

## ACADEMIC PRIMOGENITURE AND SEX-ROLE CONTRAST OF THE SECOND-BORN

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Since Galton (3) reported that first-borns were over-represented among eminent men of science, the finding of academic superiority of first-borns has been replicated both in England (2) and in America (1, 6). Three possible factors could account for this phenomenon: intellectual, economic, or motivational.

The intellectual factor has been ruled out by Jones (4) and Murphy, Murphy and Newcomb (5) who concluded upon reviewing over 100 studies that there is no evidence for intellectual superiority of the first-born. Schachter (7) traced the over-representation of first-borns among eminent scientists to their over-representation in college, which in turn he attributes to their attaining of better grades in high school. Since first- and later-borns are proportionately represented in high school, the economic explanation is effectively ruled out.

This leaves motivation as the most plausible explanation of the differential academic attainment and career selection of first- and later-borns. Smelser and Stewart have suggested "that the widely reported finding that more first-borns attend college is not a phenomenon of birth order *per se*, but is instead an effect, first of all, of some interaction of birth order, sex of child, and sex of sibling" (8, p. 300). This is a particularly important consideration if motivation is the important factor. Sex of subject is important because incentives for male and female academic achievement differ in our culture. Sex of sibling is important because the sex of the elder sibling could determine if the younger sibling will model himself after his older same-sex sibling or contrast his behavior to that of an older opposite-sex sibling.

Smelser and Stewart have demonstrated the effect of the elder sibling on duration of an individual's education. Unfortunately, the type of education was unspecified in their study. The present study is essentially a partial replication of the Smelser and Stewart study, using college attendance as a measure of academic motivation.

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## METHOD

A birth-order survey was administered to all introductory psychology students, approximately 1,000. From these, 135 students (59 males and 82 females) were selected on the basis that they came from two-sibling families, with the other sibling within four years of age. Thus we controlled for family size and age spread between siblings, two factors which could well affect the type of relationship two siblings would experience.

## RESULTS

The results are presented in Table 1. It shows the number of males and females by birth order and sex of sibling. The proportion of first-born males and females do not differ as a function of the sex

TABLE 1. NUMBER OF MALE AND FEMALE COLLEGE STUDENTS FROM TWO-SIBLING FAMILIES, BY BIRTH-ORDER AND SEX OF THEIR SIBLINGS

Sex of Sibling	Male				Female				Total
	1st born N	%	2nd born N	%	1st born N	%	2nd born N	%	
Male	12	8.7	23	16.9	20	14.7	13	9.7	68*
Female	14	10.3	5	3.7	23	16.9	26	19.1	68
Total	26	19.0	28	20.6	43	31.6	39	28.8	136

\*The equal number of male and female siblings is not by design but by chance.

of their younger sibling. With later-born males and females, however, we find a much smaller number of those who have an older sibling of the opposite sex.

An analysis for the factors of sex of subject, birth order, and sex of sibling yields a chi square of 18.24 ( $p < .01$ ). Analysis of the main effect for sex of subject indicates no significant departure from the total proportion of males and females in introductory psychology ( $\chi^2 = 1.1$ , ns). The sex of sibling and birth order main effects also were not significant. The significant departure from a chance distribution is due to the under-representation of second-born subjects with a cross-sex elder sibling, that is, males with an elder sister and females with an elder brother.

This can be seen more clearly in Table 2, where subjects are compared as a function of their birth order and the presence of a same- or opposite-sex sibling. Second-born subjects with an opposite-sex older sibling can be clearly seen to be under-represented, while those with a same-sex older sibling are equally over-represented if we use the respective frequencies of first-borns as the expected value. A chi square test was significant at the .01 level.

TABLE 2. NUMBER OF COLLEGE STUDENTS (MALES AND FEMALES COMBINED) FROM TWO-SIBLING FAMILIES, BY BIRTH-ORDER AND SEX SAMENESS VS. DIFFERENCE OF THEIR SIBLINGS

Sex of Sibling	1st born		2nd born		Total
	N	%	N	%	
Same	35	25.6	49	36.0	84
Different	34	25.0	18	13.4	52
Total	69	50.6	67	49.4	136

### DISCUSSION

Our data support Smelser and Stewart's finding in showing that an elder sibling acts as an "intellectual depressant" on the later-born, that is, when he is of the opposite sex. Thus a sex-role explanation would seem to be appropriate for academic over-representation of the first-born. According to Schachter's (7) findings, it is highly probable that a second-born will find himself in a family situation where the older sibling is academically oriented.

We suggest, if the older sibling is of the opposite sex, the second-born will label academic behavior sex-role inappropriate for himself. For example, a second-born male seeing his older sister studying will come to label studying as "feminine" behavior. In consequence he will attempt to select a "masculine" role which excludes or reduces such "feminine" behavior as studying. Poor academic performance of the second-born male may in turn reinforce academic performance of the first-born female; she may be held up as an example and praised for her achievement. On the other hand, praise for any academic success of the second-born male might be negatively reinforcing since it might be seen as praise for "feminine" activity.

In contrast, we see the presence of a same-sex older sibling to increase the probability of the younger sibling attending college. The parallel explanation for these data is: A second-born male finds himself in a family where the older brother is studying. The older brother being a positive sex-role model, the second-born attempts to emulate him in this activity as well as in others.

### SUMMARY

In a college population it was found that second-borns with an older sibling of the other sex were under-represented while to those with an older sibling of the same sex were over-represented. A sex-

role contrast and sex-role modeling explanation was given. Academic primogeniture may thus be a function of the effects of sex-role contrast of the second-born.

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