

## **Birth Order in Transgendered Males from Polynesia: A Quantitative Study of Samoan *Fa'afāfine***

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*In previous research, a late birth order has been shown to be a characteristic of Western homosexual transsexual men. To date, however, it is not clear if a late birth order is specific to Western transsexuals or may be a characteristic of non-Western transgendered males as well. We quantified birth order in a sample of 13 transgendered males known as fa'afāfine from Samoa. On average, the fa'afāfine were late born, both with regard to number of older brothers and number of older sisters, although the effect appeared to be somewhat stronger with regard to number of older brothers. We consider possible interpretations of the late birth order effect, along with recommendations for further research to identify common mechanisms that might underlie transgenderism across different cultural groups.*

In Western societies, the phenomenology of transsexualism (in the *Diagnostic and Statistical Manual of Mental Disorders* [DSM-IV; American Psychiatric Association, 1994], gender identity disorder) in both biological males and

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females has been well-described for many years. By adulthood, most Western transsexuals report a severe discordance between their cross-gender behavior and feelings and their anatomic sex. Thus, in biological males, for example, there is the strong desire to receive feminizing hormone treatment (e.g., to induce breast development) and surgical sex change (e.g., removal of the penis and testes, creation of a neovagina), that is, to align the body with the felt psychological state of a woman.

In biological males with transsexualism, it is recognized that there are two major sub-types: those who are erotically attracted to other biological males (homosexual transsexualism) and those who are erotically attracted to biological females and/or to the thought of themselves as women (heterosexual transsexualism/autogynephilia). As noted elsewhere (Zucker & Blanchard, 1997), there are a number of other parameters apart from sexual orientation that distinguish between these two subtypes of transsexualism in males. One such parameter pertains to an early childhood onset of persistent and marked cross-gender behavior (e.g., with regard to peer affiliation preference, toy preference, roles in fantasy play, dress-up play). Such indicators are more common in homosexual than in heterosexual transsexual males (Blanchard, 1988; Doorn, Poortinga, & Verschoor, 1994; Smith, 2002).

In addition to the presence of childhood cross-gender behavior, two demographic variables—sibling sex ratio and birth order—also have been shown to be reliably associated with transsexualism. Homosexual transsexuals, but not heterosexual transsexuals, come from sibships with an excess number of brothers to sisters and are later born (Blanchard & Sheridan, 1992; Blanchard, Zucker, Cohen-Kettenis, Gooren, & Bailey, 1996; Green, 2000). Moreover, the late birth order appears to be accounted for predominantly by number of older brothers, not older sisters, and has thus been termed the *fraternal* birth order effect. The fraternal birth order effect also has been reliably established in homosexual men, unselected for their degree of recalled childhood cross-gender behavior (for a review, see Blanchard, 1997).

In recent years, with the explosion in sexological, cross-cultural ethnographic research (both historical and in vivo field work), there have been many reports of apparent equivalents (or, at least, similarities) to the contemporary Western form of transsexualism in males. These include studies of the native North American *berdache* (e.g., Epple, 1998; Hauser, 1990; Jacobs, Thomas, & Lang, 1997; Lang, 1998), the *acault* from Burma (Coleman, Colgan, & Gooren, 1992), the *hijras* from India (Nanda, 1990, 1994), the *jōgappa* from south India (Bradford, 1983), the *xanīth* from Oman (Wikan, 1977), the *bantut* from the Southern Philippines (Johnson, 1995, 1997, 1998), and the *kathoey* from Thailand (Jackson, 1997).

When the information is available, one commonality that links the phenomenology across these various “third gender” types is the apparent

childhood onset of cross-gender behavior and feelings (see, e.g., Johnson, 1997, pp. 113–117). Of course, a great source of debate is to what extent this apparent surface similarity in behavior reflects common or distinct underlying mechanisms (Johnson, Jackson, & Herdt, 2000). As noted by Herdt (1994), the “special conditions” required to create these diverse third gender categories are poorly understood. If it were possible to establish that transgendered people from cultural backgrounds quite distinct from contemporary Western transsexuals shared associated features that are indicators, at least in theory, of underlying causal processes, it would give support to the possibility of a common underlying mechanism.

To date, the study of birth order of transsexuals has been predominantly limited to Western samples consisting of Canadian (Blanchard & Sheridan, 1992), Dutch (Blanchard et al., 1996), and English (Green, 2000) patients. To our knowledge, only one study has examined birth order in transsexuals in a non-Western sample. Tsoi, Kok, and Long (1977) reported a late birth order in homosexual transsexual males from Singapore; unfortunately, Tsoi et al. did not apply a test to confirm its statistical significance, report on the confidence interval, or use a control group. Thus, at present, it is not clear if the birth order phenomenon is unique to contemporary Western transsexuals or if it has a broader generality.

The present study explored this issue by examining the birth order of transgendered Polynesian males: the *fa'afāfine* of Samoa. According to Besnier (1994), the literal English translation of this term is “in the fashion of a woman” (in Tonga, the term *fakaleitī* is used). With the creation of a linguistic term, Polynesian culture appears to recognize a kind of “third gender” status of such individuals (Besnier, 2003).

Several ethnographic accounts of the developmental histories of the *fa'afāfine* suggest that childhood cross-gender behavior is common, including preferring girls as playmates and cross-dressing (e.g., Poasa, 1992). Just as behaviorally very feminine boys in Western culture are labeled as “sissy” or “queer” (condensing gender and erotic parameters; Green, 1987), behaviorally feminine Samoan boys are labeled by others as *fa'afāfine*, a term that eventually becomes internalized as an identity status/category (Poasa, 1992). It is interesting that Besnier (1994) noted that a Tongan boy who does not ably perform chores expected of boys of the same age might be chastised by his mother or other caregivers and called *ki'i fakaleitī* (“little fakaleitī”), again reminiscent of the demasculinizing label of “sissy” in the West. Shore (1981) claimed that Samoan heterosexual men dread being called *fa'afāfine* and suggested that this term served the function of regulating “normative” masculine identity and role behavior (for a similar “functionalist” argument regarding the Tahitian mahu, see Levy, 1971). Contemporary *fa'afāfine* appear to be erotically attracted to biological males (Connolly, Gendelman, Ladowsky, & Saltzgeber, 2003), although they do not conceptualize such an attraction as indicating an equivalence to the Western category of homosexual

or “gay” (Besnier, 1994; Connolly et al., 2003). Like homosexual transsexual males in the West (Lippa, 2001), *fa’afāfine* gravitate to feminine occupations; indeed, in Samoan culture, where work is strongly sex-dimorphic, it is of note that the *fa’afāfine* recall preferring the work of women, not men, during childhood (Heinemann, 2000) and, in adulthood, have occupations that are predominantly performed by women (Besnier, 1994). Also like homosexual transsexual males in the West, their relationships tend to be transitory and short-lived, and there is little indication that they marry (Heinemann, 2000). Last, there is evidence that some contemporary Polynesian *fa’afāfine*, like their Western transgendered counterparts, desire sex-change surgery (Poasa, 1992). As reported by Heinemann (2000), for example, one of her subjects stated, “I would like to have a female body. I would save money for an operation, like in America.”

We focused on the *fa’afāfine* for three reasons: first, the phenomenology of these individuals has been the subject of several detailed investigations (Besnier, 1994, 1997, 2002; Heinemann, 2000; James, 1994; Mageo, 1992); second, some descriptive reports have hinted at a late birth order among *fa’afāfine* (Heinemann, 2000). As we recently summarized (Zucker & Blanchard, 2003), in Heinemann’s series of five *fa’afāfine*, four were last born and one was next to last born; in an essay by James (1994), a Tongan *fakaleitū* was noted to be the last born of 9 siblings, all of whom were girls; third, it is well-established that Polynesian families typically produce large numbers of offspring. In 1970, a fertility rate per woman of 5.8 children was recorded in the Independent State of Western Samoa, and 6.1 children was recorded in the Territory of American Samoa (United Nations, 1995). Because previous studies have shown that the fraternal birth order effect is particularly strong in larger families (Blanchard & Bogaert, 1996; Ellis & Blanchard, 2001; Jones & Blanchard, 1998), we anticipated that the large numbers of siblings of *fa’afāfine* would provide a good test of the hypothesis.

## METHODS

### Subjects

The subjects were 14 *fa’afāfine* from either the Territory of American Samoa or the Independent State of Western Samoa originally studied by Poasa (1992, 1993). Subjects were interviewed between 1990–1992. The first subjects were known to the first author personally and the remainder were recruited through the snowball technique.

For the present study, one subject was excluded because he was adopted. As shown in Table 1, the 13 remaining subjects ranged in age from 14 to 34 years at the time of interview ( $M$ , 20.3 yrs). Subjects 11 and 13 were siblings.

**TABLE 1.** Sibling Sex Composition and Birth Order in Samoan *fa'afāfine*

Subject	Age	No. older brothers	No. older sisters	No. younger brothers	No. younger sisters	Slater's Index
1	17	4	5	1	0	0.90
2	34	7	3	0	1	0.91
3	23	2	6	0	0	1.00
4	14	4	4	0	0	1.00
5	22	5	4	0	0	1.00
6	21	1	1	1	1	0.50
7	31	4	0	1	1	0.67
8	14	0	0	0	2	0.00
9	16	2	1	1	1	0.60
10	N/A	5	1	2	2	0.60
11	18	5	6	1	0	0.90
12	19	7	3	1	0	0.91
13	15	6	6	0	0	1.00
Total	—	52	40	8	8	0.77 (Mean)

## Measures

From Poasa's (1992) field notes, a research assistant, who was not informed of the purpose of the present study, recorded the proband's number of older brothers, older sisters, younger brothers, and younger sisters.

Birth order was quantified with three measures. The first was Slater's Index (Slater, 1958, 1962), which equals the number of siblings older than the subject divided by the subject's total number of siblings, that is, older siblings/(older siblings + younger siblings). This index cannot be calculated for only children; for all other individuals, regardless of sibship size, it expresses birth order as a quantity between 0 and 1, where 0 corresponds to first born and 1 corresponds to last born. The other two measures that we used were analogous indices devised by Jones and Blanchard (1998) to quantify a proband's birth order relative to his brothers and relative to his sisters. These were computed as follows: Fraternal Index = older brothers/(older brothers + younger brothers), and Sororal Index = older sisters/(older sisters + younger sisters). The Fraternal Index can be calculated only for probands who have one or more brothers, and the Sororal Index can be calculated only for probands who have one or more sisters.

## RESULTS

All of the probands had at least one sibling (mean, 8.3; range, 2–12). They had a total of 60 brothers and 48 sisters, which yields a sibling sex ratio (number brothers/number sisters × 100) of 125:100. This is higher than the secondary sex ratio at birth (number of male live births/number of female

live births  $\times$  100), which, in epidemiological studies, is around 106:100 (Chanazarian, 1988). However, because of the small number of siblings, it is unlikely that this value would be significantly elevated (Suarez & Przybeck, 1980), which we confirmed by using the  $z$  approximation to the binomial test ( $p = .228$ , one-tailed).

Of the 13 probands, 11 had more older siblings than younger siblings, 1 had more younger siblings than older siblings, and 1 had an equal number. Eleven of the 13 probands had more older brothers than younger brothers, 1 had an equal number, and 1 had no brothers. Eight of the 13 probands had more older sisters than younger sisters, 3 had more younger sisters than older sisters, and 2 had an equal number (see Table 1).

The probands had a mean Slater's Index of .77 (95% confidence interval, .59–.95). Because one proband had no brothers, the Fraternal Index could be calculated only for 12 probands. The mean Fraternal Index was .85 (95% confidence interval, .75–.95). All of the probands had one or more sisters, so we calculated the Sororal Index for all 13. Their mean Sororal Index was .70 (95% confidence interval, .46–.93).

## DISCUSSION

Our data show that Samoan *fa'afāfine* have a sibling sex ratio (a greater number of brothers than sisters) that is similar to that found in studies of Western male homosexual transsexuals (Blanchard & Sheridan, 1992; Blanchard et al., 1996; Green, 2000) and boys with gender identity disorder (Zucker et al., 1997). The probands also were strikingly late in their birth order, consistent with studies of Western male homosexual transsexuals. Before we consider possible explanations of the birth order effect, several methodological issues require comment.

In a demographically stable population, the expected value of Slater's Index for probands selected at random would be .50. Several theorists and researchers have shown, however, that the probabilities of ascertaining early-born, middle-born, and late-born probands are altered in complex ways when total population size, average family size, or both are changing during the years in which a sample of probands is being born (Berglin, 1982; Birtchnell, 1971; Cobb, 1914; Hare & Price, 1969, 1974; Jagers, 1982; Price & Hare, 1969). For this reason, the expected value of Slater's Index may depart from .50. The situation is even more complicated for the Fraternal and Sororal Indices, because there is a small but reliable tendency for males to be born earlier in their sibships than females (Chanazarian, 1988; James, 1987). That implies that a male proband selected at random will tend to be born earlier relative to his sisters than to his brothers and that the mean Sororal Index for a group of male probands will probably be lower than the mean Fraternal Index.

Both the reality of demographically induced deviations from theoretical means of .50 for these three indices and the rather small size of the deviations actually observed in real-life populations can be illustrated with data presented by Jones and Blanchard (1998, Table 3, p. 784). Jones and Blanchard computed a mean Slater's Index of .45 for nine samples of heterosexual males totaling 4,559 probands. The Fraternal and Sororal Indices, which were computed on a subgroup of 2,115 probands who had at least one brother and one sister, were .48 and .46, respectively.

The samples analyzed by Jones and Blanchard were recruited in Canada, the Netherlands, the United Kingdom, and the United States, and nearly all the probands were white. Their results, however, are sufficient to illustrate the following point: It is extremely unlikely that the true Fraternal Index for males selected at random from any real-life population would lie in the range of .75 to .95, regardless of what demographic changes were occurring in that population during the years when those males were being born. It therefore appears safe to conclude that the present probands were born late in their sibships, at least with regard to their brothers, even though this study did not have a heterosexual control group to estimate the expected birth order indices for the general Samoan population.

From a psychosocial perspective, the late birth order of the *fa'afāfine* may be understood from a couple of angles. In Heinemann's (2000) study, it was noted that some of the mothers apparently "like to educate [i.e., rear] these boys as girls" (pp. 165–166; see also Mageo, 1992, p. 450). Along similar lines, James (1994) claimed that some *fa'afāfine* are "petted like girls by their doting mothers or grandmothers" (p. 50). In Heinemann's view, this socialization strategy defied rational explanation because, she argued, it is rare for a family to have an absence of daughters, and the practice of adoption of girls (from relatives) is common. Our data clearly support Heinemann's observation that there is no shortage of older girls in the sibships of the probands. Indeed, there were only two probands who did not have older sisters and, among those who did, the mean number was 3.6 (range, 1–6). Of course, our data do not address the more general claim that some Samoan mothers intentionally raise some of their sons as daughters. On this point, other kinds of evidence would be required.

Another socialization interpretation pertains to the role of older siblings in the rearing of the probands. Poasa (1992) noted that in Samoan culture, it is common for older siblings to play a large role in the day-to-day rearing of younger siblings, with parents taking more of a "back seat." As described by Poasa, "There is generally little personal talk or discussion between parent and child; communication tends to be mostly directive or didactic in nature" (p. 44). Perhaps within sibships, the older sisters take more responsibility than the older brothers in looking after the younger siblings and, at least under some circumstances, are prone to reinforcing or tolerating the emerging cross-gender behavior of the *fa'afāfine* (see James, 1994). To examine this

conjecture, a more detailed, microsocial study of the family environments of *fa'afāfine* is required.

From a biological perspective, the birth order data are consistent with a maternal immunological hypothesis originally developed based on data gathered on Western samples of both homosexual and transsexual males (Blanchard & Klassen, 1997). The theory holds that behavioral feminization in males may result from a maternal immune reaction during the pregnancy, which is provoked only by male fetuses and which becomes stronger after each pregnancy with a male fetus. Here, it should be noted that the theory was inspired by the empirical demonstration that the birth order effect was accounted for more strongly by the number of older brothers, not older sisters; hence, the term *fraternal birth order* effect.

This hypothesis was based partly on the argument that a woman's immune system would appear to be the biological system most capable of "remembering" the number of male (but not female) fetuses that she had previously carried and of progressively altering its response to the next fetus according to the current tally of preceding males. It was further theorized that the relevant fetal antigen might be one of the male-specific, Y-linked, minor histocompatibility antigens, often referred to collectively as H-Y antigen, which likely plays some role in the sexual differentiation of vertebrates. Thus, the specific mechanism would be some effect of maternal antibodies on the sexual differentiation of the fetal brain. In the present study, all but one of the probands had at least one older brother. Of the remaining 12 probands, the mean number of older brothers was 4.3 (range, 1–7).

In summary, our data appear to indicate that a late birth order is a common characteristic of Samoan *fa'afāfine* and thus is a family demographic factor that they share with Western homosexual transsexual males. Indeed, the mean Slater's Index that we obtained in the present study is the highest to date of any sample of transsexual males that we have studied (see Blanchard, 1997). This cross-cultural similarity suggests, therefore, that there may well be an underlying mechanism common to the psychosexual development of both Samoan *fa'afāfine* and Western transsexuals. Replication of the present findings with a larger sample of *fa'afāfine* and a matched control group of heterosexual Samoans is warranted and may provide a further empirical foundation for the elaboration of a theoretical explication that links the atypical psychosexual differentiation of transgendered biological males growing up in very different cultural and historical traditions from those encountered in contemporary Western societies.

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