maccoby and Wilson, 1957; Slaby and Frey, 1975; and Koblinsky, Cruse, and Sugawara, 1978).

Nadelman (1974) demonstrated children's recall of items labeled as appropriate for the same-sex was better than opposite sex labeled objects, using objects already familiar to and sex-typed by the children. Bradbard and Endsley (1983) extended Nadelman's work to novel stimuli, finding same sex objects were recalled more than "both" labeled objects and "both" objects were recalled more than opposite sex labeled objects. This response set was found at one day and one week later testing.

Teachers supply the classroom materials and activities as well as the labels of those objects and tasks; hence teachers are of importance in elaborating and enforcing the stereotyping classroom (Saario, Jacklin, and Tittle, 1973). Teachers can choose activities and materials which continue stereotypes or which have a sex role liberating value (Goodman and Lever, 1972; Kacerguis and Adams, (1979).

Since toys often are used in play activities, play as a source of stereotyping has also received some research attention. Sutton-Smith and Rosenberg (1961) examined the change in game preferences over a sixty year period. They found one of the enduring facets of children's activities is the gender stereotyping generally exhibited in the games.

Hargreaves and Stoll (1978) designed a Play and Games Inventory to assess 'masculine' and 'feminine' activities among 10 and 11 year olds using 44 games as suggested by Bates and Bentler's (1973) study of boys' play activities. Hargreaves (1979) found little variation in boys choosing exclusively sex appropriately labeled games while there was a much broader range of games chosen by girls. This follows Maccoby and Jacklin's (1974) finding that girls' sex typing is less rigid than boys.

Maccoby and Jacklin (1974) describe the considerable literature on normative sex differences in play. Wolf (1975) gave evidence sex inappropriate models in games were less recalled, less favored and less imitated than sex appropriate models. Hudson (1968) found boys quite readily could display a broad range of role play behaviors in other male roles. When asked to place themselves in the role of the opposite sex girls had noticeably less trouble doing so than did boys, many of whom had difficulty imagining themselves as females or refused to cooperate in a role reversal condition (Hargreaves, 1979; Riley, 1981).

An important aspect of play largely beyond teacher influence is the affect of peers as models and reinforcers. The role of peers of

differing age groups is documented (cf., Charlesworth and Hartup, 1967; Fagot and Patterson, 1969; McCandless, Bush and Carden, 1976). Further, peers in school age groups seem to be more critical of gender-inappropriate behavior than were the mothers of the subjects (Langlois and Downs, 1977). As the maturing child gradually expands individual social networks the range of possible behaviors is increased but so, too, are the sources of social disapproval, particularly the growing importance of peers in teen years. By late adolescence consistency in gender specific behaviors lessens (Block, 1972) perhaps reflecting the individual's increased cognitive development or reinforced learning (Block, 1973).

Despite the peer influence, teachers are the most important socialization agent during school years, particularly for occupational information and guidance (Guttentag and Bray, 1977). Two conclusions emerge from study of sex role socialization in schools: schools are important components, and may be the major source of stereotyping by children (Hutt, 1972; Guttentag and Bray, 1977); and teachers are the nexus of the problem solution. Teachers are an available avenue for change. Traditional schooling is likely to reinforce prevalent gender stereotypes (Lee and Gropper, 1974; Saario, Jackin and Tittle, 1973) but we also know the value of schools in accomplishing short term interventions to counter gender role stereotyping in schools (Ekstrom, 1979; Flerx et al., 1976; Guttentag and Bray, 1976; Porro, 1982; Riley and Marotz-Baden, 1979; Sprung, 1975).

HYPOTHESES DISCUSSION

Some theorists (Goslin, 1968; Kagan, 1964) suggest sex role acquisition is the single most important, most potent and most lasting aspect, or product, of the socialization of humans. As Katz (1979:155) emphasizes, "...gender is an integral part of who we are, how we think about ourselves, and how others respond to us." Among others, Saario, Jackin and Tittle (1973) and Lee and Gropper (1974) amply demonstrated the role of the school in pervasive socialization of children into contemporary gender role stereotypes; particularly, the school experience is heavily stereotyping in the presentation of occupational information (Looft, 1971a, b).

The Riley and Marotz-Baden (1979) study, which is the basis of this research discussion, was intervention in classrooms with the specific intent of demonstrating that contemporary stereotyping of careers by children can be altered. Using career education modules, toys and activities, the study hoped to show that non-stereotyping teachers (in this case, the Researcher Group) could influence stereotyping by children. Similarly, the project hoped to show the classroom teacher (Teacher Group) could use the same materials to affect children's stereotyping.

> Any significant changes which would substantially increase the female professional labor force cannot occur so long as basic values and attitudes concerning the sexual division of labor in society remains unchanged (Theodore, 1971:34).

It is to this end, changing attitudes and values, that the modules were created. While there is a wealth of literature

supporting the idea direct reinforcement can implement behavior change (Bandura and Walters, 1963; Minuchin, 1965), there is much less work on relatively unreinforced behavior (Katz, 1979). Social learning theorists demonstrated models have an effect on observers even without any mechanism of intentional, direct reinforcement of observers by the models or by others (Bandura and Walters, 1963; Mischel and Grusec, 1966). The modules in this project did not use any formal program of reinforcement, there was no response reward structure intended to produce a response set.

Hypothesis number one posits the modules would influence children's stereotyping, that the Researcher and Teacher Groups in each grade would be lower in scores than Control Groups in traditionalism, picture ranking, sex typing and higher than Control Groups in percent male in occupations to which those exposed to modules aspire. There is much in the literature to support this expectation of less stereotyping for those exposed to the modules.

Garrett, Ein and Tremaine (1977) found children at early ages (five) are very aware and knowledgeable about gender roles and, importantly, that children realize much of what they know are stereotypes, generally accurate but not necessarily accurate when applied to any given individual. This finding is consistent with variations in cognitive structural changes which Piaget and Inhelder (1969) believe occur across the elementary school years. Also, Bandura and Walters (1963) suggested that the training of children involves transmitting discriminant factors in deciding in which circumstances which behaviors are appropriate. Both of these

positions hold the idea that social maturity is an important aspect in the ability to discriminate between the polar extremes of the stereotypes and a more discrete continuum of gender roles (Garrett, Ein and Tremaine, 1977). Guttentag and Bray (1976) demonstrated stereotyping diminishes when children are faced with information which contrasts with their stereotypes. Rabban (1950) showed knowledge of adult occupations limits stereotyping about that occupation.

Ofstad (1968) claimed findings showing modeled activity was more imitated than verbal modeling, supporting a suggestion by Mussen (1969) that active modeling of behaviors is an important means of imparting information to the observer. Language acquisition is a complex process in which imitated sounds are given meaning through social context, word meanings depend on how they are used (Wittgenstein, 1958). Piaget (1958) discusses the stage development of language as self-directed firsts (egocentric), self-communicating vocally, to be followed by socialized speech directed at others. Piaget (1958) reported children understand most of what is said by others before the children can compose coherent statements themselves. Social learning accounts for language development as the product of imitation and rewards. Learning theorists point to teaching language to birds (Bandura and Walters, 1963) as an example of language through imitation. Although the concept of language implies shared meaning as well as vocalization; it is doubtful birds have shared meanings in the context used here. Learning theory also accounts for the extensive vocabulary and meaningful communication

from chimpanzees and gorillas, as illustrated by Gardner and Gardner (1978). Perhaps it is because language development is such an interactive process that children more readily imitate modeled behavior than verbalized behaviors.

But, as Bandura and Walters (1963) point out, verbalized models are used frequently, particularly the normative models used extensively in childhood socialization. Much of the childhood literature contains exemplary models with both positive role models for emulation and negative role models for avoidance. Fairytales abound in normative models for children. Berg and Bass (1961) and Biderman and Zimmer (1961) have extensively documented the influence such culturally prescribed normative models in shaping and limiting behavior. Fairy tales act as one source of models but actual behavior may follow several models; thus, not all children behave as particular models act (Bandura and Walters, 1963).

Bandura and Walters (1963) discuss three primary effects of watching models: effects reflected in the number, range and frequency of responses. Observers are said to demonstrate modeling effect when they acquire modeled behaviors which are novel to the observer. A second model effect is a change in the observer's existing repertoire of behavior (inhibitory and disinhibitory effects). Observers may also exhibit an eliciting effect wherein previously unused behaviors quickly return in the presence of models. Flanders (1968:316) defines imitation as "observation of the behavior of a model...so that the observer's subsequent behavior becomes more similar to the observed...behavior of the model."

The idea that models are imitated requires some qualification. Miller and Dollard (1941), contend modeled behavior is most readily imitated by motivated subjects positively reinforced during the acquisition process. But the models in the research reported herein did not use a structured reinforcement schedule.

Mowrer (1960) refers to vicarious learning to explain how learning takes place in the absence of reinforcement. We know seeing a model receive a reward prompts imitation of the model (Bandura, 1965b). Lefkowitz, Blake and Mouton (1955) showed material resources of a model (fashionable, expensive clothing) become a type of reward associated with the models according to observers. Turner and Berkowitz (1972) showed high status models more imitated than low status models. Changing the status of the models changed the attitudes about stereotypes in observers (Licter and Johnson, 1969). models in higher prestige positions are more imitated (Flanders, 1968; Berger, 1961). This includes models with material resources such as money and fashionable clothing (Lefkowitz, Blake and Mouton, 1955), praise and admiration (Hovland, Janis and Kelley (1953), and occupational prestige (Bandura and Kupers, 1964).

Kelley, Thibaut, Radloff and Mundy (1962) reported if observers intuit higher status models and others as <u>eventually</u> receiving rewards, the models are more likely to be imitated. Similarly, Miller and Dollard (1941) and Bandura and Walters (1963) predicted, and Harvey and Rutherford (1960) confirmed, older, higher status models are more imitated. Although non-live models (films, books, cartoons) do have an effect, as previously discussed, having live models is particularly influential (Bandura and Mischel, 1965;

Klinger, 1967). Without live models, the modules combine career activities with depictions of adults in occupational activities, thus combining adult models with role playing.

Role playing has a crucial role in the socialization of children into adult roles. Borman and Barrett (1981) claim play is anticipatory socialization to work and social roles wherein power, roles and strategies of interaction can be rehearsed. Maccoby (1959) considers role playing to be a process whereby through imitating adult activities the child gains mastery of behavior the child will be expected to display as an adult. Bandura and Walters (1963) discuss a great deal of the role playing literature then available, remarking "role playing may be a particularly effective means of producing behavior change" (1963:90-91). Rosenberg and Abelson (1960) found role playing often leads to behavior beyond that which was modeled, fully consistant with behavior appropriate for the adopted role. In this same manner,

> While playing with toys which stimulate imitation of adult behavior, children frequently reproduce not only appropriate adult-role behavior patterns but also characteristic or idiosyncratic parental patterns of response, includes attitudes, mannerisms, gestures, and even voice inflections which the parents have certainly never attempted directly to teach (Bandura and Walters, 1963:48).

Mead (1934) argues role playing involves more than just imitation of roles but also includes cognitive reflection of the evaluations of others about the role playing. Accordingly, role playing is practicing behaviors and observing the feedback received from others; the child learns largely through making errors which

produce social feedback (Freud, 1911).

Role playing by children usually results in expansion of behavior beyond that of the specific model as children combine actions of other models, as well (Bandura and Walters, 1963). In modeling, the characteristics of the model become very important to the question which model or models will be followed.

Attitude change literature suggests children are likely to be more attentive to information about occupations if the sources (models and teachers) are powerful (Sears, Rau and Alpert, 1965), are higher status than the observer, and are believable (Brim and Wheeler, 1966). Some attitude theorists (Asch, 1952; Sherif and Sherif, 1969) view attitude change as involving altering the way a person perceives the object, while others (Hovland and Weiss, 1951) say attitude change is predicated upon altering the behavioral response alternatives to a given object.

The modules accommodate all of these factors. Children receive information about adult occupations which contrasts with the content of their stereotypes; information comes from teachers who have higher prestige and power than the child's peers; the nonsexist information is coupled with role playing activities accommodating development of new behaviors and the roles and models are depicted as receiving rewards (e.g., salary and social status). Barbara Gunn (1964) concludes children are acutely aware of adult occupational prestige and Janis and King (1954) found role players frequently continue role consistency after the role-playing circumstances end. Festinger and Carlsmith (1959) contend one way to change an attitude is to have the

subject act in a manner inconsistent with previous beliefs, particularly if there was little or no inducement to act in such a manner. The inconsistency between behavior and belief, when coupled with information challenging the belief, is likely to result in attitude change. In adults, participation in consciousness-raising groups leads to more non-stereotypic beliefs (Ruble, Croke, Frieze, and Parsons, 1975); the modules are intended to do the same in children.

The second hypothesis, that female subject will be more influenced by modules than were male subjects also is grounded in social learning theory. Orne's (1962) concept of demand characteristics is useful here. Consistently, girls in schools correspond to the description of a willing subject described by Akamatsu and Thelen (1974:45): "Greater imitation is shown by subjects who are aroused, low in self- confidence, high in anxiety, highly dependent and high in need for social approval." Guttentag and Bray (1976), Nelson (1960), and Tasch (1971) found girls typify this situation. Barber (1967) found girls have a more 'high need for social approval' than boys and that those with 'high need' were more imitative. Also, Cohen (1971) said those with high need for social approval are more imitative of the modeled task, as did Ross (1966) who also found those in high need exhibited more role consistent behavior, as well. Further, Jakubczak and Walters (1959) argue girls in schools are particularly suggestable to outside peer group sources, while boys are less so (Block, 1976; Maccoby and Jacklin, 1974). From a demand characteristic perspective girls should be more influenced by modules than boys.

Another factor bearing on the prediction that girls would show more module influence than boys is the issue of reinforcement of models. By portraying to girls female models in a broad range of activities, girls are able to perceive and role play themselves in a broader range of roles than offered by contemporary stereotypes. When a behavior is labeled as appropriate for their gender, girls quickly are attuned to that behavior and also are attentive when the behavior is labeled appropriate for both genders (Stein et al., 1971). Stein et al. (1971) also discovered boys express a different response: they are most attentive for 'boy' tasks, intermediately attentive to 'both sexes' labeled tasks, and least attentive to tasks labeled for girls'. Bradbard and Endsley (1983) said children exhibit differential information seeking and retention according to the gender typing of the object.

Girls generally are more flexible in gender role preference (Thompson and McCandless, 1970; Fling and Manosevitz, 1972; Rabban, 1950) and receive far less negative reinforcement for stepping out of traditional roles (Lansky, 1967; Edelbrock and Sugawara, 1978). Girls have fewer choices than boys but their choices range from very male populated occupations to those characterized as nearly "all-female" (Siegel, 1973; Riley, 1981).

Since the module intervention was in mixed gender groups rather than in single gender groups the effect of mixed gender grouping should also be addressed. Children form single gender play groups at remarkably early ages, as early as about two years old (Maccoby, 1986). Preschool and later, most play is in single gender groups and

mixed gender play groups usually exhibit stereotypic divisions (Clark, Wyon and Richards, 1969). Serbin, Tonick and Sternglanz (1977) reported teachers can create more cross-gender play by structuring situations to require cross-gender activity, as did the modules. The simple solution to some of the stereotyping in schools is to avoid nonfunctional groupings by gender. Porro (1982) said there is no justification to the common division of labor, responsibilities and privileges evident in school classrooms. The modules accomplish all activities in mixed gender groupings. Accordingly, as Hargreaves (1979) found, girls should be less rigidly gendertyped than boys in play type activities.

The third general hypothesis concerns examining the strength of stereotyping in each grade to test the hypothesis that stereotyping will diminish with age. Brown (1956) reported boys by age three showed a dominant preference for masculine activities while same age girls were less rigid and showed a preference for a broader range of activities. Hartup and Zook (1960) reported boys' preferences continue that polarity at age four; girls' preferences remain steady or broad until early adolescence.

Kohlberg's (1966) cognitive development perspective suggests age related steps leading from consistent gender labeling and differentiation of interests and activities at age two, to a stable gender identity and stable gender preference by age six. While this appears to contradict any suggestion of diminishing stereotyping with age, Kohlberg's later work (Kohlberg and Ullian, 1974) contends there is some modification to accept some role overlap by fifth grade and

much more flexibility is acceptable by both sexes by ninth grade. Block (1972, 1973) also reports reduced gender consistency by late adolescence was particularly evident among the intellectually superior child, which is in agreement with Kolhberg's (1966) focus on cognitive maturity in discriminant learning.

Other theorists also suggest some change in stereotyping, although at an adult age. Rebecca, Hefner and Oleshansky (1976) argue for a three stage process beginning with undifferentiated gender roles as infants, polarization of gender roles in childhood and for most adults, and, for a small number of adults, resolution of role conflict renders gender irrelevant in social decisions.

Katz (1979) posits her own three stage model of gender role development wherein children first learn gender roles for children; then children learn adult role behaviors and develop strategies for testing adult role behaviors in heterosexual relations in adolescence; and, lastly, as adults employment and parental roles elaborate. The point here is that stereotyping is considered flexible with age.

Garrett, Ein and Tremaine (1977), testing first, third and fifth grade children, concluded older children have less rigid gender stereotyping than younger children. Their conclusion follows the work of Piaget and Inhelder (1969) that as children experience cognitive structural changes over time in the elementary school years, their knowledge of adult life becomes more accurate and their use of this factual base modified previously rigid stereotypes. Iglitzin (1972), too, suggests stereotyping should diminish with

intellectual maturity. Rotter (1966) concludes maturity leads to a measure of self control over reinforcement choices and meaning while continued stereotyping diminishes that self-control, hence cognitive maturity makes stereotyping less likely.

The fourth hypothesis deals with issues in reinforcement and modeling. Social learning theory proponents spend a great deal of discussion on variations in the model-subject relationship which can produce effects. The prediction is that the Researchers' Groups will show more diminished stereotyping than the Teacher Groups which will, in turn, show more change toward less stereotyping than Control Groups, at each grade level.

Attitude change and social learning theory provide several lines of support for this prediction. The nature of the model-observer relationship is a factor. The portrayal of occupational models in the gender of the observer facilitates imitation (Bandura, Ross and Ross, 1961; 1963a).

In this case the focus is upon Researcher versus Teacher as model since module effect itself is discussed in the first hypothesis. Here, the issue is what type of model is more effective than compared to no modeling at all.

One of the enduring attitude change factors supported by research (Zimbardo and Ebbesen, 1970) is Hovland and Weiss' (1951) principle that communication from a credible source is more persuasive than from a noncredible source. Hovland, Janis and Kelley (1953) developed a model of persuasive communication wherein acceptance is based on comprehension which is based on attendance to

the message and to the messenger. McGuire (1969) discusses attention as a precursor to attitude change, as do Akamatsu and Thelen (1974). Bandura and Walters (1963) support the position that outsiders (in this project the Researchers) are more interesting and are more imitated.

Another support for the influence of the Researcher is the demand characteristic of the teachers' expectations. Leacock (1982) asserts children's performance on tests of instructed material is a function of many factors of which primary importance is attributed to the teachers' expectations that children will or will not learn that which is being taught. Children are quite perceptive about what is going on in the classroom and are quite aware of what are considered by the teacher to be the right answers. Based on observation of the module use in various classes, the Researchers were more verbally rewarding, more enthusiastic, and more expectant of nonstereotyped responses. Since the Researchers concentrated on module activities to the exclusion of other classroom instructional content, the children quickly became quite aware of what was expected by the Researchers. The Teachers, too, were expecting nonstereotyping but, as regular classroom instructors with all day contact with the children, the message from Teachers was more diffused. Snodgrass (1981) found children were very responsive to teacher expectancies. Children were quite adept at perceiving appropriate and inappropriate responses as indicated by teacher behavior.

As outsiders Researchers were "special" to the classroom, according them a status differential which several authors predict

would generate more opinion change (Bandura and Walters, 1963; Miller and Dollard, 1941; Harvey and Rutherford, 1960; Lefkowitz, Blake, and Mouton, 1955). Also, Researchers had no punitive role in the classrooms. Bandura and Huston (1961) and Hetherington and Frankie (1967) suggest nurturant models are more imitated than neutral or punitive models.

Bandura and Mischel (1965) propose the idea a live model is the best communicator, superior to film or other media. However, Klinger (1967) found no significant difference between live and media models. Kurilich (1981), using classroom visits by role reversal representatives (male nurse, female firefighter), found both genders were changing stereotypes but girls changed more frequently.

Researcher classes had one male and one female Researcher while the teachers in other classes (Teacher and Control) were female except for the fourth grade Control teacher. Several authors (Maccoby and Wilson, 1957; Maccoby, Wilson and Burton, 1958; Grusec and Brinker, 1972) predict imitation is facilitated by having the model the same gender as the observer. However, Flanders (1968) and Turner and Berkowitz (1972) demonstrated prestige of the model is more important than gender of model in eliciting imitation, as did Flerx et al. (1976).

In concert with the studies above, Koblinsky and Sugawara (1979) found male and female teachers made no difference in children's ability to discriminate social roles. Bandura, Ross and Ross (1961) suggested same-gender models would be more imitated but in later work

cited by Walters and Amoroso (1967) this suggestion was modified to apply only to single-gender groups. As Bandura, Ross and Ross (1963a, b, c) demonstrated in the classic Bobo doll experiments, gender of the model is not the most powerful facet in imitative behavior.

Several factors, then, lead to the hypothesis Researchers would produce more change in stereotyping than would Teachers. As non-punitive novel outsiders modeling clearly expected behaviors Researchers would be imitated more than the Teachers (Epstein, Suedfeld and Silverstein, 1973), especially by a young group who epitomize Orne's (1962) "good subjects," wanting to please the observer (Researcher). Of course, there are other factors which may produce differences in module effect. Out-of-class factors may be influential. For instance, some studies (Lewis, 1967; Reissman, 1965; MacKay and Miller, 1982; Lightfoot, 1976) suggest middle class girls are more flexible than lower class girls in educational attainment, marital and career goals and gender role attitudes, reinforcing Kerckhoff's (1972) finding that lower class girls are more traditional in attitudes and aspirations. Rubin (1976) points out the situation of poverty curtails not only aspirations but also realistically curtails opportunity to enter higher status occupations. Parental education level is another factor influencing career aspirations. Nelson (1978) found children of highly educated parents were less stereotyping. Albert and Porter (1982), however, contends this result is due to parental expectations for their children rather than parental education directly. There is evidence parental factors (education, income, expectations) are very

predictive of nontraditionalism in girls (Houser and Garvey, 1983; McNair and Brown, 1983). The Riley and Marotz-Baden (1979) study used herein did not directly assess parental income, education or attitudes - the focus was on children's responses, perceptions, aspirations. Parental factors other than the mother's employment are not discussed in the hypotheses utilized in this study.

There is partial evidence for the fifth hypothesis, those who have an employed mother are less stereotyping than those whose mother is non-employed out of the home. Rollins and White (1982) showed daughters with mothers holding a professional occupation are less traditional than homemakers' daughters. Shapiro and Crowley (1982) reported daughters of mothers employed in non-stereotyped occupations have non-stereotyped aspirations themselves. Also Lavine (1982) found girls' preference for nontraditional occupations was related to perceptions of maternal economic power in the family. Thornton, Alwin, and Camburn (1983) reported maternal experience and attitudes shape their children's attitudes about careers. Ogbu (1982) proposes cross-cultural differences in child rearing are largely explained by the occupational expectations of the parents; thus, parents who expect a particular employment pattern for their children will come to value in their children certain attitudes which attune their children toward those occupations.

Children with homemaker mothers have clear perceptions of the homemaker role and generally view the role as low prestige (Beuf, 1974; Hartley, 1960; 1964; Scanzoni, 1986). Furthermore, children with traditional parents receive more pressure to conform to

traditional sex stereotypes (Biller and Borstelmann, 1967; Fling and Manosevitz, 1972). Edelbrock and Sugawara's (1978) literature review of sex typing discusses the relative lack of censure girls have for cross gender choices.

In the selection of occupation parental influence seems very important. Kandel and Lesser (1969) conclude parental influence is stronger than peer influence on the issue of the adolescent's future life goals; for other issues, peers may be more influential. Accordingly, this study should produce the finding there is less stereotyping by those whose mothers are employed out of the home.

Bandura and Walters' (1963) development and discussion of social learning theory includes some attention to the maintenance of learned patterns over time, focusing on the learning principle of scheduling of reinforcements:

> Under laboratory conditions it is possible to dispense reinforcers for every desired response or to dispense them intermittently according to some schedule or plan. Generally speaking, continuous reinforcement results in the more rapid acquisition of responses, but once learned, the behavior is more stable and more resistant to extinction if it has been acquired on an intermittent schedule (Bandura and Walters, 1963:5).

Reward to the models is one of the conditions which produces imitation by the observer. Also rewards by the model (Researcher/Teacher) or rewards by the Researcher/Teacher for role playing responses produce imitation. Bandura (1962) asserts acquisition of imitative responses is a function of the contiguity of events; if response consequences are rewarding performance is likely to follow. But there is some latitude in just when rewards are given.

Verbal rewards by Researchers and Teachers can be expected to produce imitation in the classes (Insko, 1965). After the module intervention, however, is there any retention of the module material? While early statements are emphatic that prolonged omission or delay of reward leads to a weakening response (Bandura and Walters, 1963:134-135) later work clearly established the idea that learning takes place when the observer <u>believes</u> the model will be rewarded eventually (Flanders, 1968). Barbara Gunn (1964) demonstrated children are very aware of occupational prestige differential and, when given the lattitude to do so, children routinely select higher prestige occupations. While we should expect the absence of continuing rewards by Researchers and Teachers would result in extinction of any stereotyping change (Bandura and Walters, 1963; Bandura, Ross, and Ross, 1963b) there could be continued non-stereotyping if subjects perceived holding non-stereotyped attitudes will be rewarding eventually. Bandura and Kupers (1964) contend when subjects perceive convergence between learning and generalized responses in social situations the subjects are self rewarding. While this condition does not exist for those not yet in the occupations they saw modeled, Anderson and Messick (1974) report children in role playing of adult life or in fantasy about adult life find reward in acting appropriate to the roles they've adopted.

Some researchers have investigated the affect of time on sex role intervention strategies. For instance Porro (1982) claims anecdotal support for a claimed influence a year after intervention but provides no data. Schau and Kahn (1976) reported measurable non-

stereotyping one year after using non-stereotyped stories in classrooms, but their sample was too small. Other researchers have tried sex role stereotyping interventions in classrooms using various materials and time frames (Koblinsky and Sugawara, 1979, 1980; Sprung, 1975; Guttentag and Bray, 1976; Kurilich, 1981; Flerx et al., 1976) but with little attention beyond measuring immediate effects. Social learning theory suggests vicarious rewards of models in the broader occupational range offered by the modules is a reward structure which may diminish over time; but, occupational prestige will be reward enough to demonstrate persistence of module effect (the sixth hypothesis) one year later. Also, if such a persistence exists, the Researcher-Teacher-Control hierarchy of the fourth hypothesis should be discernable one year later as well (seventh hypothesis) [Lefkowitz, Blake and Mouton, 1955].

CHAPTER III

METHODOLOGY

MODULE DEVELOPMENT

The modules used in this research were developed at Montana State University under the direction of Dr. Ramona Marotz-Baden, Department of Home Economics. While participating in the project some adjustments and modifications of the modules were made by the Researchers. The modules, modifications and discussion of how the modules were used in the classroom along with anecdotal evaluation of the modules are published separately, entitled "Teaching Modules for Expanding Occupational Awareness of Preschool, Second and Fourth Grade Children" (Marotz-Baden and Riley, 1979).

Modules were designed to provide small, mixed-gender groups with role playing and socio-dramatic exposure to the specific skills, uniforms (or distinctive clothing), equipment and vocabulary of occupational clusters. The emphasis was on skills rather than gender as the basis for occupations, and on a repeated message that a child can aspire to any occupation in which they have an interest.

The modules follow the suggestions of Sprung (1975) and the earlier work Riley and Powers (1977) produced which amply demonstrated the role of toys and games in either maintaining or liberating sex role stereotyping in the classroom. Many of the toys were commercially available (see Appendix A); others were developed for the Riley and Marotz-Baden (1979) project, by subcontract with the Public Action Coalition on Toys (PACT), a New York based consumer

rights organization which focuses on toys. PACT toys were to supplement the commercial market by offering toys with males and females in nontraditional careers. While the market seems to be somewhat responsive to demands for portraying women in non-traditional roles, there was very little commercially available which showed males in roles such as secretary, nurse, flight attendant, and telephone operator (Riley and Marotz-Baden, 1979). PACT filled this void by making puzzles and lotto games which separately were offered to commercial toy manufacturers for their consideration.

Preschool Modules

The Preschool Module was an eight week unit to introduce to three and four year olds six different occupational clusters focusing on occupation choices based on skills and interests rather than gender. Modules introduced police, mechanic, medical, construction, teacher and airline job clusters preceeded by an introduction to jobs in general, and followed by a review unit as well. Each occupational cluster was introduced using flannel board figures with appropriate uniforms and equipment and using a commercial product, the "Me Doll," with appropriate uniforms. Toys associated with tasks of each occupation were used to allow each child to role play an adult in the particular occupation, accompanied by gender role focused questioning by the adults in the classroom.

Second Grade Modules

The Second Grade module was a nine week modular unit designed to expand the second graders' awareness of occupations and to develop

an appreciation that interest and ability, rather than gender, are critical factors in occupational selection.

The occupation clusters depicted were: construction, health, public service, consumer and homemaking, transportation, communications and media, and business and office careers. Each module listed specific behavioral and instructional objectives, materials needed, specific details for teachers and step descriptions of activities in each unit. Modules were designed for use in four groups although they could be adapted to other configurations since activities were non-sequential. Thirty minutes per unit was the design; however, as noted in Marotz-Baden and Riley (1979), modifications were made in some units for various reasons: adjusting time to fit task needs, changing wording, altering instructions to fit class activities. Many module activities were designed to produce worksheets and activity handouts which could be included in an occupations notebook, for grading if the instructor desired. Modules were intended for groups of no more than 15 children at a time, in mixed gender distribution.

Fourth Grade Modules

Fourth grade modules involved the same focus on skills and interest rather than gender as the basis for occupational selection. Additionally, modules addressed awareness of gender stereotyping in careers, awareness of individuals in multiple family and occupational roles and personal occupational aspirations. Rather than discuss specific occupations using toys and role playing as in the preschool

and second grade units, the fourth grade modules involved games and workbook activities and much more purposive discussion on stereotyping and job interdependency. Many of the activities were adapted from At Least a Thousand Things To Do (Farnette, Forte and Loss, 1977).

Five 45 minute sessions per week was the original design but, as noted in Marotz-Baden and Riley (1979) the time in the classroom varied. Because no record of time actually used was made by any of the teachers no rigorous assessment of this issue is possible. The module design gave approximations of time needed for classroom activities but, as in other classes in other schools, daily activity schedules change frequently to fit the daily situation. The research design assumes module time factors are inconsequential.

RESEARCH DESIGN

The Riley and Marotz-Baden (1979) study involved module intervention in preschool, second and fourth grades. The research reported herein also focuses on that second grade intervention and on an assessment of its effect one year later.

The research design involves module and materials used by the two researchers, the modules and materials used by regular classroom instructors and a control classroom with regular teachers without any occupations modules and materials. This design is graphically portrayed as follows:

			T_1	T_2
Researcher Group:	R	X_1	O_1	O_4
Teacher Group:	R	X_2	O_2	O_5
Control Group:	R		O_3	O_6

R represents the relatively randomized assignment of students to groups. This assignment is unmeasured. The students were assumed to be undifferentiated prior to this intervention. The schools were assumed to serve similar populations, did not place students in classroom tracks and appeared socially unremarkable. These assumptions and casual inferences were untested to avoid pretest sensitization. Riley (1981), in testing a different grade from the same general population, found no remarkable population variables which would challenge the assumptions about the sample used in this project.

X_1 refers to the research team teachers using modules and materials during a 30 minute daily session for nine weeks. X_2 refers to the regular classroom teacher using identical modules and materials in a similar schedule during the same nine week period. O_1 was measurement of occupational attitudes and aspirations (see Appendix B) of Research Group students upon completion of the module period. O_2 is measurement of the Teacher Group students at the end of the module period. O_3 is measurement of the Control Group when the other groups were measured, at the end of the module period. T_1 represents this time of measurement, immediately following completion of the nine week module intervention. T_2 represents a measurement period approximately one year after the T_1 measurement period. O_4, O_5 and O_6 represent measurement of the Researcher,

Teacher and Control Groups at T_2. T_2 measurement applies only to the second grade groups, tested as third graders.

This research design follows the general principles of a post-test only design as discussed at length by Campbell and Stanley (1963). The major advantages of using a post-test only design are several fold. First, having a control group attempts to avoid some of the criticisms of many social intervention experiments as voiced in Campbell (1969). Secondly, post-test only assumes no activities in the control group which would be similar in effect to X have occurred during the time X was operating on the experimental group. Third, post-test only is an attempt to avoid the internal validity problem of testing. Students are only briefly exposed to the test itself (under ten minutes per student was typical in measurement) while X exposure was much more extensive (nine weeks X five days per week X thirty minutes per day = approximately one thousand three hundred and fifty minutes of topic exposure, at a minimum). The one year span between T_1 and T_2 for the third grade testing should make instrument decay negligible. Fourth, the post-test minimizes intrusion into Control classrooms and makes the time and expense of measurement minimal. Fifth, because the general population in society is an untested population (using this instrument, but certainly other samples of the general population have been examined by other researchers), there is some justification for generalization from this sample to the general population. Campbell and Stanley (1963) describe the pitfalls of failing to realize generalization is not fully justified with <u>any</u> experimental design; however, as

discussed by Hendrick and Jones (1972) a well controlled post-test design in natural settings may be acceptable presentation of real world parameters with cautious generalizations drawn therefrom.

From this research design, the aim is to discern if O_1 and O_2 differ from O_3, suggesting the modules have had an effect. If $(O_4 - O_1)$ and $(O_5 - O_2)$ differ from $(O_6 - O_3)$ some effect has acted over time, $(T_2 - T_1)$, enhancing or decreasing the attitude orientation expressed at the conclusion of the module intervention (T_1). The reviewed literature suggests the change over time exhibited by the Control Group reflects the social maturity of third graders compared to second graders. Change in Experimental Groups other than that shown by the Control Group can be attributed to module intervention effects persisting over the interval of time.

Classroom Intervention

Two Utah State University graduate students, Ms. Melinda Toney, Department of Family and Human Development, and the author, Department of Sociology, were hired to act as the Researchers in classroom presentation of the modules. The Teacher and Control Groups were classroom teachers from local public schools who consented to participate in the module intervention or in the testing alone. Other than being able to keep the toys and materials the Teachers had no inducement to participate; the Control teachers had no inducement at all.

The attitudes toward gender roles of the Researchers, Teachers and Control teachers were measured using Bem's Sex Role Inventory

(Bem, 1974) and a Broverman (1970) scale. These evaluation instruments measure the consistency and extent of an individual's gender role stereotyping. Since Guttentag and Bray's (1977) discussion of the pivotal role of teachers as mediators of sexism in the classroom, the implementation of modules is facilitated by using teachers who should be supportive or neutral rather than antagonistic to the module goal. The personnel who participated in this classroom intervention scored varying degrees of psychological androgyny (Bem, 1974). Researchers and Teachers were slightly more androgynous than Control teachers; unfortunately the specific data on this evaluation of teachers were lost. Although the exact scores no longer are available, the preliminary assessment of teachers showed Researcher and Teacher Group adults were similar in degree of support for androgyny while Control teachers' responses were somewhat less supportive.

Classroom intervention was with the written permission of the school principals and with the signed consent of each child's parent or guardian. Parental/guardian permission slips gave consent to participate in a "careers" unit with no mention of the specific focus on gender roles since researchers did not want to introduce additional home awareness on this issue during the project.

In addition to the Researchers, Teachers and Control teachers, various Utah State University graduate and undergraduate students were hired on a part-time basis to observe classroom intervention and to assist in testing at the conclusion of the intervention.

Preschool intervention utilized several sections of preschool classes in the Child Development Laboratory School in the facilities of the Department of Family and Human Development, Utah State University, Logan, Utah.

The Researchers were introduced to students as part of the regular teaching staff, and were available in the preschool most of the half-day sessions, participated in non-project activities and appeared to be indistinguishable in role from other teachers. The Teacher Group children had the toys available and the teacher had the modules. The Control Group had neither toys nor modules available.

Students were assigned to groups randomly before the intervention began. Several university students were involved in the classrooms throughout the term; some of these teachers were male. The supervising teachers in the Researcher and Control Groups happened to be male. As noted in Chapter II, several authors (Brophy and Laosa, 1971; Etaugh, Collins and Gerson, 1975; Madsen, 1968) have found little substantive influence on classes due to the presence of male teachers in the classrooms.

The Second Grade classroom intervention was accomplished at Ellis Elementary School, Logan, Utah, by the Researcher Group. The "Teacher with modules" intervention was also in Ellis School and in a classroom in Providence Elementary School, Providence, Utah. The Control classroom was also located in Providence Elementary School. The configuration at Ellis School provided a novel opportunity during the experiment. The second grade at Ellis consisted of 48 students combined in one class with two teachers working together.

This class had two rooms available; one for desk activities, the other for rug and long table activities. For this research the class was divided into four groups of twelve students each. Two groups stayed with their regular teachers (Teacher Group); two groups worked with the Researchers exclusively. The groups moved from room to room as necessary. Researchers were one male and one female; both classroom teachers were female. Students with the Researchers were kept in constant groups but the Researchers switched groups weekly; thus, Researcher Groups had male and female teachers alternating weekly.

Fourth grade intervention was split between three schools because few fourth grade classes were available. The Researcher class, in Adams School, Logan, Utah, was taught by a female. Researchers divided the class into two groups for activities, switching research teachers weekly so no group had only one Researcher. The Teacher Group, located in Providence Elementary School, Providence, Utah, had a female teacher with modules and games; while the Control Group, in Ellis School, Logan, Utah, had a male teacher with no modules or games from the project.

In testing the hypotheses regarding effects over time (Hypothesis 6, Hypothesis 7) the second grade groups were tested one year later. By then the children had been co-mingled as school boundaries shifted and parents moved. Accordingly, those children who could be located in third grade were tested again with their present (third grade) class and experimental condition (second grade - Researcher, Teacher, Control) recorded. All third grade teachers were female.

Sample Description

The teaching modules were designed for use in three grade levels: preschool (ages 3-4), second grade (ages 7-8) and fourth grade (ages 9-10). These age/grade groups were selected because they illustrate distince differences in social and cognitive development (Riley and Marotz-Baden, 1979).

Preschoolers are aware of their own sexual identity (Thompson, 1975) but they are unsure of the issue of gender constancy - some express they could be opposite gender adults (Flerx et al., 1976; Riley, 1981). Nadelman (1974) reports five year olds are clear in their preference for activities labeled appropriate for their gender while Riley and Powers (1977) and Brand, Ruiz and Padilla (1974) found racial and sexual beliefs well established among three and four year olds. Exposing preschoolers to gender role cross-behaviors would challenge the factual basis of the child's stereotypes. Garrett, Ein and Tremaine (1977) found first graders clearly had stereotypes but had little or no objective information about the adult occupations they were stereotyping. With little information of their own, preschool children are seen as stereotyping due to outside influences (parents, media and toys).

Second grade children express quite a lot of sex-typing in their activities, peer groups form and gain increased importance and noticeable role playing follows gender lines (Riley and Marotz-Baden, 1979; Maccoby, 1986). This age group is responsive to teacher activity to a high degree, more so than later ages wherein peer associations supplant teacher influence in social choices (Baldwin, 1967). O'Hara (1962) reports that girls and boys in fourth grade

have clear but decidedly differing occupational expectations which generally follow stereotyped lines. By this age, occupational alternatives are viewed as rather inflexible (Guttentag and Bray, 1976).

Samples

Tables 1, 2, 3, and 4 indicate group, gender and school distributions for the preschool, second, third and fourth grade clsses participating in this study. All tables include only those subjects available for testing (four or fewer in each grade were missing.

Table 1. Distribution of Subjects by Group and Gender, Preschool.

Group	Female	Male	Totals
Researcher	9 (29%)	10 (35.8%)	19 (32.2%)
Teacher	11 (35.5%)	9 (32.1%)	20 (33.9%)
Control	11 (35.5%)	9 (32.1%)	20 (33.9%)
TOTALS	31 (100%) (52.5%)	28 (100%) (47.5%)	59 (100%) (100%)

Table 2. Distribution of Subjects by Group and Gender, Second Grade.

Group	Female	Male	Totals
Researcher	14 (29.8%)	11 (21.6%)	25 (25.5%)
Teacher	22 (46.8%)	27 (52.9%)	49 (50%)
Control	11 (23.4%)	13 (25.5%)	24 (24.5%)
TOTALS	47 (100%) (48%)	51 (100%) (52%)	98 (100%) (100%)

Table 3. Distribution of Subjects by Group and Gender, Follow-up Group*.

Group	Female	Male	Totals
Researcher	10 (24.4%)	7 (17.1%)	17 (20.7%)
Teacher	21 (51.2%)	21 (51.2%)	42 (51.2%)
Control	10 (24.4%)	13 (31.7%)	23 (28.1%)
TOTALS	41 (100%) (50%)	41 (100%) (50%)	82 (100%) (100%)

NOTE: Due to sample mortality, sample size does not match second grade sample.

* Distribution of second grade sample tested a year later, in third grade.

Table 4. Distribution of Subjects by Group and Gender, Fourth Grade.

Group	Female	Male	Totals
Researcher	14 (36.8%)	15 (37.5%)	29 (37.2%)
Teacher	16 (42.1%)	13 (32.5%)	29 (37.2%)
Control	8 (21.1%)	12 (30%)	20 (25.6%)
TOTALS	38 (100%) (48.7%)	40 (100%) (51.3%)	78 (100%) (100%)

Data Collection Method

Preschool children were asked a series of questions (see Appendix B for the complete questionnaire) including their aspirations for adulthood, a listing of what jobs girls and boys (asking same sex first) can do as adults and, using occupations covered in the modules, whether a boy and a girl could do each of

several specific occupations. Lastly children were asked to name the occupations and "where does he/she work?" for their parents' occupations. Interviews were conducted privately, away from other children, in sites which contained no visual clues about sex roles or occupations and were conducted by female and male interviewers other than the child's classroom instructors.

Second grade subjects were interviewed using a three part questionnaire (see Appendix B). Part I, contained open-ended questions on what the child wanted to be after growing up, which toy or game did the child like best and what were the occupations of the child's parents. Part II listed the twenty-three occupations discussed in the modules; interviewers asked for each occupation if a girl, a boy, and both a girl and boy could do the occupation. Part III utilized a card sort of eight depictions of a person of the subject's gender in a module occupation - four "male" occupations (doctor, pilot, police officer, and television newscaster) and four stereo- typically female occupations (nurse, teacher, homemaker, secretary). Each subject was asked to rank the occupations according to which occupations are preferred over the other depicted occupations.

Fourth graders had a three part questionnaire also; however, they themselves completed Part I, similar to that of the second graders, and Part II, which was an expanded occupational listing, Part III involved a card sort of construction worker, doctor, business executive and pilot "male" occupations and nurse, homemaker,

secretary and nutritionist "female" occupations. Again, drawings showed same gender individuals in each occupation and subjects were asked to sort in rank of occupational preference.

Third graders were administered the same questionnaire they received as second graders. In this case, all were interviewed by the male Researcher from the previous year; however, due to the time lag, a change of setting and pronounced appearance changes (suit, short hair, no beard) only one of the Researcher Group children later admitted recognizing the interviewer as the Researcher of the previous year; none of the Teacher or Control Group children recognized the Researcher.

In the interests of time, testing convenience and specificity to the content of the modules, the questionnaires utilize forced choice responses in discussing specific occupations in each grade level. Other researchers utilize forced choice testing (Garrett, Ein and Tremaine, 1977; Flerx et al., 1976; Riley and Powers, 1977). However, Guttentag and Bray argue such forced choice measures:

> ...[require] children to choose between either a sexist or nonsexist response or between a masculine and feminine response. This type of measure is worthless because it does not give children enough range of possibility in what they can say. The measure essentially forces a child to say what the tester has already defined as the possible alternatives (1976:72).

Our use of forced choice responses is only in the part of the interview specifically dealing with module related occupations. In Part I for each grade, the subject is encouraged to express their own aspriations, with no limits imposed by the interviewer. As

demonstrated in Riley and Powers (1977) children can and do express rather broad occupational aspirations, albeit usually along stereotypic lines.

Part III used an eight fold card sort. The card sort is a method for measuring attitudes, beliefs, reported behaviors and values using visual materials. Card sorts have been found to be an effective method notably because of the speed by which quite a large volume of choices can be made. For instance, Cataldo, Johnson, Kellstedt and Milbrath (1970) found Q-sorts or card sorts are viewed by interviewers as interesting, routine-breaking and easy to administer while subjects similarly felt comfortable with the technique (as long as it was not repetitive). Kidder (1981) discusses the card sort as being useful, with more advantages than disadvantages and generally free of systematic response errors. Kropp (1986) found children in preschool were adept at accomplishing a box card sort, a finding similar to Bradbard and Endsley (1983) and Coker (1977). However, Kropp (1986) cautions among very young children (preschool) some have difficulty with the use of the term 'both'. When encountering apparent confusion, interviewers probed, using "a girl and a boy" as substitute wording.

The 'adult' depicted in the picture sort for second, third and fourth grade testing is unambiguously the same gender as the subject, countering a frequent criticism (Edelbrock and Sugawara, 1978) of the "It" figure of a widely used sex role measurement by Brown (1956). The age of the figure may be important as a source of instrument-induced error. Edelbrock and Sugawara (1978) found girls

more receptive to adult figure pictures while boys were more receptive to child figure pictures. Their conclusion is that girls are more aware of and sensitive to adult life than are boys.

Another facet in testing is the sex of the interviewer. Previous research on Brown's (1956) "It" Scale does not reveal an effect due to the gender of the experimenter (Borstelmann, 1961; Doll, Fagot and Himbert, 1973), however, Edelbrock and Sugawara (1978) found there was a social desirability factor for both boys and girls when tested by opposite gender experimenters. DeLucia (1963) found just the opposite in an earlier project. Experimenter effects were not examined in the research project reported herein, although by varying Researcher during classroom presentation of modules, the research design tried to avoid any influence on subjects due to the gender of the Researcher.

Flerx et al. (1976) pretested their kindergarten subjects first to discern if the child could correctly identify the modeled sex of a doll. Their discussion indicates some children did have difficulty but no data are available. In the Riley and Powers (1977) and Riley and Marotz-Baden (1979) studies, there appeared to be no problem in this regard among the samples.

STATISTICAL ANALYSIS

Dependent Measures

The effect of the module interventions is assessed by comparing group means on four dependent variables: (1) percent male, (2) traditionalism, (3) sex typing, and (4) traditional picture ranking.

Percent male is a measure of stereotyping of occupational aspirations in that it is expressed in percentage of males in the occupation to which the subject reportedly aspires. Each occupation enumerated by subjects was assigned an occupational identification code and the associated percentage of those in the occupation who are males as reported in the 1970 US Census, the best estimate then available. Stereotyping of aspirations by each group within each grade was compared using analysis of variance.

Traditionalism is a measure of how closely the child's perceptions about the occupations listed in Part III of the Preschool questionnaire or Part II of the other grades' questionnaires coincided with stereotyping of careers according to the subjective assessment of the researchers. For each stereotyped occupation in agreement with the traditional lines assessed by researchers, the subject was given an incremental score tally. Mean traditionalism scores for each group in each grade were compared using analysis of variance.

Gender-typing is a modification of the traditionalism score above. Absolute gender-typing of occupations is indicated by an incremental count of occupations which were identified by the children as occupations which could be done only by a female or only by a male. The mean number of occupations gender-typed was compared by group, grade and gender.

Traditional picture ranking is a measure of degree of traditionalism in the choices made by the respondent in the picture

sort. When a subject indicated four top choices which followed traditional stereotyping for their own gender their score was four. No top four choices from those traditional for their gender scored zero, thus traditional picture ranking score ranged from zero (no top four choices traditional to subject's gender, thus non-stereotyped) to four (all top four choices coincided with traditional stereotypic choices for the subject's gender). Use of contingency table analysis, a joint frequency distribution analysis, assesses group patterns in picture making.

Persistence of the module effect in each group among the second graders, measured in the third grade, is analyzed using a sign test for matched samples, a form of analysis of covariance, similar to the treatment in Flerx et al. (1976). Eighty-four (83.67%) percent of the second grade sample was tested in third grade.

Preschool to kindergarten persistence was not assessed because the sample dispersed too far to be easily tested one year after exposure to modules. Also, the fourth graders were not tested one year later due to similar problems in locating the original sample. Inexplicably, of the forty males in the fourth grade sample, only twenty-seven were located a year later, a sample mortality of over thirty percent (32.5%), while the girls' sample remained largely intact (35 available = 92.1%).

Independent Variables

Five independent variables form the basis of analysis in this study. Module effect is the primary topic of inquiry. Accordingly,

group membership is a variable of interest in assessing module influence. Response differences in dependent variables should be evident between Researcher, Teacher and Control Groups if module effects are present. Another variable of interest is grade level. The literature suggests children exhibit age variability in stereotyping, hence grade level may influence receptivity to module intervention. The third variable of interest was gender of the subject. As in the literature, males and females should be differentially influenced by module intervention.

Time is the fourth variable, which only applies to the discussion of the persistence of module effect in the second graders measured a year later. Time effect is measured in the third grade analysis.

The fifth variable, for use in analysis of the fifth hypothesis, concerns whether or not the subject's mother was employed. Each subject was asked "What does your mother do? Where does she work?" (Appendix B) as part of the testing for each group in each grade. No reported occupation or homemaker reported as the occupation were defined as non-employed, all others were defined as employed.

CHAPTER IV

FINDINGS

This chapter presents the statistical analysis of the data assessing the variations in module effect as measured in each group - in preschool, second and fourth grades, as well as the effect measured in a limited group of third graders a year after module intervention. Discussion centers on issues relevant to the seven research hypotheses posited in the preceding chapters. Analysis is reported by grade level. Statistical significance is indicated where appropriate, if results fall within conventional levels of significance.

The original research design, as discussed in Chapter III, was not followed entirely. The Preschool Teacher Group did not receive the full intervention as planned - the teacher had the toys available in the classroom but chose not to use the modules for discussing careers. Accordingly, the Preschool Teacher Group scores reported herein more closely match those of the Control Group than the Researcher Group. What slight variance from the Control Group is observed in the Teacher Group scores may be attributed to the toys being available in the classroom.

By a fortuitous opportunity the Fourth Grade design was modified due to the existence of a two-teacher, double-sized class in the Researcher Group classroom. Thus, one half of this double class was designated as the Researcher Group, while the remainder was designated the Teacher A Group. Thus the Fourth Grade analysis

utilizes two Teacher Groups, Teacher A and Teacher B (in another school) as part of the experimental condition in the data presentation.

MODULE EFFECT, GENDER, GRADE AND GROUP FINDINGS

Module effect is assessed directly by comparing group scores on each of the dependent variables. The following tabular presentations of data also break down responses into female and male scores within each group. Therefore, analysis of the first hypothesis, about the existence of module effect, also includes presentation of data relevant to the second hypothesis, that females would reduce stereotyping more than males; and, the fourth hypothesis, contending stereotyping would increase along a continuum of Researcher, Teacher and Control Group scores. With regard to these hypotheses, the findings parallel those reported in the original Riley and Marotz-Baden (1979) study; discussion is focused on each hypothesis and each grade level.

Preschool

Percent male measures the gendertyping of the occupational aspirations of each subject. The higher the percentage of males in an occupation, the more stereotyped the male subject's choice; the lower the percentage of males in an occupation, the more stereotyped the female subject's choice.

Table 5 shows the mean percent of males in occupations aspired to by preschoolers, reported by group and gender. The break- down into genders is particularly useful here since the group distinctions may mask the effect of gender within each group. Female scores among the groups in Table 5 show statistically significant module effects, while male scores show a slight module effect, not statistically significant. The first hypothesis about module effect is partially supported by group data and the second hypothesis is partially sustained since the effect is different for females and males.

Table 5. Mean Percent of Males in Occupations Aspired to, by Gender and Group, Preschool.

	GENDER*			
	Female**		Male	
Group	Mean	S.D.	Mean	S.D.
Experimental (Researcher)	37.4% (9)	40.7	93.1% (10)	8.6
Experimental (Teacher)	9.5% (11)	21.1	93.13% (9)	9.4
Control	7.8% (9)	16.8	90.44% (8)	18.0
Totals (N)	(29)		(27)	

*$p < .001$, for Gender in each group
**between groups $p < .05$ for females only, for each Experimental Group and the Control Group.

As suggested by the stereotyping literature, sex of respondent was the most important predictor of occupation of aspiration, regardless of group. In all groups males selected occupations which were at least 90% male, suggesting males are rather intransigent in occupation choices along gender lines. Remembering males are more penalized for "sex-inappropriate" choices, males should be expected

to select male occupations. Another reason to expect males to select as they did is the realization many male occupations have superior social status and income potential.

Females in all three groups were less stereotyping than the males but in Teacher and Control Groups the distinction is slight. Only in the Researcher Group did females select male occupations at a significant rate (37.4%); $p < .05$. Given the lack of module use by the Teacher Group, this result is not unexpected but it does support the direction of the second hypothesis which posits females will demonstrate more module effect than will males.

Table 5 analysis also supports the fourth hypothesis that Researcher Group stereotyping will be more influenced by modules than the Teacher Group which, in turn, is less stereotyping than the Control Group. This module effect by group is clearly evident, but only among females ($p < .05$). Male Experimental Groups preschoolers showed a non-significant increase in stereotyping rather than a decrease.

Table 6 illustrates another measure of module effects among preschool students. Aspirations for occupations were collapsed into categories of the proportion of males in the occupation; thus stereotyping by males is represented by scores in the higher percentage males occupations, while stereotyping by females would be aspiring to occupations with a lower percentage of males occupations. Module effect (Hypothesis 1) is evident but in patterns different for males and females (Hypothesis 2). Researcher Group males seem to have hardened into more stereotyping than the Control Group. Females show

a partial module effect in that several (66%) females remained stereotypic in their aspirations but a cluster of females (33%) were influenced by modules as evidenced by their very non-stereotypic aspirations (ie: jobs in which 71% or more of the incumbents are males).

Table 6. Percentage of Preschool Children, by Gender and Group, Selecting Occupational Aspirations (by Proportion of Males in the Occupation).

Percentage of Males in Occupations Chosen	Experimental (Researcher)		Control	
	Female	Male	Female	Male
0-10%	33.3% (3)		77.8% (7)	
11-20%	22.2% (2)		11.1% (1)	
21-30%	11.1% (1)			
31-40%				
41-50%			11.1% (1)	11.1% (1)
51-60%				
61-70%				11.1% (1)
71-80%	11.1% (1)	10.0% (1)		
81-90%		20.0% (2)		
91-100%	22.2% (2)	70.0% (7)		77.8% (7)
Totals (N)	100.0% (9)	100% (10)	100% (9)	100% (9)

Comparison of differential effects (Researcher v. Teacher v. Control of modules in the Preschool is hampered by the Teacher Group's lack of full module use; consequently, Teacher Group data is not included in Table 6.

Table 7 shows scores of traditionalism as measured by asking subjects whether a boy, a girl, or both a boy and a girl could hold any of thirteen listed occupations. Project personnel categorized each module occupation as traditionally considered male or female based on percentages of gender distribution as determined by the U.S. Census, and on social characterizations of the occupations as more

appropriate for a particular gender. Traditionalism score indicates extent to which subjects agreed with the idea that only a particular gender could fill a particular occupation (Riley and Marotz-Baden, 1979).

Table 7. Mean Traditionalism Scores*, by Group and Gender, Preschool.

Group	Group Total**	Gender	
		Female	Male
Experimental (Researcher)	.68 (19)**	.89 (9)	.50 (10)
Experimental (Teacher)	2.58 (19)	1.82 (11)	3.63 (8)
Control	2.53 (19)	3.13 (8)	2.09 (11)
Totals (N)	(57)	(28)	(29)

* The higher the score, the greater the traditionalism

** Between group differences $p < .05$ between Researcher and Control group

Module effect is significant ($p < .05$) between Researcher and Control Group for the group total. The lower traditionalism of the Researcher Group is as predicted in the first hypothesis. Similarly, female scores show clear module influence but male scores are illustrative of module effect between Researcher and Teacher Groups if the Teacher Group is assumed to be more representative of a Control Group, due to lack of module use.

Two points should be considered in this instance. Since the Teacher Group had access to the toys but no module intervention, we have only anecdotal evidence of the pattern of toy use among the Teacher Group. One observer reported cross-sex toy use was minimal - boys used "male" type toys (e.g., Garage, Airport, Tinker Toys),

while girls used the "female" type toys. Virtually no mixed-sex group play was observed. Hence, the finding that Teacher and Control Group have similar traditionalism scores is not surprising. However, the second point of consideration is gender related. Within the Teacher Group, females' scores demonstrate that toys which present occupations as skilled-based rather than gender-based can influence the occupational choices of the girls, even without full module use. Since there is little evidence boys used any non- stereotyped toys, their high mean traditionalism score is not unexpected.

This finding about Teacher Group and the scores on traditionalism among the Control Group points to the existence of stereotyping before children attend preschool. Furthermore, without active intervention by the teacher, children will continue stereotyping through their own gender labeling of toys as gender appropriate or inappropriate.

Table 8 indicates the stereotyped perceptions preschool children have about various occupations. While traditionalism assesses perceptions of how society has gendertyped an occupation, the gendertyping score measures the child's own perceptions about the occupations. Researcher Group children gendertyped fewer occupations than did Teacher and Control Group subjects. The difference in gendertyping between Researcher Group females (.86) and Control Group females (4.17) was statistically significant ($p < .05$) while other differences were not statistically significant.

Table 8. Mean Number of Occupations Gendertyped*, by Group and Gender, Preschool.

Group	Group Total**	Gender	
		Female	Male
Experimental (Researcher)	.83 (18)	.86 (8)	1.00 (10)
Experimental (Teacher)	2.47 (17)	1.70 (10)	3.57 (7)
Control	2.87 (15)	4.17 (6)	2.00 (9)
Totals (N)	(50)	(24)	(26)

*of a possible 13 occupations
**between groups $p < .05$ for Researcher and Control Groups only

Preschool data analysis demonstrates children in this age group (3.0 to 5.2 years in this study) do stereotype adult occupations. Furthermore, these children have translated this stereotyping of adult life into fairly narrow, stereotyped perceptions and aspirations for themselves. Intervention in the Researcher Group, using toys, activities and modules, did influence the occupational perceptions and aspirations of preschool children. However, girls were more influenced than were boys. Module effect is present in both genders, and that effect follows the prediction of the fourth hypothesis that the Researcher Group would show less gender stereotyping than the Teacher Group which, in turn, would show less gender stereotyping than the Control Group.

Second Grade

Second grade module use in this project involved a Researcher Group, a Teacher Group (Teacher A) in the same school and another Group (Teacher B) in another school and a Control Group in a third

school in the local area. Whenever possible Teacher A and Teacher B Groups will be indicated in the analysis.

Table 9 shows occupational aspirations of second grade children in relation to the percentage of males in those occupations. In all groups males chose more "male" occupations than did females. The comparatively lower score of Control Group males is not as predicted by the literature. Other samples in this population or in other second grade samples would have to be examined to see if this finding is consistent or a sample specific anomaly. In this sample the differences between each Experimental Group and the Control Group scores for males are statistically significant ($p < .01$).

Table 9. Mean Percent of Males in Occupations Aspired to, by Gender and Group, Second Grade.

	Gender			
	Female*		Male**	
Group	Mean	S.D.	Mean	S.D.
Experimental (Researcher)	49.1% (14)	35.8	95.1% (10)	6.4
Experimental (Teacher A)	32.6% (10)	36.1	96.6% (12)	2.3
Experimental (Teacher B)	42.8% (11)	40.0	92.3% (14)	9.4
Control	11.0% (11)	16.9	82.6% (13)	16.8
Totals (N)	(46)		(49)	

* Between group differences $p < .05$ for each Experimental Group and the Control Group

** Between group differences $p < .01$ for each Experimental Group and the Control Group

Researcher Group females selected occupations with higher percentages of males (49.1% Researcher, 11.0% Control) indicating

module exposure influenced Researcher Group girls (and Teacher A Group [32.6%] and Teacher B Group [42.8%] girls to lesser degrees) to select occupations for themselves which are less stereotyped. Furthermore, the broader range of occupational choice for girls exposed to the modules (S.D. = 35.8 [Researcher], 36.1 [Teacher A], 40.0 [Teacher B], 16.0 [Control]) suggests that a module effect is present among girls.

Males in all groups chose heavily male occupations with comparatively narrow ranges of choice, as indicated by the Table 9 standard deviations. Even the most egalitarian group of boys (here the Control Group) was noticeably more stereotyping in occupational aspirations than any group of girls.

Variations between Researcher, Teacher A, and Teacher B Groups suggests several considerations. First, variation may be explained by viewing second graders as attached to (identified with) their clasroom teachers; hence, the novel Researchers may not be substantially more influential. Secondly, these particular teachers (A and/or B) may be more effective teachers than the Researchers (although Table 9 suggests otherwise, at least regarding the modules). Another consideration may be that, as suggested in the preceeding chapter, girls are more receptive to cross gender occupational information while boys are more resistive (as suggested by cognitive dissonance theory) to information contrary to their stereotypes (Kropp, 1986).

Table 10 reports the distribution of occupational choices of second graders as distributed along percentage of males in those occupations. Twenty percent of the females in the groups exposed to

modules selected occupations which are heavily male (90% or more) while none of the Control Group females made similar choices. As illustrated in Table 10, females still stereotype, but the Experimental Groups showed more exploration into "male" occupations.

As in the Preschool, second grade males persisted in selecting gender stereotyped occupations, selecting "male" occupations almost exclusively. Module effect is not evident among males.

Table 10. Percentage of Second Grade Children, by Gender and Group, Selecting Occupational Aspirations (by Proportion of Males in the Occupation).

Percentage of Males in Occupational Choices	Experimental		Control	
	Female	Male	Female	Male
0-10%	28.6% (10)		63.6% (7)	
11-20%	20.0% (7)		27.3% (3)	
21-30%	2.9% (1)			
31-40%				
41-50%				7.7% (1)
51-60%	11.4% (4)		9.1% (1)	
61-70%	8.6% (3)	2.8% (1)	23.1% (3)	
71-80%	8.6% (3)	5.6% (2)		15.4% (2)
81-90%		2.8% (1)		
91-100%	20.0% (7)	88.9% (32)		53.8% (7)
Totals (N)	100.0% (35)	100.0% (36)	100.0% (11)	100.0% (13)

Traditionalism, measuring perceptions about occupational stereotypes, is indicated in Table 11. Twenty-three occupations were listed; subjects were asked if a man or woman or both men and women could do the listed jobs. Researcher and Teacher (A and B) Groups were significantly (each Experimental Group: $p < .001$) less stereotyping than the Control Group. Within treatment groups, the genders were similar in traditionalism, suggesting module use can modify attitudes about the appropriateness of contemporary stereotypes.

Table 11. Mean Traditionalism Scores*, by Group and Gender, Second Grade.

Group	Group Total**	Gender	
		Female	Male
Experimental (Researcher)	2.20 (25)	2.50 (14)	1.82 (11)
Experimental (Teacher A)	3.32 (22)	3.60 (10)	3.08 (12)
Experimental (Teacher B)	2.08 (24)	2.40 (10)	1.86 (14)
Control	10.46 (24)	9.64 (11)	11.15 (13)
Totals (N)	(95)	(45)	(50)

*The higher the score, the greater the traditionalism.
**Between group differences $p < .0001$, for each Experimental Group and the Control Group

Second grade traditionalism scores clearly demonstrate module effect (Hypothesis 1), and the expected less stereotyping by Researcher Group compared to the Teacher and Control Groups (Hypothesis 4), but the prediction that females would be more influenced than males was not found. In fact, second grade Experimental Group males showed lower traditionalism than their female counterparts in the same group.

A similar pattern is shown in Table 12 in assessing how many occupations are considered by each group to be gendertyped. Using between group mean traditionalism score differences, Researcher and Teacher Groups were significantly ($p < .001$) less stereotyping than Control Group members (in each group, however, gender differences were not significant). Control Group subjects gendertyped almost half of the twenty-three occupations while Experimental Group members gendertyped less than one fifth of the occupational list. Variation of effect between Researcher and Teacher Groups is slight.

This table demonstrates the effectiveness of the modules versus no information about stereotyping of careers. Information about stereotyping is attenuating perceptions regardless of whether that change is translated into personal choices.

Table 12. Mean Number of Occupations Gendertyped*, by Group and Gender, Second Grade.

Group	Group Total**	Gender	
		Female	Male
Experimental (Researcher)	2.52 (25)	2.86 (14)	2.09 (11)
Experimental (Teacher A)	3.82 (22)	4.10 (10)	3.58 (12)
Experimental (Teacher B)	2.42 (24)	3.10 (10)	1.93 (14)
Control	12.04 (24)	11.27 (11)	12.69 (13)
Totals (N)	(95)	(45)	(50)

*Of a possible 23

**Between group differences $p < .001$ for each Experimental Group and the Control Group, for group totals, not for gender differences within each group.

As indicated in Table 13, the picture ranking of occupations shows group effects are slight. Researcher Group children selected more nontraditional occupations in their top four choices than did the other groups; that distinction was not statistically significant. There is some evidence for concluding Researchers were more successful than Teachers A and B in countering stereotyping of occupational choices. No student selected more than one non-stereotyped occupation in their top four choices among the picture sort choices.

Table 13. Percentage of Second Grade Children, by Group, Traditionally Ranking Pictured Occupations.

Number of Traditionally Ranked Occupations Selected	GROUP			
	Researchers	Teacher A	Teacher B	Control
3	32.0% (8)	18.2% (4)	28.0% (7)	12.5% (3)
4	68.0% (17)	81.8% (18)	72.0% (18)	87.5% (21)
Totals (N)	100.0% (25)	100.0% (22)	100.0% (25)	100.0% (24)

Looking at gender of subject in relation to traditional picture ranking, shown in Table 14, module-exposed females selected at least one non-traditional occupation at a higher rate (42.9%) than did Control Group females (9.1%). Almost all of the Control group girls (90.9%) selected all traditionally female jobs while a smaller number of the Experimental Groups female subjects (57.1%) made similar choices. The implication here is modules do have an influence on girls. There was slight influence among males. Given the higher social status and salary of the pictured "male" occupations (Police Officer, Doctor, Pilot, Newscaster) over the pictured "female" occupations (Nurse, Homemaker, Secretary, Teacher), females are expected to be more flexible in occupational choice than are males since females have more to gain by flexibility than males.

Table 14. Percentage of Second Grade Children, by Gender and Group, Traditionally Ranking Pictured Occupations.

Number of Traditionally Ranked Occupations	GROUP			
	Experimental		Control	
	Female*	Male**	Female	Male
3	42.9% (6)	18.2% (2)	9.1% (1)	15.4% (2)
4	57.1% (8)	81.8% (9)	90.9% (10)	84.6% (11)
Totals (N)	100.0% (14)	100.0% (11)	100.0% (11)	100.0% (13)

* $p = .15$, Kendall's $Tau_B = .37$; $p = .03$, $Tau_C = .33$

** $p = .71$

As in preschool groups, this study shows second graders stereotype occupation and second grade girls are more flexible in their stereotyping than are second grade boys. Further, module use seems to have an influence on the girls but little impact on the boys.

Results about the predicted superiority in module effect of the Researchers compared to Teacher Groups (A and B) is less distinct. In some tables Researcher Group scores are the least stereotypic but the effect is not consistently demonstrated in all Tables for second grade data.

Fourth Grade

The fourth grade research design was more conventional than the second grade; only one Teacher Group is used. The Control Group teacher was male.

Whether fourth graders aspire to heavily gender specific occupations is shown in Table 15. In each group boys selected for occupations heavily populated (about 90% in each case) by males, indicating male fourth graders have stereotyped aspirations.

Table 15. Mean Percent of Males in Occupations Aspired to, by Gender and Group, Fourth Grade.

	Gender			
	Female		Male	
Group	Mean	S.D.	Mean	S.D.
Experimental (Researcher)	50.1% (14)	37.7	88.7% (15)	12.6
Experimental (Teacher)	22.6% (16)	26.1	87.8% (13)	13.0
Control	47.0% (7)	38.6	91.0% (11)	11.8
Totals (N)	(37)		(39)	

Females in Researcher and Control Groups selected occupations which were about 50% male; the Researcher Group choices were slightly (50.1% versus 47.0%) more egalitarian than the Control Group females. Teacher group females did not follow the same pattern; rather, they selected very low male percentage occupations. The Riley and Marotz-Baden (1979:43) report suggested this divergence from the Researcher and Control female patterns may be attributed to many of the girls selecting teacher as an occupational aspiration, a tribute to a noteably good teacher they wished to emulate. Although the module presentation makes clear the higher prestige of many male dominated occupations, the influence of this one teacher is perhaps more powerful than the information content of the modules.

Examining the standard deviations of the mean scores reported shows in each group females had a broader range of occupational aspirations than did the males who were more homogeneously concentrated about the male polar occupations. When comparing scores across the groups, there seems to have been little or no module influence.

The distribution of choices among the range of occupations in Table 16 demonstrates males in all groups select occupations very dominated by males (81-100% range); however those in the Researcher and Teacher Groups were slightly less stereotyping (71% selecting occupations with 81-100% males) than those in the Control Group (91% in the same occupational choices). Female fourth grade subjects exposed to modules showed a broader distribution in the range of choices made, with more male loaded choices (those occupations 50%

male or more) selected by about half of the girls, regardless of group.

Table 16. Percentage of Fourth Grade Children, by Gender and Group, Selecting Occupational Aspirations (by Proportion of Males in the Occupation).

Percentage of Males in Occupational Choices	Experimental		Control	
	Female	Male	Female	Male
0-10%	23.3% (7)		28.6% (2)	
11-20%	36.7% (11)		14.3% (1)	
21-30%				
31-40%	10.0% (3)			
41-50%				
51-60%		3.6% (1)		9.1% (1)
61-70%	6.7% (2)	10.7% (3)	42.9% (3)	
71-80%	6.7% (2)	14.3% (4)		
81-90%	3.3% (1)	10.7% (3)		27.3% (3)
91-100%	13.3% (4)	60.7% (17)	14.3% (1)	63.6% (7)
Totals (N)	100.0% (30)	100.0% (28)	100.0% (7)	100.0 (11)

Note: Teacher and Researcher Groups are combined in the experimental condition.

Researcher and Teacher Group females selected non-traditional (71-100% male) occupations at a greater rate (23%) than did Control Group females (14%). The males are rather traditional in their choices as a group but there also was a nucleus of females who were traditional in their occupational choices; 60 percent of females exposed to modules chose occupations with very few males (20% or less). This finding may reflect the aforementioned emulation of a particular teacher.

Table 17 demonstrates traditionalism can be influenced by the modules. Control subjects of either gender were significantly more traditional than Experimental group subjects. There was slight variation in traditionalism between Researcher and Teacher Groups, which may be attributed to teacher effect.

Table 17. Mean Traditionalism Scores*, by Group and Gender, Fourth Grade.

Group	Group Total**	Gender	
		Female	Male
Experimental (Researcher)	4.88 (24)	3.50 (12)	6.25 (12)
Experimental (Teacher)	3.23 (26)	2.14 (14)	4.50 (12)
Control	10.18 (17)	9.29 (7)	10.80 (10)
Totals (N)	(67)	(33)	(34)

*The higher the score, the greater the traditionalism.
**Between group differences $p < .001$ for each Experimental Group and the Control Group.

Contrary to the prediction of the fourth hypothesis, Table 17 does not show Research influence as more effective than the Teacher. A similar finding is supported by Table 18.

Table 18 reports gendertyping in Researcher and Teacher Groups is significantly less common than among Control Group subjects, with males doing more gendertyping than females in each group. As in the previous discussion, Researcher and Teacher variation is slight. The module effect, however, is substantial.

Table 18. Mean Number of Occupations Gendertyped*, by Group and Gender, Fourth Grade.

Group	Group Total**	Gender	
		Female	Male
Experimental (Researcher)	5.42 (24)	4.17 (12)	6.67 (12)
Experimental (Teacher)	3.46 (26)	2.21 (14)	4.92 (12)
Control	11.94 (17)	11.29 (7)	12.4 (10)
Totals (N)	(67)	(33)	(34)

*Of a possible 24 occupations

**Between group differences $p < .001$ for each Experimental Group and the Control Group

Table 19 shows traditional occupational choices predominate for all groups. Selecting one non-traditional occupation in their top four choices was found in under 15% of each group.

Table 19. Percentage of Fourth Grade Children, by Group, Traditionally Ranking Traditional Occupations.

Number of Traditionally Ranked Occupations Selected	GROUP		
	Researcher	Teacher	Control
3	12.0% (3)	13.8% (4)	10.0% (2)
4	88.0% (22)	86.2% (25)	90.0% (18)
Totals (N)	100.0% (25)	100.0% (29)	100.0% (20)

Module effect is slight and the prediction of the fourth hypothesis (Researcher Group less stereotyped than Teacher Group or Control Group) cannot be supported by this data.

Similarly, in Table 20 gender of subject made little difference in the number of non-traditional occupations selected. In each group females had a slight (25% or less) likelihood of including a non-traditional choice; males showed even more traditionalism.

Table 20. Percentage of Fourth Grade Children, by Group and Gender, Traditionally Ranking Traditional Occupations.

Number of Traditionally Ranked Occupations Selected	GROUP					
	Experimental					
	Researcher		Teacher		Control	
	Female	Male	Female	Male	Female	Male
3	25.0% (3)	0.0% (0)	12.5% (2)	15.4% (2)	25.0% (2)	0.0% (0)
4	75.0% (9)	100.0% (13)	87.5% (14)	84.6% (11)	75.0% (6)	100.0% (12)
Totals (N)	100.0% (12)	100.0% (13)	100.0% (16)	100.0% (13)	100.0% (8)	100.0% (12)

Module effect between groups was not clearly evident. Females were less traditional than males in Researcher and Control Groups, at the same rate, but not in the Teacher Group.

Summary

Module effect generally is found but in some measures the variance is not significant when comparing Experimental and Control Groups. Females generally are more influenced by modules than are males but the fourth grade data, in particular, shows the likelihood that the modules do not adequately persuade females to step out of stereotypic perceptions and aspirations. There is inconclusive or contradictory evidence for concluding the Researchers are better able to influence students than are the Teachers.

AGE EFFECT

Does gender stereotyping of careers diminish as age increases? The literature suggests older children are better able to make personal value statements which are less rigidly stereotypic than younger children. The prediction of the third hypothesis is that children would stereotype less as they matured. Due to the problems with the preschool Teacher Group's lack of module use and the dual Teacher Groups used in the second grade, only Researcher and Control Group data will be considered, although Control Group data alone would test this third hypothesis.

Table 21 reports the mean percentage of males in the occupations aspired to by Researcher and Control Groups for each grade level. The female scores show a gradual reduction in stereotyping as grade level increases for both Researcher and Control Groups. Male scores do not follow the same pattern. The male pattern is not statistically significant, but the female Control Group is ($p < .05$); therefore, only partial support is given the hypothesis.

Table 21. Mean Percentages* of Males in Occupations Aspired to, by Groups.

	Researcher				Control			
	Females		Males		Females**		Males	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Preschool	34.4%	40.7	93.1%	8.6	7.78%	16.8	90.4%	18.0
Second	49.1%	35.8	95.1%	6.4	11.0%	16.9	82.6%	16.8
Fourth	50.1%	37.7	88.7%	12.6	47.0%	38.6	91.0%	11.8

*Percentages are not cumulative

**Between group differences ($p < .05$), for Control Group female differences between grades

Table 22 presents comparison of mean traditionalism scores for all three grade levels. Group level data should show decreasing scores as age increases if the age hypothesis is true. The data show, to the contrary, that in this range traditionalism increases rather than decreases. Female scores increase in both groups (with slight pertubation in the Control Group), with a similar pattern among males. Researcher Group score differences are statistically significant ($p < .05$).

Table 22. Mean Traditionalism Scores*, by Group, Gender and Grade.

	Researcher**			Control		
	Group	Female	Male	Group	Female	Male
Preschool	.68(19)	.89(9)	.50(10)	2.53(19)	3.13(8)	2.09(11)
Second	2.20(25)	2.50(14)	1.82(11)	10.46(24)	9.64(11)	11.15(13)
Fourth	4.88(24)	3.50(12)	6.25(12)	10.18(17)	9.29(7)	10.80(10)

*The higher the score, the greater the traditionalism
**($p < .05$) for differences in scores between grades for group totals, females and males

Because different instruments to measure gendertyping were used for each grade level, no comparison is appropriate using gendertyping data. Similarly, picture ranking analysis across grade levels would be meaningless. The data presented above does not conclusively reject the null hypothesis of no age (grade level) differences in stereotyping. Female scores do indicate some decrease in stereotyping as age increases but this should be studied in other contexts for confirmation.

EFFECT OF MOTHER'S EMPLOYMENT

The literature suggests that children of employed mothers would do less stereotyping of careers than children who have unemployed mothers. The null of this fifth research hypothesis is that mother's employment produces no difference in the dependent measures' scores.

In the preschool, this position is difficult to assess since many children did not respond to questions about the employment of either parent. Many children simply did not know the occupation of one or both parents or were unable to articulate that information. Thirty-three of the sixty children (55%) did not report mother's occupation; some undoubtedly were homemakers but how many were employed is unknown. In reporting father's occupation, only fourteen of the sixty (23.3%) failed to report an occupation. In a community with no pronounced unemployment, one can surmise many preschoolers just did not know their parents' occupations.

The fifth hypothesis examines an alternative, or an intervening variable, in the effect of career education modules used with elementary school children. Group differences previously discussed may be spurious relationships. A significant adult model outside the classroom, an employed mother, may be as important as modules in affecting stereotyping change. Also, an employed mother may function to attune her child to the inconsistencies between the parental experience of occupation and the stereotyped perception of adult life held by the child. An employed mother may attune the child to the message of the modules.

For this hypothesis, each of the preceeding tables was re-examined using the controlling variable of mother's employment. Unknown employment status and known status as a homemaker were termed "non-employment;" all others, with reported employment, were termed "employment." Since subject children were the source of their mother's employment status, the actual fact of employment is not measured, just the child's perception of the mother's employment (which may be more important anyway).

Preschool

Preschool analysis is particularly influenced by the use of children as the source of employment information. While theoretically useful, this situation is problematic in the research analysis since of the fifty-nine subjects tested in preschool, only eight reported employment for their mothers. Many of the preschool sample gave uncodable responses or did not know if mother was employed. Mean percentage of males in occupations selected and the distribution of males in occupations selected showed no distinct patterns between "employment" and "non-employment" mothers groups and no pattern when further controlling for gender. Since these two topics are reflections of the children's aspirations for themselves rather than expressions of their own perceptions and attitudes, perhaps the lack of distinct pattern in response is an indication of confusion about their own identity and gender consistency, as Kohlberg (1966) suggested. Social Learning theory would view "employment" mothers as models for the expectation of having adult

occupations; but, with most employment out of the home, the content of the modeling is not very informative about the specific nature of the mother's occupation. Weak modeling could produce the indistinct patterns shown in Table 23.

Table 23. Mean Traditionalism Scores*, by Group, Gender and Mother's Employment, Preschool.

	Employment			Non-Employment		
Group	Group	Female	Male	Group	Female	Male
Researcher	2.0(4)	1.33(3)	4.0(1)	.33(15)	.67(6)	.11(9)
Teacher	3.67(3)	0(1)	5.5(2)	2.38(16)	2.0(10)	3.0(6)
Control	3.5(2)	3.5(2)		2.41(17)	3.0(6)	2.1(11)
Totals (N)	(9)	(6)	(3)	(48)	(22)	(26)

*The higher the score, the greater the traditionalism

However, the traditionalism of Researcher subjects with employed mothers is higher than the scores for those with non-employed mothers, suggesting employment has a negative effect. Another equally plausible explanation is that those preschool children who are aware of the maternal employment status may be more aware of the societal stereotypes. Teacher and Control Group data show similar patterns. None of the relationships are statistically significant.

The next table (Table 24) reports the relative gendertyping of occupations by tabulating the mean number of gendertyped occupations for each research design group, by employment status of the mother (as reported by the children), and by gender.

Table 24. Mean Number of Occupations Gendertyped*, by Group, Gender and Mother's Employment, Preschool.

		Employment			Non-Employment	
Group	Group	Female	Male	Group	Female	Male
Researcher	3.25(4)	1.67(3)	8.0(1)	.14(14)	.0(5)	.22(9)
Teacher	4.33(3)	0(1)	6.5(2)	2.07(14)	1.89(9)	2.40(5)
Control	5.0(2)	.5(2)		2.54(13)	3.75(4)	2.0(9)
Totals (N)	(9)	(6)	(3)	(41)	(18)	(23)

*Out of a possible 13 occupations

As more control variables are considered, the small sample generates small cell frequencies which makes meaningful analysis of this data impossible (Campbell, 1981). Larger preschool samples in future research may resolve this problem. As presented, there is not sufficient data to reject the null hypothesis of no mother's employment effect for the preschool sample.

Second Grade

The second grade sample is larger (N=98) and most of the sample could respond to the question of mother's employment (N=95) so the second grade sample should provide a more credible assessment of the fifth hypothesis, that mother's employment influences occupational stereotyping.

Table 25 demonstrates there is little effect among the males for mother's employment. Among the female populations there seems to be a slight negative relationship between the mother's employment and stereotyping but the results are not statistically significant.

Table 25. Mean Percent of Males in Occupations Aspired to, by Gender, Group, and Mother's Employment, Second Grade.

	Employment				Non-Employment			
	Female		Male		Female		Male	
Group	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Researcher	47.4% (7)	31.8	97.0% (3)	0	50.9% (7)	42	94.3% (7)	7.7
Teacher A	25.3% (3)	38.7	95.5% (4)	2.4	35.7% (7)	37.5	97.1% (8)	2.2
Teacher B	38.0% (5)	38.2	96.3% (3)	0.6	53.3% (7)	44	91.1% (10)	11.
Control	26.0%	29.3	97.0%	0	5.4%	5.7	91.4%	17.0
Totals (N)	(18)		(11)		(29)		(37)	

Similarly, the proportion of males in occupations aspired to by second graders (Table 26) shows little male effect but the female data again suggests a slight influence of mother's employment. The bipolar female distribution negates any substantive conclusion from a non-normal distribution of non-interval variables using statistical analysis appropriate for interval data (Stevens, 1946; and Nie, Hull, Jenkins, Steinbrenner and Bent, 1975).

Table 27, reporting mean traditionalism, shows a slight negative effect of maternal employment for Teacher B and Control Group females and for Teacher A Group males as well. Cell size renders statistical analysis inappropriate. It is interesting to note module effect, as shown by low traditionalism scores in experimental groups, is present in both employment and non-employment conditions.

Table 26. Percentage of Second Grade Children, by Gender, Group, and Mother's Employment, Selecting Occupational Aspirations (by Proportion of Males in the Occupations).

Percentage of Males In Occupational Choices	Employment				Non-Employment			
	Experimental		Control		Experimental		Control	
	Female	Male	Female	Male	Female	Male	Female	Male
%	%	%	%	%	%	%	%	%
0-10	18.2 (4)	16.7 (3)	33.3 (1)		15.4 (6	10 (4)	75.0 (6)	
11-20	13.6 (3)	11.1 (2)	33.3 (1)		10.3 (4)	7.5 (3)	25 (2)	
21-30	4.5 (1)							
31-40								
41-50								8.3 (1)
51-60	13.6 (3)	5.6 (1)	33.3 (1)		2.6 (1)	2.5 (1)		
61-70	4.5 (1)	5.6 (1)			7.7 (3)	7.5 (3)		25 (3)
71-80	4.5 (1)				7.7 (3)	5. (2)		16.7 (2)
81-90					2.6 (1)	2.5 (1)		
91-100	40.9 (9)	61.1 (11)		100 (1)	53.8 (21)	62.5 (25)		50 (6)
TOTALS (N)	100 (22)	100 (18)	100 (3)	100 (1)	100 (39)	100 (39)	100 (8)	100 (12)

Table 27. Mean Traditionalism Scores*, by Group, Gender and Mother's Employment, Second Grade.

	Employment			Non-Employment		
Group	Group	Female	Male	Group	Female	Male
Experimental (Researcher)	3.0(10)	4.1(7)	.03(3)	2.0(15)	1.29(7)	2.62(8)
Experimental (Teacher A)	5.0(7)	6.7(3)	3.7(4)	3.0(15)	2.6(7)	3.34(8)
Experimental (Teacher B)	1.7(7)	3.0(4)	1.0(3)	2.4(17)	2.14(7)	2.6(10)
Control	10.8(4)	11.3(3)	9(1)	11.5(20)	10.13(8)	12.4(12)
Totals (N)	(28)	(17)	(11)	(67)	(29)	(38)

*Lower score indicates lower traditionalism

Gendertyping, shown in Table 28, replicates the pattern of the preceeding table in a negative pattern for females and mixed influence on males.

Table 28. Mean Number of Occupations Gendertyped*, by Group, Gender and Mother's Employment, Second Grade.

	Employment			Non-Employment		
Group	Group	Female	Male	Group	Female	Male
Experimental (Researcher)	3.2(10)	4.4(7)	0.3(3)	2.0(15)	1.3(7)	2.75(8)
Experimental (Teacher A)	5.43(7)	7.7(3)	3.75(4)	3.1(15)	2.6(7)	3.5(8)
Experimental (Teacher B)	2.0(7)	3.5(4)	0(3)	2.6(17)	2.42(7)	2.7(10)
Control	11(4)	11.7(3)	9(1)	12.3(20)	11.1(8)	13.0(12)
Totals (N)	(28)	(17)	(11)	(67)	(29)	(38)

*Of a possible 23 occupations

The following table, Table 29, shows a perceptable module influence in each female group but no pattern among females when comparing employment and non-employment groupings. Data for males were inconclusive.

Table 29. Percentage of Second Grade Children, by Gender, Group and Mother's Employment, Traditionally Ranking Traditional Occupations.

Number of Traditionally Ranked Occupat. Selected	Employment				Non-Employment			
	Experimental		Control		Experimental		Control	
	Female	Male	Female	Male	Female	Male	Female	Male
	%	%	%	%	%	%	%	%
3	40.(6)	10(1)	0(0)	100(1)	52.4(11)	7.7(2)	12.5(1)	8.3(1)
4	60.(9)	90.(9)	100(3)	0(6)	47.6(10)	92.3(24)	87.5(7)	91.7(11)
Totals(N)	100 (15)	100 (10)	100 (3)	100 (1)	100 (21)	100 (26)	100 (8)	100 (12)

Fourth Grade

Seventy-six of the seventy-eight fourth grade students reported mother's employment information; thus, the information base of the fourth grade is clearly superior to the confused preschool data.

Table 30 reports no consistent pattern. Some groups have higher percentage of males in their chosen occupations for "mother's employment" subjects, suggesting for two of the males' groups and Control Group females that an employed mother may lead to less stereotyping but just the opposite is indicated by the other groups.

Table 30. Mean Percent of Males in Occupations Aspired to, by Gender, Group and Mother's Employment, Fourth Grade.

	Employment				Non-Employment			
	Female		Male		Female		Male	
Group	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	%		%		%		%	
Researcher	44.7 (11)	35.5	90.4 (8)	12.2	57.0 (4)	47.3	86.7 (7)	13.8
Teacher	23.4 (5)	30.9	89.5 (4)	13.7	22.3 (11)	25.4	87. (9)	13.5
Control	70.0 (2)	0	83.8 (4)	18.	43.2 (4)	47.8	95.1 (7)	3.9
Totals (N)	(18)		(16)		(19)		(23)	

Table 31, Traditionalism, and Table 32, Gendertyping, repeat the pattern of less stereotyping by non-employed mother children for group data as well as for comparisons between same-gender groups controlling for mother's employment. Picture ranking was inconclusive due to small cell frequencies in cross tabulation.

Table 31. Mean Traditionalism Scores*, by Group, Gender and Mother's Employment, Fourth Grade.

		Employment			Non-Employment	
Group	Group	Female	Male	Group	Female	Male
Researcher	5.76(17)	3.6(10)	8.9(7)	3.13(8)	3.7(3)	2.8(5)
Teacher	5.57(7)	3.(3)	7.5(4)	2.47(19)	1.9(11)	3.2(8)
Control	11.86(7)	14.(2)	11.(5)	10(9)	8.8(4)	11(5)
Totals (N)	(31)	(15)	(16)	(36)	(18)	(18)

*The higher the score, the more traditionalism

Table 32. Mean Number of Occupations Gendertyped*, by Group, Gender and Mother's Employment, Fourth Grade.

	Employment			Non-Employment		
Group	Group	Female	Male	Group	Female	Male
Researcher	6.35(17)	4.2(10)	9.4(7)	3.13(8)	3.7(3)	2.8(5)
Teacher	5.71(7)	3.(3)	7.8(4)	2.63(19)	2(11)	3.5(8)
Control	13.86(7)	17.5(2)	12.(5)	11(9)	10.3(4)	12.4(5)
Totals (N)	(31)	(15)	(16)	(36)	(18)	(18)

*Of a possible 24 occupations

Conclusion about Mother's Employment

From a methodological standpoint the small cell frequencies, inadequate reporting by younger subjects, and low levels of measurement make drawing substantive conclusions difficult. However, there is a consistency in the data which suggests mother's employment does have an effect on the child's stereotyping perceptions. To be in conformity with the extant literature, the expected outcome of this hypothesis would be that employed mothers are likely to have less stereotyping children and that mother's employment would enhance module impact. The suggestion from the data is the opposite - children of employed mothers seem slightly more stereotyped.

Because the sample is so small no substantive conclusion can be made, but the pattern in the data suggests study of a larger sample would be useful. Also, if studied further, mother's employment should be broken down into more detail; perhaps mothers in stereotyped jobs have one influence while mothers in non-stereotyped jobs have a different effect. In the Second Grade, 14.6%

reported mother's employment in an occupation which had 50% or greater proportion of males. In the Fourth Grade, the similar figure was 27.5%. Examining larger samples in this regard may be a fruitful activity.

PERSISTENCE OF MODULE EFFECT

The sixth and seventh hypotheses in this study will be considered together since the seventh depends upon the findings of the sixth. The sixth hypothesis posits any module effect found in the earlier analysis should be an effect which will be measurably noticeable over the passage of time. The seventh hypothesis contends module effect which persists over time will be more pronounced in the Researcher Group than in the Teacher Group in relation to the Control Group. The null hypotheses of these statements are: Experimental Groups and the Control Group will not differ over time; and, there will be no difference between Researcher and Teacher experimental Groups. Here the same module effect variables will be used: percent male, traditionalism, gendertyping, and stereotyped picture ranking. The sample tested were tested in second grade (Experimental, Teacher A, Teacher B, Control Groups) and given the same instrument approximately one year later, in their third grade year. Due to sample mortality discussed earlier, the preschool and fourth grade samples were not tested.

Not all of the tested second grade subjects were available for testing in third grade. Accordingly, any conclusions regarding the

third grade sample must first consider the sample mortality issue. Of the ninety-eight second graders studied, eighty-two were available for testing in third grade; thus 83.7% of the original sample was preserved. However, is there a random attrition of the sample or is the third grade test subject cohort skewed toward or away from the module exposure? Comparing the second grade sample available as third graders with the entire original second grade sample is a necessary step (Table 33).

The following table examines the attrition of the original second grade sample and compares scores of occupational aspirations of those available for third grade testing with the original sample of second grade subjects. Most of the attrition came in the Researcher Group while other groups were comparatively stable over the year interval. Table 33 indicates the Experimental Groups' males in the third grade test were slightly more stereotyping as second graders compared to the entire second grade sample. The Control Group remained intact. For test sample females, the Teacher A Group was intact while the other Experimental Groups were slightly more stereotypic than the original sample; the Control Group showed a very small increase in percentage of males in chosen occupations.

Table 33. Mean Percent of Males in Occupations Aspired to, by Gender and Group, Second Grade Sample and Those Second Graders Available for Third Grade Testing.

Group	Second Grade Sample				Attrition		Second Graders Tested in Third Grade			
	Female		Male				Female		Male	
	Mean	S.D.	Mean	S.D.	Female	Male	Mean	S.D.	Mean	S.D.
Experimental (Researcher)	49.1% (14)	35.8	95.1% (10)	6.4	4	4	47.2% (10)	37.2	97.0% (6)	.6
Experimental (Teacher A)	32.6% (10)	36.1	96.6% (12)	2.3	0	1	32.6% (10)	36.1	97.0% (11)	1.8
Experimental (Teacher B)	42.8% (11)	40.0	92.3% (14)	9.4	0	3	42.3% (11)	39.2	91.3% (11)	10.4
Control	11.0% (11)	16.9	82.6% (13)	16.8	1	0	12.2% (10)	17.4	83.6% (13)	16.8
Totals (N)	(46)		(49)		(5)	(8)	(41)		(41)	

Part of the any score variation may be from third grade teacher influence but that avenue of comparison showed no pattern of third grade teacher effect. Assignment of subjects into the nine third grade classrooms rendered a distribution ranging from only one subject in one class to twenty-one subjects in another class and eighteen in a third class. Despite the non-normal distribution of second graders into third grade classes, the mean percentage of males in occupations aspired to by third graders, as shown in Table 34, gives no indication of a significant third grade teacher effect.

Table 34. Mean Percentage of Males in Occupations Aspired to, by Third Grade Teacher, Third Grade.

Third Grade Teacher	Mean	SD
Teacher 1	36.3 (21)	25.5
Teacher 2	34.4 (18)	23.9
Teacher 3	49.6 (8)	28.3
Teacher 4	36.0 (9)	23.6
Teacher 5	37.6 (12)	21.2
Teacher 6	39.6 (5)	19.8
Teacher 7	47.7 (3)	42.2
Teacher 8	31.0 (1)	0
Teacher 9	21.6 (5)	11.4
TOTAL (N)	(82)	

In response to the question of whether or not the group sampled as third graders is not a representative group from the original second grade sample, Table 34 suggests differences are inconsequential.

Third grade testing used the same instrument used in second grade, hence the assessment of the sixth hypothesis, that there is a module effect a year later, parallels the earlier analysis. Which group has the most module effect persisting over the year, the seventh hypothesis, is tested in a similar fashion.

The third grade occupational aspirations are not markedly different than the second grade sample's scores. Table 35 reports the mean percentage of males in the occupational aspirations reported by the second grade sample (only those tested in both second and third grades) and their choices one year later. Males in each group were staunchly gender stereotyping in their occupational aspirations by third grade. Furthermore, only one group of males (Teacher B Group) decreased their stereotyping a year after module exposure. These male scores show module effect was slight, if at all, since the scores are close to the Control score in all groups. Also indicated by these scores is module effect among the group scores for males because the Control Group change is a significantly greater change ($p < .05$) than the changes exhibited by Experimental Groups. Unfortunately for the politicized goal of the project, to demonstrate the efficacy of gender stereotype change in schools, the male scores suggest module use may encourage more gender stereotyping among males rather than altering stereotyping the males already believed.

Female scores in third grade show quite a bit of change from the second grade testing for the Researcher and Teacher B Groups but little change for Teacher A or Control Groups. The groups which

Table 35. Change in Mean Percent of Males in Occupations Aspired to, by Gender and Group, Second Grade to Third Grade.

Group	SECOND GRADE*				THIRD GRADE*				SECOND TO THIRD GRADE** PERCENTAGE POINT CHANGE	
	Female		Male		Female		Male			
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Female	Male
	%		%		%		%			
Experimental (Researcher)	47.2 (10)	37.2	97.0 (6)	0.6	23.5 (10)	32.9	97.0 (6)	2.5	-23.7	0
Experimental (Teacher A)	32.6 (10)	36.1	97.0 (11)	1.8	31.6 (10)	37.1	97.1 (11)	2.1	-1.0	+0.1
Experimental (Teacher B)	42.3 (11)	39.2	91.3 (11)	10.4	51.5 (11)	43.2	86.5 (11)	24.7	+9.2	-4.8
Control	12.1 (10)	17.4	82.6 (13)	16.8	12.8 (10)	14.6	92.6 (13)	10.5	+0.7	+10.0
Totals (N)	(41)		(41)		(41)		(41)			

* All between group differences ($p < .05$) for each Experimental Group and the appropriate Control Group.

** Positive change means increasing stereotypes for males, decreasing stereotypes for females. Negative change means decreasing stereotypes for males, increasing stereotypes for females.

changed the most changed in opposite directions; Researcher Group became more stereotypic while Teacher B Group females became less stereotypic. This convergence is in concert with the earlier results in the comparison of measures at each grade level. Between group differences were significant ($p < .05$) for analysis with the Control Group and each Experimental Group. Module effect is evident even a year after module use. But, the large standard deviations for female scores indicate not all females were influenced by the modules and they remain fairly bipolar a year later.

With the question of whether module influence is discernable after a year, the seventh hypothesis focuses on the relative strength of module effect among the groups. In the discussion of second grade findings, the Teacher A Group exhibited more module effect than did either Researcher or Teacher B Groups, somewhat contrary to the direction of the fourth hypothesis which predicted Researcher Group superiority. The findings in Table 35 show Teacher B Group females as less stereotypic in the third grade, and the same is shown for males. There is no substantiation for the prediction Researcher Group scores would be less stereotypic than the Teacher A and Teacher B Groups.

The distribution of occupational aspirations of the third grade students, shown in Table 36, indicates several things. The polarity of female scores from second grade continues into third grade; in the third grade Experimental Group a nucleus of stereotypic females is similar to the bulk of the Control Group females in very stereotyped occupations (20% male or less). Thirty-five percent (11 out of 31) of the third grade Experimental Group females chose non-stereotypic

Table 36. Change in Percentage of Second and Third Grade Children, by Gender and Group, Selecting Occupational Aspirations (by Proportion of Males in the Occupation), Second Grade to Third Grade.

Percentage of Males in Occupational Choices	Second Grade				Third Grade			
	Experimental		Control		Experimental		Control	
	Female	Male	Female	Male	Female	Male	Female	Male
%	%	%	%	%	%	%	%	%
0 - 10	32.4(10)		60.0(6)		45.2(14)		50.0(5)	
11 - 20	79.4(6)		30.0(3)		12.9(4)	3.4(1)	40.0(4)	
21 - 30	3.2(1)							
31 - 40								
41 - 50				7.7(1)	6.5(2)		10.0(1)	
51 - 60	6.4(2)		10(1)		3.2(1)			
61 - 70	9.6(3)	3.6(1)		23.1(3)	9.6(3)			15.4(2)
71 - 80	9.6(3)	7.2(2)		15.4(2)	3.2 (1)	3.4(1)		7.1(1)
81 - 90		3.6(1)						
91 - 100	19.4(6)	85.6(24)		53.8(7)	19.4(6)	93.2(27)		76.9(10)
TOTALS (N)	(31)	(28)	(10)	(13)	(31)	(29)	(10)	(13)

(50% or more male) occupations, although no Control Group females chose any non-stereotyped occupation. This finding indicates module effect on third grade females. There is a slight downward (more stereotyped) slump in third grade female scores compared to second grade scores. But the important finding in the third grade is that some females (41.9%) exposed to modules showed occupational aspirations markedly different from the Control Group females' choices in the same grade. The module use did produce an influence a year later, for females. The male scores showed some moderation in their strongly held stereotypes but the clear majority of Experimental Group (93.2%) and Control Group (76.9%) males remained very stereotyped (90% or more male) in occupational aspirations.

Traditionalism measures perceptions about who can do occupations rather than measuring personal aspirations. Females seem to believe stereotypes are not necessarily true for themselves (aspirations) but are more likely the future for their "sisters;" while, males are stereotypic in their own aspirations but seem to accept broader limits for other males. The Control Group seems to be becoming <u>less</u> traditional while experimental groups are becoming <u>more</u> traditional. This apparent finding needs explanation. The direction of change for Experimental and Control Groups is convergent. Module effect still exists; Experimental Groups are less traditional than the Control Group but the gap is narrowing in third grade.

Table 37. Change in Mean Traditionalism Scores*, by Group and Gender, Second Grade to Third Grade.

GROUP	Second Grade			Third Grade			Change** Second to Third Grades		
		Gender			Gender			Gender	
	Group Total	Female	Male	Group Total	Female	Male	Group Total	Female	Male
Experimental (Researcher)	2.7 (16)	3.2 (10)	2.0 (6)	5.06 (16)	6.70 (10)	2.71 (6)	+2.36	+3.5	+0.71
Experimental (Teacher A)	3.3 (21)	3.8 (10)	2.8 (11)	6.0 (21)	7.2 (10)	4.91 (11)	+2.7	+3.4	+2.11
Experimental (Teacher B)	1.9 (22)	1.7 (11)	2.0 (11)	3.09 (22)	2.9 (11)	3.27 (11)	+1.19	+1.2	+1.27
Control	11.2 (23)	10.0 (10)	12.2 (13)	9.0 (23)	9.3 (10)	8.77 (13)	-2.2	-0.7	-3.43
Totals (N)	(82)	(41)	(41)	(82)	(41)	(41)			

* The higher the traditionalism score the greater the traditionalism

** Positive change is toward more traditionalism over time

In examining groups, Teacher A Group is moderate in scores in third grade, and in change in scores over time. Teacher B Group shows less traditionalism for females but Researcher Group males are slightly less traditional than Teacher B Group males. Based on Table 37, there is evidence module influence is present in third grade, but that influence is weakening. There is no support for the prediction the Researcher Group would show more persistence of module effect than Teacher A and Teacher B Groups.

Gendertyping of occupations also measures attitudes rather than personal aspirations (although it could be argued having an aspiration toward an occupation could influence one's gendertyping of that occupation). Table 38 shows gendertyping of the twenty-three occupations in the module. Generally, gendertyping scores declined from second grade to third grade for the Control Group while all of the Experimental Groups showed increasing gendertyping. On the first glance this finding seems to refute the module effect expectation. However, module effect <u>is</u> present in third grade data as indicated by significant between group differences for each Experimental Group and the Control Group in third grade. Furthermore, the Experimental Group's and Control Group's scores are convergent, indicating the module effect is "wearing off;" but, since gendertyping scores of the Control Group are much higher than scores for Experimental Groups module effect has not dissipated completely.

Table 38. Change in Mean Number of Occupations Gendertyped*, by Group and Gender, Second Grade to Third Grade.

	Second Grade			Third Grade			Change in Gendertyping** (Change in Means)		
		Gender			Gender			Gender	
GROUP	Group Total***	Female	Male	Group Total***	Female	Male	Group Total	Female	Male
Experimental (Researcher)	2.88 (16)	3.4 (10)	2.14 (6)	5.12 (16)	6.8 (10)	2.7 (6)	+2.24	+3.40	+0.56
Experimental (Teacher A)	3.48 (21)	4.10 (10)	2.91 (11)	6.38 (21)	7.9 (10)	5.0 (11)	+2.9	+3.8	+2.09
Experimental (Teacher B)	1.95 (22)	1.90 (11)	2.0 (11)	3.10 (22)	2.9 (11)	3.3 (11)	+1.15	+1.0	+1.3
Control	11.87 (23)	10.8 (10)	12.69 (13)	9.30 (23)	9.7 (10)	9.0 (13)	-2.57	-1.1	-3.69
Totals (N)	(82)	(41)	(41)	(82)	(41)	(41)			

* Out of a possible 23 occupations

** Positive change is increasing sextyping

*** Between group differences ($P < .01$) for each Experimental group with the appropriate Control Group

Examining which Experimental Group had the most module effect remain over the one year hiatus, Teacher B Group had the lowest group score, lowest net change in group scores and the least net change for females, but Researcher Group had the least net change for males. From this data one cannot conclude the Researcher Group would show the least attenuation of module effect over time.

Traditional picture ranking is the final measure of module effect among groups. Table 39 compares scores for each group, indicating the percentage point change from second to third grade scores. As in the second grade data, no third graders selected less than three stereotypic pictures in their top four occupational choices. Once again, the choices of four stereotypically male occupations and four stereotypically female occupations for the picture sort produced pronounced discriminant measures, perhaps too discriminant. Further research using other occupational choices might produce different results.

Table 39 reports no change in the Control Group from second grade to third grade. In this instance it would be hasty to conclude stereotyping does not change over time. Previous tables have shown there is some attenuation of stereotyping by the Control Group according to the other dependent measures. A plausible conclusion is that the use of a different picture sort, perhaps one less polar in occupational choices, may provide findings similar to earlier tables.

Table 39. Change in Percentage of Children, by Group, Traditionally Ranking Traditional Occupations, Second Grade to Third Grade.

Number of Traditionally Ranked Occupations	Experimental (Researcher)			Experimental (Teacher A)			Experimental (Teacher B)			Control		
	2nd Grd.	3rd Grd.	Change	2nd Grd.	3rd Grd.	Change	2nd Grd	3rd Grd.	Change	2nd Grd.	3rd Grd.	Change
	%	%		%	%		%	%		%	%	
3	29.4 (5)	5.9 (1)	-23.5	14.3 (3)	0 (0)	-14.3	31.8 (7)	27.3 (6)	-4.5	13.0 (3)	13.0 (3)	0
4	70.6 (12)	94.1 (16)	+23.5	85.7 (18)	100 (21)	+14.3	68.2 (15)	72.7 (16)	+4.5	87.0 (20)	87.0 (20)	0
TOTALS (N)	100 (17)	100 (17)		100 (21)	100 (21)		100 (22)	100 (22)		100 (23)	100 (23)	

* Positive change in 3 rank means less stereotyping, negative change in 3 rank means more stereotyping

Comparing the Experimental Groups and the Control Group demonstrates some module effect persisted from second grade to third grade. One Experimental Group, Teacher B Group, remained less stereotyping than the Control Group; but the Researcher and Teacher A Groups lost their module effect as measured by this picture ranking.

Table 40 examines picture ranking more closely by analyzing group data controlling for gender. This gender information shows Control Group scores actually contain divergence between females who are becoming more stereotyping and males who are becoming less stereotyping. Researcher Group data shows just the opposite, males became more stereotyped while females reduced their stereotyping even more than when exposed to modules. This pattern exists in Teacher B Group and is similar to the Teacher A Group pattern.

The superior retention of module effect by the Researcher Group was expected (Hypothesis #7) but not found. Teacher B Group showed the most module effect persistence into third grade, using all four dependent measures. Only in some scores for males did the Researcher Group scores approach or surpass Teacher B Group scores for males. Here, perhaps, is some residual influence of having a male instructor during the module phase for the Researcher Group only. This is conjecture since gender of experimenter was an untested factor, given the project research design and staffing.

Table 40. Change* in Percentage of Children, by Group and Gender, Traditionally Ranking Traditional Occupations, Second Grade to Third Grade.

Number of Traditionally Ranked Occupations	EXPERIMENTAL (Researcher) Female			EXPERIMENTAL (Teacher A) Female			EXPERIMENTAL (Teacher B) Female			CONTROL Female		
	2nd Gr.	3rd. Gr.	Change	2nd Gr.	3rd. Gr.	Change	2nd Gr.	3rd. Gr.	Change	2nd Gr.	3rd. Gr.	Change
	%	%		%	%		%	%		%	%	
3	40.0 (4)	10.0 (1)	-30.0 (less)	30.0 (3)	0	-30.0 (less)	63.6 (7)	36.4 (4)	-27.2 (less)	10.0 (1)	30.0 (3)	+20.0 (more)
4	60.0 (6)	90.0 (9)	+30.0	70.0 (7)	100 (10)	+30.0	36.4 (4)	63.6 (7)	+27.2	90.0 (9)	70.0 (7)	-20-0
TOTALS (N)	100 (10)	100 (10)		100 (10)			100 (11)	100 (11)		100 (10)	100 (10)	

Number of Traditionally Ranked Occupations	EXPERIMENTAL (Researcher) Male			EXPERIMENTAL (Teacher A) Male			EXPERIMENTAL (Teacher B) Male			CONTROL Male		
	2nd Gr.	3rd. Gr.	Change	2nd Gr.	3rd. Gr.	Change	2nd Gr.	3rd. Gr.	Change	2nd Gr.	3rd. Gr.	Change
	%	%		%	%		%	%		%	%	
3	14.3 (1)	0	-14.3 (more)	0	0	0	0	18.2 (2)	+18.2 (more)	15.4 (2)	0	-15.4 (less)
4	87.7 (6)	100 (7)	+14.3	100 (11)	100 (11)	0	100 (11)	81.8 (9)	-18.2	84.6 (11)	100 (13)	+15.4
TOTALS (N)	100 (7)	100 (7)		100 (11)	100 (11)		100 (11)	100 (11)		100 (13)	100 (13)	

* Negative change in 3 rank means less stereotyping for females, more stereotyping for males
Positive change in 3 rank means more stereotyping for females, less stereotyping for males

Teacher B Group was consistently less stereotyping than was Teacher A Group over time and was superior to Teacher A Group during second grade testing. Researcher Groups' reduced stereotyping in second grade did not persist at a similar rate into third grade as did Teacher A or Teacher B. One possible explanation of the Researcher Group second grade performance is the issue of demand characteristics. Subjects knew what the experimenters in the Research Group wanted and may have responded accordingly in testing.

The greater module persistence of Teacher B Group, and to a lesser extent that of Teacher A Group, may also be a result of longer exposure to the influence of their respective classroom teachers. The research design assumed the Experimental Groups entered the module phase with similar values about gender issues yet no initial assessment was made (in order to avoid sensitizing the subjects). Since experimental teachers were volunteers and reported to be fairly enthusiastic and non-sexist themselves, it is not inconceivable Teacher A and Teacher B Groups could have entered the project with less stereotyping due to about six months with such teachers. Another Teacher A and Teacher B factor could be that the Researcher Group ended the module use and the experimenters departed while the other classroom teachers (A and B), who had used modules, continued to be in daily contact with their groups for another two months, until summer vacation. Undoubtedly, enthusiastic, sensitized teachers would continue some of the message of the modules, if not the modules themselves. The unit of instruction may have ended but the subject and the attitudes continued. Applying the principles

of social learning theory, Teacher A and Teacher B Groups may have had more persistence because modeling and rewards continued.

In explaining why Teacher B Group was demonstratively more lasting in module effect compared to Teacher A Group and to the Researcher Group, a plausible explanation would be found in the attitudes and skills differences between the classroom instructors involved. This information is supposition since teacher specific traits were either untested (teaching skills) or tested but no longer available (Bem and Broverman Scales were used but no data are now available).

The third grade data, though controvertible, strongly suggests the module effect seen among Experimental Groups in second grade did not become fully extinguished over a year of school and family life. Clearly module effect diminished over time but it did not disappear. This information is heartening to those who seek a means of altering gender stereotyping in society. This research shows the school can be a viable vehicle for change in gender stereotyping but it also shows that change seems to be only among females. Occupational stereotypes generally benefit males (if benefit is measured by income and prestige), so there is little to be gained by males when confronted with gender stereotyping intervention modules. Females did change; males did not change.

This research also points to the efficacy of using the regular classroom teacher as a source of gender stereotyping intervention. Rather than requiring outsiders as "gender stereotyping resource" people, an expensive and politically unlikely proposition, this research shows a sensitive teacher, with a few inexpensive toys

and modules of activities, can infuse in at least some of the class an appreciation of occupational choices based on personal skills rather than based on contemporary gender stereotyping of careers. Good teachers, intersted in changing gender stereotyping, can make a difference.

The third grade data also provides impetus for another conclusion about intervention in gender stereotyping. The message is clear that a short term intervention is not enough to produce lasting change. Intervention as early as preschool is effective but must continue throughout the school curriculum in order to maintain attitudes contrary to the powerful out-of-school influences.

CHAPTER V

CONCLUSIONS

This project demonstrates gender stereotyping of careers by elementary school children can be changed by a classroom intervention program. Children can learn to view occupations as skill based rather than gender based. Children can learn that their own occupational aspirations need not be limited by gender stereotypes. These findings are not unique to this project, as related in Chapter Two, but similar findings here give increased credibility to using the school as a vehicle for gender stereotype change. What is particularly useful about the research reported herein is that the limited intervention had a discernable impact a year later. Previous studies did not assess attitude change over a long period. While it is not remarkable to try non-sexist activities in classrooms, it is unusual for multiple measures to be used, for different configurations of module use to be investigated at the same time, and for module effect to be tested over time.

The research reported herein discusses the module effect by research design group, by grade, and by gender. In general, the modules had an influence on individual aspirations but had a more noticeable influence on perceptions of which occupations are acceptable for both genders. A common pattern in the module influence was that females usually were more influenced, while males were rather inflexible in their stereotyping. A plausible explanation of the apparent male intransigence is grounded in social learning

theory's emphasis on rewards. If males viewed stereotype change as rewarding, the theory suggests modules would produce change among the males. However, since prestige and pay for non-male stereotyped jobs is comparatively low in our society, male subjects may have viewed any aspirations in those occupations as relatively unrewarding; hence, males were not influenced by the modules to the extent females were influenced. The research does demonstrate personal aspirations are more stereotyped than are attitudes about stereotyping of careers in a general sense.

The findings showed gender stereotyping in each grade, with males in each grade more stereotyping than the females in the same grade. Module use did not produce much change among the males and may have contributed to a hardening of stereotyping as demonstrated by the third grade males.

Female groups at each grade level showed marked change in gender stereotyping, and that change was evident a year later as tested in the Third grade. Many females clearly broadened their aspirations and perceptions when exposed to the project modules. The general pattern of findings was that females changed more than males, who remained largely uneffected by the modules. Of course, not all females changed - in each grade there remained a cluster of stereotypic scores among Experimental group females, but most females did change.

The differences between Researcher and Teacher parts of the research design were somewhat inconclusive. Further research is needed to determine which teacher specific factors facilitate gender

stereotype change and which factors retard change. This research does demonstrate variation among teachers is a factor but it does not isolate which characteristics or behaviors cause the variation.

CRITIQUE

The most salient problem of this study stems from sample sizes. Much of the data analysis suffers from cell frequencies insufficiently large to permit more than rudimentary analysis of variance. Sophisticated statistical techniques often require large samples for multiple factor analysis and interval level data - we had neither. In particular, statistical significance in small samples is problematic in the likelihood of an error, usually a Type I error based upon inadequate sample size. Using means as a measure is particularly subject to sample size dependency. Increased sample size can reduce Type I probability of error with not much increase in Type II error probability. Many of the tables showed effects which were evident but not statistically significant. Larger sample sized studies could avoid a difference between sample group means when the parameter may not exist.

Another criticism focuses on the application of the research design. The preschool Teacher Group did not use the module but only used the module toys available in the room. This situation negated any examination of Researcher vs. Teacher effect at that grade level. Second grade and fourth grade design were adequate. Adding an additional Teacher Group in the Second grade was fortuitous in that the third grade data became much more instructive, by accident rather

than by research design.

Asking preschool children information about their parents' occupations was futile if one is seeking factual information. Analysis of mother's employment is hampered by such an uneven distribution into employment (known) and non-employment (unemployed, homemaker, employed but unknown to child).

Introduction of modules in the second semester was for the convenience of the research team and the involved schools, not for any specific research design factor. In retrospect, having module intervention at the very end of the year would open the design to selection problems.

Another problem in the project, not crucial to the research reported herein but which could have been useful, was the loss of the teacher attitude data. As became evident in the longitudinal data, an interested teacher is a crucial element in attitude change modules in a classroom. Just how important teacher interest is could have been assessed using teacher attitude data from the participating teachers. If other schools adopt the Marotz-Baden and Riley (1979) modules, knowing which teachers are likely to use the material effectively would be sound management.

The criticisms above are general in nature and do not discuss particulars about the modules or the testing instrument. Those items were discussed in the critique in the Marotz-Baden and Riley (1979) module packet.

SUGGESTED FURTHER RESEARCH

The major suggestions already have been mentioned. Larger samples using the same modules would be useful, particularly for statistical analysis.

Another uninvestigated factor which may be important is the gender of the teacher. One of the Researcher instructors and the fourth grade Control Group instructor were males. No attempt was made to assess gender of teacher effects on module use. The reviewed literature was inconclusive. Further research is needed, particularly as the teaching profession becomes more egalitarian in belief and practice as Sprung (1978) predicted.

If mother's employment is important, this should be more fully investigated. Rather than treating mother's employment as a dichotomous variable, either/or, the factor should be examined in detail. Controlling for mother's income or time of work (days vs. nights) or the nature of the occupation (prestige, percent males, probability of promotion, skills needed) may be useful avenues of inquiry. Of course, such a study requires a much larger sample to be useful.

If mother's employment is investigated, perhaps so too should father's occupation, using the parameters suggested above. Social learning principles about modeling suggest parents of either gender can be powerful role modles.

The demonstration of module effects was not unexpected. Other projects, discussed in Chapter Two, have tried other forms of non-sexist education with similar results. What is somewhat unusual

about this research is the one year later testing and subsequent analysis. Most of the reviewed studies involved no longitudinal study or a short time span, often only weeks later. Testing one year later produced interesting results in the Teacher B and Researcher Group changes. The second grade sample was tested a year later, as third graders. The same sample now (1986) is entering their sophomore year in high school. A longitudinal study of their aspiration changes and changes of perception would be very useful. In 1989 those second grade children will be graduating, some into adult careers, some into college preparation for careers, and some into homemaking. The true effect of module intervention is not assessed by third grade data but by the influence of the intervention on the choices the subject children actually make as young adults entering the labor force. Given time and funding a testing of the sample in 1989 would be very informative.

A further extention of the premises and findings of this study would be to implement programs to reduce gender stereotyping throughout the curriculum, in all grade levels and in all subjects rather than a narrow focus on occupations. For political reasons, a program of gender stereotyping intervention at several curriculum levels is very unlikely.

COMMENT

Module intervention in preschool, second grade, and fourth grade worked. Children exposed to the modules reported occupational aspirations which differed from the aspirations of children without the module experience. Children also had less stereotyped

perceptions about careers through module exposure. The module effect was not even, for some females at all grade levels seemed influenced by modules while some of the females were unmoved. Males at each grade level remained largely unaltered by their module experience, or as suggested by the third grade data, may have become more entrenched in stereotyping by their brief experience.

The premise of the research project was fulfilled but the larger promise of such research remains largely intact. The mechanisms of purveying gender role stereotyping of careers is known, yet little seems to have been accomplished by projects such as this one. A few weeks of non-sexist information is not enough to counter the years of exposure to a stereotyped division of labor which is under pressure to change. Eleanor Maccoby (1986) warned that demographic change in the labor force is inexorable. Preparing children for that change is a political position which does not yet have the popular support and the information base necessary to accomplish that end.

Educational institutions are under attack for teaching the mechanics of sexual behavior; for teaching evolution; for teaching the variability of human culture; for teaching information as the basis for responsible citizenship is the product of healthy skepticism; for teaching tolerance; for teaching that the past is only a prologue for today and the future rather than insisting human history need be repeated. Given the current political climate and the lack of a coherent political basis for an intervention along the lines suggested by this project, it is unlikely a full program of intervention to change gender stereotyping will be implemented. This project points to a way gender stereotyping could be changed using

schools and teachers. It should be expanded, further investigated, tested and implemented - but it is unlikely these steps will happen.

It could be argued that adopting a policy of curriculum-wide intervention to change prevailing gender stereotyping is not the proper business of government. If so, the task then falls to the educational profession to take upon itself to implement such a change. This, too, is unlikely, for the educational establishment seems more closely to have the appearance of confused political interests rather than a unified profession leading social change.

Assuming the indecisiveness of government and the disinterest and inability of the education industry's leadership to implement curriculum-wide change of gender stereotyping, the conclusion is for individuals to take it upon themselves to create the materials and opportunities for change in individual classrooms. Module projects such as this one are steps in that direction. Several of the authors cited earlier have provided useful suggestions toward that end. Until the cultural climate changes, efforts to change gender stereotyping will remain isolated and piecemeal, based on the efforts and interests of teachers and parents who take it upon themselves to implement change whenever and wherever they can.

The argument of the project, and this dissertation, is that reducing gender role streotyping of careers is a useful goal which can be accomplished using the mechanisms and materials already known or readily created by a society interested in making such a change. Not to change is a disservice to the society we create as we make choices in the socialization of our children, for their future as well as ours.

[1] Jo Durden-Smith, in the October 1980 issue of Quest magazine, presents an encapsulated summary of the work of Dr. Jerre Levy, of the University of Chicago, a leading researcher in sexual dimorphism of the brain. Dr. Levy's remarks refute much of the earlier conclusions of Maccoby and Jacklin, and a host of others, that in the nature v. nurturance debate on gender role development, nurturance is superior in influence. Dr. Levy reports brain differences account for male superiority in grasping concepts, spatial abilities and focused attention; while female brains lead to female superiority in auditory and olfactory sensitivity, verbal skills, fine motor coordination and social skills. While expressing that not all of these are firmly established findings, Dr. Levy is credited with stating observational trends lead to the deduction that male and female differences are physiologically based in a large measure. She believes genetic differences are mediated by hormonal differences and reinforced and magnified by culture but the basis remains biological.

Levy and others are focusing on hormonal schedules and interruptions of hormone activity as likely (or at least possible) explanations of differences between genders and, on a side axis, a possible explanation of homosexuality as chemically based. Dr. Levy cautions that impressive evidence from rat experiments is a distant step from drawing similar conclusions about humans.

It is a basic assumption of the research reported herein that regardless of the origin of sexual differences, the important facets of how we express our sexual dimorphism is largely sociological and is not immutable. Within the range of human behavior, this research, and the thrust of most of the associated literature, contends occupational aspirations are culturally directed, are maleable through social influences, and are, at present, needlessly constrained along a masculine and feminine dichotomy.

Until Levy's work is more conclusive, these assumptions remain.

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APPENDIXES

APPENDIX A

TOY LIST

PRESCHOOL TOY LIST

Toy	Source	Price
	LOANED	
1. Play Family Action Garage	Fisher Price	
2. Play Family Airport	Fisher Price	
3. Me Doll	The Children's Company	
4. Occupational Clothing for Me Doll	(not commecially available)	
	PURCHASED	
1. Occupational Puzzles (doctor, lineworker, pilot, mechanic)	The Judy Company 310 North Second St. Minneapolis, MN 55401	$3.30 each
2. Robot Card Career Deck	Fun-Da-Mentals Box 263 South Pasadena, CA 91030	$1.50
3. Community Careers Flannel Board (#157)	Instructo/McGraw Hill Paoli, PA 19301	$5.95
4. When I Grow Up, I Want to Be...(#171, Flannel-board figures)	Instructo/McGraw Hill Paoli, PA 19301	$8.95
5. Our Helpers Play People (#7931, stand-up figures)	Milton-Bradley Company Agent: Utah-Idaho School Supply Company 155 South State Street Salt Lake City, UT 84111	$6.25
6. Super Basic Young Erector Set (#33005)	CBS Toys 41 Madison Avenue New York, NY 10010	$12.75
7. Tinker Toy (311 pieces)	Grand Central Stores	$8.99
8. Doctor Kit	Grand Central Stores	$1.99

PACT TOYS

1. Generation Puzzles
   - boy and girl dishwashing
   - teenage boy and girl babysitting
   - mother and father bus drivers
   - grandparents storekeeping

2. Jigsaw Puzzles
   - truck driver (#17, 11 pieces & board)
   - flight attendant (#12, 12 pieces & board)
   - veterinarian (#5, 12 pieces & board)
   - librarian (#20, 12 pieces & board)
   - telephone operator (#25, 12 pieces and board)

3. Mix and Match Lotto (two pieces each)
   - secretary
   - ticket seller
   - repair person
   - school cook
   - recreation director
   - bank teller
   - pharmacist
   - interviewer
   - veterinarian
   - dancer
   - dental assistant
   - cashier
   - farmer
   - Coast Guard Petty Officer

TOY DESCRIPTIONS

PRESCHOOL TOYS

1. FISHER-PRICE PLAY FAMILY ACTION GARAGE: This toy is a model garage with hand crank vehicle elevator, gasoline pump, two-level parking, drive up ramp, and four cars, all out of plastic. Up to five children can play with cars, elevator and pump easily; however, more than five children means one has to take turns in an activity. The elevator operator (crank) was the most popular activity, jealously guarded once obtained, and the focus of the most discord.

2. FISHER-PRICE PLAY FAMILY AIRPORT: Made of plastic, this toy is a model airport with control tower, passenger ramp, drive up baggage area and illustrations of terminal activities.

3. ME DOLL: A soft Raggedy Ann-type doll, the unique feature of the Me Doll is the face. Instead of a face this doll has a large, round, unbreakable mirror. The clothing which comes with the doll is a removable, two-piece outfit, apparently casual slacks and a smock. We had made other sets of clothing: pilot's shirt and pants, tie and uniform coat, police officer's uniform pants and shirt with badge, doctor's white pants and coat, nurse's white pants and shirt, mechanic's overalls, construction worker's overalls, business suit and dress blouse and vest, and teacher's casual shirt and pants. The clothing was easy to put on and take off the Me Dolls.

4. JUDY COMPANY OCCUPATIONAL PUZZLES: Show females as a doctor, mechanic, telephone lineworker and pilot. The females are Caucasian.

5. ROBOT CARD DECK: Contains 19 pairs of cards, each card depicting a male and a female in the same occupation. The deck also includes two robot "wild" cards and six blank cards for other careers not depicted. The instruction booklet in the plastic case describes 14 activities and questioning strategies. Races are depicted.

6. COMMUNITY CAREERS FLANNEL BOARD: Contains 27 figures, males and females depicted, in the same occupations, for use on a flannel board. Each occupation has a label card and some appurtenance equipment for the occupation. Additional blank labels are included, flannel board is not. Different races are depicted.

7. INSTRUCTO/MCGRAW HILL "WHEN I GROW UP, I WANT TO BE,": Has a male and a female figure with interchangeable occupational uniforms and clothing and equipment for a dozen occupations. Everything is made of felt and is used on a flannel board.

8. MILTON-BRADLEY OUR HELPERS PLAY PEOPLE: A set of six pairs of cardboard stand-up figures with plastic stands, illustrating males and females in the same occupations. Different races are depicted.

9. SUPER BASIC YOUNG ERECTOR: A set of large plastic plates, beams, wheels, nuts and bolts for constructing simple designs. The instructions contain several designs.

10. TINKER TOY SET: The 315 piece set in a barrel contains the full assortment of Tinker Toy shapes and sizes.

11. DOCTOR KIT: Consists of a plastic doctor bag, stethoscope, hypodermic, thermometer, reflex hammer and pressure cuff.

PACT TOYS

1. GENERATION MATCH: Depicts four pairs of males and females, each pair shows different generations. Members of each generation pair are in the same occupation; the occupations are labeled, each pair is divided into a two piece match set for scrambling and matching. Pieces are laminated on hardboard.

2. JIGSAW PUZZLES: Include a black female trucker, white male flight attendant, elderly white female veterinarian, oriental male librarian and Chicano male telephone operator. Made of laminated hardboard, the puzzles are quite durable.

3. MIX AND MATCH LOTTO: Two piece simple puzzles depicting various races and males and females in a set of 13 different occupations. The sets are of the same material as the other PACT puzzles.

SECOND GRADE TOY LIST

Toy	Source	Price
	PURCHASED	
1. Robot Card Game Decks	Fun-Da-Mentals Box 263 South Pasadena, CA 91030	$1.50
2. Community Careers Flannel Board Set (#157)	Instructo/McGraw Hill Paoli, PA 19301	$5.95
3. Super Basic Young Erector Set	CBS Toys 41 Madison Avenue Ne York, NY 10010	$12.75
4. Tinker Toy (311 pieces)	Grand Central Stores	$8.99
5. Our Helpers Play People (#7931)	Milton-Bradley Company Agent: Utah-Idaho School Supply Company 155 South State Street Salt Lake City, UT 84111	$6.25
6. Doctor Kit	Grand Central Stores	$1.99
7. The Ungame	The Ungame Company 1440 South State College Blvd. Bldg. 2-D Anaheim, CA 92806	
	PACT TOYS	
1. Mix and Match Lotto (two pieces each)	secretary ticket seller repair person school cook recreation director bank teller pharmacist interviewer	veterinarian dancer dental assistant cashier farmer Coast Guard Petty Officer
2. Jigsaw Puzzles	nurse (41 pieces) teacher (55 pieces)	
3. Board Puzzles	truck driver flight attendant telephone operator	veterinarian librarian

TOY DESCRIPTIONS

SECOND GRADE

1. JUDY COMPANY OCCUPATIONAL PUZZLES: Show females as a doctor, mechanic, telephone lineworker and pilot. The females are Caucasian.

2. ROBOT CARD DECK: Contains 19 pairs of cards, each card depicting a male and a female in the same occupation. The deck also includes two robot "wild" cards and six blank cards for other careers not depicted. The instruction booklet in the plastic case describes 14 activities and questioning strategies. Different races are depicted.

3. COMMUNITY CAREERS FLANNEL BOARD: Contains 27 figures, males and females depicted, in the same occupations, for use on a flannel board. Each occupation has a label card and some appurtenance equipment for the occupation. Additional blank labels are included, flannel board is not. Different races are depicted.

4. WHEN I GROW UP, I WANT TO BE...: Has a male and a female figure with interchangeable occupational uniforms and clothing and equipment for a dozen occupations. Everything is made of felt and is used on a flannel board.

5. OUR HELPERS PLAY PEOPLE: A set of six pairs of cardboard stand-up figures with plastic stands, illustrating males and females in the same occupations. Different races are depicted.

6. SUPER BASIC YOUNG ERECTOR: A set of large plastic plates, beams, wheels, nuts and bolts for constructing simple designs. The instructions contain several designs.

7. UNGAME: A board game with moveable markers and questioning cards. The game is best suited for four players, ages 7 and up. The object of the game is to examine values and interpersonal communication in a non-threatening game environment.

PACT TOYS

1. GENERATION MATCH: Depicts four pairs of males and females, each pair shows different generations. Members of each generation pair are in the same occupation; the occupations are labeled. Each pair is divided into a two-piece match set for scrambling and matching. Pieces are laminated on hardboard.

2. JIGSAW PUZZLES: Fairly large sized pieces (at least 1 square inch each) and are made of laminated hardboard. The puzzles depict a male teacher and a male nurse, with labeled occupations.

3. MIX AND MATCH LOTTO: Two-piece simple puzzles depicting various races and males and females in a set of 13 different occupations. The sets are of the same material as the other PACT puzzles.

FOURTH GRADE TOY LIST

Toy	Source	Price
	PURCHASED	
1. Robot Card Game Decks	Fun-Da-Mentals Box 263 South Pasadena, CA 91030	$1.50
2. Super Sandwich Games	Teaching Concepts, Inc. Box 2705 Grand Central Station New York, NY 10017	$12.95
3. Space Hop Game	Teaching Concepts, Inc.	$12.95
4. Endangered Species	Teaching Concepts, Inc.	$9.95
5. Electric Motorized Erector	CBS Toys, Inc. 41 Madison Avenue New York, NY 10010	$24.95
6. Junior Executive Game	The Toy Center 2205 Highland Drive Salt Lake City, UT 84005	$4.95
7. Ungame	The Ungame Company 1440 South State College Blvd. Bldg. 2-D Anaheim, CA 92806	$4.95
	PACT TOYS	
1. Jigsaw Puzzles	male teacher (55 pieces) male nurse (41 pieces)	

TOY DESCRIPTIONS

FOURTH GRADE

1. ROBOT CARD DECK: Contains 19 pairs of cards, each card depicting a male and a female in the same occupation. The deck also includes two robot "wild" cards and six blank cards for other careers not depicted. The instruction booklet in the plastic case describes 14 activities and questioning strategies. Different races are depicted.

2. SUPER SANDWICH: A board game for four players, each with a plastic, reuseable score card for tabulating nutritional contents of various foods as indicated by the cards which correspond to each move on the board. Nutritional planning and decision-making are the objectives of the game.

3. SPACE HOP: A board game for four players in which each player moves a marker according to dice count, toward a solar system feature which must be named from factual clues. Successful identification of solar system features is the game objective.

4. ENDANGERED SPECIES: A four player board game wherein players garner points through board moves in order to "save" a selected endangered animal. Ecological awareness is the intention of the game.

5. ELECTRIC MOTORIZED ERECTOR SET: An advanced construction set with metal plates, girders, angle pieces, wheels, shafts, nuts and bolts. A small, low rpm motor powered by batteries is included, batteries are not.

6. JUNIOR EXECUTIVE: A four player board game intended to teach cooperation in business decisions. Players negotiate decisions and make transactions according to prices of each move on the board. Accumulation of play money and assets marks the winner.

7. UNGAME: A board game with moveable markers and questioning cards. The game is best suited for four players, ages 7 and up. The object of the game is to examine values and interpersonal communication in a non-threatening game environment.

PACT TOYS

1. JIGSAW PUZZLES: Fairly large sized pieces (at least 1 square inch each) and are made of laminated hardboard. The puzzles depict a male teacher and a male nurse, with labeled occupations.

APPENDIX B

MODULE EVALUATION INSTRUMENTS

Interviewer_____ Name_____

Group: A B C

Sex: M F

PRESCHOOL EVALUATION

I. PERSONAL ASPIRATIONS

What would you like to be when you grow up? (Probes: What kind of work would you like to do? What job would you like to have?)

1._____

2._____

3._____

II. JOB PERCEPTIONS

(if female):
a. What kind of jobs can girls do when they grow up?
b. What kind of jobs can boys do when they grow up?

(if male):
a. What kind of jobs can boys do when they grow up?
b. What kind of jobs can girls do when they grow up?

(either):
a. What jobs can both boys and girls do when they grow up?

	Girls	Boys	Both
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

III. MODULE EFFECT

Can (child of same sex), or any other boy/girl be a (e.g., doctor) when he/she grows up?

Can (child of opposite sex) or any other girl/boy be a (e.g., doctor) when she/he grows up?

	Boys Do		Girls Do	
	Yes	No	Yes	No
1. Police Officer	Yes	No	Yes	No
2. Doctor	Yes	No	Yes	No
3. Nurse	Yes	No	Yes	No
4. Construction Worker	Yes	No	Yes	No
5. Teacher	Yes	No	Yes	No
6. Mechanic	Yes	No	Yes	No
7. Pilot	Yes	No	Yes	No
8. Flight Attendant	Yes	No	Yes	No
9. Veterinarian	Yes	No	Yes	No
10. Secretary	Yes	No	Yes	No
11. Truck Driver	Yes	No	Yes	No
12. Telephone lineperson	Yes	No	Yes	No
13. Telephone Operator	Yes	No	Yes	No

IV. PARENT'S OCCUPATION

a. What does your father do? Where does he work?

_____

b. What does your mother do? Where does she work?

_____

THANK YOU for all your help in answering my questions.

Interviewer_____ Name_____

Group: E T C

Sex: F M

SECOND GRADE EVALUATION

Part I.

A. What would you like to be when you grow up? You may tell me several things if you like, but tell me in order of their importance to you. Start with what you most want to be.

B. What toy or game, in your classroom, did you enjoy the most this year?

C. What kind of work does your father do? Where does he work?

D. What kind of work does your mother do? Where does she work?

Part II.

I'm going to name some jobs. If you don't understand what they are, I will tell you. I want you to tell me who can do these jobs (e.g., "Police Officer, can a man do that job? Can a woman do that job"?)

Occupation	Men	Women
Police Officer		
Letter Carrier		
Nurse		
Musician		
Dentist		
Construction Worker		
Teacher		
Newspaper Reporter		
Secretary		
Doctor		
Homemaker (housekeeper)		
Baker		
Pilot		
Actor		
Banker		
Telephone Operator		
Scientist		
Bus Driver		
Plumber		
Carpenter		
Dancer		
Business Executive		
Newscaster		

Part III. Picture Ranking.

I'm going to show you eight pictures, two at a time. I want you to choose between the two pictures; choose the one that shows the job you would most like to do when you grow up.

Rank	# of Occupation (see below)
1	_____
2	_____
3	_____
4	_____
5	_____
6	_____
7	_____
8	_____

Police Officer	1
Doctor	2
Pilot	3
Newscaster	4
Nurse	5
Homemaker	6
Secretary	7
Teacher	8

Interviewer_____ Name_____
Group: E T C
Sex: F M

FOURTH GRADE EVALUATION

Part I.

A. What would you like to be when you grow up? You may list several things if you like, but list them in order of their importance to you. Start with what you most want to be.

B. What toy or game, in your classroom, did you enjoy the most this year?

C. What kind of work does your father do? Where does he work?

D. What kind of work does your mother do? Where does she work?

Part II.

In your opinion, which of the following jobs should be held by men, women or both.

Occupation	Men	Women	Both
Police Officer			
Engineer			
Nurse			
Musician			
Dentist			
Construction Worker			
Teacher			
Newspaper Reporter			
Secretary			
Doctor			
Homemaker (housekeeper)			
Baker			
Pilot			
Actor			
Banker			
Politician			
Scientist			
Flight Attendant			
Plumber			
Carpenter			
Dancer			
Medical Examiner			
Newscaster			
Business Executive			

Part III. Picture Ranking.

Rank	# of Occupation (see below)
1	
2	
3	
4	
5	
6	
7	
8	

Construction Worker	1
Doctor	2
Pilot	3
Business Executive	4
Nurse	5
Homemaker	6
Secretary	7
Nutritionist	8

VITA

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