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Spouse Similarity in Attitudes, Personality, and Psychological Well-Being

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The study of the origin of spouse similarity is interesting because the extent to which spouse similarity reflects genetic resemblance between husbands and wives affects the genetic structure of a population. The sources of observed spouse similarity in attitudes, personality, and psychological well-being are discussed. Analyses based on data collected from an American adult sample assessed longitudinally showed that spouse correlations were high for attitudes and low to moderate for personality and psychological well-being. Four competing explanations to spouse similarity were compared: initial similarity, attrition, convergence, and age covariation. The results did not support the latter three explanations, indicating that initial similarity may be an appropriate interpretation of observed spouse similarity. The findings are consistent with those of other comparable studies.

KEY WORDS: Assortative mating; spouse similarity; attitudes; personality; psychological well-being; convergence.

INTRODUCTION

The study of spouse similarity, and of the origin of spouse similarity in particular, interests researchers in behavioral genetics. The extent to which spouse similarity reflects genetic resemblance between husbands and wives affects the genetic variance and the genetic structure of a population. Such "assortative mating" increases homozygosity in a population and influences the correlations among biological relatives. The genetic and psychological consequences of assortative mating have been discussed in a number of review papers (Epstein and Guttman, 1984; Thiessen and Gregg, 1980; Jensen, 1978; Vandenberg, 1972). In genetic studies, the important consequence of assortative mating is that the genetic and environmental parameter estimates in classical behavioral genetic and linkage models may be affected when random assortment assumptions are violated (Gilger, 1991; Plomin, 1986; Rice *et al.*, 1989). For example, in the study of twins, the genetic correlation between fraternal twins is estimated to be .5 under classical designs assuming random mating. However, that estimate diverges from .5 if there is nonrandom mating, and increases as the extent of assortative mating increases. Spouse resemblance questions are relevant for other genetic designs, such as family designs, as well. Even though spouse similarity can be directly modeled in path analysis (and is thus less sensitive to violations of random assortment), these models assume that the effect is constant across possibly very wide age and cohort ranges. If it is known that length of marriage, for example, changes the magnitude of spouse correlations, then that effect (and its ramifications on other parameters such as heritabilities) can be modeled and tested in the family design. Studies that can answer whether spouse similarity is a function a marriage length, such as the one reported in this paper, would suggest whether such effects should be considered.

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Positive assortative mating has been shown pervasively for a variety of physical, cultural, cognitive, educational, and personality traits (Gilger, 1991; Watkins and Meredith, 1981; Jensen, 1978; Vandenberg, 1972; Spuhler, 1968). These researchers tend to find high degrees of spouse similarity for age, education, and certain cultural variables (e.g., ethnic background), while low to moderate spouse correlations are found for cognitive abilities, general intelligence, personality traits, and physical attractiveness.

As Price and Vandenberg (1980) noted, modeling phenotypic resemblance between spouses is complicated by the fact that usually only the realized assortment (i.e., the degree of similarity present after some years of marriage) is measured. As they proposed, the observed similarity could be due to at least four factors. First, direct assortment may occur at the time of early acquaintance—initial similarity. If initial similarity is justified, then one may safely use realized spouse correlations as estimates of assortative mating. Second, the observed similarity of spouses could be due to convergence of phenotypes during the years of cohabitation and frequent interpersonal interaction of the spouses. Third, the observed spouse similarity could be inflated by the data collection procedure. That is, separated or divorced couples, who are usually excluded from the studies, may be the most dissimilar pairs. Finally, since spouses are highly correlated in age, high within-couple similarity could be a function of age. However, the age-dependent similarity does not reflect the genetic resemblance between spouses and does not affect the genetic structure of a population.

This report describes the phenotypic similarity in a sample of American couples from a longitudinal study of multiple generations. Included is a description of assortment for frequently studied variables such as age, education level, and personalities, as well as less studied variables such as attitudes, opinions, and psychological well-being. The most important hypotheses investigated by this study are whether spouse similarity in the survey variables (a) is a result of initial similarity rather than convergence after years of marriage, (b) is a result of initial similarity rather than attrition, and (c) is confounded with age effects.

The longitudinal design permits a test on attrition. Age effects were taken into consideration by regressing out age from the scores on the dependent variables. The question of initial assortment vs. convergence as sources of realized spousal similarity was examined cross-sectionally with multiple regression analyses.

MATERIALS AND METHODS

Subjects

The present investigation is based on data collected from the adult samples of the ongoing Longitudinal Study of Generations, which has been described in considerable detail elsewhere (Bengtson and Roberts, 1991). Briefly, the records of a southern California health maintenance organization were used to identify male subscribers who were aged 55 and older, had a dependent family member enrolled in the plan, and had at least one grandchild aged 16 to 26. In 1971–1972 (Time 1), qualified families were sent surveys. In 1984–1985 (Time 2; 13 years after Time 1) surveys were again mailed to anyone on the list, having responded at Time 1 or not, to new spouses of respondents who had divorced and remarried, and to any other new family members. In 1988 (Time 3) surveys were mailed to all previous persons as well as to all spouses of the third generation (grandchildren).

There are 408 couples who participated at Time 1, 197 couples at Time 2, and 296 couples at Time 3. Among these subjects, there are 124 "longitudinal" couples who participated at all three waves. However, for inclusion in the present analyses, both members of the couple are required to have answered the relevant items, and so the number of couples with complete data varies by item.

The sample is largely but not exclusively Caucasian. Their economic statuses range from lower middle-class to wealthy, with the median tending to be in the comfortable middle-class based on their household income.

Measures

The analyses are based on 61 items from the survey: Four of them are for background information, including age, gender, years of marriage, and highest education level, while the other items measure opinions/attitudes, personality traits, and psychological well-being. Respondents' ages are measured in years. Their education levels are measured as years of schooling and then recoded on an

Table I. Factor Loadings for Opinion/Attitude Variables[a]

Factor	Variable	Loading	Question
Religiosity	REL6	.83	Do you consider yourself religious?
	REL11	.83	U.S. would be better off if religion had more influence.
	REL9	.79	Every child should have religious instruction.
	REL10	.75	God exists in the form as described in the Bible.
Political Conservatism	OPNSB2	.77	U.S. should be ready to answer any power challenges.
	OPNSA17	.74	Society's most important task is law and order.
	OPNSA20	.65	Most people on welfare are lazy.
Gender Inequity	TFI6	.84	Husband should have main say.
	TFI3	.80	It goes against nature for women to have authority over man.

[a] The average loadings for each variable across three times are presented. Variables' loadings on minor factors are lower than .3. n = 2044 for Time 1, 1331 for Time 2, and 1483 for Time 3.

8-point scale ranging from 1 (elementary school) to 8 (representing graduate school at Time 1 and postgraduate education at Time 2 and Time 3).

There are nine opinion/attitude items common to all three times, providing information on respondents' religious and political attitudes and opinions toward gender equality. Respondents were asked to rate their agreement with each statement based on a 1–5 point scale (1=strongly disagree, while 5=strongly agree). Three subscales were constructed, based on factor loadings obtained from exploratory factor analyses, and were labeled "Religiosity," "Political Conservatism," and "Gender Equality." Factor loadings for each item in the opinion/attitude scale are presented in Table I. Subscale scores were computed by averaging responses on all the completed items within each factor. Higher scores on the Religiosity subscale indicate the scorer being more religious. Higher scores on the Political Conservatism subscale indicate the scorer being more conservative on political opinions. Higher scores on the Gender Inequity subscale indicate the respondent showing greater endorsement of traditional inequity between genders.

As part of the survey, 18 items were selected from Eysenck's Personality Questionnaire (EPQ) (Eysenck and Eysenck, 1975; Floderus-Myrhed and Pedersen, 1980) providing measures of extraversion-introversion and neuroticism. The survey also included Bradburn's (1969) Affect Balance (BAB) Scale, which yielded separate scores for positive and negative aspects of affect. The BAB consists of five positive and five negative affect items, to which subjects respond yes or no according to whether they have felt that way recently. For example, subjects were asked whether, in the past week, they had felt "particularly excited or interested in something" or "on top of the world," both of which are indicative of positive affect. Examples of negative affect items include feeling "very lonely or remote from other people" or "bored." The yes responses were summed separately for positive and negative items to yield positive (BAB-P) and negative (BAB-N) subscale scores. Also included in the study was the Center for Epidemiologic Studies Depression Scale (CES-D) (Radloff, 1977), which provides a measure of another aspect of psychological well-being, depression. The CES-D consists of 20 items assessing six major symptom areas (mood, guilt/worthlessness, helplessness/hopelessness, psychomotor retardation, loss of appetite, and sleep disturbance). Each item was rated on a scale from 0 ("rarely or none of the time") to 3 ("most or all of the time") in terms of frequency of occurrence during the past week; the total score could range from 0 to 60, with higher scores indicating more symptoms and/or a higher frequency of occurrence of the symptoms, i.e., more likely to be depressed.

Reliabilities (Cronbach's alpha) were computed within the time of measurement for each subscale based on this particular data set. The reliabilities for the subscales, as well as the sample sizes with which the reliabilities were computed, are presented in Table II. They range from .58 to .89, with the majority beyond .70.

Preliminary Analyses

Several preliminary analyses were performed before looking at spouse resemblance. These in-

Table II. Subscale Reliabilities (α) with Sample Sizes (*n*) Across Time, and Number of Items (No.) in Each Subscale

Scale	No.	α (*n*) Time 1	Time 2	Time 3
Religiosity	4	.83 (1878)	.87 (1243)	.86 (1299)
Political Conservatism	3	.59 (1963)	.64 (1286)	.61 (1410)
Gender Inequity	2	.58 (1531)	.72 (1298)	.68 (1439)
BAB positive	5	.64 (1964)	.71 (1255)	.67 (1412)
BAB negative	5	.72 (1992)	.67 (1272)	.65 (1429)
CES-D (Depression)	20	—	.75 (1233)	.89 (1304)
EPQ—Extraversion	9	—	—	.78 (1313)
EPQ—Neuroticism	9	—	—	.78 (1364)

clude examination of the simple effects of age and gender in the various subscales, as well as the within-person correlation (Pearson's *r*) of education level with each subscale of opinions/attitudes, personality, and psychological well-being. Gender differences were examined by computing mean differences between husbands and wives. On average, husbands have significantly higher achieved education level than wives in all three waves of the study ($t = 2.27$, $p = .024$, for Time 1; $t = 5.52$, $p < .001$, for Time 2; $t = 4.80$, $p < .001$, for Time 3). No other gender difference was found for the other variables analyzed here. The within-person correlation between age and education level is significantly negative at all three times for both male (mean $r = .29$) and female (mean $r = .27$) respondents, i.e.; younger respondents tend to have higher education than older ones.

Preliminary correlation analyses also show that an individual's scores on the opinion/attitude variables are significantly correlated with education level. Respectively, the average correlations (across times) are −.2, −.4, and −.3 between education level and Religiosity, Political Conservatism, and Gender Inequity. That is, the more-educated individuals were less religious and less politically conservative and had fewer gender biases. However, one's personality and psychological well-being scores are not significantly correlated with education level. Since age and education level are highly correlated between spouses, and would thus inflate spouse resemblance for the related traits, age and education effects were removed from each of the dependent measures using a multiple regression procedure. Age effects were removed from each subscale by regressing husband's subscale score on husband's age and wife's score on wife's age, then computing the residuals from the regressions. The age-adjusted correlation between spouses on the particular subscale was then computed as the Pearson's correlation between the residuals. Since preliminary correlation analyses showed that an individual's opinion/attitude scores were significantly correlated with education level, the spouse correlations on opinion/attitude subscales were further adjusted, using a similar procedure, for both age and education effects. That is, an individual's score on an opinion/attitude subscale was regressed on his/her age and education level, then the age- and education-adjusted correlation between spouses was computed as the correlation between the residuals from the multiple regression procedures.

Table III presents the observed spouse correlations for age, education level, opinions/attitudes, personality traits, and psychological well-being. The preliminary correlations, age-adjusted correlations, and age- and education-adjusted correlations (for opinion/attitude subscales) are presented in the third, fourth, and fifth column, respectively, in Table III.

RESULTS

A longitudinal study should provide the necessary type of data best to test for "convergence" (i.e., the extent to which spouse similarity is a function of the marriage length) and attrition effects. The most direct way to test for convergence is selecting only the couples with sufficient data, who remained married, across all three times (the "longitudinal couples") and comparing their correlations across time. The Pearson's correlations of the longitudinal couples on the measures which are common to two or more times (namely, Religiosity, Political Conservatism, Gender Inequity, BAB-P, BAB-N, and CES-D) are presented in Table IV.

Table III. Spouse Correlations for Age, Education, Attitudes, Personality Traits, and Psychological Well-Being, Unadjusted and Adjusted for the Age Effect (Age-Adj. *r*) and for the Age and Education Effects (Age- and Educ.-Adj. *r*)

Variable	*n* couples	Unadj. *r*	Age-adj. *r*	Age- and educ.-adj. *r*
Age	404	.965**	—	—
Education	404	.516**	.473**	—
Religiosity				
Time 1	301	.635**	.620**	.588**
Time 2	193	.680**	.660**	.622**
Time 3	289	.690**	.663**	.645**
Political Conservatism				
Time 1	301	.543**	.536**	.421**
Time 2	193	.544**	.523**	.380**
Time 3	289	.514**	.450**	.351**
Gender Inequity				
Time 1	301	.410**	.418**	.374**
Time 2	193	.490**	.471**	.364**
Time 3	289	.427**	.413**	.339**
BAB-P				
Time 1	403	.125*	.119*	—
Time 2	189	.144*	.131	—
Time 3	287	.213**	.184**	—
BAB-N				
Time 1	403	.271**	.177**	—
Time 2	189	.262**	.279**	—
Time 3	287	.275**	.217**	—
CES-D				
Time 2	192	.307**	.306**	—
Time 3	287	.279**	.277**	—
EXTROVERT	266	.092	.086	—
NEUROTIC	266	.144*	.135*	—

* $p<.05$.
** $p<.01$.

Comparing across times, we find no systematic pattern showing that these correlations increase or decrease over time. The spouse correlations on the opinion/attitude scales start off at moderate to high levels (from .36 to .53) at Time 1, then increase (Religiosity), decrease (Political Conservatism), or remain fairly stable over time (Gender Inequity); and the changes are usually small. The correlations on affect balance and depression at all times are generally low and nonsignificant, and show no systematic pattern of change over time.

One problem with the longitudinal correlation analysis, however, is that 50% of the 127 longitudinal couples in this study had been married for at least 20 years, and 80% had been married for more than 15 years, even at Time 1. Mean age was 47.1 (SD = 11.1) for husbands and 44.4 (SD = 11.0) for wives. Since most couples had been married for 15 or even 20 years at the very beginning of this study, the correlations we observed might be insufficient in providing information on changes that happened during relatively early stages of their marriage.

Table IV. Adjusted Spouse Correlations of the "Longitudinal Couples" Across Times

Variable	*n* couples	Adjusted *r* Time 1	Time 2	Time 3
Religiosity[a]	89	.525**	.692**	.688**
Political Conservatism[a]	88	.514**	.443**	.364**
Gender Inequity[a]	76	.361**	.354**	.377**
BAB-P[b]	119	.120	.155	.052
BAB-N[b]	117	.096	.126	.194*
CES-D[b]	121	—	.223*	.107

[a] Correlations are adjusted for age and education effects.
[b] Correlations are adjusted only for age effects.
* $p < .05$.
** $p < .01$.

Since the data might not provide adequate information for us to test the convergence directly, convergence was tested using the multiple regression model suggested by Price and Vandenberg (1980). The model can be written as

$$\text{HSCORE} = b_1\text{WSCORE} + b_2\text{ML} + b_3\text{WSCORE} * \text{ML} + b_0 + \text{error}$$

where HSCORE is the husband's score on a scale, WSCORE is the wife's score on the same scale, ML represents the marriage length (years) of this couple, and WSCORE*ML is the multiplicative interaction term. b_1, b_2, and b_3 are regression coefficients, b_0 is the regression constant, and error is the random error of measurement. The statistical significance of b_1 tests the main effect of WSCORE, i.e., whether or not the wife's score is a significant predictor of husband's score; the significance of b_2 tests the main effect of marriage length. However, what we are most interested in is b_3—its significance tells whether spouse similarity changes over marriage length.

The regression coefficients of each term in the above multiple regression model are given in Table V, along with the R^2 obtained from the regression models with and without the interaction term.

As we can see from Table V, all of the main effects of wife's score are significant. But only 3

Table V. Regression coefficients for Main Effects of Wife's Score (WS), Marriage Length (ML), and Interaction Between Wife's Score and Marriage Length (WS*ML)

		Step I			Step II	
Variable	*n*	WS	ML	R^2	WS*ML	R^2
Religiosity						
Time 1	301	.678**	.003	.401	.004	.404
Time 2	193	.662**	−.001	.445	−.001	.445
Time 3	289	.683**	−.006*	.438	.001[a]	.439
Political Conservatism						
Time 1	301	.473**	.004	.254	−.005	.261
Time 2	193	.534**	.001	.294	.007	.304
Time 3	289	.502**	−.003	.222	−.002	.223
Gender Inequity						
Time 1	301	.405**	.006*	.183	.001	.183
Time 2	193	.453**	.007	.254	.003	.256
Time 3	289	.493	−.003	.205	.002	.206
BAB-P						
Time 1	403	.116*	−.022**	.078	.003	.079
Time 2	189	.129	.012	.029	.002	.029
Time 3	287	.197**	−.012*	.062	−.010*	.087
BAB-N						
Time 1	403	.192**	−.026	.136	.001	.136
Time 2	189	.223**	.011	.083	.011*	.113
Time 3	287	.223**	−.020	.120	.003	.121
CES-D						
Time 2	192	.290**	−.001[a]	.095	−.003	.097
Time 3	287	.279**	−.001	.071	−.010*	.098

[a] .001[a] indicates that the absolute value was less than .001.
* $p<.05$.
** $p<.01$.

of 17 of the regression weights for the interaction term (wife's score × marriage length) are significant. Even for these three significant regression weights, whose absolute values are as small as .01, two of them were negative; and the negative weights suggest "divergence" rather than "convergence." Moreover, these significant interactions are not consistent over time of measures, suggesting that they are probably only spurious occurrences.

The aforementioned multiple regression model incorporates the interaction between spouse similarity and the length of marriage into a linear scheme. However, this relationship could be nonlinear, i.e., the direction (similar/dissimilar) may change during the marital course. To examine the possible nonlinear characteristics of the function, respondents were separated into four groups according to the numbers of years of their marriage: (1) less than 6 years, (2) between 6 and 15 years, (3) between 16 and 25 years, and (4) longer than or equal to 26 years. Spouse correlations on all the subscales were examined by group, and there are no substantial differences among these four groups in terms of spouse similarity. Again, these results do not support the hypothesis of convergence of spouses over time.

The patterns of the age- and education-adjusted correlation matrices for opinion/attitude scales for Time 1 and Time 3 were compared between couples married less than 6 years and the other couples (whose marriage length ranged from 6 years through 69 years), when the number of subjects were sufficient for the test. Two alternative models were tested using the MX program (Neale, 1991). All estimates for spouse correlations were allowed to be different across groups of different marriage length (Model 1), or corresponding parameter estimates were restricted to be invariant across groups (Model 2). Model 2, with the same parameter estimates for different groups, is the more parsimonious one; it indicates the same pattern of correlation matrices for different groups (defined by marriage length). The chi-squares for both models are nonsignificant, i.e., both models are accepted. For Model 1, $\chi^2=17.10$ with 34 df ($p=.99$) for Time 1, and $\chi^2=20.62$ with 34 df ($p=.92$) for Time 3. For Model 2, $\chi^2=34.40$ with 50 df ($p=.96$) for Time 1, $\chi^2=20.10$ with 50 df ($p=1.0$) for Time 3. For both Time 1 and Time 3, the chi-square differences between Model 1 and Model 2 with the differences in degrees of freedom are not significant. Model 2 is preferred since it is the more economic one, which means that the age- and education-adjusted spouse correlations are the same for the two groups (with different marriage length). These results did not suggest any relationship between spouse similarity and length of marriage.

To test the possible effects of attrition, spouse correlations were compared at Time 1 among three "groups" of couples, which were defined according to the stability of their marriage. In Group 1 were 127 "stable" couples who remained married across three time points. In Group 2 were 26 "divorced" couples who were married to each other at Time 1 but divorced or separated between Time 1 and Time 3. In Group 3 ("widowed") were another 87 couples who participated at Time 1, but one of the spouses died between Time 1 and Time 3. Only those subjects with complete information were included in analyses, thus sample sizes may

Table VI. Spouse Correlations in Attitude and Personality Traits at Time 1 by Marriage Stability

Variable	Stable (n = 123)	Divorced (n = 25)	Widowed (n = 87)
Religiosity	.583**	.528*	.596**
Political Conservatism	.655**	.571*	.464**
Gender Inequity	.465**	.450	.397**
BAB-P	.107	.151	−.051
BAB-N	.195*	.218	.365**

* $p<.05$.
** $p<.01$.

vary depending on information available for particular subscales. The correlations are shown in Table VI.

The significance of differences in spouse similarity between the "stable" couples and the "divorced" couples provides a statistical assessment of the issue of attrition. t tests were done on Time 1 correlations for each of the five subscales shown in Table VI, and no significant differences were found between the "Stable" and the "Divorced" groups or between the "Stable" and the "Widowed" group.

DISCUSSION

The purpose of this report is to assess the evidence for (or against) the existence of spouse similarity and to examine the sources of the observed spouse similarity. There are four findings relevant to these issues. First, there is evidence for significant within-couple correlations on opinion/attitude scores, positive and negative affect, CES-D (depression), and neuroticism. The spouse similarity in opinions/attitudes is the highest. Spouse correlations for personalities and psychological well-being are low to moderate (i.e., r = .13 to .31). Second, age effects explain very little of the observed spouse similarity. Comparing the third and fourth columns in Table III, we can see that adjusting for age does not change the spouse correlations for the survey variables substantially. In other words, direct assortment on the survey variables is independent of age. Third, convergence is not supported, in that the interaction terms between the traits and marriage length are nonsignificant. Fourth, attrition does not appear to affect spouse similarity, given that no group differences were found between the "stable" couples and the "divorced" couples. An alternative explanation to the failure to detect convergence could be that spouse similarity as a function of years of marriage is nonlinear. Spouses may converge substantially during first several years of their marriage (or even before their marriage) and then remain stable after they have converged to a certain extent. Unfortunately, this data set did not provide sufficient information on the newlywed couples. However, the similar correlation matrices derived from dividing subjects into four groups according to their marriage length do not support the notion that convergence happens during the early of marriage. In addition, the nonsignificant chi-square tests of heterogeneity of correlations in different groups do not suggest any relationship between spouse similarity and length of marriage. One may still argue that the spouses may have converged during the very early years of their marriage, or even before their wedding.

Convergence can be tested directly and conclusively only with longitudinal data starting before or at least from the couples' early meetings. It would be helpful to answer the question of convergence if data variables are collected from boyfriends and girlfriends, and follow-up studies would reveal the similarity between those who eventually entered into marriage and after different years of marriage (e.g., after 3, 7, and 10 years of marriage). In such a study, it will also be possible to compare the initial similarity between two groups of male and female subjects: those who eventually enter into marriage and those who do not. Comparison between the similarity of future couples and that of male–female pairs in the other group will provide stronger evidence for (or against) nonrandom mating.

The results of this study are similar to those by other authors on assortative mating on other aspects of behavioral traits, for example, academic or cognitive ability (Gilger, 1991; Phillips *et al.*, 1988; Watkins and Meredith, 1981; Price and Vandenberg, 1980), in that positive and significant spouse correlations were found and that the observed spouse similarity did not seem to be a result of convergence of age effects. Also, the results are consistent with those from earlier studies on relevant personality traints (Mascie-Taylor, 1989; Phillips *et al.*, 1988), which showed low to moderate spouse correlations for these traits. In general, the results do not support a hypothesis of spousal convergence, attrition, or age effects as interpretations

of the observed realized spouse similarity, and thus initial similarity seems to be highly plausible. So one may reasonably safely use realized spouse correlations for these variables as estimates of assortative mating in relevant genetic designs.

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