

On the Social Advantages of Having an Older, Opposite-Sex Sibling: Birth Order Influences in Mixed-Sex Dyads

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This study examined the influences of birth order on behavior occurring in the initial, unstructured interactions of 40 mixed-sex dyads composed of a man and a woman who each had a sibling of the opposite sex. The design contrasted four different dyad types: (a) a firstborn man paired with a firstborn woman, (b) a firstborn man paired with a last born woman, (c) a last born man paired with a firstborn woman and (d) a last born man paired with a last born woman. Results indicated that individuals with an older, opposite-sex sibling were particularly likely to have rewarding interactions with strangers of the opposite sex. Relative to firstborn men, last born men talked nearly twice as long, asked more questions, and evoked more gazes, verbal reinforcers, and self-reported liking from their female partners. Relative to firstborn women, last born women were more likely to initiate the interaction and to exceed the rate at which their male partners smiled. These findings are inconsistent with Toman's (1961, 1976) "family constellation" theory but are consistent with the results of various empirical studies that have also documented the greater social skills of later borns.

Differences in the early social experience of firstborn and later born individuals appear to underlie a range of behavioral differences observed later in the life span. Because firstborns interact more, and more exclusively, with adults than do later borns during their early years, firstborns tend to become adult oriented whereas later borns tend to become peer oriented (Markus, 1981; McArthur, 1956; Sells & Roff, 1963). This difference in orientation appears to be related to findings indicating that firstborns actually receive more parental attention, direction, and control than do later borns (Jacobs & Moss, 1976; Schaller, 1978; see also Conners, 1963).

Among the best established consequences of this differential socialization are (a) the greater propensity of firstborns to conform to authority (e.g., Adams, 1972) and to identify with and adopt task-oriented leadership

roles (e.g., Chemers, 1970; Hardy, 1972; Hardy, Hunt, & Lehr, 1978); (b) the greater educational attainment of firstborns, including college attainment (see reviews by Adams, 1972, and Warren, 1966; but see also Smelser & Stewart, 1968); and (c) the greater achievement and intelligence of firstborns (e.g., Belmont & Marolla, 1973; Breland, 1973; Zajonc & Markus, 1975; Zajonc, Markus, & Markus, 1979).¹ As if these apparent advantages of firstborns over later borns were not enough, firstborns also (d) have more pride in themselves (Howarth, 1980) and higher self-esteem (Schwab & Lundgren, 1978), (e) are accorded more status than their later born siblings as a function of age (Eisenstadt, 1956; Moore, 1969), (f) are perceived as

This study was supported in part by National Science Foundation Grant 79-21443 to William Ickes. The authors would like to thank Margaret Hale and Michael Wochnik for assistance in coding the data, David Kenny for advice concerning the statistical analysis, and Hazel Markus for providing a number of references to recent studies of birth order and social behavior.

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¹ Although the "confluence model" of Zajonc and his colleagues acknowledges that the average intellectual performance of firstborns invariably exceeds that of last borns in studies of older adolescents and adults (Zajonc, Markus, & Markus, 1979, p. 1333), the pattern of differences is demonstrated to be much more complicated in studies conducted during subjects' childhood and early adolescent years. The confluence model (e.g., Zajonc et al., 1979; Zajonc & Markus, 1975) offers a compelling account of the entire pattern of age-related differences based on the assumption that "effects previously thought to be associated with birth order [per se] are . . . mediated substantially by family size and the spacing of births" (Zajonc et al., 1979, p. 1328).

dominant in sibling interactions (Sutton-Smith & Rosenberg, 1968, 1970), and (g) are more likely to administer punishment to a same-sex peer in a Buss-type shock paradigm (Ickes, Note 1).

The picture is not entirely one-sided, however, as Markus (1981) and others have noted. By becoming adult oriented and internalizing adult standards for intellectual performance and achievement, firstborns also tend to become more stressed, anxious, and neurotic than laterborns (Howarth, 1980; Sutton & McIntire, 1977). Moreover, firstborns apparently fail to develop their social skills to the degree that later borns do. Because firstborns typically have only adult roles to model early in life whereas later borns have both adult and peer (i.e., sibling) roles to model, later borns seem to develop a wider repertoire of role-playing skills. These social-skill differences are suggested by (a) the greater self-reported participation of later borns in drama and (b) peer ratings indicating that later borns are better than firstborns at the type of role playing that acting requires (Sutton-Smith & Rosenberg, 1966). Such differences also are evidenced by studies indicating that relative to firstborns, later borns (c) are rated by themselves (McArthur, 1956) and by their teachers (Miller & Maruyama, 1976) as more socially skilled, (d) are rated by their peers as more popular (a finding that generalizes across the variables of age, race, sex, and socioeconomic status; Miller & Maruyama, 1976; Schachter, 1964), and (e) are more accepting of their peers in return (Sells & Roff, 1963).

Although the wider range of role models available to later borns than to firstborns may account in part for these social skill differences, Miller and Maruyama (1976) identified another, possibly more important factor in the relative power of firstborn versus later born siblings:

Because age grading—the hierarchical awarding of status as a function of age—apparently occurs universally in childhood and adolescence (e.g., Eisenstadt, 1956; Moore, 1969), younger children must typically grow up possessing less power than their older siblings. Indeed, firstborns are perceived as dominant in sibling interactions (Sutton-Smith & Rosenberg, 1968). Therefore, if later-born children are to obtain even a modicum, if not a fair share of positive outcomes, they must develop their interpersonal skills—powers of negotiation, accommo-

modation, tolerance, and a capacity to accept less favorable outcomes—to a degree not typically found in firstborn children. On the other hand, firstborn children, by virtue of the higher status implicit in age grading, possess greater power and may simply take or achieve what they want quite arbitrarily. (p. 123)

Taken collectively, the findings reviewed above suggest a simple, straightforward prediction regarding birth order and social behavior: Later borns will evidence greater social skills and be more successful in peer interactions than will firstborns. Interestingly, however, this simple, empirically based prediction is somewhat at odds with predictions deriving from perhaps the best known theory relating birth order to social behavior: Toman's (1961, 1969, 1976) "family constellation" theory.

Toman's theory proposes that "the role a person has had in early intrafamilial relationships will carry over into adult relationships" (Levinger & Sonnheim, 1965, p. 137) such that people will prefer to affiliate with, date, and marry partners "who enable them to replicate an earlier relationship with a sibling of the opposite sex" (Birtchnell & Mayhew, 1977, p. 19). According to Toman, heterosexual dyadic relationships should be most successful and satisfactory when both rank and sex complementarity occur, that is, when (a) the older brother of a younger sister is paired with the younger sister of an older brother or (b) the younger brother of an older sister is paired with the older sister of a younger brother (Mendelsohn, Linden, Gruen, & Curran, 1974). In contrast, the prediction deriving from the birth order studies reviewed above is that heterosexual dyadic relationships should be most successful and satisfactory when both the male and the female are later borns. Unlike Toman's theory, this contrasting prediction requires no assumptions about rank complementarity or the desirability of replicating an early relationship with an opposite-sex sibling.

The research findings relevant to Toman's theory have been mixed and, in general, not supportive. Toman's own research (e.g., Toman, 1959, 1962, 1964; Toman & Gray, 1961) has been criticized by Birtchnell and Mayhew (1977) as methodologically inadequate to test the theory. Also, of the independent tests conducted by other researchers,

all but one (Mendelsohn et al., 1974) have failed to support Toman's predictions (Birtchnell & Mayhew, 1977; Kemper, 1966; Levinger & Sonnheim, 1965; Touhey, 1971; Ward, Castro, & Wilcox, 1974). Birtchnell and Mayhew's (1977) studies—designed as definitive tests of Toman's hypotheses—found virtually no support for them in two large-sample investigations of friendship formation and mate selection/success in marriage.

The present study sought to clarify the influence of birth order in mixed-sex dyads composed of a man and a woman who each had a sibling of the opposite sex. The study employed an unstructured interaction paradigm that has proven particularly useful for revealing the influence of dispositional factors on behavior occurring in the initial interaction of two strangers (Ickes & Barnes, 1977, 1978; Ickes, Patterson, Rajcecki, & Tanford, 1982; Ickes, Schermer, & Steeno, 1979; Rajcecki, Ickes, & Tanford, 1981). The major advantages of the paradigm are (a) it tends to minimize the influence of situational factors while maximizing the influences of dispositional ones; (b) it permits the unobtrusive measurement of spontaneous, unstructured interaction behavior that is relatively uncontaminated by task demands or other traditional sources of bias; and (c) it yields a wide range of behavioral and self-report measures that can be analyzed at both the between-dyads and the within-dyads levels of analysis. For detailed reviews and discussions of the paradigm, see Ickes (1982, in press).

The design of the study—a 2×2 factorial in which the firstborn versus last born status of the male and female dyad members were varied orthogonally—permitted a test of the competing predictions described above. Support for Toman's predictions would be expected to take the form of crossover interactions revealing greater social involvement and interpersonal attraction in complementary dyad types (i.e., those in which men with older sisters are paired with women with younger brothers and men with younger sisters are paired with women with older brothers) than in noncomplementary dyad types (i.e., those in which men with older sisters are paired with women with older brothers and men with younger sisters are paired with women with younger brothers). Support for

the contrasting, empirically based predictions would take the form of additive main effects revealing greater social involvement and interpersonal attraction in dyad types in which the man and/or the woman are last born rather than firstborn.

Method

Subjects and Pretesting

The subjects were 47 male and 47 female undergraduates enrolled in introductory psychology courses at the University of Missouri—St. Louis.² They were drawn from a population of over 800 students from whom birth order data had been obtained as part of a departmental pretesting administered at the beginning of the semester. On the first page of the pretest survey, subjects were asked to provide background information that included their name, sex, current age, birth date, the number and current ages of their brothers, and the number and current ages of their sisters. They were also asked to indicate whether they had a twin brother or sister and whether they were adopted.

Potential subjects for the study were selected on the basis of these pretest data. Our goal was to study the influences of birth order on the interactions of mixed-sex dyads without confounding birth order per se with other related variables such as "age gap" or sex of sibling. To do this, we restricted our test sample to only those individuals who had at least one opposite-sex sibling. Thus, all of the dyads were alike in that they each comprised a man who had at least one sister and a woman who had at least one brother. By holding this feature of the dyad's composition constant across all conditions, we were able to focus our investigation on the question of how men's and women's birth order with respect to their opposite-sex siblings might influence their subsequent relationships with strangers of the opposite sex.

The selection criteria dictated that preference should be given to subjects who had only one opposite-sex sib, and 50% of all the subjects run in the study met this criterion. However, to fill out the *Ns* in each condition, it was necessary also to include some subjects (23.25%) who had two or more opposite-sex sibs and others (26.75%) who had one opposite-sex sib and one same-sex sib. In all cases the subjects run in the study were either firstborn or last born, so no subject had both older and younger sibs (i.e., no "middle borns" were included). The age gap between the subjects and their opposite-sex sibs was not directly controlled through the selection

² The data for seven dyads were not included in the analyses because at least one of the subjects in these dyads expressed suspicion that the interaction had been recorded. Of these dyads, three were in the firstborn (FB) man-last born (LB) woman (FB δ -LB ϕ) condition, two were in the LB δ -FB ϕ condition, and two were in the LB δ -LB ϕ condition. Preliminary analyses indicated, however, that the inclusion of these dyads would not alter the pattern and statistical significance of the findings reported below.

procedure, but it was indirectly controlled through an assignment to conditions that was random within the constraint imposed by the birth order variable. The same procedure also resulted in a random assignment to conditions of subjects having only one opposite-sex sib, two or more opposite-sex sibs, or one opposite- and one same-sex sib.

Potential subjects were contacted by telephone and scheduled to participate in the study in mixed-sex dyads. (Subjects were not informed at this stage that another subject would be participating in the study with them.) The selection and assignment procedures ensured that all dyads comprised a man and a woman who each had an opposite-sex sib and were each either the firstborn (FB) or the last born (LB) in their families. Because age gap was indirectly controlled through randomization, only the subjects' birth order with respect to their opposite-sex sibs was systematically varied across conditions (i.e., dyad types).

Design

As in previous studies in this series (e.g., Ickes & Barnes, 1978; Ickes et al., 1982; Rajecki et al., 1981), we sought to examine behavior at two levels of analysis. On one level, using dyads as the units of analysis, we were interested in how behavior might vary as a function of the male dyad members' birth order (FB♂ vs. LB♂) and of the female dyad members' birth order (FB♀ vs. LB♀). On another level, using subjects within dyads as the units of analysis, we were interested in how behavior might vary as a function of the gender (male vs. female) of the subjects within each dyad. Thus, the design comprised a two-between, one-within factorial that varied the men's birth order and the women's birth order as the between-dyads factors and varied the sex of the subjects within dyads as the within-dyads factor.

Subjects were assigned randomly, within the constraints imposed by their gender and birth order, to the four between-dyads conditions: (a) a firstborn man paired with a firstborn woman, (b) a firstborn man with a last born woman, (c) a last born man with a firstborn woman, and (d) a last born man with a last born woman. After compensation was made for the dyads lost because of suspicion, there were 10 dyads in each condition.

Setting and Equipment

The experimental room used as a setting for the study was furnished to look like a storage area that recently had been converted into a temporary waiting room. As in earlier studies, which employed a room of slightly different dimensions (Ickes et al., 1979, 1982; Ickes & Barnes, 1977, 1978; Rajecki et al., 1981), a video camera and videotape recorder were concealed behind boxes stacked on tables in a corner of the room across from a couch and coffee table (see Figure 1).

Procedure

During the telephone solicitation, a research assistant (who feigned naivety of what the study was about) instructed the subjects to report to specific waiting areas within the psychology building. These areas were phys-

ically isolated from each other but were on the same floor as the experimental room described above. At the beginning of each session and prior to meeting each pair of subjects, the experimenter activated the videotape equipment in the experimental room and checked to ensure that it was well concealed and operating properly. She then turned off the lights in the room and collected the two subjects from their respective waiting areas. (The experimenter was kept blind with respect to the subjects' birth order.)

The experimenter led the subjects into the experimental room and, turning on the lights, asked them to leave their belongings by the door and take a seat on the couch. She then explained that the first part of the study involved filling out copies of a questionnaire but that she had just run out of these and would have to obtain some more. Explaining that she would return "in a minute or two," the experimenter left the room to secure some fresh copies of the questionnaire, closing the door behind her. She then consulted a digital watch to time the 5-minute interval in which the subjects were covertly audiotaped and videotaped.

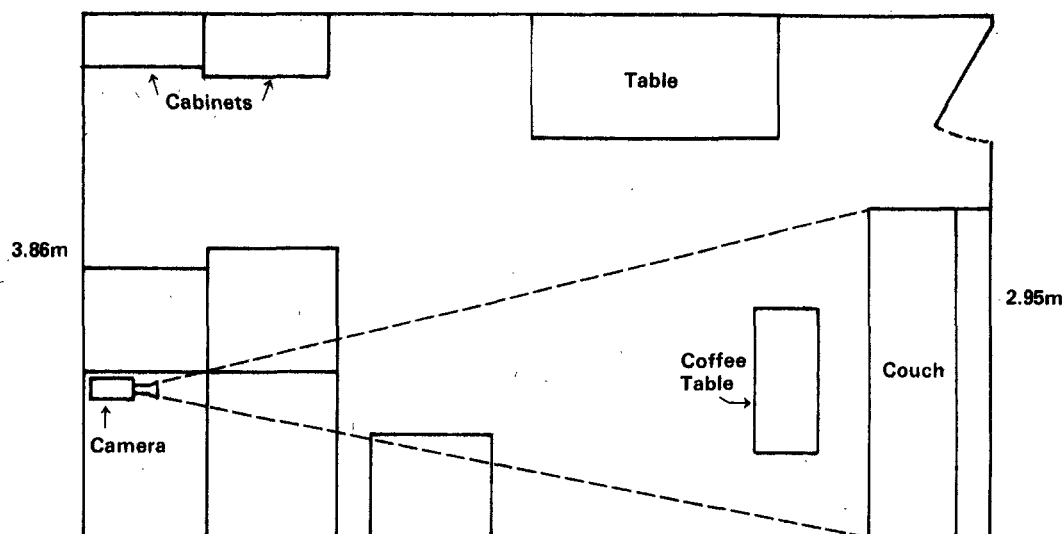
At the end of this period, the experimenter returned, announced that the study was half over, and queried the subjects for possible suspicion of the videotaping before proceeding further. Following this test for suspicion, the experimenter conducted a partial debriefing in which she explained that the first part of the study had been designed to examine "the actual behavior of two strangers during their initial interaction." She showed the subjects how the videotape of their interaction had been made, assured them that any data taken from the tapes would be used for statistical purposes only, and asked them to sign a release form giving their consent for the tapes to be used in this way (all subjects agreed to sign the release).³

The experimenter then explained that the second part of the study involved assessment of the subjects' perceptions of the interaction in which they had just engaged. Accordingly, each subject was asked to fill out a posttest questionnaire designed to elicit perceptions of self and the other's behavior during the interaction period. A second questionnaire, the Bem Sex-Role Inventory (BSRI; Bem, 1974), was also administered at this time; its purpose will be discussed in the Results section.

Before they completed the questionnaires, the subjects were seated in opposite corners of the room, facing away from each other, and were explicitly assured that their responses would not be seen by the other subject. The experimenter waited outside in the hall while the subjects completed the questionnaires and collected the forms

³ Subjects run in the paradigm were always made aware at this point that no invasion of their privacy had occurred. Because the videotape equipment was activated before they entered the room, and because there were no external monitors or outputs in use during the observation period, absolutely no one but the subjects themselves knew what events transpired that were recorded on the tape. This means that if one or both subjects exercised the right to have the tape erased immediately, instead of releasing it for use as data, the content of the interaction would remain their own private concern.

a. TOP VIEW



b. SIDE VIEW

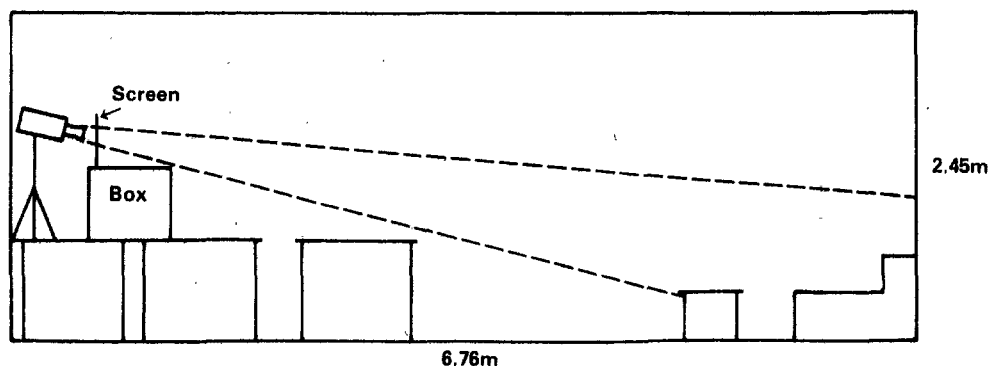


Figure 1. Schematic views of the physical setting.

from each subject as he or she left the room. Each subject was sworn to secrecy and then released.

Dependent Measures

To ensure the comparability of the present data with those obtained in previous studies in this series, the same categories of dependent measures were obtained. The first set of measures was selected to assess various aspects of interactional involvement identified by Goffman (1963, 1971), Mehrabian (1974), and others. These measures were coded from the videotape data by two independent judges (one man, one woman) who were blind to the subjects' birth order. Included in this set were measures of a number of "static" behaviors that either

occurred only once or did not vary much over time: *who sat first*, *who talked first*, *interpersonal distance* (shoulder to shoulder), the degree of *body orientation* each subject maintained with respect to the other; and the openness of each subject's *body posture* (subjectively estimated on a scale from 0 to 2, where 0 = closed, 1 = somewhat open, and 2 = very open). The interrater reliability coefficients for these five measures, based on the entire sample, were all greater than .90.

Also included in the first set of measures were some temporally variable or "dynamic" behaviors that were recorded from the videotapes by means of push-button hand panels connected to a specially designed digital event counter. These included the total frequency and duration of *verbalizations*, *directed gazes*, *mutual gazes*,

Table 1
Main Effects: Men's Birth Order

Dependent measures	Firstborn male dyads	Lastborn male dyads	F(1, 36)
Verbalizations (duration) ^a	67.7	94.5	3.33*
Directed gazes (frequency)	19.0	26.4	4.14**
Directed gazes (duration) ^a	59.8	92.0	3.83*
Mutual gazes (frequency)	14.8	24.2	4.72**
No. of questions asked	4.3	6.4	5.63***

^a Measures of duration are in seconds.

* $p \leq .075$. ** $p < .05$. *** $p < .025$.

expressive gestures, and facial expressions of *positive affect*. All verbalizations were recorded, regardless of their content. Directed gazes were recorded whenever the subject under observation looked directly toward the other person's face, with the event counter "and-gated" to record mutual gazes whenever directed gazes were displayed by both dyad members simultaneously. Expressive gestures were recorded as gross arm and hand movements that accompanied verbalizations and appeared to supplement their content. Positive affect was operationally defined as any instances of smiling and/or laughter. The interrater reliabilities for the total frequency and duration of these five dynamic behaviors ranged from .71 to .98 for total frequency (mean $r = .88$) and from .70 to .99 for total duration (mean $r = .90$), based on a subsample of 20 subjects (10 dyads).

A second set of dependent measures coded directly from the videotapes provided indexes of some of the structural features of the subject's verbal interaction: the number of times each subject initiated *conversation sequences*, asked the other person *questions*, or provided *verbal reinforcers* or "back channel" responses ("I see," "Uh-huh," "Right," etc.) as feedback when the other was speaking. The interrater reliabilities for these three measures were 1.00, .99, and .98, respectively ($n = 20$).

A third set of dependent measures was based on the subjects' responses to the items on the posttest questionnaire. These items included measures of various feelings and behavior occurring during the 5-minute interaction for which subjects were required to rate both themselves and their partners. Following these items was the measure of interpersonal attraction used in the studies by Ickes and Barnes (1978) and Ickes et al. (1979). This measure comprised 18 bipolar adjective dimensions (exciting-dull, sincere-insincere, cold-warm, etc.) on which the subjects within each dyad were asked to rate each other. The individual ratings on these 18 dimensions were later summed to compute a global index of liking for the other.

Results

Effects Involving the Men's Birth Order

Main effects. The behavioral data yielded a pattern of main effects for the men's birth order, which indicated that dyad members tended to talk to each other longer, asked each other more questions, and looked at each

other more in the last born male (LB δ) dyads than in the firstborn male (FB δ) dyads (see Table 1).

Interaction effects. This pattern of results was elaborated and further specified by a pattern of interaction effects that revealed intriguing differences in the behavior of the male and female members within the FB δ and LB δ dyad types. As the data in Table 2 indicate, the last born men talked to their female partners almost twice as long as the firstborn men talked to theirs ($M = 102.0$ sec and 56.0 sec, respectively, $p < .03$).⁴ Although the women's talking did not vary as a function of the men's birth order, the greater amount of time the female partners of last born men spent in the "listener role" (Duncan, 1969, 1972; Duncan & Fiske, 1977) helps account for the fact that they looked at their male partners nearly twice as long as did female partners of firstborn men ($M = 102.9$ sec and 54.5 sec, respectively, $p < .03$).

The interaction data also offer evidence that the women in the LB δ dyads enjoyed their interactions with the relatively talkative last born men. These women tended to smile more frequently, provided their partners with over twice as many verbal reinforcers or back channel responses ("Right," "Uh-huh," "I see," etc.), and expressed substantially more liking for their partners on the postinteraction liking measure than did the women in

⁴ For the individual comparisons of independent groups (e.g., firstborn vs. last born men compared across different dyad types), Myers's (1972) procedure for post hoc contrasts was employed, with $df = 19$ in each case. For the individual comparisons of nonindependent groups (i.e., male vs. female partners within a given dyad type), matched-group t tests were employed with $df = 9$ in each case. All p values are two-tailed.

Table 2
Interaction Effects: Men's Birth Order by Sex of Dyad Members

Dependent measures	Firstborn male dyads		Lastborn male dyads		Interaction $F(1, 36)$
	Men	Women	Men	Women	
Verbalizations (duration) ^a	56.0	79.3	102.0	87.1	4.35**
Directed gazes (duration) ^a	65.0	54.5	81.0	102.9	3.38*
Positive affect (frequency)	5.4	6.4	5.4	9.6	4.32**
Positive affect (duration) ^a	6.9	7.3	4.2	9.7	5.68***
Verbal reinforcers (frequency)	5.6	4.3	5.0	9.0	4.91**
No. of questions asked	4.2	4.3	6.9	5.8	3.42*
No. of conversation sequences initiated	.6	1.2	.8	.6	3.83*
Liking for partner	42.4	29.4	41.6	47.3	5.13**

^a Measures of duration are in seconds.

* $p \leq .075$. ** $p < .05$. *** $p < .025$.

the FB δ dyads ($M = 9.6$ vs. 6.4 , 9.0 vs. 4.3 , and 47.3 vs. 29.4 , respectively; $p < .07$, $< .05$, and $< .03$, respectively).

The reasons why the last born men were able to evoke more responsiveness and liking from their partners than were the firstborn men are suggested by a number of apparently converging results. First, the last born men signaled their interest in and involvement with their partners by tending to ask them more questions than the firstborn men asked theirs ($M = 6.9$ and 4.2 , respectively, $p < .06$). Second, and in a related vein, the data from one of the posttest items revealed that the last born men rated themselves as having tried more than the firstborn men "to compensate for their partners' failure to initiate conversation, act friendly, etc." ($M = 7.4$ and 5.2 , respectively, $p < .02$). Third, an examination of the specific liking dimensions that contributed most strongly to the overall interaction revealed that the last born men were perceived to be significantly more "self-assertive," "exciting," and "friendly" than were the firstborn men ($M = 2.4$ vs. 1.0 , 1.4 vs. 0.2 , and 3.8 vs. 1.6 , respectively, $ps < .05$).

Effects Involving the Women's Birth Order

Main effects. The main effects for the women's birth order offer at least some hints that the last born women may have been more responsive interaction partners than the firstborn women. In behavioral terms, the last born women appeared more willing than the firstborn women to engage in interaction

with their male partners. Twelve of the 20 last born women were the first to speak in their dyads, whereas only 6 of the 20 first born women did so, $\chi^2(1) = 3.64$, $p < .07$. Also, whereas the last born women were equally likely to sit down before or after their male partners had been seated (10 out of 20 sat first), the firstborn women typically sat down only *after* their partners were seated (only 4 out of 20 sat first), $\chi^2(1) = 3.96$, $p < .05$.

It is possible that these differences in who sat first and who talked first may indicate some reticence on the part of the firstborn women to engage in interaction with a strange man. The greater "social distance" of firstborn women is consistent with Whalen, Flowers, Fuller, and Jernigan's (1975, p. 294) finding that firstborn women require significantly more "personal space" than do later borns. This interpretation is also bolstered by an examination of the specific liking dimensions, which revealed that the men perceived the last born women to be significantly more "likeable" than the firstborn women ($M = 4.0$ and 2.4 , respectively, $p < .01$), although this difference was not significant for the overall measure of liking ($F < 1$).

Interaction effects. The means in the top row of Table 3 indicate that in addition to sitting last on the couch, firstborn women were inclined to adopt relatively confrontive body orientations vis-à-vis their male partners. (Interpersonal distance in the dyads did not vary, however, as a function of the women's birth order; $F < 1$). That the men

may have had ambivalent reactions to such confrontive body orientations is suggested by correlational data revealing that the "confrontiveness" of the women's body orientations was significantly correlated with the extent to which their male partners rated them as being "strong," "vain," and "sensitive" on specific dimensions of the liking measure— $r_s(38)$ ranged from .32 to .40, $p_s < .05$. At any rate, the firstborn women were unique in displaying this confrontive body orientation, as the means in Table 3 reveal.

The patterns of means in the two bottom rows of Table 3 indicate that the last born women smiled significantly more frequently and longer than did their male partners ($M = 9.0$ vs. 4.4 and 10.2-sec vs. 5.0 sec, respectively, $p_s < .05$), whereas the firstborn females did not differ from their partners in the frequency and duration of smiling ($t_s < 1$).

Sex Differences

In addition to the patterns of effects described above, the data yielded a few main effects for the sex of the dyad members. These results indicated that the women generally smiled more often and longer than their male partners but displayed a more "closed" or compacted body posture ($M = 8.0$ vs. 5.4, 8.6 sec vs. 5.6 sec, and .5 vs. 1.0, respectively), $F(1, 36)$ ranged from 7.38 to 22.23, $p_s < .01$. The main effects for smiling (i.e., positive affect) replicate previous findings for mixed-sex dyads (e.g., Duncan & Fiske, 1977; Ickes & Barnes, 1978; Kendon & Ferber, 1973; Pilkonis, 1977) and are qualified by the two-way interactions with the men's

and the women's birth order that we have already discussed (see Tables 2 and 3). The sex difference for body posture has also been found in previous research (e.g., Ickes et al., 1979; Mehrabian, 1972) and has been interpreted by Henley (1977) and by LaFrance and Mayo (1978) as a result of status and/or personal-space differences between the sexes.

Checks on Possible Mediating Variables

Because previous studies in this program of research have revealed substantial influences on interaction behavior of the dyad members' sex role orientations (Ickes, 1981; Ickes et al., 1979; Ickes & Barnes, 1978; LaFrance & Ickes, 1981), we wondered if sex role differences might have mediated the present results. Such mediation would be highly plausible if, for example, men and women with older, opposite-sex siblings are more likely to become androgynous than are men and women with younger, opposite-sex siblings. (For a review of work demonstrating that—in initial, unstructured encounters— androgynous individuals typically have more involving and personally satisfying interactions than nonandrogynous individuals, see Ickes, 1981.)

To determine if the subjects with older, opposite-sex siblings indeed had acquired a more androgynous orientation than those with younger, opposite-sex siblings, we employed the same two-between, one-within design to analyze the subjects' BSRI data, extending this design to treat each subject's total masculinity and femininity scores as the levels of an additional within (subjects) variable. The results of this analysis revealed only the theoretically uninteresting finding that

Table 3
Interaction Effects: Women's Birth Order by Sex of Dyad Members

Dependent measures	Firstborn female dyads		Lastborn female dyads		Interaction $F(1, 36)$
	Men	Women	Men	Women	
Body orientation	.0	.6	.2	.0	4.28*
Positive affect (frequency)	6.4	6.9	4.4	9.0	7.56**
Positive affect (duration) ^a	6.2	6.7	5.0	10.2	4.87*

^a The measure of duration is in seconds.

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

the men had higher masculinity scores and lower femininity scores than the women, interaction $F(1, 36) = 23.12, p < .001$. Birth order (whether the men's or the women's) was not significantly related to the subjects' sex role orientations, neither as main effects nor in interaction with the other variables (all $ps > .15$). It appears, then, that the reported influences of the subjects' birth order on their interaction behavior were not mediated by corresponding differences in their sex role orientations.

Our selection of the subjects from introductory psychology courses should have ensured the absence of any significant age/cohort differences, but to rule out stringently the possibility of such differences, we used the pretest date-of-birth data to convert each subject's present age to months and then analyze these transformed data in our two-between, one-within design. No effects were significant (all $ps > .20$), indicating that age also did not mediate the effects of birth order in this study.

Discussion

Viewed collectively, the data provide strong, converging evidence that individuals with older, opposite-sex siblings are particularly likely to have "successful" (i.e., involving and rewarding) initial interactions with strangers of the opposite sex. This phenomenon was most clearly evident in the case of the male dyad members. When compared to firstborn men with younger sisters, last born men with older sisters talked nearly twice as long, tended to ask more questions, and evoked significantly more gazes, verbal reinforcers, and self-reported liking from their female partners. In contrast, firstborn men with younger sisters did not talk much, tended to ask fewer questions, and were perceived by their partners as being relatively unassertive, unexciting, and unfriendly. In the case of the female dyad members, the social advantages of having an older, opposite-sex sibling were again apparent, but in more subtle and indirect ways. When compared to firstborn women with younger brothers, last born women with older brothers were perceived as more likable and were more likely to initiate the interaction and to exceed the rate at

which their male partners smiled. Ancillary data suggested that these influences of birth order on social behavior were not mediated by corresponding differences in the subjects' ages or sex role orientations.

The convergence of the results across a range of behavioral and self-report measures is important, given the large number of effects tested. As Lykken (1968) pointed out, such multiple corroboration of a phenomenon or process within a single study can be an effective safeguard against Type II error. By the same token, the convergence of the present findings with the bulk of previous research on birth order and social behavior represents a constructive replication argument against Type II error (Lykken, 1968).

Theoretical Implications

The present findings enhance our understanding of the relation between birth order and social behavior in a number of important ways. First, they clarify the influence of birth order in mixed-sex dyads by revealing a pattern of additive main effects for the men's and women's birth order. This pattern is consistent with the predictions derived from most of the previous empirical research, but it is inconsistent with the predictions derived from Toman's (1961, 1976) theory. By supporting the first of these positions at the expense of the second, the data can be used to argue for a theory of birth order influences in heterosexual dyads that does not require any assumptions about rank complementarity or the desirability of replicating an early status relationship with an opposite-sex sibling.

Second, the present set of results is the first (of which we are aware) to map the influences of birth order across a range of behaviors occurring in the context of naturalistic, ongoing dyadic interactions. The interactional aspects of these influences are also clearly apparent. As the data in Table 2 illustrate, the direct influence of the men's birth order on their own interaction behavior produced indirect (i.e., mediated) effects on their female partner's behavior that were of comparable magnitude and interest.

Third, the present findings help qualify the general pattern of social skills associated with

later born status by revealing some interesting sex differences in the specific types of social skills displayed by the men and women in these mixed-sex interactions. If we may speculate a bit in an attempt to characterize more abstractly the nature of these sex differences, it appears that the social skills of the last born women were used to create a favorable (i.e., responsive and supportive) context or climate for the interaction, whereas the social skills of the last born men were used to provide much of the actual content and structure of the interaction. More specifically, the last born women created a favorable interaction context and signaled their willingness to interact by talking first and displaying more positive affect than their male partners displayed in return. For their part, the last born men constructed engaging conversations that elicited from their female partners a high level of mutual gazes, verbal reinforcers, and self-reported liking. In contrast to these last born women and men, the firstborn women created a less favorable interaction context and possibly signaled some reluctance to interact by sitting last and adopting a relatively confrontive body orientation, whereas the firstborn men failed to provide much content and structure for their interactions (e.g., they did not talk much, asked relatively few questions, and generally came across as relatively unassertive, unexciting, and unfriendly).

Questions for Future Research

In addition to increasing our understanding in the various ways noted above, the present findings raise some intriguing new questions for future research. One major issue to be explored concerns the generality of the effects obtained in this study. For example, Are the social skill advantages of having an older sibling limited only to individuals whose older siblings are of the opposite sex, or do they also generalize to individuals whose older siblings are of the same sex? Are the types of effects obtained in this study apparent only in interactions with partners of the opposite sex, or can they be found in interactions with partners of the same sex as well? Despite the apparent unimportance of rank complementarity, is the complementarity be-

tween the sex of one's older sibling and the sex of one's interaction partner important such that individuals with older, opposite-sex siblings have the greatest advantage in interaction with opposite-sex strangers, whereas individuals with older, same-sex siblings have the greatest advantage in interaction with same-sex strangers? Do the influences of birth order on social behavior occur only in the initial, unstructured interactions of two strangers, or do they generalize to more structured, long-term interactions as well? Are the greater social skills of last born men and women generally displayed in patterns reflective of the "content/context" distinction described above, or are these sex-differentiated patterns found only in those initial, mixed-sex interactions in which the man is expected to "take the lead"? Additional research is needed to address these various aspects of the generalizability issue.

A second major issue that warrants further study concerns the specific social process(es) by which individuals with older, opposite-sex siblings acquire the social competencies documented in this report. Two somewhat speculative possibilities are suggested. The first possibility is that in the course of attempting to engage their older, opposite-sex siblings in conversation or in other forms of social interaction, individuals try out a variety of "social engagement" behaviors, only some of which are reinforced. As time passes, the reinforced behaviors become well established as part of a repertoire of social engagement and social competence skills, whereas the nonreinforced behaviors become extinguished. The development of such skills in individuals with younger, opposite-sex siblings is less likely, however, because the greater power of these individuals (based on their relative size, intellectual development, etc.) permits them to demand their younger siblings' attention and social engagement directly, without having to resort to the trial-and-error use of more subtle and indirect social skills (cf. Miller & Maruyama, 1976).

Another possible explanation for the differential socialization of children with older versus younger opposite-sex siblings puts less emphasis on the children's interaction with their opposite-sex sibs than on the amount of contact the children are likely to have with

their siblings' same-sex friends (who also are of the opposite sex with respect to the children themselves). According to this account, individuals with older, opposite-sex siblings are likely to have relatively many opportunities to encounter and interact with their siblings' same-sex friends, thereby acquiring a repertoire of social engagement and social competence skills in the same manner described above. In contrast, individuals with younger, opposite-sex siblings are typically less likely (and often less willing) to have contact with their siblings' same-sex friends and thus fail to acquire and refine such skills to the same degree.

These two alternative socialization processes are obviously not mutually exclusive (i.e., both could contribute to the resulting social skill differences, either additively or in interaction). Currently, however, there is no direct evidence for either of them. We suspect that the first of these processes will prove to be more important than the second, and we hope that the present findings will help to stimulate some definitive developmental research on this topic.

A closely related topic for future research is suggested by the more general theoretical speculation that the greater social skills of later borns can be traced to two major factors: (a) the greater number of role models available to later borns early in life and (b) the relatively low power and status of later borns within the family. Because the influences of both of these factors on the social skills of the last born child should become more pronounced as family size increases, we may propose, as a specific hypothesis, that the relative social skill advantages of last borns over firstborns should increase as a positive function of family size. Developmental studies of the social skills of siblings, with appropriate (e.g., age-equivalent) comparisons made both across and within families, should provide informative tests of this hypothesis.

A final task for future research should be studies designed to establish the discriminant validity of the model of differential socialization we have proposed. It is possible, for example, that there are some circumstances (e.g., interactions with older adults or in structured, task-oriented, hierarchical situa-

tions) in which firstborns are more socially adept than later borns.⁵

Practical Implications

Beyond helping to clarify the role of birth order influences in social behavior and suggesting some interesting directions for future research, the present findings also suggest some important real-life implications regarding the social compatibility versus incompatibility of certain mixed-sex (and, potentially, same-sex) dyad types. Most generally, the data suggest that individuals who are in need of "social skills training" (e.g., Twentyman & McFall, 1975) are more likely to be firstborn than last born. More specifically, the data suggest that some configurations of dating and marriage partners (e.g., two firstborns) may have more difficulty achieving a compatible social relationship than others (e.g., two last borns). These and other practical implications (e.g., regarding the social compatibility of firstborn and last born workers in occupational settings) may lend an applied focus to future research on the relation between sibling configurations and social behavior.

⁵ We are indebted to an anonymous reviewer for this suggestion for future research.

Reference Note

1. Ickes, W. Unpublished data, 1971.

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Received February 22, 1982 ■