

Sex Without Emotional Involvement: An Evolutionary Interpretation of Sex Differences

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Two samples of male (n = 243) and female (n = 298) college students completed sexual surveys, and in-depth, oral interviews were conducted with 28 highly sexually active female college students. Findings supported five predictions derived from evolutionary (parental-investment) theory. Even when females voluntarily engaged in low-investment copulation, coitus typically caused them to feel emotionally vulnerable, and to have thoughts expressing anxiety about partners' willingness to invest. For females, increasing numbers of partners correlated positively with the incidence of these feelings and thoughts; for males, these correlations were negative. Females' attempts to continue regular coitus when they desired more investment than partners were willing to give produced feelings of distress, degradation, and exploitation despite acceptance of liberal sexual morality. Increasing numbers of partners did not mitigate these reactions in females and may exacerbate them. Multiple-partner females developed techniques for dealing with their emotional reactions to low-investment copulation: They frequently tested their partners for signs of ability and willingness to invest (e.g., dominance, prowess, jealousy, nurturance), and they limited or terminated sexual relations when they perceived partners' investment as inadequate. Results were consistent with the view that the emotional-motivational mechanisms that mediate sexual arousal and attraction are sexually dimorphic.

KEY WORDS: sexuality; sex differences; emotions; evolution.

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INTRODUCTION

Researchers have consistently identified the following sex differences in sexuality and partner selection. Men are more willing than women to engage in sexual relations in the absence of emotional involvement and marital potential and are more likely to seek sexual relations with a variety of partners for the sake of variety. Male sexuality is more focused on the genitals and orgasm than is female sexuality, and women are more easily distracted during coitus than are men (Blumstein and Schwartz, 1983; Kinsey *et al.*, 1953; Roche, 1986; Townsend, 1987; Udry and Billy, 1987; G. Wilson, 1981, 1987). Men are more readily aroused sexually than women by visual stimuli (e.g., the sight of a potential sex partner); consequently, evaluation of acceptability for coitus can be virtually instantaneous for men but tends to take longer for women (Buss and Schmitt, 1993; Clark, 1990; Kinsey *et al.*, 1953; Symons, 1979; Townsend and Levy, 1990a). Men place more emphasis than women on physical attractiveness in choosing partners for sex or marriage, and women place more emphasis than men do on partners' socioeconomic status (SES) (Bercheid and Walster, 1974; Dion, 1981; Hatfield and Sprecher, 1986; Townsend and Levy, 1990b).

Researchers guided by evolutionary theory explain sex differences in sexuality and mate selection criteria in terms of differential parental investment (Buss, 1989a; Buss and Barnes, 1986; Ellis and Symons, 1990; Hill *et al.*, 1987; Kenrick and Keefe, 1992; Kenrick *et al.*, 1990; Sadalla *et al.*, 1987; Symons, 1979; Symons and Ellis, 1989; Townsend, 1989; Townsend and Levy, 1990a, 1990b; Trivers, 1972). Although human males typically invest a great deal in their offspring, the sexes differ profoundly in their minimum possible parental investment. What might be a simple act of copulation for a male can result for the female in the medical risks of pregnancy and delivery, and the lifelong investment of motherhood (Symons, 1979; Kenrick *et al.*, 1990). Symons (1979) argued that this discrepancy in minimum possible investment caused, through natural selection, the mechanisms that mediate sexual arousal and mate evaluation to differ in men and women. As the human cortex and behavioral plasticity expanded during evolution, the number of maladaptive as well as adaptive behaviors that could be learned also increased. Consequently, because their reproductive risks and opportunities differed, male and female evolved complex, dimorphic, emotional-motivational mechanisms to recognize and look after their own interests. Without these mechanisms, people's sexual behavior would be prohibitively open to exploitation and random environmental variation. Males evolved the tendency to become sexually aroused by visual stimuli, and to spread investments among several females when circumstances permitted, because natural selection favored males who were at-

tracted to a great variety of partners, and who assessed these partners' acceptability for intercourse largely on the basis of physical attributes that serve as cues to fertility, e.g., muscle tone, complexion, facial and bodily proportions, absence of wrinkles (Cunningham, 1986; Ellis and Symons, 1990; Hill *et al.*, 1987; Kenrick and Keefe, 1992; Kenrick *et al.*, 1990; Mathes *et al.*, 1985; Symons, 1979, 1987; Townsend, 1989).

Because women's minimum possible parental investment is vastly greater than men's, selection favored a more selective process of mate evaluation in women with more emphasis on partners' potential for parental investment—social dominance, prowess, nurturance—and less emphasis on physical attributes that serve as cues to fertility (Buss, 1989a; Buss and Barnes, 1986; Naficy, 1981; Symons, 1979). Women's emotional mechanisms should therefore motivate them to seek out and detect partners' ability and willingness to invest, to evaluate the quality of investment, and to espy and counteract shirking and false advertising. Symons (1979) postulated that, when the mechanisms that mediate sexuality are fully identified and understood, some of these mechanisms will be as sexually dimorphic as the external genitalia.

Sex differences in both sexual behavior and attitudes have declined in Western societies since the Kinsey studies (Alzate, 1984; Blumstein and Schwartz, 1983; Clement *et al.*, 1984). But sex differences remain strong in masturbation rates, timing and causes of first arousal, motivations for coitus, and the tendency to dissociate coitus from emotional involvement (Carroll *et al.*, 1985; Clement *et al.*, 1984; Knoth *et al.*, 1988; Townsend, 1987; Useche *et al.*, 1990; G. Wilson, 1981, 1987). Roche (1986) found college-age males were much more willing than females to condone and engage in coitus when dating "with no-particular affection"; in fact, no females expressed this level of permissiveness. With higher levels of affection and monogamous commitment, however, the gap narrowed between the sexes' behavior and attitudes. In stage four, being in love and dating only this person, sex differences disappeared.

Evolutionary researchers propose that, although the emotional mechanisms in both sexes are modifiable by experience, certain cognitive-emotional links are easier to forge than others, and certain critical experiences produce different and even opposite effects on males and females (Daly *et al.*, 1982; Symons, 1979; Symons and Ellis, 1989; Tooby and Cosmides, 1992; Townsend, 1987, 1992). A common social science explanation of the link between love and sex among women is that they have learned this as a societal norm and thus try to ensure they are in love and that their partner loves them before, or at least during, a sexual affair (Gagnon and Simon, 1973; Hill *et al.*, 1979; Roche, 1986; Simon and Gagnon, 1986; cf. Ellis and Symons, 1990; Knoth *et al.*, 1988; Tooby and Cosmides, 1992;

Townsend, 1987; Useche *et al.*, 1990; Wilson, 1987). Some undergraduate women conclude after the end of an affair that they were not “really” in love at the time but had only convinced themselves they were in love in order to rationalize their actions and not feel guilty—purportedly because they had been taught by society that sex without love is unacceptable (see Sample 4 below; Roche, 1986). The social sanction for being in love is thus held responsible for the fact that they had feelings of affection, vulnerability, and bonding during the affair, but these feelings are no longer considered genuine because the partner was inappropriate for that level of involvement and/or because the relationship did not last. Women do evaluate cues to potential for investment as part of their evaluation of mate attractiveness, and much of this evaluation occurs prior to coitus as well as after (Kanin *et al.*, 1970; Townsend, 1987, 1989, 1992; Townsend and Levy, 1990a, 1990b). But an emotional mechanism that was only tied to a cognitive appraisal of investment could be maladaptive because it could fail to function when, in fact, female reproductive risks and opportunities were involved. To be maximally effective, this mechanism must be closer to the genes (Wilson, 1975), and, hence, more directly tied to the act that produces female reproductive risks and opportunities, namely, vaginal penetration. Admittedly, many women in this culture are exposed to romantic ideology extolling the raptures of romantic love, and many no doubt absorb this ideology (Ellis and Symons, 1990). But it is also possible that engaging in vaginal intercourse, in and of itself, activates feelings of closeness and vulnerability in women (Bardwick, 1971).

Simpson and Gangestad (1991a, 1991b) proposed that a significant portion of the observed variation in women’s sexual behavior is not environmentally contingent but rather is caused by genetic variation produced by natural selection. Gangestad and Simpson (1990) classified women who score below the median on their Sociosexual Orientation Inventory (SOI) as “restricted,” and women who score above the median as “unrestricted.” Unrestricted women require less investment of affection and resources from their partners as a prerequisite for coitus, provided that the partners meet their standard for dominance/social status and physical/sexual attractiveness. Consequently, unrestricted women require a shorter period for mate evaluation and tend to have more sexual partners and shorter-term relationships than do restricted women (Simpson and Gangestad, 1992).

Tanfer and Schoorl’s analysis (1992) of a clustered probability sample of 1314 never-married, 20- to 29-year-old women revealed that with increasing sexual experience, the periods of abstinence and the time spent between sexual relationships declined; these dynamics produced an ever-increasing rate of sex partners. The authors caution that many of these women may desire more durable monogamous relationships, but as desires

and needs change, or relationships do not “lead to somewhere,” they move on to new partners. It is thus possible, the authors note, that a substantial portion of the short-term relationships began with the expectation (or hope) that they would be more lasting. The percentage of 1-night stands and very short-term relationships that were not entered knowingly or voluntarily, however, is “unascertained and largely speculative.” The purpose of the current investigation was to use evolutionary theory to explore these questions: (i) What proportion of college-age women engaged in sexual intercourse with no expectation, or hope, of emotional involvement? (ii) What are the motivations and emotional reactions of women who engage in this type of low-investment copulation? (iii) Can these women totally dissociate sexual pleasure from a need for investment (e.g., displays of affection, ideas of future commitment, emotional bonding)? (iv) How do they compare to their male counterparts in this regard?

The evolutionary literature cited above suggests that the emotional-motivational mechanisms that mediate human sexuality should exhibit the following characteristics. First, these mechanisms should be able to operate without conscious control; otherwise they could be thwarted by socialization and manipulation, or by the individual's own inadvertent self-disclosure (Nesse and Lloyd, 1992; Symons, 1979; Trivers, 1985; Wilson, 1975). A second characteristic that an emotional-motivational mechanism should possess is that it should continue to operate after mating. Because humans do not have mechanisms that ensure that they mate for life, and many humans do not mate for life (Buss 1989b; Symons, 1979, 1985), a mechanism that atrophied after mating would be maladaptive. Research consistently indicates that sex differences in desires and dissatisfactions can persist decades after marriage—men typically dissatisfied with their sex lives and women with their husbands' ability as providers or emotional communicators (Blumstein and Schwartz, 1983; Buss, 1989b; Cherlin, 1979; Locksley, 1980; Murstein and Christy, 1976; Kinsey *et al.*, 1953; Rhyne, 1981; Rubin, 1983; Scanzoni, 1978).

Third, an emotional-motivational mechanism should be facultative, i.e., flexible enough to be overridden by conscious control when necessary—at least on a behavioral level. A total inability to calculate the advantages and risks involved would be maladaptive. Yet, the mechanisms would have to be robust enough to emerge, at least as consciously experienced emotion, in a wide variety of environments. Male sexual jealousy fulfills these criteria (see Discussion; Daly *et al.*, 1982; Daly and Wilson, 1988).

A study of 104 sexual relationships among college undergraduates revealed that women were choosier than men and were more likely to end relationships than men were because (i) their partners did not measure up to their standards, so the women saw no point in continuing a sexual re-

lationship or, (ii) the partners *did* measure up in most respects, and the women wanted to continue the relationships, but the men were unwilling to make commitments (Hill *et al.*, 1979). A more recent study identified this pattern among medical students and reaffirmed that it is more characteristic of women than of men (Townsend, 1987). The emotional reactions that underlay this pattern were exactly the type predicted by evolutionary theory. Women medical students experienced intensely negative emotional reactions when they attempted to maintain sexual relationships that involved insufficient emotional commitments and marital potential (Townsend, 1987). What appeared crucial for the activation of such intense anxiety and remorse in sexually liberal women like those in the study was a discrepancy between the women's desire for a specific man's emotional commitment and his actual commitment. This discrepancy apparently activated negative feelings of vulnerability, of "being used," and that "something was wrong." These feelings thus seemed to serve a protective function; they acted as an emotional "alarm" that warned the women that their interests were being thwarted (Buss, 1989b). These feelings were so strong that the women's attempts to disregard them failed, and in every case they were impelled to change their tactics: They demanded more investment-commitment and if it was not forthcoming, they terminated the relationship. In contrast, similar experiences led the male medical students to the opposite conclusion from that of their female peers: They should seek and enjoy more transitory relationships in the future because such a course would be less damaging to their mental balance and career aspirations than would more involved relationships. These findings and parental-investment theory suggested the following predictions.

Prediction 1. Even when women feel they do not want to become emotionally involved with a person, sexual intercourse will make them feel vulnerable, and thoughts will cross their minds like "Does he care about me, is sex all he was after, will he dump me in the morning?" These thoughts will be difficult to control. When women do like their partners, even in the first sexual encounters, marital/parental-investment thoughts will cross their minds, like, "What would our kids look like, what would our wedding be like, where would we go on our honeymoon?" For men, increasing numbers of partners will correlate with ease of not becoming emotionally involved or feeling emotionally vulnerable, and not having investment thoughts. Increasing numbers of sex partners for women will have null or opposite effects on these tendencies in women.

Prediction 2. Women's primary motivation in partner selection is to secure high-quality investment, and this is also true for highly sexually active women. Consequently, women's number of sex partners will not correlate with a lack of desire to marry or with a desire to delay marriage.

Women's sexual activity will, however, correlate negatively with a belief that they might marry someone they meet in college. In comparison, men's sexual activity is determined more by the opportunity to indulge in partner variety (Ellis and Symons, 1990; Symons, 1979, 1987, 1992; Townsend, 1987, 1992). Consequently, more sexually active men will want to delay marriage, and men's number of sex partners will be unrelated to whether they think they might marry someone they meet in college.

METHOD

Sample 1

Subjects consisted of female ($n = 175$) and male ($n = 113$) students in a general requirement, upper-division anthropology course.

Sample 2

Male ($n = 130$) and female ($n = 123$) students in an introductory psychology course participated for course credit. All subjects in both samples were unmarried and between the ages of 18 and 23.

Instruments and Procedure

Participants completed the anonymous surveys in same-sex groups of 10 to 20. Participants were informed that the investigators were interested in the types of people different individuals would interact with in certain situations. The questions analyzed below were embedded in a 102-item questionnaire. The Sample 2 survey served to replicate the results of Sample 1, and provided an opportunity to obtain additional information. To this end, several questions were added and Simpson and Gangestad's SOI was included (1991a, 1991b, 1992). This inventory consists of seven questions: number of sex partners in the previous year, number of 1-night stands, number of partners foreseen in the next 5 years, frequency of sexual fantasies about people other than the current dating partner, and three questions answered on Likert scales, "Sex without love is OK," "I can imagine myself being comfortable and enjoying 'casual' sex with different partners," and "I would have to be closely attached to someone (both emotionally and psychologically) before I could feel comfortable and fully enjoy having sex with her/him." The SOI correlates highly with subjects'

total number of sex partners and numerous other measures of sexuality, both behavioral and attitudinal (Simpson and Gagestad, 1991b, 1992).

RESULTS

Sample 1

Prediction 1

Sixteen percent of the females and 6% of the males reported that they had never had sexual intercourse; 56% of the females and 37% of the males said that they had had fewer than 5 partners; 22% of the females and 31% of the males reported fewer than 12; 4% of the females and 24% of the males reported having >12 partners: $\chi^2(18) = 35.98, p < 0.0001$. Seventy-three percent of the males and 36% of the females reported that they had had sex on at least one occasion with a person with whom they did not want to get emotionally involved; 27% of the males and 63% of the females said that they had never had this experience: $\chi^2(1) = 37.22, p < 0.0001$. Subjects then answered the following question on a 5-point scale (1 = very easy; 5 = very difficult): "If you answered 'yes' to the previous question, did you find it difficult to keep from getting emotionally involved with this person?" When those subjects who had never had this experience were eliminated, 69 females and 83 males remained. Of those remaining subjects, 31% of the females and 8% of the males found it difficult or very difficult; 37% of the females and 68% of the males found it easy; the remainder were undecided: $\chi^2(2) = 10.84, p < 0.005$. These subjects' responses to this question were then correlated with their reported total number of sex partners. The results are displayed in Table I. Higher numbers of sex partners correlated with the ease with which male subjects separated sex from emotional involvement, $r(82) = .34, p < 0.0002$; these correlations did not reach significance for female subjects, $r(68) = -.08, ns$; this sex difference was significant, $z = 1.71, p < 0.04$.

Seventy-three percent of the females and 37% of the males agreed or strongly agreed that sexual relations made them feel emotionally vulnerable even when they did not want to get emotionally involved (Question 4 in Table I); 9% of the females and 27% of the males disagreed or strongly disagreed; the rest were undecided: $\chi^2(4) = 49.52, p < 0.0001$. Subjects' responses to this question were correlated with their total number of sex partners. Females with greater number of sex partners were more likely to report that intercourse made them feel emotionally vulnerable even when they did not want to become emotionally involved. In contrast, males with

Table I. Correlations Between Total Number of Sex Partners, SOI Scores, and Emotions Questions for Two Samples of Undergraduates—By Sex^a

Question	Sample 1		Sample 2		SOI scores	
	No. sex partners		No. sex partners		Males	Females
	Males	Females	Males	Females	Males	Females
1. I feel I should be emotionally involved with a person before having sex with him/her.	.45 ^e	.29 ^e	.37 ^e	.42 ^e	.60 ^e	.61 ^e
2. When I had sex with a person with whom I did not want to get emotionally involved, I found it easy-difficult to keep from getting emotionally involved with this person.	-.34 ^d	-.08	-.16	-.06	-.08	-.11
3. When I had sex on a regular basis with someone I did not want to get emotionally involved with, I found it easy-difficult to keep from getting emotionally involved with this person.	—	—	-.34 ^e	-.55 ^e	-.31 ^e	-.56 ^e
4. Even if I don't want to be emotionally involved with someone, if I have sex with him/her, I begin to feel vulnerable and would at least like to know he/she cares.	.19 ^c	-.16 ^c	.20 ^b	-.16	.19 ^b	-.09
5. Even when I've first met a person, if I have sex with her/him, afterwards, thoughts cross my mind like: "What would it be like being married to her/him; what would our wedding be like; what would our kids look like?"	.22 ^c	.00	.29 ^d	-.07	.17 ^b	-.00
6. Do you think you'll marry anybody you date in college (definitely-definitely not)?	—	—	.14	.20 ^b	.08	.27 ^c
7. I want to get married: during college, right after college, 1-2 yrs. after college, 5, 10, 15, 20 years, never.	—	—	.18 ^b	.01	.22 ^c	.07

^aSample 1: n = 113 males and 175 females. Sample 2: n = 132 males and 124 females. For Sample 1, question 2, n = 69 females and 83 males, and for Sample 2, Question 2, 55 females and 83 males because subjects who had never had these experiences were omitted from these computations. For Question 3, n = 16 females and 44 males for Sample 2. Dashes (—) indicate a question that was not asked for that sample. SOI = Sociosexual Orientation Inventory (Simpson and Gangestad, 1991b); see text for explanation.

^bp < 0.05.
^cp < 0.01.
^dp < 0.001.
^ep < 0.0001.

more partners were more likely to disagree with this proposition: female $r(172) = -.16$; male $r(110) = .19$, both $ps < 0.01$. The responses to this question of those subjects who reported that they had never had sex with someone with whom they did not want to become emotionally involved were then eliminated. The magnitude of the correlations remained approximately the same, but the correlation for females did not reach the 0.05 confidence level (see Table I): female $r(63) = -.20$, $p < 0.11$; male $r(79) = .33$, $p < 0.003$. The sex difference in the correlations, however, was significant: $z = 3.21$, $p < 0.0007$.

Sample 2

Prediction 1

Sex differences in Sample 2 were similar to those described for Sample 1. Males tended to have more sex partners than females did, $\chi^2(3) = 18.29$, $p < 0.001$. Males were more likely to have sexual relations without wanting emotional involvement, $\chi^2(4) = 23.73$, $p < 0.0001$. Omitting those who had never had the experience, males were more likely to find it easy to have sex without becoming emotionally involved, $\chi^2(2) = 8.82$, $p < 0.025$. Sexual relations were more likely to make females feel emotionally vulnerable even when they did not want to become emotionally involved, $\chi^2(5) = 43.95$, $p < 0.0001$.

The correlations for the preceding questions with subjects' total number of sex partners were almost identical for Samples 1 and 2 (see Table I). The only exception was that the correlation between number of partners and Question 2 (easy–difficult not to get emotionally involved) was slightly larger for Sample 1 males than for Sample 2 males. Males were more likely than females to continue sex on a regular basis when they did not desire emotional involvement, $\chi^2(1) = 28.49$, $p < 0.0001$. Females seemed even less likely than males to continue sex on a regular basis when they did not desire emotional involvement (Question 3, 13% female 34% male), than to try this at all (Question 2, 44% female, 64% male). This possibility was tested and the result indicated a possible trend, $\chi^2(1) = 3.15$, $p < 0.10$. The correlations with female's number of partners were nonsignificant for Question 2 but significant for Question 3, despite the fact that only 17 females reported having sex on a regular basis when they did not want to get emotionally involved with that person. These findings suggest that only a limited number of females try sex on that basis, but for those who do, it becomes easier to avoid emotional involvement with increasing number of partners. Increasing numbers of partners, however, tended to have opposite effects

on male's and female's tendency to feel emotionally vulnerable for both samples (Question 4), and the results were similar for the tendency to have "investment" thoughts after intercourse (Question 5). Comparing Question 3 with Questions 4 and 5, it may be that the females who engage in sex without emotional involvement on a regular basis and with more partners, have as many investment thoughts, and as much or more anxiety about not having investment as females who engage in them to a lesser extent, but the former group has simply become more adept at managing these feelings than the latter. This possibility will be explored in Sample 4, below.

Prediction 2

Forty-five percent of the females and 33% of the males thought they would marry someone they met in college; 44% females and 54% males were undecided; 10% females and 12% males thought not $\chi^2(2) = 6.84, p < 0.05$. Female's SOI scores and number of sex partners correlated negatively with thinking they would marry someone they met in college, respectively, $r(118) = .27, p < 0.002, r = .20, p < 0.02$; the correlations for males did not reach significance, $r(127) = .08, ns, r = .14, p < 0.11$.

Fifty percent of the females and 39% of the males wanted to marry during, or up to 2 years after college; 44% females and 55% males wished to marry 5 to 10 years after college; 5% females and 5% males, 15 years after college to never, $\chi^2 = 5.03, p < 0.10$. Male's SOI scores and number of partners correlated with a desire to postpone marriage, $r(128) = .22, p < .01, r = .18, p < 0.04$; the correlations for females did not reach significance, $r(117) = .07, r = .01, ns$. The sex differences between the correlations approached the 0.05 level of confidence: For the correlations between SOI scores and postponement of marriage, $z = 1.22, p < 0.11$; between subjects' SOI scores and believing they would marry someone they met in college, $z = 1.56, p < 0.06$.

Question 1 in Table I stated, "I feel I should be emotionally involved with a person before having sex with him/her." Sample 1 females were more likely than males to agree with this statement, $\chi^2(4) = 72.84, p < 0.0001$. For Sample 1, question 1 correlated negatively for *both sexes* with number of sex partners (see Table I); having sex with someone with whom they did not want to become emotionally involved, female $r(173) = .32$, male $r(110) = .38$, both $ps < 0.0001$; and the ease they experienced in avoiding emotional involvement with that person, female $r(68) = .28, p < 0.007$, male $r(82) = .34, p < 0.0002$. Like very similar items in other surveys, this question is normative and attitudinal (Roche, 1986; Simpson and Gangestad, 1991b), whereas the questions concerning feelings of vulnerability and mari-

tal thoughts in Table I were designed to tap the actual feelings that occur when a subject engages in coitus. These results suggest that, compared to attitudinal or normative statements like Question 1, women's responses to the questions concerning emotional vulnerability and investment thoughts may covary less with other factors in women's sex lives, i.e., they may be relatively constant, whereas this is less true of men. In other words, if these measures are valid, sexual intercourse elicits just as many feelings of bonding, desire for investment, and vulnerability in more-partner women as in few-partner women, whereas in men, greater numbers of partners correlates with increasing ease in detaching sex from emotional vulnerability and thoughts of investment. To explore the emotional reactions of young women who are experienced in low-investment copulation, and to compare their reactions to the reactions of their male peers, a third sample was chosen.

Sample 3

In contemporary Western societies, words such as love and commitment serve as vernacular euphemisms for investment. When men are unwilling or unable to meet women's standards for investment of time, resources, and nurturance, women are less likely to "love," and sexual relations become less desirable and satisfactory (Blumstein and Schwartz, 1983; Roche, 1986; Townsend, 1987). Sexual access thus becomes a bargaining chip that, consciously or unconsciously, women trade for emotional and material investment, whereas men trade investment for female sexuality and beauty (Denney *et al.*, 1984; Townsend, 1987, 1989; Townsend and Levy, 1990a, 1990b).

Prediction 3

Women will report that when they are upset or disappointed with their partners, they usually will not have sex with them. This will be true even of women with the highest numbers of sex partners and single sexual encounters.

The 25 males and 25 females with the highest SOI scores in Sample 2 were selected for closer analysis. These males' mean SOI score was 137.12; their range was 123–171. The 25 female's mean SOI score was 98.36; their range was 82–162. The female mean SOI score in the study detailing the development of the SOI was 38.90, $SD = 26.90$ (Simpson and Gangestad, 1991b). Thus, all of the current sample's female scores far exceeded those subjects' mean score and presumably would be classified as exhibiting an "unrestricted" sociosexual orientation by the authors' criterion (they used the median score to classify the sample restricted and unre-

stricted). The 50 subjects' responses to the questions concerning emotional reactions to sexual reactions appear in Table II.

Males were more likely than females to have had sex on their partners request when they were still upset with their partners, but this sex difference was not strong, $\chi^2(1) = 3.34, p < 0.10$. It could be, however, that although the reported frequency is roughly equivalent for males and females, the motivations underlying their behavior are different. This possibility is explored in Sample 4, below. In general, the results in Table II mirror those in Table I. Although the Sample 3 females are much more sexually active than the females in Samples 1 and 2, their male counterparts are even more so; consequently, sex differences remain strong for most of the questions. What is striking is the lack of a sex difference for Question 1 but the presence of a difference for Question 3. Among these sexually active undergraduates, women and men were equally likely to try sex "for its own sake," i.e., sex without emotional involvement (Question 1), but women were less likely than men to continue to have sex on a regular basis with someone when they did not want emotional involvement (Question 3). The literature we examined in the introduction suggests that women eschew this type of experience because they usually see no point in sexual relations that do not "lead anywhere," i.e., toward a higher-investment relationship, or they do try it and have emotional reactions that impel them to seek investment and to terminate sexual relations if investment is inadequate (Edwards and Booth, 1976; Hill *et al.*, 1979; Townsend, 1987). To investigate this proposition, a fourth sample was chosen.

Sample 4

Prediction 4

Because the feelings of bonding and vulnerability evoked by sexual intercourse are difficult to suppress, control of their own emotions and of their partners' emotional involvement (i.e., partners' willingness to invest) will be consciously perceived as a problem by women. Women who engage in low-investment copulation therefore develop techniques for controlling their emotions (as well as for improving quality of investment). Some methods of controlling their negative emotional reactions to low-investment copulation will be to eliminate sex or limit sexual access to avoid experiencing discrepancy between desired investment and investment offered; date others, including keeping a faithful, reliable investor in reserve; suppress emotions, consciously or with drugs or alcohol; do not think about him, avoid sight of him.

Table II. Fifty Highly Sexually Active College Students' Reactions to Casual Sexual Relations^a

	% Males	% Females	df	χ^2
1. Have you ever had sex, and you knew before you had sex that you did not want to get emotionally involved with this person?				
a. yes	92	88		
b. no	8	12	1	1.02
2. If you answered "yes," did you find it difficult to keep from getting emotionally involved with this person?				
a. easy	74	43		
b. difficult	26	56	1	4.38 ^c
3. Have you ever continued to have sex on a regular basis with someone you did not want to get emotionally involved with?				
a. yes	76	37		
b. no	24	63	1	7.41 ^d
4. If you answered "yes," did you find it difficult to keep from getting emotionally involved with this person?				
a. easy	74	22		
b. difficult	26	77	1	6.64 ^d
5. I feel I should be emotionally involved with a woman/man before having sex with him/her				
a. agree	12	40		
b. ambivalent	16	28		
c. disagree	72	32	2	8.40 ^e
6. If I have sex with someone I just met, after we have sex, thoughts cross my mind like, "Is sex all she/he was after, will she/he dump me in the morning, will this relationship last?"				
a. I have thoughts like this.	36	68		
b. I don't have thoughts like this.	64	32	1	5.12 ^e

Table II. Continued

	% Male	% Female	df	χ^2
7. Even if I think I don't want to be emotionally involved with a person, if I have sex with her/him a few times, I begin to feel vulnerable and would at least like to know she/he cares about me.				
a. agree	25	84		
b. ambivalent	25	12		
c. disagree	50	4	2	18.64 ^f
8. Even when I've first met a person, if I have sex with her/him, thoughts cross my mind like: "I wonder what it would be like being married to her/him; what would our wedding be like; what would our kids look like?".				
a. I sometimes have thoughts like this	48	87		
b. I don't have thoughts like this.	52	13	1	8.67 ^d
9. When my partner has done something to upset me, I don't feel like having sex with her/him.				
a. agree	20	52		
b. disagree	80	48	1	5.54 ^c
10. Have you ever had sex upon your partner's request when you were still upset with her/him? If so, how often?				
a. frequently	74	48		
b. infrequently	26	52	1	3.34 ^b

^aN = 25 males and 25 females; above percentages are occasionally based on n = 23 or 24 due to missing observations. Subjects recorded answers on 9-point scales; cells were combined when expected frequencies were less than 5.

^bp < 0.10.

^cp < 0.05.

^dp < 0.01.

^fp < 0.0001.

Table III. Sexual Negotiation: Oral Interview Responses of 23 College Females^a

Questions	%
1. If you have ever had sex with someone you did not want to get emotionally involved with, did you find difficult to keep from getting emotionally involved with this person?	
a. Very easy	4
b. Easy	4
c. Indifferent	4
d. Difficult	42
e. Very difficult	18
f. Difficult if I liked him	27
2. If you had difficulty, how did you try to control your feelings?	
a. I try to control feelings and not think about the guy	21
b. Dated others	30
c. Avoided him	17
d. a and b	17
e. a and c	9
f. Was not difficult	4
3. Even if you are not emotionally involved with a guy and don't want to be emotionally involved, if you have sex with him, how does it make you feel?	
a. Wonder if he cares at all, how he feels about me; these feelings are difficult to control	65
b. Difficult only if I like the guy	13
c. No difficulty; indifferent	8
d. Occasional moral regrets	13
4. When you first have sex with someone, do thoughts cross your mind like, "Is sex all he was after and is he going to dump me in the morning?"	
a. Yes	96
b. No	4
5. In the first stage of sexual relationship in which you feel like you really like your partner, do thoughts cross your mind like, "What would our wedding be like, where would we go on our honeymoon, what would our kids look like?"	
a. Yes	57
b. No	43
6. Do you ever test your boyfriend to see where he stands, or how far you can push him before he draws the line? If so, what is it you're looking for when you do this?	
a. Jealousy	34
b. Dominance	39
c. Willingness to invest (nurturance, generosity, devotion)	61
d. Limits of his trust	4
e. Respect for my freedom and independence	4
f. Never test boyfriend	21
7. Do you feel like you need an element of control in your relationships? If so, what specifically do you feel you need to control?	
a. How he feels about me (his willingness to invest)	8
b. My own emotions and dependency on him	26
c. a and b	53
d. Need to control everything	13

Table III. Continued

Questions	%
8. When you're upset with your partner, will you still have sex with him if he wants it?	
a. No	70
b. Usually not	17
c. Yes, if necessary to secure or maintain relationship	8
d. I don't know	4

^aSome of the total percentages for a question exceeded 100 because subjects mentioned more than one alternative.

If women are typically choosier than men and they select and reject partners largely on the basis of investment, they should develop methods to evaluate quality of investment, and to detect shirking, false advertising, and lack of enthusiasm. One of these methods is *testing*. Testing is behaving in a way that is likely to elicit from a partner evidence of a particular trait, for example, jealousy, nurturance, or dominance.

Prediction 5

Women will report that they test their partners at least occasionally for displays of traits that indicate ability to invest, like dominance and prowess, and traits that indicate a willingness to invest, like generosity, jealousy, affection, and nurturance.

Procedure

McClelland (1986) proposed that abstract, linear, attitudinal measures do not tap people's actual emotional reactions to romantic-sexual experiences as well as some more oblique methods. Two female research assistants therefore conducted oral interviews with 30 women who had high SOI scores. These interviews included some open-ended as well as forced-choice questions and allowed the respondents to describe the vicissitudes of their love lives in their own words.

Female students in an upper-division anthropology class (Sample 1) were asked whether they would be willing to be interviewed in person by a female research assistant concerning their marital goals and dating and sexual experience. Students were also requested to ask their friends and roommates if they would be willing. An initial opportunity sample of 30 sexually active females was identified. The female research assistant made

appointments for volunteers by telephone and interviewed them in their own or the interviewer's apartment. Each interview lasted from 1 to 4 hours. Interview responses were coded independently by two research assistants. Intercoder reliability was .82. Two of the original 30 subjects were never interviewed because of logistics and time constraints; there was nothing systematic about these losses. The mean SOI score of the remaining 28 females was 70.24, $SD = 31.13$. To include only those subjects with relatively high SOI scores, the 5 lowest scorers were omitted from the current analysis (their scores ranged from 25 to 43). The mean SOI score of the 23 remaining females was 79.70, $SD = 27.23$; their range, 44 to 126.

Results

Results of the 23 oral interviews are displayed in Table III. The results of the 5 highest scorers are profiled below. The top five's mean SOI score was 113; their SOI score range was 101–126.

Subject 19's SOI score was 126. She has had a lifetime total of four 1-night stands and within the past year 6 different sex partners. She agreed that "Sex without love is OK." (she marked 7 on a 9-point scale), and fantasizes a few times each week about someone other than her current partner. When asked whether she thinks she should be emotionally involved with someone before having sex with him, she said that she would like to think this way, but that in all honesty she really does not. Intercourse does, however, make her feel differently about a partner because they shared something special, that there is a link between them because they were intimate, but this does not necessarily mean that they have to become great friends or that it must lead to a serious relationship. During their first sexual encounter, she does wonder whether sex was all her partner was after and how he will treat her in the morning, but she does not have marital thoughts. She reports that she frequently tests her boyfriend to see how he feels about her. She says she must have control over what she does and how fast she lets her emotions show. She feels very afraid of being alone. She has occasionally kept "safe" partners (i.e., males willing to invest) in reserve while she was looking for or actually seeing another partner. She describes herself as a very emotional person. Due to this, she says she has had many 1-night stands that have "broken my heart." She reports that she was very open with her sexuality in the past. When she was younger, she says she had no qualms about sleeping with any guy, but now she does not fool around because she is in a serious relationship. She relates that she gets very angry when her boyfriend thinks that she will go to bed with him when she is mad. She responds to this by arousing him as much as

she can and then refusing to have intercourse. She said that "if he thinks he has that much control over me that I will just go to bed at his beck and call," then she must show him that she "still has a lot of control too."

Subject 3's SOI score was 118. Within the past year she had had 6 different sex partners and a lifetime total of five 1-night stands. She strongly agreed that "Sex without love is OK." (she marked 9 on a 9-point scale), and fantasizes once every 2 weeks about someone other than her current partner. When asked whether she thinks she should be emotionally involved with someone before having sex with him, she answered "No." Intercourse only makes her feel differently about a partner if she likes him; then she wonders if he cares about her. During their first sexual encounter, she does wonder whether sex was all her partner was after and how he will treat her in the morning, but she does not have marital thoughts. She reports that she frequently tests her boyfriend to see if he will handle situations in a way she respects. She says she has to have control of herself: "I can't get so wrapped up in him that I forget about myself...I have to maintain my own personality and ideas. I don't want to lose what is important to me." She states that she is not especially bothered by a 1-night stand. She thinks of it as "opening up," and if it was only for 1 night, that is okay. Whenever she has felt that her partner was taking her for granted, she reacted to this by expressing her dissatisfaction. If he did not respond by being more considerate of her wishes and feelings, she would break up with him. Subject 3 characterizes herself as strongly feminist, and reports that she does not "need men in any way." She says she hopes to marry when she is about 30 years old.

Subject 28's SOI score was 111. Within the past year she has had 4 different sex partners and a lifetime total of eight 1-night stands. She weakly agreed that "Sex without love is OK." (she marked 6 on a 9-point scale), and fantasizes once every 2 or 3 months about someone other than her current partner. She had trouble not getting emotionally involved only if she liked a guy. Then she would worry the next day about what he thought of her, whether he would call her, and she would have marital thoughts. But if she was only doing it because she was physically attracted to him and only wanted a 1-night stand, then she did not have a hard time not getting emotionally involved. When asked whether she thought she should be emotionally involved with someone before having sex with him, she said in the past she did not think so, but now she thinks she should be emotionally involved: "I used to have a guy's point of view that I could just sleep around with whoever I wanted, but now I find this demeaning. [Why?] "Sex is like giving a part of yourself to a guy, and if you do this without any emotional involvement, then you are showing a lack of respect for yourself." Now if she tries to do that, she begins to "feel used." Her attitude changed when she "grew up and found a serious boyfriend." She

then lost all interest in sleeping around and began to feel more respect for herself, a feeling she says she now enjoys. Before she met her current partner, she felt as though sex was just a competition between friends to see who could get the most of it. Even before her serious boyfriend, however, if she really liked a guy, then she would get very emotionally involved when she had sex with him. She would even hold out on the guy to be sure that he would not think she was easy: "During the game, I would think of sex like a guy does...it's all about getting laid with no strings attached." But when she was after emotional involvement, she "had to think of sex like a woman usually does with all of the emotions involved." Subject 28 does not have sex with her current partner when she is angry with him because, "I would not feel close to him if I was mad. The physical pleasure would not be worth it because we would be putting aside our emotions, which are more important...Besides, it would be like giving in to him, and I won't give him what he wants if he doesn't give me what I want."

Subject 4's SOI score was 109. Within the past year she has had 3 different sex partners and has a lifetime total of sixteen 1-night stands. She agreed that "Sex without love is OK." (she marked 7 on a 9-point scale), and fantasizes once every 2 weeks about someone other than her current partner. When asked whether she thinks she should be emotionally involved with someone before having sex with him, she answered "No." When asked how she reacts if a guy she likes breaks up with her, she reported that she surrounds herself with friends and goes out with other guys, but she does not sleep with them right away because: "that makes me feel worse. I go out to make sure people are still attracted to me...to build my self-esteem." During initial sexual encounters, if she likes the guy, she does wonder whether sex was all her partner is after and how he will treat her in the morning, and she does have marital thoughts. Subject 4 reports that she was very promiscuous when she was younger, in high school, but within the last 6 months she has become very picky about whom she sleeps with. She explained, "it was time to settle down and start getting serious about finding a husband...(she hopes to be married by age 26)...Everyone should have their fun for a while and go crazy once they're away from their parents, but after a while, it isn't fun anymore and you want to start getting serious with someone." [Why?] "I didn't like waking up with strange guys in strange places; it bothered me sometimes." [How did it bother you?] "It made me feel sort of used." She says that she will sometimes have sex with her partner when she is upset with him "to keep him happy." But, if the relationship is very stable and she feels that he has really upset her, she will not sleep with him.

Subject 25's SOI score was 101. Within the past year she has had 2 different sex partners and a total of six 1-night stands. She strongly agreed that "Sex without love is O. K." (she marked 8 on a 9-point scale), and fan-

tasizes once every 2 or 3 months about someone other than her current partner. When asked whether she thinks she should be emotionally involved with someone before having sex with him, she said, "No, sex is not that big of a deal...When you first have sex, it is a big deal, but once you've lost your virginity, it gradually becomes less important to be in love with the guy. The more you have sex, the less of a big deal it becomes." After initial sexual encounters, however, she does wonder whether sex was all her partner was after and how he will treat her in the morning, and she does have marital thoughts, occasionally even before she has sex with someone. She reports that she does have difficulty not getting emotionally involved when she has sex: "but if the guy is really a jerk and I have nothing in common with him, then it's a lot easier [not to get emotionally involved] than if I like the guy." She says that once she sleeps with a guy, she feels that there is: "a link between the two of us...we've shared our bodies and left ourselves vulnerable to each other...I think of the guy as being mine in a way, even though I know we don't have a relationship." She reports that she frequently tests her current boyfriend to see how much he likes her, and sometimes she flirts with other guys to see how jealous her boyfriend will get. Subject 25 explained that she gets attached to guys very easily because she is "very emotional"; she thought this was "natural for all girls." She reports that she was raised to have sex only when she was in love with someone and married to them. She thinks that this is partly why she always gets attached to a guy after she has had sex with him: "It's like I can justify my actions by thinking, even if I wasn't involved with the guy before I had sex with him, it's okay 'cause I am now...[in this way] I don't have to feel that I've completely gone against the morals I was raised with." She would not have sex with her partner when she is angry with him because it would be "belittling my feelings" and would "give him control over me because I'm letting him do whatever he wants."

DISCUSSION

The findings of all four samples support Prediction 1. Even when women felt they did not want to become emotionally involved with a person, sexual intercourse typically made them feel vulnerable, and thoughts crossed their minds like "Does he care about me, is sex all he was after, will he dump me in the morning?" These thoughts were difficult to suppress. When women did like their partners, even in the first sexual encounters, parental-investment thoughts could cross their minds, like, "What would our kids look like, what would our wedding be like, where would we go on our honeymoon?" In Samples 1-3, men were more likely than women to engage in sex when they did not desire emotional involvement, and more likely to

maintain regular sexual relations with persons with whom they did not want emotional involvement. Men with greater numbers of partners found it more desirable to have sexual relations without emotional involvement, were less likely to have investment thoughts, and found it easier not to feel vulnerable than did their female counterparts. For example, the "vulnerable" question elicited a strong sex difference even when only the most sexually active males and females were selected for comparison (see Table II).

The Sample 2 findings suggested that only a limited number of women tried sex on a regular basis with someone when there was little or no emotional involvement, but for those who did, increasing numbers of partners made it easier to avoid emotional involvement. Increasing numbers of partners, however, tended to have opposite effects on men's and women's tendency to feel emotionally vulnerable and to have "investment" thoughts after intercourse. If these measures are valid, sexual intercourse may elicit just as many feelings of bonding, desire for investment, and vulnerability in multiple-partner women as in few-partner women, whereas in men, greater numbers of partners correlates with increasing ease in detaching sex from emotional vulnerability and investment.

Some of the women in the oral interviews (e.g., Subject 19) were not raised with a restrictive morality and do not espouse one now, but the predicted emotional reactions to intercourse and to regular low-investment intercourse occurred nevertheless. Other subjects were raised with a more traditional morality but had genuinely repudiated such values, at least on a cognitive level (e.g., Subject 25); their emotional reactions, however, were identical to the previous group's reactions. These results are consistent with the proposition that the pattern of basic sex differences in motivations and arousal identified by the Kinsey researchers, and the opportunity to realize these differences are better predictors of actual behavior than background socialization (Buss and Schmitt, 1993; Ellis and Symons, 1990; Kinsey *et al.*, 1953; Knoth *et al.*, 1988; Townsend, 1987, 1992; Townsend and Levy, 1990b; Townsend and Roberts, 1993). Alternative explanations to the current one are discussed more fully below.

Prediction 2

Women with multiple partners wanted to marry as soon as women with fewer partners, and women who believed that they might marry someone in college had fewer sex partners. In contrast, more sexually active men wanted to delay marriage, and believing they might marry someone they met in college did not significantly affect their sexual activity. These sex differences in the correlations between sexual activity and marital prospects

were not strong but they were in the predicted direction. Together with the other findings, they suggest that the proceptive behavior of highly sexually active women in college may represent a mating stage rather than a preferential lifetime strategy—a possibility that Simpson and Gangestad acknowledged (1991a). The oral interviews support this interpretation. Many undergraduate women realize that they will probably not marry anyone they date in college, and their own career plans, or the uncertainty thereof, cause them to try to keep from getting involved. On the other hand, they do not want their sexual relationships to be meaningless, i.e., to be devoid of investment, and their emotions make such a course difficult, so they walk a tightrope in which they try to maintain the level of investment-commitment that is convenient at the moment, and at the same time ensure that their partner is at the same, or a little higher level of willingness to invest. Too much higher is a problem too, because it would restrict their career ambitions and potential opportunities to find someone better. This finding illuminates the other side of the coin: These women also found men who were *too* willing to invest unattractive (see Prediction 5 below).

The oral interviews thus indicated that multiple partners and 1-night stands represented a temporary stage of experimentation for some undergraduate women: a time to test their attractiveness in competition with other women, or exact revenge on an ex-lover. By their senior years, some of these women had settled into monogamous relationships and looked back on their previous mode with regret, or as the naive experimentation of someone who “didn’t know what sex and love were all about.” What is striking is that, although some of the oral interviewees had no regrets at all, and some even said that phase had been “fun,” once they experienced sexual relations in stable, affectionate, committed relationships, they discovered that it felt “right.” Respondents said they had no desire to return to their previous mode, and in fact exhibited negative reactions to that prospect. Of the 5 highest SOI scorers profiled above, 3 showed this pattern.

Prediction 3

Most of the oral interviewees reported that when they were upset or disappointed with their partners, they usually would not have sex with them. The only exceptions were women who said they would go ahead and have sex even when they were angry or upset “because he wanted it” in order not to endanger the relationship. The profiles (above) of the 5 highest SOI scorers indicated that even women with the highest numbers of sex partners and single sexual encounters tended to exchange sexual access in this way

for signs of investment (Symons, 1979; Townsend, 1987; Townsend and Levy, 1990a).

Prediction 4

Control of their own emotional involvement and their partners' level of involvement (i.e., their willingness to invest) was consciously perceived as a problem by the oral interviewees. Because the feelings of bonding and vulnerability evoked by sexual intercourse were difficult to suppress, women who engaged in low-investment copulation developed techniques for controlling their emotions—as well as for improving quality of investment. Some methods of controlling their negative emotional reactions to low-investment copulation were eliminate sex, or limit sexual access to avoid experiencing the discrepancy between desired investment and investment offered; date others, including keeping a faithful, reliable investor in reserve; suppress emotions, consciously or with drugs or alcohol; do not think about him, avoid sight of him. These techniques may help to explain Tanfer and School's results (1992). As women become older and have increasing numbers of sex partners, they become more adept at protecting themselves, and at ensuring that a partner's investment is sufficient for their current needs, and for the way they define the relationship at the moment. Despite this accommodation, the primary motivation and goal of most of these women is to establish a stable, monogamous, affectionate relationship with a high quality mate, i.e., a mate with superior willingness and ability to invest. Impediments to this goal tend to cause frustration, dissatisfaction, and distress (Blumstein and Schwartz, 1983; Ellis and Symons, 1990; Kinsey *et al.*, 1953; Symons and Ellis, 1989; Townsend, 1987, 1989).

Prediction 5

Most of the women in the oral interviews said that they liked a "challenge," a guy that was "hard to get" but not impossible. When queried about what "getting" a guy meant, subjects gave various examples of willingness to invest: take her to nice places, call frequently, be affectionate, willing to spend quality, nonsexual time with her, treat her with respect, not pursue other women. Men who "came on too quickly," with these signs of willingness to invest were likely to be labeled nerds, wimps, geeks, or jerks. In this collegiate subculture, a vernacular term for a man who is completely willing to court a female and do anything she wants is *whipped*, which is an abbreviation of the phrase, *pussy-whipped*. This term seems to

be as popular among women as among men, at least in this subculture. Subject 25, for example, said that she needed a "challenge." If a guy is "too nice" and "sucks up" to her too much, it gives her an "inferiority complex because a guy who would do that may not be as great as I think he is." Subject 19 reported that if a guy agrees with everything she says, she tries to provoke him "just to see if I can get an argument out of him." She also brings up "topics he knows more about" than she does, so that "he has to take the conversation away" from her. This type of testing and evaluation of male prowess and dominance appears to be a pervasive element in heterosexual relationships (Blumstein and Schwartz, 1983; Townsend, 1987, 1989). Although some men want to marry women with good educations and jobs, in judging partners' sexual attractiveness, most men are indifferent to the signs of dominance, prowess, and competitiveness that seem to be essential components of attractiveness when women judge partners (Sadalla *et al.*, 1987; Townsend and Roberts, 1993). As an essential component of sexual attractiveness, dominance, like spontaneous visual sexual arousal and true sexual fetishism, may reflect almost absolute sex differences in the mechanisms that mediate sexual arousal and attraction (Hill *et al.*, 1987; Knoth *et al.*, 1988; Pillard and Weinrich, 1987; Sadalla *et al.*, 1987; Stoller, 1982; Symons, 1979, 1987; Weinrich, 1988).

Testing for dominance and the other forms of testing in Table III appeared to be semiconscious. Subjects did not call it "testing" and indeed had no specific term for these actions. But they had no problem recognizing and acknowledging they engaged in these actions when asked if they sometimes pushed their partners to see if they could get an emotional reaction out of them, or to see how far they could go before their partners drew the line, or if they sometimes flirted with other men to see whether their partners would get jealous. Most of the oral interviewees were not clearly aware that they performed these actions until discussing them pulled them into focus.

These women's emotional reactions to low-investment copulation, and more specifically, to loss of control over level of investment in sexual relationships, fulfill the criteria for emotional-motivational mechanisms proposed by evolutionary theory. These emotions can be consciously overridden on a behavioral level, but negative feelings intrude into consciousness in response to inadequate investment despite acceptance of liberal sexual morality. These emotions motivate remedial action: They urge the subject to elicit signs and reassurance of willingness and ability to invest (Buss, 1989b). If these are not forthcoming, the subject can experience extreme emotional distress until she is impelled to terminate the relationship. When perceived investment is insufficient, sexual relations become less desirable and satisfactory, even when the subject does not know why

this is true, or does not believe it should be true. Hence, even those subjects who vehemently repudiated a double standard of sexual morality typically refused to have sexual relations when they were dissatisfied with investment.

McClelland (1986) has marshalled an impressive array of evidence indicating that formal, abstract, attitudinal and normative questions are not necessarily the best measures to tap differences in male and female sexual psychologies. More oblique measures like storytelling or TATs often have better predictive validity. The oral interviews presented here suggest that being able to express one's feelings in one's own terms in an informal, conversational atmosphere may also open an avenue to the emotions associated with sexuality. This research method may thus provide a valuable complement to formal, linear instruments.

Neurophysiologist LeDoux (1989) argued that the amygdala is a principal mediator of human emotions. In cognitive processing, sensory inputs must first be transmitted beyond the sensory cortex to multimodal integrative areas before they reach the hippocampus—one of the most important structures in cognition. In contrast, the amygdala receives inputs directly from the thalamus and association areas of the cortex. Affective judgments thus appear to occur more rapidly than cognitive processing and often operate on the basis of stimulus features rather than recognition of whole objects. Because this mechanism is the precursor of emotional experience, it operates by definition outside of conscious awareness. As described by LeDoux, the amygdala system (i) could explain why oblique measures are sometimes better predictors of sexual emotions and behavior than formal linear instruments; (ii) is a likely candidate to perform the functions of the emotional mechanisms proposed by evolutionary researchers (Buss, 1989b; Daly *et al.*, 1982; Daly and Wilson, 1988; Nesse and Lloyd, 1992; Symons, 1979, 1987; Trivers, 1985).

Alternative Interpretations

Some authors would argue that the emotional reactions described in this study are an example of primary socialization reemerging to supplant secondary socialization (Gagnon and Simon, 1973; Simon and Gagnon, 1986). There is no way of *disproving* this claim, but two objections to this explanation seem pertinent here (Ellis and Symons, 1990; Knoth *et al.*, 1988; Tooby and Cosmides, 1992). First, studies that have attempted to link any of Kinsey's basic sex differences to specific experiences, sex-role ideology, or environmental elements have consistently failed to do so (Blumstein and Schwartz, 1983; Edwards and Booth, 1976; Spanier, 1976;

Townsend, 1987, 1992; Townsend and Levy, 1990b). Second, what emerges in these women's emotional reactions is not a traditional double standard of sexual morality. Engaging in various forms of coitus with little or no emotional involvement or monogamous commitment did not necessarily produce feelings of guilt, regret, degradation, or exploitation in these women. Rather, what produced these feelings was a lack of control over the level of the partner's investment. Like the women medical students (Townsend, 1987), among these undergraduate women, a discrepancy between the desired level of investment-commitment and the man's willingness to invest produced emotional distress. As long as the man was willing to invest at the level the woman felt she was ready for at the moment, the highly charged feelings of being used, degraded, and disoriented did not emerge. Increasing numbers of sex partners did not seem to mitigate these reactions, and may exacerbate them. Similar to the results here, Simpson (1987) found that women with higher SOI scores reacted to breakups with *more* emotional distress than women with lower SOI scores.

One might argue that samples of North American undergraduates are not representative of the general population and that they therefore bias the results. On the contrary, in some ways these undergraduates are the ideal population in which to test the current hypotheses. First, women without alternative financial resources are more likely to marry and remarry than their more financially independent peers (Blumstein and Schwartz, 1983). The average age of marriage has been increasing in the last 30 years, particularly for college-educated women (Goldman *et al.*, 1984; Norton and Moorman, 1987). As we saw, many of the women in the current samples did not expect to marry anyone they met in college, nor did they want to marry until several years after graduation. The samples were drawn from a private university, whose annual tuition, room, and board cost approximately \$20,000. The average, combined family income of the current samples was \$70,000; hence, many of the subjects come from affluent backgrounds and do not work to support themselves. Compared to the middle and upper-middle classes in Western democracies, in third-world countries women are more dependent on their husbands and male kin for their status and material resources. Consequently, more third-world women are compelled to exchange sexual access for resources than middle-class women in industrialized societies (Buss, 1989a; Glenn, 1989). Compared to Western samples, men and women in third-world countries report that they, respectively, desire higher levels of traits like "physical attractiveness" and "good earning capacity." Nevertheless, the *gender differences* in standards for these traits are relatively stable across societies (Buss, 1989a; Buss and Schmitt, 1993). In fact, cross-culturally, increasing women's SES tends to raise rather than lower their socioeconomic standards for mates (Buss, 1989a; Buss and

Schmitt, 1993; Glenn, 1989; Townsend, 1989; Townsend and Roberts, 1993; Wiederman and Allgeier, 1992). Given their resources and their plans for delayed marriage, there is no necessity for the undergraduate females here to become seriously emotionally involved or to be attracted to high-status, dominant males, and there are some good reasons not to do so. The fact that these sex differences remain so pronounced in environments where resources and technology could obviate them attests to their robustness (Buss, 1989a; Irons, 1989).

Some authors have argued that the patterns of male and female sexuality identified by the Kinsey team vary drastically transculturally and are totally absent and even reversed in some societies (Mead, 1928, 1935; Simon and Gagnon, 1986). Space constraints preclude a thorough review of the cross-cultural evidence here, but we can examine opposite poles of the societal continuum of sexual permissiveness (see also Burley and Symanski, 1981; Buss, 1989a; Buss and Schmitt, 1993; Kenrick and Keefe, 1992; Symons, 1979; van den Berghe, 1979). Sex differences in sexual behavior are most pronounced in the upper class of agrarian kingdoms, where males vehemently strive to control female sexuality (Betzig, 1986; Daly *et al.*, 1982; Dickemann, 1979; van den Berghe, 1979). Even in relatively permissive cultures, however, low-investment copulation in women is linked to low mate value, and hence, to reputational damage, e.g., among the Ache (Buss and Schmitt 1993, p. 219). Polynesian cultures are certainly among the most tolerant regarding low-investment copulation in women, yet they reveal the same sex differences we have described here. In her generalizations Mead denied that sex differences familiar to Westerners characterized Samoan sexuality (1928, pp. 157, 160, 198, 201). Her descriptions of actual behavior, however, show the following: Female virginity was considered a prize and the conquest of virgins conferred prestige upon successful males (pp. 37, 99). In contrast, sexual accessibility reduced females' self-esteem, reputation, and marital chances (pp. 120, 155, 179-181). Girls' first lovers were usually older, high-status men (p. 88), who used their superior power, experience, and wiles to seduce young virgins. When the men grew tired of their dalliance and terminated these affairs, the girls reacted like jilted females in Western societies: They felt used, humiliated, betrayed, and enraged (Mead, 1928, pp. 155-56, 176-77; Simpson, 1987; Townsend, 1987).

Mangaia is a Polynesian culture whose language is closely related to Samoan. Marshall (1971) reported that most Mangaian girls had several lovers prior to marriage and most Mangaian women were capable of having multiple orgasms in intercourse. These findings might be interpreted as indicating a lack of a sexual double standard and a general similarity between male and female sexuality. Marshall's account, however, provides ample evidence to the contrary. He reported that "Mangaian males very definitely

believe that men tend to want sexual activity more frequently than do their women but that women tend to 'hold them back' from full sexual indulgence. Some husbands may beat the wife into submission" (p. 124). Young males are possessive about their local girls and may fight with boys of other villages when attempts are made to take away their girls (p. 128). The average girl has had a least three or four lovers between the ages of 13 and 20, whereas the average boy has had over ten (boys travel to other islands to expand their conquests). Boys compete to seduce as many girls as they can; the strongest contestants have a penis tattooed on their thighs or a vagina tattooed on their penises. Some of these Lotharios boast of having tried 60 or 70 girls and maintain notebook records of their exploits. The boys compare exploits, sexual knowledge, techniques, and the compliance and responsiveness of different girls—as North American boys do in adolescent subculture (Berg, 1975; Udry, 1974; Udry and Billy, 1987). Manganians admire the boy who has had many girls, and compare him to "a strong man, like a bull, going from woman to woman." They do not admire the girl who has intercourse with many boys and compare her to a pig. Manganians thus assume that men want to copulate with many women and use various forms of investment such as gifts, food, persuasion, and serenades to achieve their ends. Women, however, who chase men and use gifts to entice them are considered "silly pigs" (Marshall, 1971, pp. 128, 151).

Motoro is a Manganian equivalent of Samoan *moetotolo*, or sleep crawling, a form of clandestine rape. Concerning *motoro*, Marshall reported (p. 129): Less aggressive boys or the darker skinned and other less socially desirable youths may take up to a year of "sweet talk" to win the girl they desire; others may speed their suit by serenades. Most of them simply take what they want, when they want it.

For the agricultural societies in Murdock's World Ethnographic Sample, in 83 cases women do most of the farm work; in 125 societies men do most of the farm work; in 133 societies men and women make equal contributions (Stephens, 1963, p. 284). This type of variability suggests that if there are any biological sex differences that influence the sexual division of farm labor, they are probably not very strong. Authors who claim that Kinsey's basic sex differences are purely the product of cultural conditioning should be able to demonstrate comparable cultural variability for those sex differences, but the evidence for this type of variability is either negative or lacking (Burley and Symanski, 1981; Buss, 1989a; Buss and Schmitt, 1993; Symons, 1979, van den Berghe, 1979). In recent years, sex differences in some aspects of sexual behavior have declined in some populations of Western societies, e.g., numbers of premarital sex partners among university students (Alzate, 1984; Clement *et al.*, 1984; Useche *et al.*, 1990). Sex dif-

ferences remain strong however, in precisely those traits predicted by evolutionary theory: motivations, arousability, fantasies, masturbation rates, causes of first arousal, attraction to dominance and status, and the tendency to divorce coitus from investment (Carroll *et al.*, 1985; Ellis and Symons, 1990; Knoth *et al.*, 1988; Roche, 1986; Sadalla *et al.*, 1987; Townsend, 1987; Wilson, 1981, 1987). If one controls for opportunity, basic sex differences become even more pronounced: In agrarian kingdoms, potentates may have dozens and even hundreds of concubines; in Western democracies, dozens, hundreds, and even thousands of sex partners are reported for some high-status male politicians, athletes, and media celebrities. In contrast, beautiful women in Western democracies, who presumably could have their pick of partners given the current market, do not have hundreds and thousands of partners, and may have fewer partners, on the average, than some less attractive women because their physical attractiveness allows them to demand more in terms of investment while exchanging less in terms of sexual access (Buss and Schmitt, 1993; Elder, 1969; Mueller and Pope, 1980; Townsend, 1987, 1989, 1992, Udry and Eckland, 1984). Over 20 years ago Bernard predicted that the more freedom the sexes have to realize their basic impulses and fantasies, the more visible fundamental gender differences will become (1972, p. 256). The Polynesian and North American data we have examined may exemplify this prediction.

Evolutionary psychologists do *not* propose the existence of immutable instincts (Buss, 1989b; Daly and Wilson, 1988; Tooby and Cosmides, 1992). Rather, their argument is similar to earlier anthropologists' concept of a "developed human nature." As Redfield proposed, although cultural mores may be able to "make anything right," given human propensities and certain universal needs, mores have an easier time making some things right than others. For example, it would be easier for societies to condition mothers to cherish their children, than to condition them to cherish their children and then eat them (Redfield, 1957, pp. 159-60). Male sexual jealousy also illustrates this principle. In some societies, severe sanctions and punishments serve to control and suppress the violent tendencies provoked by male sexual jealousy, but the emotions apparently occur in many individuals nevertheless, and some men express them violently despite the sanctions and punishments (Daly *et al.*, 1982; Daly and Wilson, 1988).

Clearly, learning and social conditioning play a vital role in molding sexual behavior. But research on the paraphilias, gender identity, and gender transposition suggests that a final explanation of sex differences is more likely to involve complex interactions of genetic and hormonal effects, critical periods of learning, and psychosocial influences, than a simplistic nature-nurture dichotomy and *tabula rasa* view of the brain (Green,

1987; Money and Ehrhardt, 1972; Pillard and Weinrich, 1987; Stoller, 1982; Toboy and Cosmides, 1992; Udry and Billy, 1987; Weinrich, 1988).

REFERENCES

- Alzate, H. (1984). Sexual behavior of unmarried Colombian university students: A five-year follow-up. *Arch. Sex. Behav.* 13: 121-132.
- Bardwick, J. (1971). *The Psychology of Women*, Harper & Row, New York.
- Berg, D. H. (1975). Sexual subcultures and contemporary heterosexual interaction patterns among adolescents. *Adolescence*, 10: 543-548.
- Bernard, J. (1972). *The Future of Marriage*, World Publishing, New York.
- Berscheid, E., and Walster, E. (1974). Physical Attractiveness. In Berkowitz, L. (ed.), *Advances in Experimental Social Psychology*, Academic Press, New York.
- Betzig, L. (1986). *Despotism and Differential Reproduction: A Darwinian View of History*, Aldine de Gruyter, Hawthorne, New York.
- Blumstein, P., and Schwartz, P. (1983). *American Couples*, Morrow, New York.
- Burley, N., and Symanski, R. (1981). Women without: An evolutionary and cross-cultural perspective on prostitution. In Symanski, R. (ed.), *The Immoral Landscape: Female Prostitution in Western Societies*, Butterworths, Toronto, Canada.
- Buss, D. (1989a). Sex differences in human mate preferences: Evolutionary hypotheses tested in 37 cultures. *Behav. Brain Sci.* 12: 1-49.
- Buss, D. (1989b). Conflict between the sexes: Strategic interference and the evocation of anger and upset. *J. Pers. Soc. Psychol.* 56: 735-747.
- Buss, D. and Barnes, M. (1986). Preferences in human mate selection. *J. Pers. Soc. Psychol.* 50: 559-570.
- Buss, D. and Schmitt, D. (1993). Sexual strategies theory: an evolutionary perspective on human mating. *Psychological Review* 100: 204-232.
- Carroll, J. C., Volk, K. D., and Hyde, J. S. (1985). Differences in motives for engaging in sexual intercourse. *Arch. Sex. Behav.* 14: 131-143.
- Cherlin, A. (1979). Work life and marital dissolution. In Levinger, G., and Moles, O. (eds.), *Divorce and Separation*, Basic Books, New York.
- Clark, R. (1990). The impact of AIDS on gender differences in willingness to engage in casual sex. *J. Appl. Soc. Psychol.* 20: 771-782.
- Clement, U., Schmidt, G., and Kruse, M. (1984). Changes in sex differences in sexual behavior. *Arch. Sex. Behav.* 13: 99-120.
- Cunningham, M. (1986). Measuring the physical in physical attractiveness: Quasi-experiments in the sociobiology of female facial beauty. *J. Pers. Soc. Psychol.* 50: 925-935.
- Daly, M., and Wilson, M. (1988). *Homicide*, Aldine de Gruyter, New York.
- Daly, M., Wilson, M., and Weghorst, S. (1982). Male sexual jealousy. *Ethol. Sociobiol.* 3: 11-27.
- Denney, N. W., Field, J. K., and Quadagno, D. (1984). Sex differences in sexual needs and desires. *Arch. Sex. Behav.* 13: 233-245.
- Dickemann, M. (1979). Female infanticide, reproductive strategies, and social stratification. In Chagnon, N., and Irons, E. (eds.), *Evolutionary Biology and Human Social Behavior*, Duxbury Press, North Scituate, MA.
- Dion, K. (1981). Physical attractiveness, sex roles, and heterosexual attraction. In Cook, M. (ed.), *The Bases of Human Sexual Attraction*, Academic Press, New York.
- Edwards, J., and Booth, A. (1976). Sexual behavior in and out of marriage. *J. Marr. Fam.* 38: 73-81.
- Elder, G. H. (1969). Appearance and education in marriage mobility. *American Sociological Review* 34: 519-532.
- Ellis, B., and Symons, D. (1990). Sex differences in sexual fantasy. *J. Sex. Res.* 27: 527-555.
- Gagnon, J., and Simon, W. (1973). *Sexual Conduct*, Aldine, Chicago.

- Gangestad, S. W. and Simpson, J. A. (1990). Toward an evolutionary history of female sociosexual variation. *J. Pers.* 58: 69-96.
- Glenn, N. D. (1989). Intersocial variation in the mate preferences of males and females. *Behav. Brain Sci.* 12: 21-23.
- Goldman, N., Westoff, C., and Hammerslough, C. (1984). Demography of the marriage market in the United States. *Population Index* 50: 5-25.
- Green, R. (1987). *The sissy-boy syndrome*. Yale University Press.
- Hatfield, E., and Sprecher, S. (1986). *Mirror, Mirror*, State University of New York Press, Albany.
- Hill, C. T., Rubin, Z., and Peplau, L. A. (1979). Breakups before marriage: The end of 103 affairs. In Levinger, G., and Moles, O. (eds.), *Divorce and Separation*, Basic Books, New York.
- Hill, E., Nocks, E., and Gardner, L. (1987). Manipulation by physical and status displays. *Ethol. Sociobiol.* 8: 143-154.
- Irons, W. (1989). Mating preference surveys. *Behavioral and Brain Sciences* 12: 24.
- Kanin, E. J., Davidson, D. R., and Scheck, S. R. (1970). A research note on male-female differentials in the experience of heterosexual love. *J. Sex Res.* 6: 64-72.
- Kenrick, D., and Keefe, R. (1992). Age preferences in mates reflect sex differences in reproductive strategies *Beh. Brain Sci.* 15: 1-29.
- Kenrick, D., Sadalla, E., Groth, G., and Trost, M. (1990). Evolution, traits, and the stages of human courtship: Qualifying the parental investment model. *J. Pers.* 58: 97-116.
- Kinsey, A., Pomeroy, W., Martin, C., and Gebhard, P. (1953). *Sexual Behavior in the Human Female*, W. B. Saunders, Philadelphia, PA.
- Knoth, R., Boyd, K., and Singer, B. (1988). Empirical tests of sexual selection theory. *J. Sex Res.* 24: 74-89.
- LeDoux, J. (1989). Cognitive-emotional interactions in the brain. *Cognit. Emot.* 3: 267-289.
- Locksley, A. (1980). On the effects of wives' employment on marital adjustment and companionship. *J. Marr. Fam.* 42: 470-473.
- Marshall, D. (1971). Sexual behavior on Mangaia. In Marshall, D., and Suggs, R. (eds.), *Human Sexual Behavior*, Basic Books, New York.
- Mathes, E., Brennan, S., Haugen, P., and Rice, H. (1985). Rating of physical attractiveness as a function of age. *J. Soc. Psychol.* 125: 57-168.
- McClelland, D. (1986). Some reflections on the two psychologies of love. *J. Pers.* 54: 334-352.
- Mead, M. (1928). *Coming of Age in Samoa*, Morrow, New York.
- Mead, M. (1935). *Sex and Temperament in Three Primitive Societies*, Morrow, New York.
- Money, J., and Ehrhardt, A. (1972). *Man and Woman, Boy and Girl*, Johns Hopkins Press, Baltimore, MD.
- Mueller, C., and Pope, H. (1980). Divorce and female remarriage mobility. *Soc. Forces* 58: 726-738.
- Murstein, B. I., and Christy, P. (1976). Physical attractiveness and marriage adjustments in middle-aged couples. *J. Pers. Soc. Psychol.* 34: 537-542.
- Naficy, A. (1981). Mate selection: The relative contributions of age, physical attractiveness, and income to desirability as romantic and marriage partners. Unpublished doctoral dissertation. Ann Arbor, MI: University Microfilms International.
- Nesse, R., and Lloyd, A. (1992). The evolution of psychodynamic mechanisms. In Barkow, J., Cosmides, L., and Tooby, J. (eds.), *the Adapted Mind*, Oxford University Press, New York.
- Norton, A., and Moorman, J. (1987). Current trends in marriage and divorce among American Women. *J. Marr. Fam.* 49: 30-14.
- Pillard, R., and Weinrich, J. (1987). The periodic table model of the gender transpositions: Part I. A theory based on masculinization and defeminization of the brain. *J. Sex Res.* 23: 425-454.
- Redfield, R. (1957). The universally human and the culturally variable. *J. Gen. Educ.* 10: 150-160.
- Rhyme, D. (1981). Bases of marital satisfaction among men and women. *J. Marr. Fam.* 43: 941-955.

- Roche, J. (1986). Premarital sex: Attitudes and behavior by dating stage. *Adolescence*, 21: 107-121.
- Rubin, L. (1983). *Intimate Strangers*, Harper & Row, New York.
- Sadalla, E., Kenrick, D., and Vershure, B. (1987). Dominance and heterosexual attraction. *J. Pers. Soc. Psychol.* 52: 730-738.
- Scanzoni, J. (1978). *Sex Roles, Women's Work, and Marital Conflict*, Health, Lexington, MA.
- Simon, W., and Gagnon, J. (1986). Sexual scripts: Permanence and change. *Arch. Sex. Behav.* 15: 97-120.
- Simpson, J. (1987). The dissolution of romantic relationships: Factors involved in relationship stability and emotional distress. *J. Pers. Soc. Psychol.* 53: 683-692.
- Simpson, J., and Gangestad, S. (1991a). Personality and sexuality: Empirical relations and an integrative theoretical model. In McKinney, K., and Sprecher, S., (eds.), *Sexuality in Close Relationships*, Erlbaum, Hillsdale, NJ.
- Simpson, J., and Gangestad, S. (1991b). Individual differences in sociosexuality: Evidence for convergent and discriminant validity. *J. Pers. Soc. Psychol.* 60: 870-883.
- Simpson, J., and Gangestad, S. (1992). Sociosexuality and romantic partner choice. *J. Pers.* 60: 31-51.
- Spanier, G. (1976). Formal and informal sex education as determinants of premarital sexual behavior. *Arch. Sex. Behav.* 5: 39-67.
- Stephens, W. (1963). *The Family in Cross-Cultural Perspective*, University Press of America, Washington, DC.
- Stoller, R. (1982). Transvestism in women. *Arch. Sex. Behav.* 11: 99-115.
- Symons, D. (1979). *The Evolution of Human Sexuality*, Oxford University Press, New York.
- Symons, D. (1985). Darwinism and contemporary marriage. In Davis, K. (ed.), *Contemporary Marriage*, Russell Sage, New York.
- Symons, D. (1987). The evolutionary approach: Can Darwin's view of life shed light on human sexuality. In Geer, J., and O'Dohohue, W. (eds.), *Theories of Human Sexuality*, Plenum Press, New York.
- Symons, D. (1992). What do men want? *Behav. Brain Sci.* 15: 115.
- Symons, D., and Ellis, B. (1989). Human male-female differences in sexual desire. In Rasa, A., Vogel, C., and Voland, E. (eds.), *Sociobiology of Sexual and Reproductive Strategies*, Chapman and Hall, London.
- Tanfer, K., and Schoorl, J. (1992). Premarital sexual careers and partner change. *Arch. Sex. Behav.* 21: 45-68.
- Tooby, J., and Cosmides, L. (1992). The psychological foundations of culture. In Barkow, J., Cosmides, L., and Tooby, J. (eds.), *The Adapted Mind*, Oxford University Press, New York.
- Townsend, J. (1987). Sex differences in sexuality among medical students: Effects of increasing socioeconomic status. *Arch. Sex. Behav.* 16: 427-446.
- Townsend, J. (1989). Mate selection: A pilot study. *Ethol Sociobiol.* 10: 241-253.
- Townsend, J. (1992). Measuring the magnitude of sex differences. *Behav. Brain Sci.* 15: 115.
- Townsend, J., and Levy, G. (1990a). Effects of potential partners' costume and physical attractiveness on sexuality and partner selection. *J. Psychol.* 124: 371-389.
- Townsend, J., and Levy, G. (1990b). Effects of potential partners' physical attractiveness and socioeconomic status on sexuality and partner selection. *Arch. Sex. Behav.* 19: 149-164.
- Townsend, J., and Roberts, L. (1993). Gender differences in mate preferences among law students. *J. Psychol.* 127: 507-528.
- Trivers, R. (1972). Parental investment and sexual selection. In B. Campbell, B. (ed.), *Sexual Selection and the Descent of Man, 1871-1971*, Aldine, New York.
- Trivers, R. (1985). *Social Evolution*, Benjamin Cummings, California.
- Udry, R. (1974). *The Social Context of Marriage*, Lippincott, New York.
- Udry, J. R., and Billy, J. O. G. (1987). Initiation of coitus in early adolescence. *Am. Sociol. Rev.* 52: 841-855.
- Udry, J. R., and Eckland, B. K. (1984). Benefits of being attractive: Differential pay-offs for men and women. *Psychol. Rep.* 54: 47-56.

- Useche, B., Villegas, M., and Alzate, H. (1990). Sexual behavior of Colombian high school students. *Adolescence*, 25: 291-304.
- van den Berghe, P. (1979). *Human Family Systems*, Elsevier, New York.
- Weinrich, J. (1988). The periodic table model of the gender transpositions: Part II. Limerant and lusty sexual attractions and the nature of bisexuality. *J. Sex. Res.* 24: 113-129.
- Wiederman, W. W., and Algeier, E. R. (1992). Gender differences in mate selection criteria. *Ethol. Sociobiol.* 13: 115-124.
- Wilson, E. O. (1975). *Sociobiology: The New Synthesis*, Harvard University Press, Cambridge, MA
- Wilson, G. (1981). Cross-generational stability of gender differences in sexuality. *Pers. Individ. Diff.* 2: 254-262.
- Wilson, G. (1987). Male-female differences in sexual activity, enjoyment, and fantasies. *Pers. Individ. Diff.* 8: 125-135.