

Spouse Similarity for IQ and Personality and Convergence

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A similar pattern of spousal association for IQ scores and personality traits was found in two British samples from Oxford and Cambridge. There was no indirect evidence from either sample to suggest that convergence occurred during marriage. All observed assortative mating might well be due to initial assortment.

KEY WORDS: assortative mating; homogamy; convergence.

INTRODUCTION

Assortative mating, where like phenotypes mate with like, is widespread for a large number of characters in man including height, weight, IQ, and age as well as social and geographical propinquity (Ahern *et al.*, 1983; Spuhler, 1968; Vandenberg, 1972; Roberts, 1977; Jensen, 1978; Pennock-Roman *et al.*, 1988).

Assortative mating can affect the genetic structure of a population by increasing genetic variance and also homozygosity, although only when few loci are involved. If associated with differential fertility gene frequencies will change (Crow and Felsenstein, 1968). Since IQ is thought to have a significant heritability (Bouchard and McGue, 1981), the study of assortative mating for IQ and other heritable characters is of considerable interest to behavioral genetics.

The majority of studies reports a positive association between husband and wife for IQ (usually between .20 and .45) and lower values for

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personality traits (average, .15), although there is considerable variation between studies and over time (Johnson *et al.*, 1976). However, one of the problems associated with the study of assortative mating is convergence of spouse phenotypes over time (Price and Vandenberg, 1980; Mascie-Taylor, 1988).

As Price and Vandenberg (1980) note, most studies measure realised assortment, which is the degree of similarity present after some years of marriage. They argue that the observed similarity between spouses could be due to (1) initial similarity, (2) convergence during marriage as a result of shared environments, (3) attrition of dissimilar couples as a result of separation or divorce, and (4) confounding effects of age-related variables in heterogeneous samples.

Ideally longitudinal studies are needed to examine directly the effects of convergence, but the hypothesis can be tested indirectly by seeing whether couples married longer are more similar than those who have been married only briefly. The present study examines the extent of convergence for IQ and personality traits in two British samples.

MATERIALS AND METHODS

The two studies have been described in considerable detail elsewhere (Harrison *et al.*, 1974, 1976; Mascie-Taylor, 1977; Mascie-Taylor and Gibson, 1979), although this is the first time that this particular aspect is reported. It is sufficient to note here that the Cambridge sample was collected from an urban community living on the outskirts of the city, whereas the Oxford sample was collected from villages situated some eight to ten miles from Oxford in a region known as Otmoor. Both samples collected family information including husband/wife similarities as well as years of marriage. The same IQ and personality tests were used in the two samples, namely, the Wechsler Adult Intelligence Scale (WAIS; Wechsler, 1958) and Eysenck's Personality Inventory (EPI; Eysenck, 1970). Because of the difficulties of using the WAIS in a "field" situation and due to recent metrication, a shortened test was used comprising four verbal subtests (comprehension, similarities, vocabulary, and digit span) and three performance subtests (block design, object assembly, and digit symbol). The verbal and performance IQ components can be used to provide an overall or total IQ score. All scores were age corrected as described by Wechsler (1958).

Eysenck's personality inventory (Eysenck, 1970) provides measures of extroversion-introversion and neuroticism. It also includes an inconsistency or "lie" scale.

Table I. Zero-Order Spouse Correlations for IQ and Personality in Oxbridge Samples

	Cambridge		Oxford	
	Correlation	<i>p</i>	Correlation	<i>p</i>
WAIS test				
Comprehension	+ .185	<.01	+ .287	<.001
Similarities	+ .395	<.001	+ .442	<.001
Digit Span	+ .221	<.002	+ .097	ns
Vocabulary	+ .372	<.001	+ .406	<.001
Block Design	+ .177	<.02	+ .321	<.001
Object Assembly	+ .255	<.001	+ .162	<.05
Digit Symbol	+ .282	<.001	+ .130	ns
Verbal IQ	+ .340	<.001	+ .462	<.001
Performance IQ	+ .285	<.001	+ .155	ns
Total IQ	+ .403	<.001	+ .372	<.001
EPQ				
Extraversion	+ .233	<.001	+ .141	ns
Neuroticism	.072	ns	+ .048	ns
Inconsistency	+ .235	<.001	+ .278	<.001

RESULTS

The spouse correlation for the IQ subtests and components and the three personality variables are shown in Table I. There were no significant differences between samples in spousal correlations, and they are similar in magnitude to those reported in the literature.

Table II presents the results of correlating the absolute difference between husband and wife with years of marriage. As can be seen, there is no significant association for any of the IQ tests or personality variables in the two samples. However, as Price and Vandenberg (1980) point out, these results remove only the linear effects of age or length of marriage. They recommend using hierarchical multiple regression in which the dependent variable is, say, wife's IQ score. Years of marriage is entered as the first step, husband's IQ score next, and finally, the multiplicative interaction term (husband's score \times length of marriage). The statistical significance interaction term provides a test of whether there is change of similarity over time. If the interaction term is positive, it indicates convergence. Only 1 of the 26 multiple regression analyses showed any significant interaction term, and that was for inconsistency ($p < .05$) in the Oxford sample. Given the number of analyses performed, one would expect at least one apparent significant result by chance alone.

DISCUSSION

The results obtained from these two British samples provide no indirect evidence in support of convergence. In that respect they are in

Table II. Effects of Convergence for IQ and Personality: Correlation Between Years of Marriage and Difference in IQ Scores and Personality Between Spouses

	Cambridge sample (<i>N</i> = 193)		Oxford sample (<i>N</i> = 150)	
	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
WAIS IQ test				
Comprehension	-.189	ns	+.166	ns
Similarities	-.015	ns	+.046	ns
Vocabulary	+.014	ns	-.005	ns
Digit Span	-.171	ns	+.036	ns
Block Design	+.003	ns	-.123	ns
Object Assembly	-.042	ns	+.036	ns
Digit Symbol	+.020	ns	+.029	ns
Verbal IQ	-.132	ns	+.105	ns
Performance IQ	-.055	ns	-.008	ns
Total IQ	-.106	ns	+.035	ns
EPQ				
Extraversion	+.015	ns	+.153	ns
Neuroticism	+.177	ns	-.028	ns
Inconsistency	+.096	ns	+.137	ns

agreement with Price and Vandenberg's results which showed convergence only for "plastic variables" such as smoking and alcohol consumption. Buss (1984) reported consonant results for self-reported and observer-reported measures of personality.

A different approach was used by Watkins and Meredith (1981), who examined newlywed couples tested on 21 tests of specific cognitive abilities. Fifteen of these tests had been administered previously in the Hawaii Family Study (Johnson *et al.*, 1976) and the Colorado Family Study (Zonderman *et al.*, 1977), where most couples had been married for many years (although exactly how long is unclear in the Colorado Study). All the Hawaii couples had teenage children. Comparisons between Watkins and Meredith's correlations and the two other studies revealed no consistent differences.

In the absence of direct evidence, it seems that similarity between spouses for IQ and personality traits is a result of initial assortment rather than a result of convergence.

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