ABSTRACT
        The objective of this paper was to investigate,
within a path analytic framework, the form and degree of the
relationship between young women's marital plans and their
educational expectations. The data for analysis were obtained from a
3 wave, 6 year panel of non-metropolitan southern youths in Texas,
Louisiana, Mississippi, Georgia, Alabama, and South Carolina. The
first sample of high school sophomores was originally collected in
1966 and 1967, and subsequently 2 and 6 years later. The analysis of
the stability of marital plans and educational expectations in this
report focused only on these attitudes during the sophomore and
senior years. The analysis for females indicated that the correlation
between marital plans and educational expectations observed in
cross-sectional data results from marital plans, in part determining
subsequent development of educational expectations, whereas the
reverse influence is of negligible effect. At a higher level of
abstraction, it would support the contention that marriage and
possibly motherhood were major goals for women relative to
educational considerations. The same analysis for males, however,
resulted in the lack of any relationship between the 2 variables.
(KM)

EDUCATIONAL AND MARITAL ATTITUDES:

DIRECTIONALITY AND MUTUAL DEPENDENCE[1,2]

by

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Objectives

Based on existing socialization theory, it appears that the formation
of women's marital plans and educational expectations and the relation-
ship between those variables have significant consequences for the
development of educational behavior and general sex roles. The objec-
tive of this paper is to investigate within a path analytic framework
the form and degree of the relationships between young women's marital
plans and their educational expectations. More specifically, the re-
search is designed to focus on the formation and dynamics of these
phenomena observed in a six year panel of Southern youth. Numerous
quantitative studies using correlational techniques have indicated a
relationship between marital plans and educational expectations (Carter,
1973; Epstein, 1973; Gubbels, 1973; Havens, 1973; Matthews and Tiedeman,
1964; Papanek, 1973; Sewell, 1971; and Thomas, 1971). The various
studies have generally reported a moderate, positive correlation for
women and a weak, positive correlation for men. Substantively, subjects
who expect or plan to attain a higher level of education have also been
found to expect or plan to marry at a later age. Unfortunately, the form

of the relationship between the two variables, especially the question of directionality, is largely either undefined or confused. However, on the basis of present literature, at least four plausible explanations for the observed correlation can be posited.

Explanation 1. Marital plans exert a "causal" influence on the educational expectations. That is, educational expectations are dependent to some degree upon the formation of marital plans.

Explanation 2. Educational expectations exert a "causal" influence on the marital plans. That is, the marital plans are dependent to some degree upon the formation of educational expectations.

Explanation 3. The relationship between the marital plans and educational expectations of women is spurious, resulting from the effects of a prior variable or variables. No causal relationship exists between women's marital plans and educational expectations; the correlation found is an artifact of previous influence.

Explanation 4. Marital plans and educational expectations are mutually dependent; there is a reciprocal effect between the two variables.

The Bayer Studies

The impetus for developing this line of research results from two recent studies linking women's marital plans and educational attitudes by Bayer (1969a, 1969b) and a critique of his approach by Schoenberg (1972). In the first of the Bayer studies in the American Journal of Sociology (1969b), a path analytic model was developed using Project Talent data to explain the effects of aptitude, socioeconomic influence, and marital plans on educational aspirations. The analysis revealed a significant path (.343) from marital plans to educational aspirations. The entire path model is included as Figure 1.

In a second report appearing the same year in the Journal of Marriage and The Family (1969a), Bayer presented a more elaborate causal path model that was designed to predict actual age at marriage of women. This time, however, he posited a flow from educational plans to marital plans. (See Figure 2) Thus, Bayer has reported two studies in the same year, utilizing essentially the same data set, but positing contradictory relationships between women's marital plans and educational attitudes. It is interesting to note that in both cases "large" causal effects were reported ("large" relative to other effects in the model). Furthermore, the first Bayer model approximated the relationship in Explanation 1, and the second model posits a relationship in agreement with Explanation 2. When these two findings are taken together, the actual form of the relationship between the variables becomes problematic, and a dilemma exists concerning which explanation is preferable.

It should also be noted that although Bayer used the variable labels educational aspirations (1969b) and educational plans (1969a), each was apparently operationalized in the same manner. Respondents were asked how much education they expected to achieve. From the conceptual point of view of the present authors, the variable would have been more appropriately designated as educational expectations. Kuvlesky and Bealer (1966) provide a lengthy argument for the development of this position for occupational attitudes. Studies by Cosby and Ohlendorf (1973) and Picou et al. (1972) represent empirical applications of this conceptual treatment.

To further complicate the form of the relationship between marital plans and expectations, Schoenberg, in a rather extensive critique of Bayer in Sociological Methodology 1972, has pointed out additional difficulties with the Bayer study (1969b) and suggested yet another plausible explanation for the reported correlations. This third explanation was that the correlation might be spurious as a result of the effects of prior variables. This relationship corresponds to Explanation 3 above, and is modeled in Figure 3.

A fourth possible relationship in addition to those anticipated by Bayer and Schoenberg may also explain the observed correlations. The two variables might be mutually dependent, or in other words, there may be reciprocal effects. This possibility, of course, corresponds to the previously stated Explanation 4. By combining the two studies by Bayer and Schoenberg's critique, it can only be concluded that although a relationship apparently exists between women's marital plans and educational expectations, the form is not only unknown, but also confused in present research literature.

Sex Discrimination and the Role of Educational and Marital Plans

Disparities in the statuses of women in American society has been linked by numerous researchers to the formation of such attitudes as educational and marital plans. From a broad perspective, Epstein has theorized that "in the exchange system of American society, women's sex status...has typically cost them prestigious and remunerative jobs because society did not evaluate (women) as being high in either capacity or potential" (1973). Furthermore, in her analysis of sexual occupational differentiation, she has suggested that

> those (women) who did succeed had to be brighter, more talented, and more specialized than white males in a comparable labor pool, whom the society ranked higher. Thus, they paid more for the same benefits...if they were permitted to acquire them at all (1973).

Occupations have become sex-typed such that males feel compelled to obtain masculine occupations to assert their virility, just as women

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feel compelled to accept occupations considered "proper" for females in order to protect their feminine self-image (Gubbels, 1973). Consequently, marriage and motherhood are still the major goals of most women. These decisions tend to limit other goals, especially occupational ones. Traditional female occupations are domestic services, teaching elementary and secondary schools, clerical work, nursing, retail sales, factory labor, needlework, and social work (Fichter, 1973; Papanek, 1973; Waldeman, 1973). Finally, "regardless of the occupational field they enter, women around the country and across racial lines tend to have the same distribution of work activities on the job itself" (Fichter, 1973).

The American female, whose primary socialization is often through another female, her mother, tends to reflect traditional attitudes toward education and career. Sewell's analysis indicated that while "women make better grades in high school than do their male cohorts, they are still seriously disadvantaged relative to men in levels of teachers' and parents' encouragement and in their own levels of educational aspirations" (1971). He has further stated that women have lower chances to obtain additional schooling, college attendance or graduation, or of attending graduate or professional schools than do males (1971). He hypothesized the major sources of these lower attainment rates of women are to be found in the period immediately following high school completion because "the effects of socialization in the family and in the school are easily manifest in women's levels of school performance, of significant other's influence, and of aspirations" (1971). Sewell concluded that

> a narrow sex-role training that stresses household and
> family roles for women over educational and occupational
> opportunities -- and which becomes most salient when
> young women for the first time face the realities of dis-
> crimination in higher education and the job market --
> plays a major part in depressing the women's post-sec-
> ondary educational attainments (1971).

Thomas has hypothesized that among white females "the girls appear to have internalized the achievement orientation which so conspicuously characterizes American society...without abandoning the normative prescription that females marry, have children, and devote themselves to the mother role" (1971). She has indicated that white females may not utilize their educations to obtain an occupation; instead, white females tend to use their education to obtain a husband during college years, and thereafter follow the traditional female roles of wife and mother. Papanek has theorized that a woman may accomplish vicarious achievement "through the husband's job in a special combination of roles which (she calls) the 'two-person single career' " (1973). Female participation in such a career may deter the wife from pursuit of a full-fledged career for herself. In fact, she may be discouraged from a career by both her husband and his employer who may feel that her par-

ticipation in a career would hurt her husband socially. In contrast to patterns of white females, black females expect to utilize their education professionally (Epstein, 1973).

Matthews and Tiedeman have hypothesized that the developmental influences of attitudes toward a career and marriage upon life styles occurs as a person ages (1964). These marital plans of an individual are best measured by directly asking the individual at what age she intends to marry (Bayer, 1969a).

The level of female non-marriage in a given status category increases with income. Havens asserts that the occupational status of working women can be analyzed as a variable effecting differential levels of marriage for women, if the economic rewards associated with a given occupation are viewed as elements of status (1973). Havens' explanation of this phenomenon hypothesizes that "the higher the economic achievement of females, the less their desire to accept the confining traditional familial sex role of wife-mother-homemaker or to be evaluated in terms of that sex role" (1973). Furthermore, Carter has theorized that the marital status of a woman has a negative effect upon her occupational status (1972). She suggests that non-married women are more likely than married women to have occupations ranking highly in occupational status. Conversely, married men have higher occupational statuses than non-married men (Carter, 1972).

Matthews and Tiedeman have discussed four disparities of women's attitudes toward marriage, education, and occupation (1964). First of all, the female's perception of male attitudes toward her intelligence may cause the marriage-minded female to not pursue her desired career, or to forsake it for the security of marriage. A second disparity occurs in the traditional attitudes that women are qualified only to be, homemakers, while men should hold the dominant position of breadwinner in the family. A third disparity arises in the "conflict between acceptance of the role of wife and mother and acceptance of a feminine career" (1964). Fourth, women's attitudes toward desired age at marriage conflict with the purpose and desire of college education.

Data Collection

The data for analysis were obtained from a three wave, six year panel of non-metropolitan Southern youth. This study (S-81) includes comparable data from the states of Texas, Louisiana, Mississippi, Georgia, Alabama, and South Carolina. Wave I data were originally collected in 1966-1967 when the subjects were high school sophomores. Wave II data were collected two years later when the majority of the youth in the panel were in their senior year in high school. Additional information was collected (Wave III) in the summer and fall of 1972 when most of the subjects were four years beyond their expected date of high school graduation. The resulting panel consisted of a total of 1228 respondents.

The primary method of data collection for the Wave I and Wave II interviews was group-administered questionnaires. Wave III information was primarily obtained by personal interviews; however, mailed question-naires and telephone interviews were used to recontact a portion of the subjects. Panel attrition appeared to be associated with high school drop-outs and migration at Wave II (the senior year of high school data collection), and due to out-of-state migration and military service in Wave III (the post-high school period). Furthermore, two subsets of the three wave, six year data set design are unavailable. Wave I data was not collected in Louisiana and Wave II data was not obtained in Mississippi. Therefore the data subsets from these two states have been deleted from the present study. A common set of questions were utilized in the various interviews at each of the waves and across states. This repeated measurement of variables focused on the youths' orientations toward such critical life areas as occupational plans, educational plans, residential attitudes and marital plans. Thus, the study has the po-tential for the analysis of the stability and mutual dependence, over time, of these variables.

Of primary interest to the present paper was the repeated measure-ment of women's educational expectations and marital plans. Measures of both of these variables were obtained at each of the three waves. Each respondent was asked "if you could have as much education as you desired, which would you do?" This question was followed by a series of structured responses. The subjects were then asked "what do you really expect to do about your education?" The answers to the second question were structured as follows:

1. Quit high school right now.
2. Complete high school.
3. Complete a business, commercial,
   electronics, or some other tech-
   nical program after finishing
   high school.
4. Graduate from a junior college
   (2 years).
5. Graduate from a college or university.
6. Complete additional studies after graduating
   from a college or university.

The above operationalization of the variable educational expectations is consistent both with Bayer's measurement and with the conceptual dis-tinction between aspirations and expectations developed by Kuvlesky and Bealer (1966). The second variable of primary concern was women's marital plans. Marital plans were defined as the student's orientation toward a definite age at marriage and was operationalized as the actual age response to the question, "At what age would you like to get married?" This measurement was again largely in agreement with the procedures used by Bayer (1969a, 1969b).

Development of the Model

As should be recalled, the objective of this research was to investigate and specify the form and degree of the relationship between marital plans and educational expectations. It was felt that the utilization of multi-wave, repeated measurement data with path analytic procedures would provide superior information to certain critical issues of form. More specifically, repeated measurement panel data as compared to cross sectional surveys has special advantages in the analysis of questions of directionality, stability and mutual dependence.

The basic modeling technique applied was the path analytic method developed by Heise (1970). The Heise path-panel technique was developed to deal with the problems of stability and cross-lagged effects in two wave, two variable designs. The method is an extension of the cross-lagged correlation technique (Pelz and Andrews, 1964) and has been evaluated with simulated data (Pelz and Lew, 1970). Empirical applications of this technique can be found in papers by Cosby, Falk, and Kirklin (1973) and Cosby and Ohlendorf (1973).

Following the Heise approach, our model treats the same variable observed at different waves as hypothetically different variables (this general approach is graphically represented in Figure 4). The x-odd variables (X_1, X_3) refer to marital plans, and the x-even variables (X_2, X_4) to educational expectations. Using this arrangement, the two wave, two variable models resulted in a model with four hypothetical variables. It was obvious and theoretically desirable that all possible paths in this model could not be computed (See Heise, 1969; and Heise, 1970). Fortunately, however, the introduction of a set of assumptions, discussed in some detail by Heise, which are isomorphic with the notion of causation in time-ordered data, allowed a theoretically agreeable solution. First, the assumption of temporal assymetry of effects was made so that later states of a variable could not influence earlier states. Thus, it was assumed that educational expectation levels in Wave II did not affect levels of the variables in Wave I. The application of this assumption eliminated the following four paths: $(X_4 \rightarrow X_{1,2}; X_3 \rightarrow X_{1,2})$. Second, it was assumed that effects did not occur instantaneously but instead after some finite period of time. Consequently, it was assumed that marital plans and educational expectations measured in the same wave did not affect each other but instead that effects were cross-lagged across waves. The generalization of this assumption resulted in the deletion of four additional paths $(X_1 \rightarrow X_2; X_2 \rightarrow X_1; X_3 \rightarrow X_4; X_4 \rightarrow X_3)$.

The paths in this two wave, two variable model (Figure 4) lead to two types of interpretation. First, one set of paths are interpreted as estimates of the consistency or stability of each type variable between waves. For example, paths from X-odd to X-odd variables for Model I are estimates of the consistency or stability of marital plans,

and paths from X-even to X-even variables are estimates of the con-
sistency or stability of educational expectations. Second, the paths
from X-odd to X-even variables and X-even to X-odd variables are in-
terpreted as estimates of the cross-lagged effects. Thus, the paths in the
model from marital plans to educational expectations (X-odd to X-even) and
from educational expectations to marital plans (X-even to X-odd) are
estimates of various cross-lagged effects between the variables. These
interpretations of estimates agree with the Heise model (1970) and with the
earlier work on cross-lagged correlations by Pelz and Andrews (1964).

Analysis of the Data

The analysis of the stability of marital plans and educational
expectations in this initial report has been restricted to the Wave I and
Wave II data subsets and thus focuses only on these attitudes during
the sophomore and senior year periods. The restriction was implemented
for two chief reasons. First, this portion of our data was approximately
comparable to the Talent data utilized in the two Bayer studies. Bayer
focused on the marital plans and educational expectations of high school
seniors. We will be investigating similar data for a panel of both
sophomores and seniors. Secondly, since a significant number of respondents
married in the interim between Waves II and III, we felt that a more complex
model was in order for this post-high school period. Therefore, the analysis
of these attitudes during the post-high school period will await a future
and more extensive analysis.

Means

The mean levels for marital plans and educational expectations observed
at the sophomore and senior data waves are presented in the margins of Table 1.
The average planned age at marriage for female sophomores was approximately
22 years, and about 21.5 years for the females when they were seniors. Male
marital plans were somewhat higher than the females at each wave, averaging
about 24 years at both the sophomore and senior observations. Mean levels
of educational expectations for both males and females fluctuated only
slightly between the sophomore and senior years (See margins of Table 1).
These means correspond closely with similar observations reported by Bayer
from the Talent data, although exact comparisons were not possible at this
time due to divergent coding schemes.

An examination of the correlation coefficients for the female subset
(Table 1) revealed several patterns. First, all correlation coefficients
were of sufficient magnitude to indicate statistical significance at the
.05 level. Second, the stability correlations (those correlations between
repeated measures of the same variables) were found to have the strongest
association; the correlation between sophomore and senior marital plans
was .510 and the corresponding correlation between educational expectations
was .580. Third, the correlation between marital plans and educational
expectations at the sophomore wave was a slight .112 whereas the comparable
correlation for the senior wave data was .332. These last two correlations

were of considerable interest since they were suggestive of an increasing relationship between these variables with age. Fourth, the cross-lagged correlation between sophomore marital plans and senior educational expectations (.261) was approximately twice that of the cross-lagged correlation between sophomore educational expectations and senior marital plans (.132).

It should also be noted that the correlation between female seniors' marital plans and educational expectations of .332 in our data was almost of exactly the same magnitude as that reported by Bayer in the Talent data. The comparable correlation from Talent was .343. Thus, the women's mean levels of marital plans, mean levels of educational expectations and the correlation between the two variables observed in our study closely approximated the figures obtained by Bayer. Since the Talent study did not include sophomore data, no comparison could be made at that wave.

A pattern, different from the female data, was observed in the male correlation matrix (Table 1). First, only three of the six possible correlations were found to be statistically significant at the .05 level. As had been the case with female data, the stability correlations for both marital plans and educational expectations were found to be relatively large, of about the same magnitude, and to be statistically significant. The correlations between sophomore and senior men's marital plans was .451 and .527 for educational expectations. Also as had been the case in the women's data, a small but statistically significant correlation (.107) was found between sophomore marital plans and educational expectations. On the other hand, neither cross-lagged correlation was found to be of magnitude to be significant. Likewise, the correlation between senior marital plans and educational expectations was found to be small and nonsignificant.

Thus when the configurations of correlations for the male and female matrices were compared, sets of similarities and differences emerged. Among the differences, we find: (1) a higher degree of interrelatedness of variables for females since all correlations were judged to be significant, whereas, only one-half the coefficients were significant for males; and (2) both cross-lagged correlations for females were found to be significant whereas neither cross-lagged correlation for males was found to be significant. The main point of agreement between the male and female correlations was the relatively large stability correlations observed in each set for both marital plans and educational expectations.

The 2W-2V Path Models

The 2W-2V path-panel model for the female subset appears as Figure 5. Analysis indicates that approximately 27% of the variation in senior year marital plans and 38% of the variation in educational expectations could be "explained" by the combined influence of the sophomore levels of the same two variables. These estimates represent multiple correlations for the senior year marital plans and educational expectations respectively of .52 and .61.

The coefficients reported along the primary paths are standardized path coefficients above the arrows and unstandardized path coefficients in parentheses below the arrows. All paths in the female 2W-2V model with the exception of the path from sophomore educational expectations to senior marital plans were found to be at least twice their standard error and those were considered of sufficient magnitude to indicate effect. As had been the pattern in the correlation matrix, the stability of both marital plans and educational expectations were moderate to strong during the period. The stability path for marital plans was estimated to be .501 and the path for educational expectations was .558. An examination of the cross-lagged paths, however, was of more interest. The cross-lagged path from sophomore marital plans (.198) was of moderate strength while the remaining cross-lagged path was small (.076) and nonsignificant. This pattern among cross-lagged effects obviously supports Explanation 1 that posits a causal priority of marital plans over educational expectations for females.

The same 2W-2V model for males appears as Figure 6. The amount of explained variation was somewhat less than for females. In contrast, 20% of the variation in senior marital plans and 28% of the variation in senior educational expectations was explained by prior sophomore levels of the same variable. Again, the marital plans and educational expectations stability paths were moderate to strong during this period. They were respectively .449 and .525. On the other hand, the cross-lagged paths revealed a different pattern for males than the one observed in the female model. Neither cross-lagged path (.018 or .022) was found to be of sufficient strength to indicate effect. Thus, for our male data, it would appear that no relationship exists between marital plans and educational expectations.

Discussions

The objective of this research was to investigate the degree and form of the relationship between adolescents' marital plans and educational expectations. Based on prior research and logical extension of results, it was apparent that the form of the relationship was undetermined and perhaps confused in research literature. At least, four plausible explanations could account for current reported correlations: (1) a priority of marital plans; (2) a priority of educational expectations; (3) mutual dependency or reciprocal effects between the two variables; and (4) spurious effects resulting from influences of another variable or variables. The research strategy employed was to utilize repeated measurement panel data with path analytic techniques as a partial solution.

Our analysis for females indicated a relationship that was in agreement with Explanation 1. As you may recall, this explanation posits that the correlation between marital plans and educational expectations observed in cross-sectional data results from marital plans, in part determining subsequent development of educational expectations, whereas the reverse influence is of negligible effect. At a higher level of abstraction

it would support the contention that marriage and possibly motherhood were major goals for women relative to educational considerations. The same analysis for males, however, resulted in the lack of any relationship between the two variables being observed. Thus, for males, the development of these attitudes tended to occur independently of the other. When these two divergent patterns are taken together, the most apparent, parsimonious explanation would be that of differential socialization by sex and the learning of traditional sex roles that stress marriage and motherhood at the expense of educational and occupational attainment for females. This line of reasoning finds support in the Sewell study (1971) which found a lower level of parent and teacher influence for higher educational attainment among high school females, and more generally with the Matthews and Tiedeman theoretical sketch which stresses the inherent conflict between women's formation of educational, occupational, and traditional marital attitudes.

One implication of this outcome would be to recommend an ordering of effects in cross-sectional models as that presented by Bayer (1969b) which stipulates a causal priority of marital plans and to reject arrangements as presented in the Bayer study (1969a) which posits a priority of educational expectations. Such interpretations should be made with caution since difficulties still exist especially with respect to recconciling cross-sectional and cross-lagged paths. The following problems should be kept in mind. First, cross-lagged paths and cross-sectional paths are not directly comparable. Each is based on a fundamentally different concept of causation, primarily with regard to the assumption of instantaneous causation. Second, the problem of causal lag in sociological research is poorly understood. Third, neither the cross-sectional nor the cross-lagged approaches convincingly deals with the problem of spurious effects and thus that explanation (Explanation 4) remains plausible even given the resolution of the above difficulties.

Figure 1. Bayer's path diagram relating educational aspirations
to aptitude, SES, and marital plans for females.
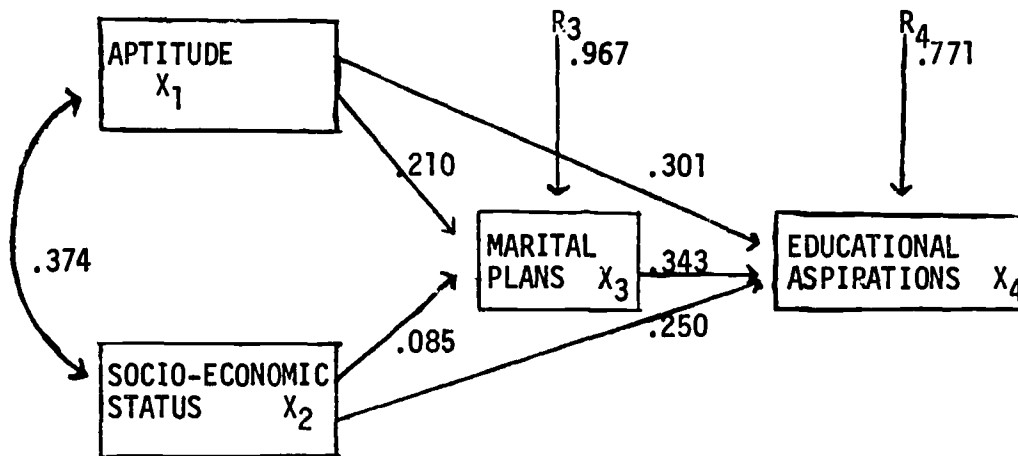
From: Bayer, Alan E. "Marriage Plans and Educational Aspira-
tions," American Journal of Sociology (September 1969):
241.

Figure 2. Bayer's path diagram relating age at marriage to prior
life plans, aptitude, and socio-economic level for
females.
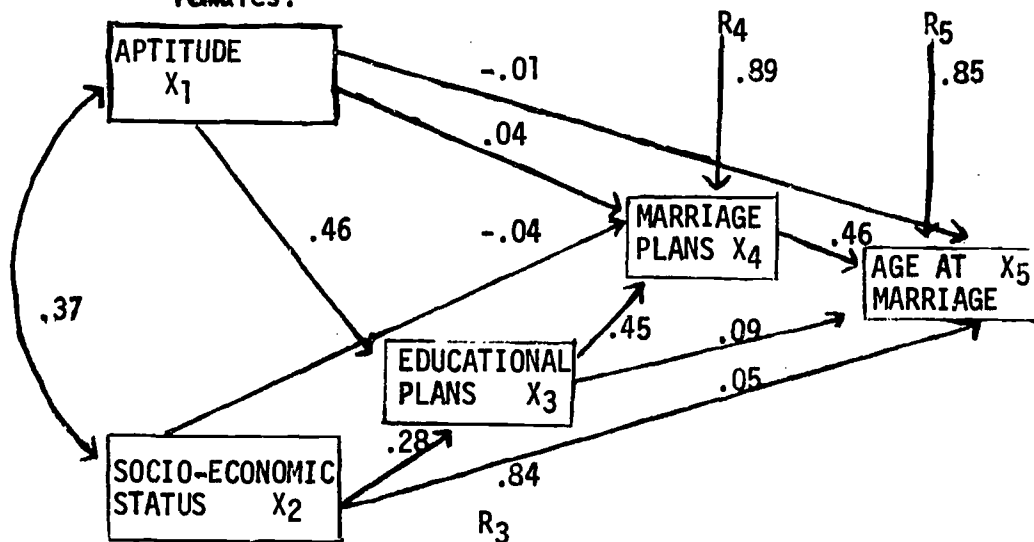
From: Bayer, Alan E. "Life Plans and Marriage Age: An Applica-
tion of Path Analysis," Journal of Marriage and the
Family (August 1969): 556.

Figure 3. Path diagram showing a spurious relationship between women's marital plans and educational aspirations.
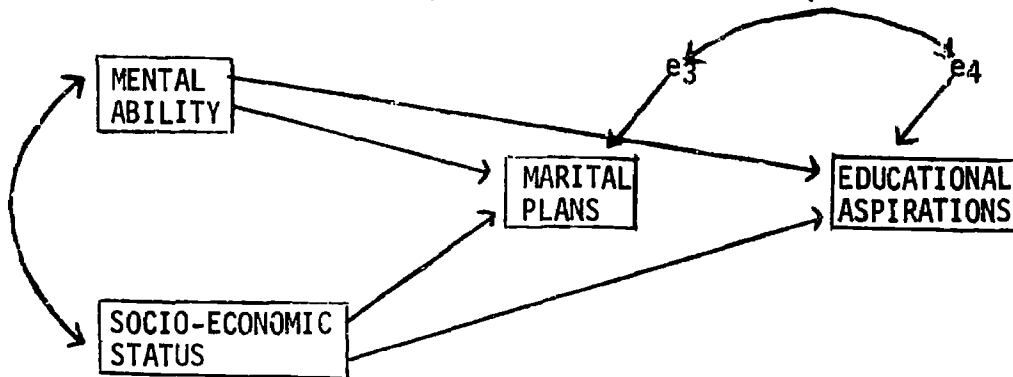
From: Ronald Schoenberg "Strategies for Meaningful Comparison" in Herbert L. Costner's Sociological Methodology, 1972, San Francisco: Jossy-Bass, Inc. p. 26.

Figure 4. Heise path analytic model for two variable and two waves, relating marital plans and educational expectations.
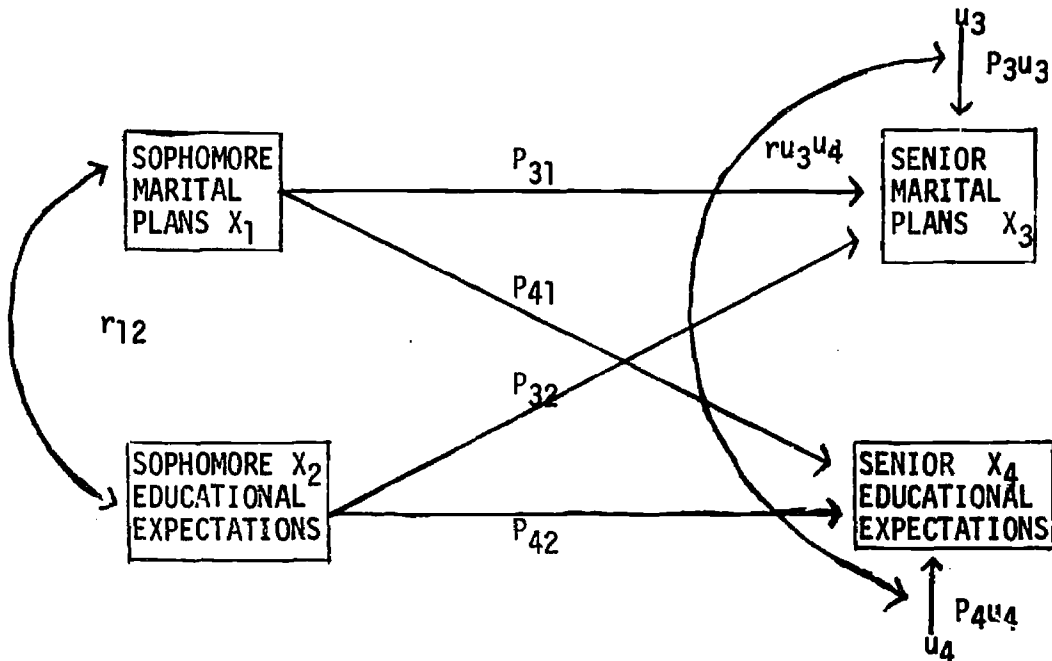
Figure 5. Female 2W-2V model relating marital plans and education-
al expectations.

NS=not significant
*=path equal to or greater than its standard error
**=path equal to or greater than twice its standard error
()=nonstandardized path coefficient
N=313
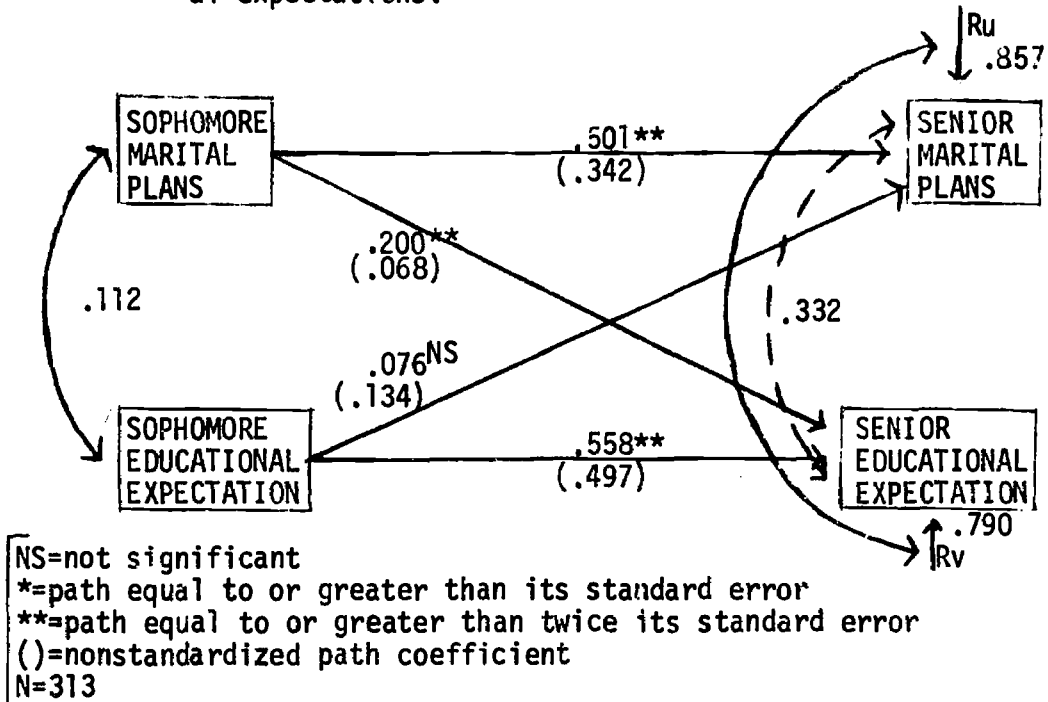
Figure 6. Male 2W-2V model relating marital plans and educational
expectations.

NS=not significant
*=path equal to or greater than its standard error
**=path equal to or greater than twice its standard error
()=nonstandardized path coefficient
N=432
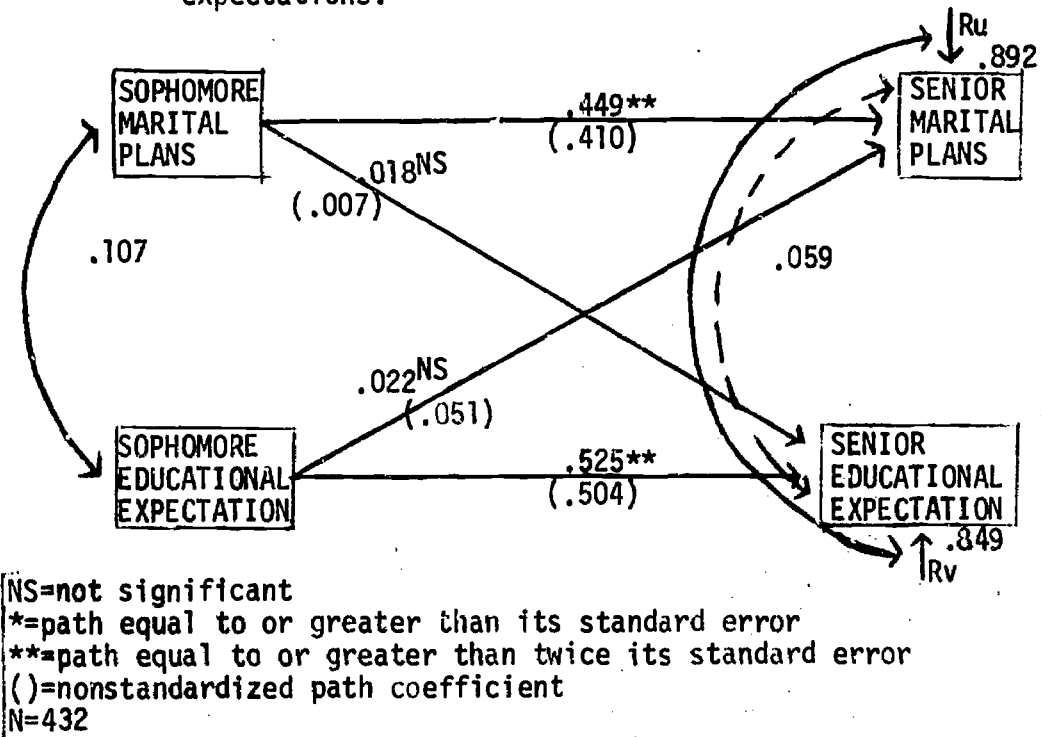
TABLE 1. MATRIX OF ZERO-ORDER CORRELATION, AND MEANS FOR MARITAL
PLANS AND EDUCATIONAL EXPECTATIONS. Female coefficients
are represented above unity and Male coefficients
below.

	MP Soph.	Ed Ex Soph.	MP Seniors	Ed Ex Seniors	Means for Females
MP Soph.	1.00	.112 (.045)	.510 (.001)	.261 (.001)	22.108
Ed Ex Soph.	.107 (.024)	1.00	.132 (.018)	.580 (.001)	3.670
MP Seniors	.451 (.001)	.070 (.139)	1.00	.332 (.001)	21.581
Ed Ex Seniors	.074 (.118)	.527 (.001)	.059 (.217)	1.00	3.731
Means for Males	24.182	3.995	24.048	3.960	

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