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Birth order and sexual strategy[☆]

Richard L. Michalski*, Todd K. Shackelford

Division of Psychology, Florida Atlantic University, 2912 College Avenue, Davie, FL 33314, USA

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Abstract

According to F. J. Sulloway [Sulloway, F. J. (1996). *Born to rebel*. New York: Pantheon], firstborns can minimize the diversion of parental investment to younger siblings by upholding their parents' beliefs, or the parental "status quo." Maintenance of the status quo may translate into the pursuit of different sexual strategies as a function of birth order. Accordingly, Sulloway hypothesized that laterborns are more likely to pursue a short-term sexual strategy, whereas firstborns are more likely to pursue a long-term sexual strategy. The current between-family study tests this hypothesis with four predictions using self-reports of 438 college age men and women. Contrary to Sulloway's hypothesis, firstborns and laterborns did not differ in sociosexuality, a measure of short-term sexual strategy, or in desired age at first marriage, a measure of long-term sexual strategy. Consistent with Sulloway's hypothesis, laterborns desired more sexual partners than did firstborns at several future time intervals. Additionally, firstborns desired to have children at an earlier age than did laterborns, suggesting greater pursuit of a long-term sexual strategy by firstborns. Discussion addresses a methodological limitation of the current research and highlights the need for alternative methods for testing the hypothesis that sexual strategy varies strategically with birth order. © 2002 Elsevier Science Ltd. All rights reserved.

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Over evolutionary history, parents recurrently faced the adaptive problem of providing for and investing in offspring. It would have been reproductively beneficial for parents to allocate limited resources to offspring that could most effectively use those resources to enhance their survival or reproduction. Ancestral parents that differentially invested in offspring would have out-reproduced

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* Corresponding author. Tel.: +1-954-236-1179; fax: +1-954-236-1150.
E-mail address: rmic5640@fau.edu (R.L. Michalski).

those that did not (Daly & Wilson, 1987; Trivers, 1972). Birth order was a stable feature of ancestral family environments that may have led to parental investment biases that varied with offspring age. According to Daly and Wilson (1987), ancestral parents would have enhanced their reproductive success by investing in the most advanced offspring, or those that had the best ability to translate that investment into reproductive success.

Laterborns are born into an environment that requires competition for parental investment. In order to acquire parental investment, laterborns might adopt a strategy of investment solicitation that differs from that used by an older sibling. Sulloway (1995, 1996) suggested that it is this strategic use of psychological strategies that makes laterborns more likely than firstborns to deviate from positions and beliefs held by parents, thus making laterborns less likely to uphold the parental “status quo.” According to Sulloway (1995, 1996), laterborns that did not use a strategy of parental investment solicitation that differed from firstborns would have been out-reproduced by laterborns that did use a different strategy—one in which they “adopted” psychological attributes different from firstborns. These psychological attributes may affect the sexual strategy that an individual pursues, causing sexual strategy to vary with birth order.

Sulloway (1996) hypothesized that firstborns are more likely than laterborns to pursue a long-term sexual strategy because of firstborns’ greater identification with parents and with the status quo. Laterborns, in contrast, are hypothesized to be more likely than firstborns to pursue a short-term sexual strategy, because laterborns lack the identification with parents and with the status quo typical of firstborns. A long-term sexual strategy includes a willingness to invest time, energy, and resources in a romantic partner, and seeking and having fewer sex partners (Buss & Schmitt, 1993). A short-term sexual strategy, in contrast, includes a disinclination to invest in a romantic partner and the active pursuit of casual sex partners.

Sulloway’s (1996) hypothesis has not been tested empirically, although one previous study generated relevant results. In a study of adolescent sibling pairs, Rodgers and Rowe (1988) found that, consistent with Sulloway’s hypothesis, younger siblings engaged in a higher degree of intimate sexual behaviors than did their older siblings. We directly test Sulloway’s hypothesis in a between-family design, securing multiple assessments of sexual behaviors and desires from a large sample of young adults.

The willingness to have sexual intercourse without commitment is a good assessment of sexual strategy (Simpson & Gangestad, 1991). The Sociosexual Orientation Inventory (SOI) differentiates “restricted” and “unrestricted” sexual strategies. A restricted sexual strategy includes a need for emotional attachment to a partner before having sex, fewer sex partners, and more time necessary before having sex. An unrestricted sexual strategy includes less need for emotional attachment to a partner before having sex, more sex partners, and less time necessary before having sex. Based on Sulloway’s hypothesis, firstborns are expected to be more restricted and laterborns are expected to be more unrestricted in sexual strategy. We test the following prediction:

Prediction 1: Laterborns, relative to firstborns, will score higher in sociosexuality (more unrestricted).

If firstborns and laterborns differ in the sexual strategy they pursue, their reports of the number of sex partners they desire should differ. Laterborns, pursuing a short-term sexual strategy, should desire more sex partners than firstborns. We test the following prediction, for time intervals ranging from one day to a lifetime:

Prediction 2: Laterborns, relative to firstborns, will desire more sex partners at several future intervals of their life.

If firstborns are more likely to pursue a long-term sexual strategy than are laterborns, then producing offspring and investing in them sooner may be a more likely strategy for firstborns relative to laterborns. Age at first marriage is likely to be associated with the desired age at first offspring; people who desire to have children earlier are likely to desire to marry earlier (Buss, 1994). Desired age at first marriage and desired age at first offspring are predicted to be later for laterborns than for firstborns, given their greater hypothesized pursuit of a short-term sexual strategy.

Prediction 3: Laterborns, relative to firstborns, will desire to marry at a later age.

Prediction 4: Laterborns, relative to firstborns, will desire to have their first child at a later age.

Effects associated with socioeconomic status (SES) and sibship size are important controls in birth order research (Ernst & Angst, 1983; Steelman & Powell, 1985). The negative correlation between birth order and SES is a potential confound in testing Sullo way's hypothesis and derivative predictions; effects associated with birth order need to be independent of those associated with SES. Sibship size also is an important control because of confounding with the number of laterborns as sibship size increases. Identifying birth order effects requires that these effects are independent of those attributable to SES and sibship size. We control for these potential confounds in the current study.

1. Method

1.1. Participants

Undergraduate students (178 men, 260 women) at a large state university in the southeastern United States completed a short survey. Participants were instructed to place their completed survey in a brown security envelope to maintain anonymity. Participants ranged in age from 18 to 79 years with a mean of 26.0 years (S.D. = 9.0). Most participants completed the survey for extra credit in their courses. The remaining participants completed the survey as partial fulfillment for a research participation requirement in an introductory psychology course.

1.2. Materials

The survey completed by participants consisted of four sections. The first section collected demographic information. Participants were asked to list each of their siblings in descending order by age and to indicate their own age. We asked each participant to circle the number corresponding to the socioeconomic status (SES) in which they were raised (1 = lower, 2 = lower middle, 3 = middle middle, 4 = upper middle, and 5 = upper) and to report their desired age of marriage (or first marriage, if already married) and their desired age of first offspring (or the age at which they had their first child).

The second section consisted of the Sociosexual Orientation Inventory (SOI; Simpson & Gangestad, 1991). The SOI requests information about the participant's sexual history, including

when the participant first had sexual intercourse, how many times they had sex in the past month and with how many different partners, how often they fantasize about having sex with someone other than their current partner (if mated), and how long they dated their current partner (if mated) before the relationship became sexual. The last questions of the SOI assess agreement with statements regarding sex without love, having casual sex, and enjoyment of sex without emotional attachment to the sexual partner. Response options ranged from 1 (I strongly disagree) to 9 (I strongly agree).

The fourth section was adapted from Buss and Schmitt (1993). This section asked the participant to list the desired number of sex partners they would like to have for 13 time intervals in the future ranging from 1 day to their remaining lifetime.

2. Results

All analyses were conducted with SES and sibship size entered as covariates. For each analysis, firstborn status was used as the independent measure and coded 1 = firstborn and 2 = laterborn, following Sulloway (1996). Participants without siblings were excluded from all analyses, following Salmon and Daly (1998). Firstborns and laterborns did not differ significantly in age [firstborns, $M = 25.3$ years, $S.D. = 8.0$; laterborns, $M = 26.4$ years, $S.D. = 9.2$; $t(1, 390) = 2.37$, $P > 0.05$] or in the SES in which they were raised [firstborns, $M = 3.2$, $S.D. = 0.8$; laterborns, $M = 3.1$, $S.D. = 0.9$; $t(1,386) = 0.7$, $P > 0.05$]. Laterborns reported membership in larger sibships than firstborns [laterborns, $M = 3.7$, $S.D. = 2.0$; firstborns, $M = 2.9$, $S.D. = 1.2$; $t(1, 390) = -4.3$, $P < 0.001$].

Prediction 1 stated that laterborns, relative to firstborns, will score higher in sociosexuality (more unrestricted). We calculated a composite SOI score ($\alpha = 0.73$) as the mean of the 11 standardized variables, following Simpson and Gangestad (1991). This composite SOI score was entered into the ANOVA as the dependent variable. Firstborns and laterborns did *not* differ in sociosexuality [firstborns, $M = 0.0$, $S.D. = 0.60$; laterborns, $M = 0.0$, $S.D. = 0.52$; $F(1,377) = 1.4$, $P > 0.05$]. Because the 11 questions included in the SOI assess different dimensions of sociosexuality (Simpson & Gangestad, 1991), we conducted tests for birth order differences on each of the questions. Firstborns and laterborns differed significantly in response to one of the 11 questions. Firstborns reported having significantly more past sex partners than laterborns [firstborns, $M = 14.3$, $S.D. = 48.1$; laterborns, $M = 7.9$, $S.D. = 12.1$; $F(1,363) = 4.1$, $P < 0.05$]. Prediction 1 was not supported.

Prediction 2 stated that laterborns will desire more sex partners than firstborns at several intervals in the future. Prior to conducting these tests, we noted that the error variance for firstborns and laterborns was significantly different for many of the time intervals. To statistically correct these differences in error variance, we conducted log transformations on these variables. We then conducted a multivariate ANOVA with the 13 intervals entered as dependent variables. The number of sex partners desired by firstborns and by laterborns differed significantly at several of the intervals (Table 1). Consistent with Prediction 2, laterborns desired significantly more sex partners than did firstborns over the next 5, 10, 20, and 30 years. Firstborns did not desire significantly more sex partners than laterborns at any of the future time intervals.

Prediction 3 stated that laterborns, relative to firstborns, will desire to marry at a later age. Results from the ANOVA revealed that laterborns do *not* desire to marry at a significantly later age than firstborns [firstborns, $M=25.8$, $S.D.=4.3$; laterborns, $M=26.7$, $S.D.=4.6$; $F(1,350)=2.6$, $P>0.05$]. Prediction 3 was not supported.

Prediction 4 stated that laterborns, relative to firstborns, will desire to have their first child at a later age. Results from this ANOVA revealed that firstborns *do* desire to have their first child at a younger age than do laterborns [firstborns, $M=27.2$, $S.D.=4.0$; laterborns, $M=28.2$, $S.D.=4.0$; $F(1,207)=4.7$, $P<0.05$]. Prediction 4 was supported.

The average age of the sample was slightly older than in comparable studies of birth order and of sexual strategy (e.g. Buss & Schmitt, 1993; Salmon, 1999), and perhaps this affected the results (for example, by producing a greater proportion of married participants). We re-conducted all analyses, with participant age entered as a covariate. The same pattern of findings emerged as when age was not entered as a covariate (analyses are available from the first author upon request). The slightly older age of the sample therefore cannot account for the pattern of results.

As a final check of the data, we tested for standard sex differences in several mating-relevant behaviors, attitudes, and preferences. The results replicated several well-documented sex differences in sexual strategy (Buss & Schmitt, 1993; Buss & Shackelford, 1997; Simpson & Gangestad, 1991). For example, men scored higher (more unrestricted) in sociosexuality than did women [men, $M=0.2$, $S.D.=0.6$; women, $M=-0.1$, $S.D.=0.5$; $F(1,384)=31.2$, $P<0.001$]. Men also reported desiring significantly more sex partners than did women at each of the 13 time intervals. At the lifetime interval, for example, men reported desiring an average of 23.0 sex partners ($S.D.=106.2$), whereas women reported desiring an average of just 1.9 sex partners [$S.D.=4.4$; $F(1,362)=8.7$, $P<0.01$]. These robust sex differences suggest that there is nothing peculiar about the sample that may have confounded tests of birth order effects.

Table 1
Number of sexual partners desired by firstborns and by laterborns at different time intervals^a

Interval of the future	Firstborns		Laterborns		F-value
	<i>M</i>	(S.D.)	<i>M</i>	(S.D.)	
Day	0.59	(0.52)	0.67	(0.56)	0.51
2 weeks	0.69	(0.87)	0.78	(0.89)	0.08
Month	0.98	(20.68)	0.93	(10.46)	0.57
6 months	2.36	(15.39)	1.63	(5.82)	1.08
Year	3.59	(30.36)	2.81	(13.34)	3.11
2 years	3.96	(30.38)	4.22	(26.48)	2.42
3 years	4.26	(30.55)	4.94	(31.08)	3.19
4 years	4.47	(30.60)	5.97	(40.75)	3.36
5 years	4.68	(30.66)	7.06	(50.58)	3.89*
10 years	5.11	(30.80)	8.36	(52.91)	4.45*
20 years	5.30	(30.98)	9.77	(59.54)	4.82*
30 years	5.45	(31.04)	11.13	(69.34)	4.26*
Lifetime	4.05	(12.67)	13.36	(82.99)	3.19

^a Data were provided by 78 firstborns and 143 laterborns.

* $P<0.05$.

3. Discussion

Using self-report data provided by several hundred young men and women, the results provide mixed support for Sulloway's (1996) hypothesis that firstborns are more likely to pursue a long-term sexual strategy, whereas laterborns are more likely to pursue a short-term sexual strategy. Failing to support Sulloway's hypothesis, firstborns and laterborns do not differ in sociosexuality or in their desired age of marriage. Consistent with Sulloway's hypothesis, firstborns and laterborns differ in the age at which they would like to have their first child and in the number of sex partners that they desire over several time intervals. Relative to firstborns, laterborns desire to have children at a later age and desire a greater number of sex partners at several future time intervals.

A key limitation of the current study is an exclusive reliance on self-report. Accurate reports of sexual experiences and desires (i.e. age of first sex, desired number of sexual partners), for example, may not have been provided. Assuming Sulloway's (1996) hypothesis is correct—that birth order does predict sexual strategy—and given the null results of the study, one might speculate that firstborns overestimate their sexual experiences, laterborns underestimate their sexual experiences, or both. Nothing in Sulloway's (1996) arguments, however, or in the arguments presented by others working on birth order, suggests that firstborns and laterborns might differ in this way. Self-report biases probably did not confound the results of the current study, although this possibility can be evaluated empirically. In addition to self-reports, observer reports by close friends might be secured as an alternative source of information about sexual desires and behaviors.

The current study offers mixed support for the Sulloway's (1996) hypothesis that firstborns favor a long-term sexual strategy, whereas laterborns favor a short-term sexual strategy. Examination of several key variables fails to support the possibility that tests of the relationships between birth order and sexual strategy were flawed by sample peculiarities. Future research is necessary to disentangle current methodological limitations from tests of Sulloway's (1996) hypothesis.

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