



IS THERE AN EARLY-30S PEAK IN FEMALE SEXUAL DESIRE? CROSS-SECTIONAL EVIDENCE FROM THE UNITED STATES AND CANADA

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ABSTRACT: *This research explored whether women experience a "sexual peak" during their early 30s and, if so, whether such a peak might have an evolved function. In Study 1, results from a cross-sectional sample of college students from the United States (N = 803 women, 415 men) revealed that women between 30 and 34, relative to older and younger women, described themselves as more lustful, seductive, and sexually active. In contrast, men did not experience a sexual peak between 30 and 34. In a second study (N = 611 women, 329 men), findings of an early-30s peak in women were replicated among married and single individuals from Canada. Using new measures of human sexual strategies (Schmitt & Buss, 2000), the authors were able to test 2 hypotheses about the possible functions of an early-30s peak in female sexual desire. One hypothesis is that an early-30s peak increases reproduction in monogamous, long-term relationships. A second hypothesis is that women's early-30s peak in sexual desire increases reproduction through promiscuous or extra-pair copulations. Overall, the hypothesis that the peak is designed to increase women's reproduction in monogamous, long-term relationships received the most support. Discussion focuses on limitations and alternative explanations of the current findings and on areas for future investigation.*

Keywords: *Female sexual desire Sexual desire peak Evolutionary function*

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INTRODUCTION

A common assumption in the United States is that men reach a "sexual peak" before age 20, whereas women's sexuality peaks after the age of 30 (Barr, Bryan, & Kenrick, 2002; Wiederman, 2001). This belief may stem from the seminal work of Kinsey and his colleagues, who used total orgasm frequency from all sexual "outlets," including masturbation, as an index of sexual peak (Kinsey, Pomeroy, & Martin, 1948; Kinsey, Pomeroy, Martin, & Gebhard, 1953). Total orgasm frequency, however, is only one way to operationalize the sexual peak of a gender. Other

important indicators may include the capacity for sexual performance and the ease with which one becomes sexually aroused (Mosher, Barton-Henry, and Green, 1988; Whalen, 1966). Perhaps most central to people's everyday conceptions of male and female sexual potency, however, is the psychological construct of *sexual desire* (Regan & Berscheid, 1999).

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Modern sexologists tend to view sexual desire as a subjective feeling or motivational state that most would call the experience of "lust" (Levine, 1988; Regan, 1999). Although it may seem logical that sexual desire should directly relate to Kinsey's "total sexual outlets," across a wide range of studies sexual desire has proven largely independent of sexual behaviour, including behavioural orgasm rates, sexual arousability, and measures of sexual performance (Bancroft, 1983; Beck, Bozman, & Qualtrough, 1991; Hill, 1997; Kaplan, 1979; Regan, 1996; Wallen, 1995). Fisher (1998) has postulated that sexual desire, what she refers to as "lust motivation," is a unique biochemical system in humans, distinct from other more behavioural forms of sexual expression. Many sex researchers have also insisted that sexual desire may not be adequately operationalized as the simple summation of behavioural sex acts (see Spector, Carey, & Steinberg, 1996). Thus, it is questionable whether changes in sexual desire—changes most relevant to popular conceptions of sexual peaks—actually coincide with the peaks in orgasm behaviour frequency originally reported by Kinsey and his colleagues. Indeed, it remains largely unknown whether peaks in sexual desire exist at all.

Several studies have suggested that women may experience changes in their sexual desire over time (Adams & Turner, 1985; Blumstein & Schwartz, 1983; Hunt, 1974; Rubin, 1982; Tavris & Sadd, 1977). However, these studies usually portray sexual desire as in steady and continuous decline across adulthood. Only a handful have hinted that the age of 30 marks an important developmental transition. For example, some research shows that the cognitive-emotional "focus" of women toward sex seems to shift as women pass through their 30s (Kaplan & Sager, 1971), and that women's experience of pleasure during vaginal intercourse changes conspicuously as they move through this period of adulthood (Laumman, Gagnon, Michael, & Michaels, 1994). Although women's self-reported rates of intercourse decline less rapidly during their 30s than during older ages (Udry, 1980), most studies have failed to document a definitive empirical link between women's ages and "peaks" in sexual desire (Purifoy, Grodsky, & Giambra, 1992; Haellstroem & Samuelsson, 1990).

From the extant literature it is unclear whether an

early-30s peak occurs in women's sexuality, and no solid evidence has confirmed its presence in the realm of subjective sexual desire (Baldwin & Baldwin, 1997). Although some perspectives have provided proximate explanations for such a shift (e.g., masturbatory learning or changes in hormones), most do not answer the question of why such shifts exist in the first place, if indeed they do exist. For example, if women's sexual desire peaks, or plateaus, at age 35 because of the climacteric (age-related decline in sex hormones), which is a debatable point (Segraves, 1988; Weg, 1978), why would there be changes in hormone levels at that age? For an additional level of understanding of sexual desire shifts, many have turned to the ultimate explanations provided by evolutionary perspectives on human sexuality (Barr et al., 2002; Buss & Schmitt, 1993; Regan, 1999).

EVOLUTIONARY PERSPECTIVES ON AN EARLY-30S PEAK IN FEMALE SEXUAL DESIRE

Evolutionary perspectives on human sexuality usually explore the ways in which patterns of sexual desire are functional (i.e., linked to increased reproduction), and how they reflect special design features of psychological adaptation (i.e., how they solve specific adaptive problems; Buss, 1999). Women's sexual desire for long-term mates who are relatively older than they are (Kenrick & Keefe, 1992), for example, may have evolved because it increased the probability that ancestral women would mate with a man who possessed the critical ability to provide resources for the woman and her offspring (Buss, 1989a; Ellis, 1992). Women's monthly peak in sexual desire near ovulation, on the other hand, may have evolved because it increased the probability of having conceptive intercourse in our female ancestors (Gangestad & Thornhill, 1997; Regan, 1996; Stanislaw & Rice, 1988). In both cases, an evolutionary explanation may be relevant because women's sexual desires seem functional (or would have been functional in our ancestral past as hunters and gatherers), and because each desire appears designed to solve a different adaptive problem (i.e., with whom to have sex in the case of age preferences, and when to have sex in the case of ovulation). This does not mean that evolutionary explanations of these or other sexual phenomenon are always fully satisfying or complete. It is often necessary to place sexual behaviour in historical and cultural context



(Belsky, Steinberg, & Draper, 1991; Keller, 1990). We would argue, however, that evolutionary explanations involving function and design can add a deeper understanding to why certain patterns in sexual desire may exist.

Women's early-30s peak in sexual desire might lend itself to evolutionary explanation, if it is linked to increased reproduction and to solving specific adaptive problems from our ancestral past (Lancaster, 1994; Tooby & Cosmides, 1992). There are two, related rationales for thinking the early-30s peak in female sexual desire may have solved adaptive problems and increased women's reproductive success. Both rationales build on marked changes in women's reproductive biology over the lifespan.

One way in which an early-30s peak in sexual desire may have been functional for our female ancestors is by tracking important changes in the probability of conception across adulthood. The percentage of fertile ovulatory cycles—cycles that include an ovulation that could lead to pregnancy—varies tremendously over a woman's lifespan (Döring, 1969; Menken, Trussell, & Larsen, 1986). Between the ages of 12 and 14, less than 10% of menstrual cycles include fertile ovulations. This is a relatively low level, implying that the average female is not designed to reproduce at this age, and that a sexual peak in human females at this age would not have been strongly favored by natural selection, all else being equal. The percentage of fertile cycles rises to around 50% between 21 and 25. Consequently, sexually active females between the ages of 21 and 25 were much more likely to reproduce in our ancestral environment than sexually active females between the ages of 12 and 14. Reproduction is possible at the younger ages, but it is less likely. Some studies have suggested that the mid-20s is a sexual peak in women, in that women tend to have the most children when in their mid-20s (see Jones, 1996). However, other evidence suggests this birthing peak may occur around age 30 in hunter-gatherer cultures (i.e., the type of culture in which we evolved; see Hill & Hurtado, 1996, p. 335).

Regardless, it is clear that the percentage of fertile ovulatory cycles actually peaks at 70% in women's early 30s (see Baker & Bellis, 1995; Döring, 1969). Notably, this is the age range during which survey

research suggests that sexuality may peak in women (e.g., Barr et al., 2002). Moreover, the percentage of fertile ovulatory cycles drops steadily after age 35, and begins a precipitous decline after age 40 (see also Scheffer et al., 1999). Thus, women's reproductive success may have been enhanced by an early 30s peak in sexual desire because it would have both maximized conceptive sexual intercourse and developmentally predated the steep decline in fertile ovulatory cycles. This evolutionary logic depends, of course, on the assumption that modern rates of fertile ovulatory cycles essentially mirror those of our ancestral past. Some evidence suggest this is the case (see Hill & Hurtado, 1996). There is another perhaps more compelling reason, though, for thinking that an early-30s peak in sexual desire would have benefited ancestral women.

The second evolutionary rationale for thinking that the early-30s peak may have an impact on women's reproductive success involves age-related variation in rates of genetic abnormalities, miscarriages, and birth complications (Gindoff & Jewelewicz, 1986; Hook, 1981; Naeye, 1983). For example, the probability of giving birth to children with genetic disorders does not increase dramatically—as with many disorders and complications—until after a woman reaches 35. The probability of having a child with Down Syndrome, for instance, is largely independent of the father's age, but highly related to the mother's age (Creasy & Resnik, 1999; Singer, 1985). Relative to women under 20, the probability of having a child with Down Syndrome doubles between 25 and 30, and triples between 30 and 35. However, it increases 800% between 35 and 40, 2300% percent between 40 and 45, and 5000% after age 45 (Singer, 1985). This would have posed a significant adaptive problem for women. In addition, chromosomal problems associated with inbreeding may have been relatively common in our evolutionary past (Brown, 1991), and giving birth to children with genetic anomalies most certainly had deleterious effects on the reproductive success of our ancestors (Shepher, 1983).

This powerful confluence of changes in the reproductive biology of women during their early 30s—maximal fertility with a pending decrease in viable ovulations, along side an imminent increase in



offspring defects and birthing complications—would have presented women with adaptive problems in need of a solution. An early-30s peak in sexual desire may have been sculpted into women's psychology because it increased women's rates of sexual intercourse when they were the most fertile and had not yet incurred age-heightened risks in giving birth. From an evolutionary perspective, an early-30s peak in women's sexual desires would occur at just the right time to reap the reproductive benefits of maximally fertile ovulations and avert the approaching costs of both lowered fertility and genetically defective offspring.

Many questions remain unanswered, however. Does an early-30s increase in sexual desire exist among women? How might an increase in sexual desire have led to greater reproductive success in ancestral women? In what precise ways might the peak be functional, leading to more reproduction than women would otherwise have enjoyed if they did not experience a sudden burst of sexual desire in their early 30s?

We tested two competing evolutionary hypotheses about the specific function of an early-30s peak in female sexual desire:

Hypothesis 1: A woman's increase in sexual desire in her early 30s leads to reproduction with a primary long-term partner. Because women in their early 30s are at a peak in fertile ovulatory cycles, and because they do not yet face the heightened risks of birthing complications and genetic anomalies in their offspring, higher rates of sexual intercourse would increase the probability of having (additional) offspring with a primary partner. If this hypothesis is correct, then women in their early 30s, compared to women of other ages, will exhibit heightened levels of: a) subjective sexual desire, b) initiating sexual intercourse, and c) sexual intercourse frequency. In addition, if this hypothesis is correct and this peak is driven by women's reproductive biology, then men will not display this pattern of sexuality change.

Hypothesis 2: A woman's increase in sexual desire in her early 30s directly leads to increased reproduction within extra-marital liaisons, or with multiple men if the woman is not involved in a long-

term relationship. Because women in their early 30s are peaking in fertile ovulatory cycles, and because they do not yet face the heightened risks of birthing complications and genetic anomalies in their offspring, higher rates of sexual intercourse, via adulterous or promiscuous sex, would increase the probability of having (additional) offspring, and potentially increase their genetic quality and diversity as well (Gangestad & Simpson, 1990; Smith, 1984). There is evidence that, after having a child with a primary partner or husband, a woman's additional children are more likely to result from sexual intercourse with other men (Baker & Bellis, 1995). In other words, after the first child with their husband women are more likely to "double mate". One would thus expect to find that a higher percentage of the children born to women of different ages were being raised by men who, unknowingly, were not their biological fathers. If Hypothesis 2 is correct, then women in their early 30s, compared to women of other ages, will exhibit heightened levels of interest in and pursuit of extra-pair relationships if involved with a long-term relationship, or interest in and pursuit of short-term sexual partners if not involved in a long-term relationship. In addition, if this peak is driven by women's reproductive biology, then men will not display this hypothesized pattern of sexuality change.

Although affirmative findings on this point in early-30s women are essential for this hypothesis, they are not sufficient. As corollaries to Hypothesis 2, one would also expect, as in Hypothesis 1, to find heightened levels of (a) subjective sexual desire, (b) initiating sexual intercourse, and (c) sexual intercourse frequency.

METHODS

STUDY 1 METHODS: IS THERE AN EARLY-30S PEAK AMONG WOMEN FROM THE UNITED STATES?

PARTICIPANTS

The participants in this study were comprised of four samples. The first sample included 365 women and 196 men from a public university in Florida. The second sample included 211 women and 103 men from a medium-sized private university in Illinois. The third sample included 137 women and 81 men from a large public university in Texas. The fourth sample



included 90 women and 35 men from a public university in New York. The samples were combined to provide a total of 803 women and 415 men. Members of all samples participated in the current study for extra-credit in psychology courses, and were primarily middle-class and Caucasian.

From the 803 women and 415 men of this sample, we were able to create 10 reasonably-sized age groupings for the purpose of exploring basic age differences and developmental shifts in sexuality. Sufficient sample sizes were available for exploring the sexuality of women and men at the ages of 18, 19, 20, 21, and 22-24, and we were able to place a special focus on sexuality change between the age groups 25-29 and 30-34. Due to smaller sample sizes, age groupings of 10-year intervals were used thereafter.

PROCEDURE

All samples completed a packet of measures entitled "The Anonymous Questionnaire Study." The first page of the packet contained blanks asking participants to provide their age and sex, and included the following instructional set: "*Instructions:* This questionnaire is entirely voluntary. All your responses will be kept confidential and your personal identity will remain anonymous. No identifying information is requested on this survey, nor will any such information be added later to this survey. If any of the questions make you uncomfortable, feel free not to answer them. You are free to withdraw from this study at any time for any reason. This questionnaire should take about 5 minutes to complete. Thank you for your participation."

The first questionnaire was adapted from Buss and Schmitt (1993) and provided a measure of the amount of short-term mate seeking and long-term mate seeking. This measure asked participants: "Please rate the degree to which you are currently seeking a long-term mating partner (i.e., a marriage partner) and short-term mating partners (i.e., one-night stands, brief affairs, etc.) by circling one number on each of the following 7-point scales." This instructional set was followed by two Likert-type scales ranging from 1 (currently not at all seeking) to 7 (currently strongly seeking), one scale for rating "Long-Term Mating Partner Seeking" and one scale for rating

"Short-Term Mating Partner Seeking."

The second questionnaire was adapted from Buss and Schmitt (1993) and was used to test receptivity to short-term sex. This measure asked participants to rate on a 6-point scale ranging from +3 (definitely yes) to -3 (definitely not) the degree to which, "If the conditions were right, would you consider having sexual intercourse with someone you viewed as desirable if..." they had known that person for varying amounts of time ranging from 5 Years to 1 Hour. Unlike the original measure from Buss and Schmitt, participants also responded to time periods of 10 Years and 1 Minute.

The final questionnaire was adapted from Schmitt and Buss (2000) and asked participants to rate the degree to which twenty-six sexuality adjectives described themselves. Ratings were collected on a Likert-type scale ranging from 1 (not at all accurate) to 9 (extremely accurate), asking participants to "describe themselves" as they are generally or typically, compared to others they know of the same sex and roughly the same age. Five abbreviated scales of sexual strategies were relevant to the present study. Scales of Lust (computed as the mean of lustful, perverted, and erotic self-ratings), Seductiveness (seductive, flirtatious, sensual), Abstinence (celibate, virginal, chaste), Promiscuity (promiscuous, loose), and Infidelity (adulterous, unfaithful) were derived from this measure. Each scale displayed moderate levels of internal reliability ($\alpha = 0.61, 0.70, 0.79, 0.70, 0.67$, respectively), and the full scales from a 67-item version of the questionnaire (as presented in Schmitt & Buss, 2000) possess moderate to high levels of construct validity. Some participants failed to complete portions of scales, with the result that the degrees of freedom vary across statistical analyses.

Study 1 did not record marital status and thus precluded distinctions between single and married women in the key early-30s age group. Study 2 sought to address this concern and to test Hypotheses 1 and 2 in a broader national sample from another country.



STUDY 2 METHODS: IS THERE AN EARLY-30s PEAK AMONG WOMEN FROM CANADA?

PARTICIPANTS

The participants in this study were comprised of four samples representing different regions of Canada. The first sample was from the west coast of Canada and included an ethnically diverse sample of 208 women and 126 men from the University of British Columbia (including 37% Asian, 32% European, 3% Indian, 3% Pacific Islander, 2% Russian). All measures were administered in English, and participation was rewarded with extra-credit in college classes. The second sample included 94 women and 26 men from Université Laval in Quebec. These participants were primarily French-speaking and completed all measures as translated into French (a full description of the translation process is available from the authors). The third sample included 161 women and 94 men from Toronto, most of whom were college students and all of whom were volunteers. The final sample came from Alberta in the western prairie region of Canada and included 148 women and 83 men. These participants were primarily volunteer college students. The samples were combined to provide a total of 611 women and 329 men.

PROCEDURE

All samples completed a packet of measures similar to that used in Study 1, as well as a measure asking for demographic information. The packet contained the full "Sexy Seven" sexuality adjective measure (Schmitt & Buss, 2000). As a result, the Lust scale was computed using the additional adjectives of "horny" and "orgasmic" and possessed a Cronbach alpha of 0.79. The items "alluring," "provocative," and "sultry" were added to the Seductive scale, resulting in an alpha of 0.77. All other scales were identical to Study 1 and possessed similar levels of internal reliability. Several other measures not related to this study were also included. As in Study 1, some participants failed to complete portions of scales, with the result that the degrees of freedom vary across statistical analyses.

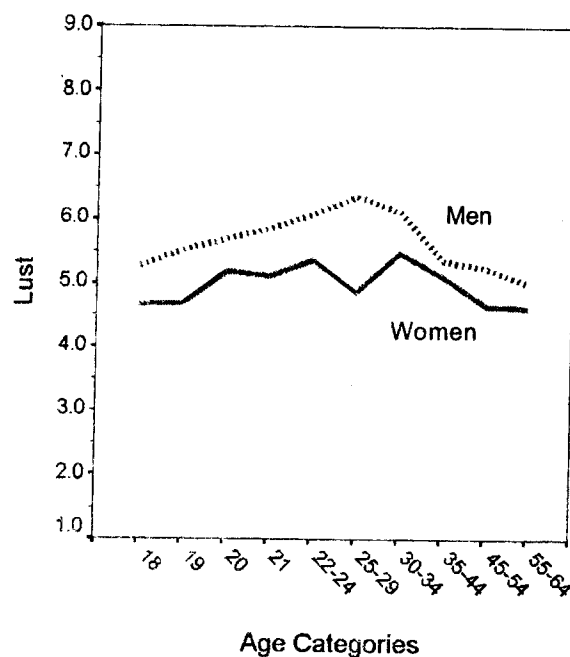
RESULTS

STUDY 1 RESULTS

According to Hypothesis 1, and as a corollary to

Hypothesis 2, women should experience heightened levels of subjective sexual desire during their early 30s. Women's scores on the Lust scale, a reasonably valid gauge of subjective sexual desire (Schmitt & Buss, 2000), are shown in Figure 1. We found a main effect of age group on Lust, $F(9, 779) = 2.61, p < 0.01$, revealing that women's subjective levels of sexual desire appear to change significantly across age groupings. However, because we had a priori hypotheses, this main effect was not necessary in order to proceed to our hypothesis-testing planned comparisons (Tabachnick & Fidell, 1996). The key statistical question is whether the sexual desires of women in their early 30s significantly differ from the other age categories in ways that support or refute Hypotheses 1 and 2.

Figure 1 Subjective Levels of "Lust" Among Men and Women from the United States*



*Fifty-three women (solid line) and 38 men (dotted line) were in the key 30-34 age groupings.

As shown in the first column of Table 1, it appeared that women in their early 30s experienced the highest levels of subjective sexual desire. The significance test used to assess whether women in their early 30s experience a true "peak" in sexual desire examined whether women in the 30-34 age group were

Table 1 A Cross-Sectional View of Subjective Sexual Desire Across Adulthood

Age Group	Women			Men		
	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>
18 Years	4.66	1.83	123	5.27	1.67	47
19 Years	4.69	1.62	99	5.52	1.46	65
20 Years	5.18	1.65	82	5.70	1.26	34
21 Years	5.12	1.65	121	5.85	1.40	53
22-24 Years	5.37	1.62	163	6.08	1.36	86
25-29 Years	4.86	1.59	89	6.36	0.93	38
30-34 Years	5.47	1.53	53	6.12	1.87	38
35-44 Years	5.10	1.77	44	5.35	1.60	31
45-54 Years	4.65	1.57	23	5.24	2.14	18
55-64 Years	4.61	2.92	6	5.00	1.93	5

Note: Scores were based on responses to Likert-type scales ranging from 1 (not at all accurate) to 9 (extremely accurate) from a lexically-based self-report measure of Lust (Schmitt & Buss, 2000). Possible "sexual peaks" are highlighted in bold.

significantly different from other women. Women in the 30-34 age group were more lustful than the average of all other women, $t(787) = 1.96, p < 0.05$ (see Table 2). This significant finding, though only small in magnitude ($d = 0.28$; Cohen, 1988), is consistent with a peak in women's sexual desire during their early 30s. However, this observation should be considered tentative given the study's methodological limitations and interpretive challenges which are described below.

Men did not display a pattern of peaking in sexual desire between 30 and 34. As shown in Figure 1, and as displayed in the second column of Table 1, men's highest levels of sexual desire were in the 25-29 age grouping. This finding is not consistent with the common perception of a peak in sexuality among men around age 20, and illustrates the limitations of using orgasm frequency as the sole measure of sexual peak. The curvilinear relationship of age and sexual desire among men also seems to match men's age-specific levels of testosterone (Bancroft, 1984). As shown along the top row of Table 3, the significance test that confirmed a sexual peak among women in their early 30s was not significant when conducted on men's responses. Thus, we found that the early-30s peak in sexual desire was sex-specific, as predicted by both hypotheses.

Hypothesis 1, and the corollaries to Hypothesis 2, stated that women will exhibit heightened levels of initiating sexual intercourse in their early 30s. As

Table 2 Are Women Between 30 and 34 Years of Age at a Sexual Peak?

Sexual Characteristic	Women 30-34		All Women Not 30-34		30-34 versus Not 30-34 <i>t</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Lust	5.47	1.53	4.99	1.69	1.96*
Seductiveness	7.13	1.25	6.40	1.47	3.45***
Abstinence	2.51	1.89	3.53	2.48	-2.87**
Infidelity	2.08	1.51	2.00	1.53	0.24
Promiscuity	2.25	1.59	2.31	1.66	-0.24
Short-Term Mate Seeking	1.71	1.64	2.11	1.71	-1.65
Likelihood of sex with someone after one day	-2.47	1.01	-2.59	1.14	0.71

Note: Scores of Lust, Seductiveness, Abstinence, Promiscuity, and Infidelity were based on responses to Likert-type scales ranging from 1 (extremely inaccurate) to 9 (extremely accurate) from a lexically-based self-report measure of human sexuality (Schmitt & Buss, 2000). Scores for Short-Term Mate Seeking were based on a Likert-type scale ranging from 1 (currently not at all seeking) to 7 (strongly currently seeking), scores for Likelihood of Sex were based on scales ranging from -3 (definitely not) to +3 (definitely yes); all from Buss and Schmitt (1993). Fifty-three women were in the 30-34 group, 750 women were in the "not 30-34" group. * = $p < 0.05$, ** = $p < 0.01$, *** = $p < 0.001$.

shown in Table 2, women in the 30-34 age group had higher Seductiveness scores than the average of all other women, $t(771) = 3.45, p < 0.001$. As displayed



Table 3 Are Men Between 30 and 34 Years of Age at a Sexual Peak?

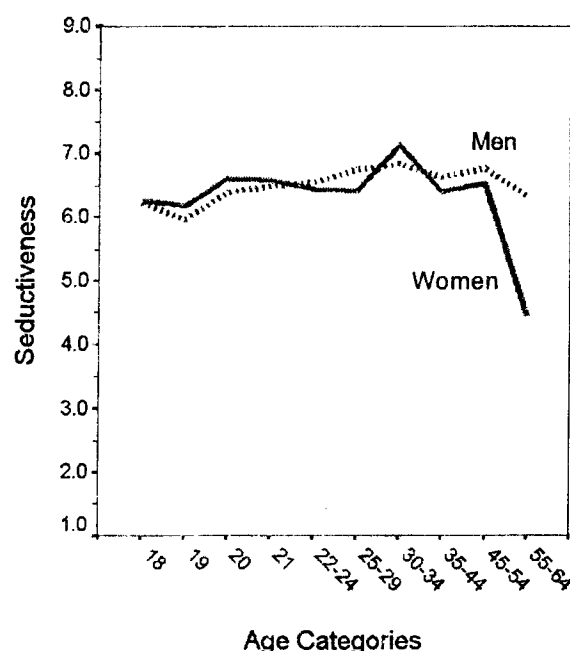
Sexual Characteristic	Men 30-34		All Men Not 30-34		30-34 versus Not 30-34 <i>t</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Lust	6.12	1.87	5.73	1.48	1.50
Seductiveness	6.84	1.57	6.43	1.39	1.74
Abstinence	2.14	1.55	3.11	2.17	-2.67**
Infidelity	2.74	2.17	2.79	1.91	-0.15
Promiscuity	4.27	2.53	3.92	2.15	0.94
Short-Term Mate Seeking	2.51	2.08	3.32	2.05	-2.29*
Likelihood of sex with someone after one day	-0.42	2.32	-0.89	2.32	1.24

Note: Scores of Lust, Seductiveness, Abstinence, Promiscuity, and Infidelity were based on responses to Likert-type scales ranging from 1 (extremely inaccurate) to 9 (extremely accurate) from a lexically-based self-report measure of human sexuality (Schmitt & Buss, 2000). Scores for Short-Term Mate Seeking were based on a Likert-type scale ranging from 1 (currently not at all seeking) to 7 (strongly currently seeking), scores for Likelihood of Sex were based on scales ranging from -3 (definitely not) to +3 (definitely yes); all from Buss and Schmitt (1993). Thirty-eight men were in the 30-34 group, 377 men were in the "not 30-34" group. * = $p < 0.05$, ** = $p < 0.01$.

in Figure 2, a clear and pronounced peak in Seductiveness was evident among women 30-34. These findings document for the first time that women's attempts at soliciting intercourse, operationalized as Seductiveness, peak in their early 30s. As shown in Figure 2, and statistically reported in Table 3, measures of Seductiveness among men did not peak in their early 30s. Thus, we have provided preliminary evidence of sex-specific peaks in sexual desire and sexual initiation among women in their early 30s.

Hypothesis 1, and the corollaries to Hypothesis 2, also stated that women will have more sexual intercourse in their early 30s. As noted in the third row of Table 2, women in the 30-34 age group were significantly less abstinent, or more sexually active (Schmitt & Buss, 2000), than the average of all other groups, $t(696) = -2.87, p < 0.05$. Only women in the 35-44 reported lower levels of Abstinence, or higher rates of sexual activity, than women 30-34. Among men,

Figure 2 Subjective Levels of "Seductiveness" Among Men and Women from the United States*



*Fifty-three women (solid line) and 38 men (dotted line) were in the key 30-34 age groupings.

the 30-34 age group was significantly less abstinent than other age groupings, $t(404) = -2.67, p < 0.01$. These findings, summarized in Tables 2 and 3, provide some support for Hypothesis 1 and for the corollaries to Hypothesis 2.

Hypothesis 2 stated that women in their early 30s will engage in more adulterous and promiscuous sexual activity than women in other age groups. The hypothesized function of this sexuality shift in women was to increase the genetic quality or diversity of their offspring (Smith, 1984). Because Hypothesis 1 made no such prediction, this was a key avenue for contrasting Hypotheses 1 and 2. As shown in Table 2, women in their early 30s did not experience an increase in their level of Infidelity or Promiscuity as reflected in self-reports (Schmitt & Buss, 2000). Thus, women in the 30-34 age group did not differ significantly from other women in their tendency to have the kind of sexual intercourse that would potentially lead to greater genetic diversity or quality in their offspring (i.e., unfaithful or promiscuous sex). These results, therefore, tend to disconfirm Hypothesis 2.



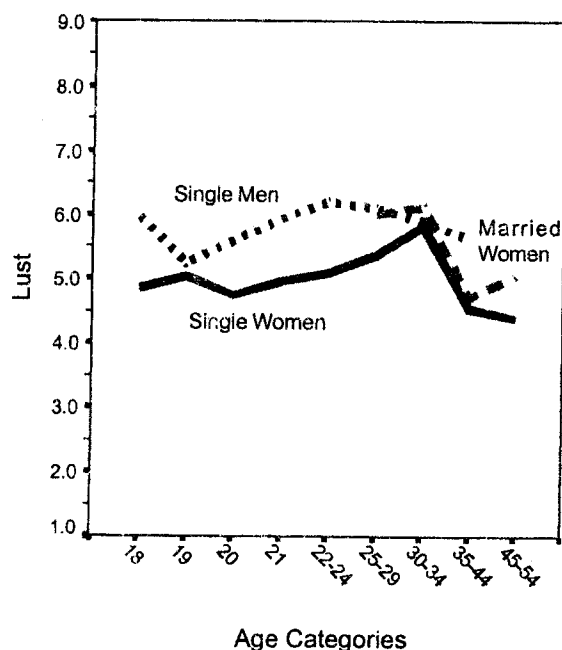
Two additional measures were administered to our samples that provided tests of Hypothesis 2. In both cases, Hypothesis 2 was not supported. First, women in the 30-34 age group did not report seeking short-term mates more than other women. If a difference does exist, it is that women 30-34 reported *less* seeking of short-term mates than women in all other age groups, $t(696) = -1.65, p < 0.10$. Men were also less likely to seek short-term mates in the 30-34 age group than older or younger men, $t(407) = -2.29, p < 0.05$. Second, women in the 30-34 were not significantly more likely to agree to have sex with a desirable man after knowing him for only one day. As with the lexical self-description measure (Schmitt & Buss, 2000), these findings disconfirm Hypothesis 2.

Because Study 1 did not record marital status of respondents, the results presented to this point leave it unclear whether the apparent early-30s peak in desire functions to increase desire in marriage, to facilitate mate acquisition, or both. The findings from Study 2 address this issue while retesting hypotheses 1 and 2 in a varied sample of Canadian women.

STUDY 2 RESULTS

According to Hypothesis 1, and the corollaries to Hypothesis 2, women should experience heightened levels of subjective sexual desire during their early 30s. As illustrated in Figure 3, and detailed in Table 4, this trend seemed evident among both single and married Canadian women. A significance test was used to assess whether Canadian women in their early 30s experience a true "peak" in sexual desire

Figure 3 Subjective Levels of "Lust" Among Single Women, Married Women, and Single Men from Canada*



*Nine single women (solid line), five married women (bars), and six single men (dotted line) were in the key 30-34 age groupings.

relative to other women (see Table 5). Unfortunately, sample sizes were not sufficient for testing married and single women separately. Instead, we examined whether all Canadian women in the 30-34 age group experienced a significant increase in sexual desire in

Table 4 A Cross-Sectional View of Subjective Sexual Desire Across Adulthood from a Canadian Sample

Age Group	Single Women			Married Women			All Men		
	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>
18 Years	4.85	1.84	56				5.96	1.86	37
19 Years	5.03	1.81	165				5.23	1.51	74
20 Years	4.73	1.60	96				5.59	1.39	55
21 Years	4.95	1.42	83				5.93	1.48	38
22-24 Years	5.09	1.62	115				6.20	1.56	73
25-29 Years	5.36	1.53	41	6.00	0.66	12	6.10	1.42	29
30-34 Years	5.82	1.83	9	6.12	1.25	5	5.89	1.49	6
35-44 Years	4.53	2.38	9	4.70	1.16	6	5.62	0.96	5
45-54 Years	4.38	1.17	9	5.04	1.63	5			

Note: Scores were based on responses to Likert-type scales ranging from 1 (not at all accurate) to 9 (extremely accurate) from a lexically-based self-report measure of Lust (Schmitt & Buss, 2000). Possible "sexual peaks" are highlighted in bold.



Table 5 Are Canadian Women Between 30 and 34 Years of Age at a Sexual Peak?

Sexual Characteristic	Women 30-34		All Women Not 30-34		30-34 versus Not 30-34
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>t</i>
Lust	5.93	1.60	4.99	1.65	2.11*
Seductiveness	5.93	1.00	5.59	1.48	0.85
Abstinence	2.23	1.48	3.76	2.51	-2.28*
Infidelity	1.93	2.19	2.13	1.54	-0.48
Promiscuity	3.04	1.90	2.83	1.75	0.43
Short-Term Mate Seeking	1.64	1.34	2.11	1.60	-1.09
Likelihood of sex with someone after one day	-1.85	1.61	-2.35	1.37	1.31

Note: Scores of Lust, Seductiveness, Abstinence, Promiscuity, and Infidelity were based on responses to Likert-type scales ranging from 1 (extremely inaccurate) to 9 (extremely accurate) from a lexically-based self-report measure of human sexuality (Schmitt & Buss, 2000). Scores for Short-Term Mate Seeking were based on a Likert-type scale ranging from 1 (currently not at all seeking) to 7 (strongly currently seeking), scores for Likelihood of Sex were based on scales ranging from -3 (definitely not) to +3 (definitely yes); all from Buss and Schmitt (1993). Fourteen women were in the 30-34 group, 597 women were in the "not 30-34" group. * = $p < .05$.

relation to other women. Women 30-34 reported significantly higher levels of Lust than women in all other age groups, $t(609) = 2.11$, $p < 0.05$, $d = 0.57$. This significant finding replicates Study 1 and provides cross-national evidence that a peak in women's sexual desire exists during their early 30s. The number of men who were married ($n = 12$) did not allow us to visually examine trends across marital status in men. Single men, however, failed to display a significant pattern of peaking in desire between 30 and 34 (see Figure 3 and Table 4). Again, this finding replicated the finding among men from the United States.

Hypothesis 1, and the corollaries to Hypothesis 2, stated that women will exhibit heightened levels of initiating sexual intercourse in their early 30s. However, as shown in Table 5, there was not a significant effect that suggested an early-30s peak in Seductiveness among Canadian women. This is a replication failure of Study 2. Hypothesis 1, and the corollaries to Hypothesis 2, also stated that women

will have more sexual intercourse in their early 30s. As noted in the third row of Table 5, there was a difference such that women in the 30-34 age group were less abstinent, or more sexually active, than the average of all other groups, $t(596) = -2.28$, $p < 0.05$. This finding replicates Study 1 and provides significant support for Hypothesis 1 and for the corollaries to Hypothesis 2 among Canadian women.

Hypothesis 2 stated that women in their early 30s will engage in more adulterous and promiscuous sexual activity than women in other age groups. The hypothesized function of this sexuality shift in women was to increase the genetic quality or diversity of their offspring (Smith, 1984). As noted above, this is an important avenue for contrasting Hypotheses 1 and 2 because Hypothesis 1 made no such prediction. As shown in Table 5, women in their early 30s did not experience an increase in their level of Infidelity or Promiscuity as reflected in self-reports (Schmitt & Buss, 2000). Nor were they more likely than other women to seek short-term mates or agree to sex with men after brief periods of time. Thus, women in the 30-34 age group were not less faithful or more promiscuous than women across all other age groups. These results corroborate those of Study 1 and strongly disconfirm Hypothesis 2.

DISCUSSION

OVERVIEW

Study 1 provided provisional evidence that women from the United States who were attending college and were between the ages of 30 and 34 were more likely to score higher on measures of lustfulness, seductiveness, and sexual activity (i.e., less abstinent) than was the collective sample of younger and older female students. This pattern of an early-30s increase in sexual desire was not evident among men. The findings thus offer tentative confirmation of the fabled early-30s peak in women's erotophilic desire and sociosexual behaviour. These findings also support Hypothesis 1, and the corollaries to Hypothesis 2, which propose an evolutionary benefit of an early-30s peak in female sexual desire. However, women in their early 30s do not report significantly higher levels of infidelity, promiscuity, or short-term mate-seeking than other women. Neither were women in their early 30s more likely to have sex with someone



they view as desirable after knowing them for a brief time period. These findings directly refute Hypothesis 2.

As noted previously, these conclusions were constrained by at least three significant factors. First, the responses are from college students residing in a single culture, the United States. It may be that women from other countries/cultures do not experience or would not report this type of sexual peak. Second, our findings may result from a shared set of sexual stereotypes. Although we sampled in geographically diverse sections of the United States (i.e., New York, Florida, Texas, and Illinois), the stereotype of early-30s women peaking in sexual desire may be so common throughout the United States that early-30s women in our samples reported increased sexual desire reactively, trying to fulfil what they perceived to be a common sexual expectation. Finally, because we did not assess the marital status of participants in Study 1, it remained unclear whether the sexual peak functions to increase sex within marriage, or whether the early-30s increase in desire is constrained to single women, perhaps functioning in the context of mate acquisition rather than reproduction. In Study 2 we addressed these issues by sampling a cross-section of college students and others from four regions within Canada.

Much like their United States counterparts, Canadian women between the ages of 30 and 34 also had higher scores on our measure of lustfulness than did women of all other ages combined. There was also a significant tendency for Canadian women in their early 30s to report being more sexually active than did younger or older women. This pattern of sexual desire across age groupings was not evident among men. Consequently, these findings largely replicate those of Study 1 and provide a cross-cultural confirmation of an early-30s sexual peak in women. These findings are thus consistent with our evolutionary Hypothesis 1 about the function of an early-30s peak in female sexual desire. However, women in their early 30s did not report significantly higher levels of infidelity, promiscuity, short-term mate-seeking, or having sex with relative strangers than other women. These findings disconfirm Hypothesis 2.

GENERAL OBSERVATIONS

Subject to the methodological limitations discussed

below, the current findings suggest unique answers to two key questions. First, women in their early 30s seem to experience a peak in sexual desire, as measured by subjective feelings of lust and behavioural manifestations of seductiveness and sexual activity. Along with evidence from orgasmic output (Kinsey et al., 1953), the cognitive-emotional focus of sex (Kaplan & Sager, 1971), social perceptions of sexual peak (Barr et al., 2002), and the suggestive findings from other large self-report surveys (Laumann et al., 1994), the current set of sexual self-descriptions corroborate the hypothesis that women's sexual desire peaks in their early 30s. Second, the failure to find other shifts in sexuality with age (e.g., increases in infidelity or promiscuity) suggests that women's sexual desire peak may have the specific evolutionary function of increasing reproduction with one's primary long-term mating partner (either within marriage, or if single by seeking out non-promiscuous sex). Support was not found for the hypothesis that women in their early 30s are engaging in more extra-marital affairs or more promiscuous sex, which was hypothesized to be a way of increasing the genetic quality or diversity of their offspring (Smith, 1984).

The present findings may have important practical implications. For example, sex differences in the timing of sexual peaks may help to explain some recurring forms of sexual conflict, such as conflict over the frequency of sexual intercourse (Buss, 1989b; Hurlbert & Apt, 1994). In particular, if men tend to marry women who are roughly four years younger than they are (Buss, 1989a), the time period when men are in their mid 20s and women in their early 20s may be a time of heightened sex drive discrepancy. Relatedly, improving our understanding of why the sexes differ in sexual desire at particular developmental times may have important implications for sex and marital therapy (Kaplan & Sager, 1971; Verhulst & Heiman, 1988). Wiederman (2001) has speculated that sex differences in the timing of sexual peaks may be largely unrelated to changes in female sexual desire. Instead, changes in sex differences may result from men's desires dropping over time. In the current set of studies, however, it seemed clear that changes in female sex drive do have an effect on the degree to which partners differ in sex drive. Therapists will thus find here further reason to address the sexual



desires of both partners when treating couples with discrepant sex drives.

Another important conclusion from this research is that men and women do not differ all that greatly in the timing of sexual desire peaks. Although men did not exhibit as strong a peak as women, the timing of maximal lust and seductiveness among men was closer to women's peak than most people assume (i.e., the male peak was around 25, not the 19- or 20-year-old stereotype common to American culture; Wiederman, 2001). Barr et al. (2002) found that the perception of sex differences in the timing of sexual peaks may be due to people's tendency to rate men's peak in terms of sexual desire and women's peak in terms of sexual satisfaction. Our findings confirm that sex differences in the timing of sexual peaks do exist, at least based upon anonymous self-report surveys, within the singular domain of sexual desire. However, men's sexual desires peaked later than is commonly perceived (Barr et al., 2002).

METHODOLOGICAL LIMITATIONS

The present research has several important limitations. One limitation is that the sample size of the older age groupings was small. Although sample sizes of at least eight are generally required for the types of analyses presented here, some have argued that when sample sizes are less than 30, as is the case with all the 45-54 and 55-64 age groups, results still need to be interpreted with caution (Laumann et al., 1994). As an initial exploration of changes in female sexual desire around age 30, however, the sample sizes of the key age groups are probably adequate for some amount of generalization. The non-random nature of the samples also limits the generalizability of our results. For example, women who are 30-34 and are in college are likely somewhat different from women-in-general of this age group. Women seeking an undergraduate degree who are in their 30s also may differ in personality, hormones, and other life factors from women who are younger and are following a more normative path of attending college. As a consequence, the findings presented here should be conservatively viewed as a very preliminary portrayal of sexuality shifts across the life course.

Because this study was cross-sectional, it is also a

concern that the observed sexual peaks in women are due to cohort effects. For example, women born in the late 1960s may be more lustful than women born before and after that time because of the sociocultural events of that time in history, and not because all women experience a peak in sexual desire in their early 30s. Laumann et al. (1994), for example, found that the sexual behaviour of women born in the 1940s was strongly affected by the events of the sexual revolution. Those women who married in the 1960s had higher rates of infidelity (11.6%) than women born in the 1930s (8.1%), 1950s (8.3%), or 1960s (6.2%). Others have found that cross-sectional designs tend to overestimate changes in sexual activity (George & Weiler, 1981). Future research using cross-sequential or longitudinal designs will be needed to directly address this limitation.

Another limitation of this research is that we did not assess the marital status of participants in Study 1, nor did we measure the parental status or reproductive history of participants. It is possible that the participants in the older age groupings of Study 1 were recently divorced and on their way back to college in search of career-related education. The lack of a change in infidelity might not have provided a straightforward test of Hypothesis 2 because these women's promiscuity is not necessarily "adulterous." Still, the fact that self-reports on the Promiscuity scale did not change over time suggests that women were not increasing the variety of their sexual partners. Married or single, if women in the 30-34 age group experience a sexual peak but do not increase their attempts at short-term mating, this directly disconfirms Hypothesis 2. In addition, in Study 2 and in two subsequent studies where measures of erotophilic desire were collected along side key demographic information (Schmitt, 2001; Schmitt & Shackelford, 2001), few significant differences were found between married, single, or divorced individuals in terms of their basic sexual desires.

It is still possible, however, that the early-30s peak in erotophilic lust, predicted by both evolutionary hypotheses, is due to confounding demographic variables not measured in Study 2, and is not the result of an evolved sexual adaptation. The average age of marriage in America is around 25 for women and it seems to be rising (Laumann et al., 1994; Sweet &



Bumpass, 1990). It could be that women between 30 and 34 in our sample experienced a demographic peak in being *newly* married. The increase in sexual desire and seductive behaviour at age 30 might be caused by a sexual "honeymoon stage" in the early years of marriage (Blumstein & Schwartz, 1983; Greenblatt, 1983) and not by intrapsychic or biological increases in libido. The causal pathways between the newlywed stage of marriage and the intensification of sexual desire, however, could work in the reverse direction. It may be that women enter marriage in their early 30s due to an increase in their feelings of sexual desire. With our current methods, we are unable to address this causal ambiguity.

Previous research focusing only on married couples has documented that, although sexual activity declines over the course of marriage, this decline slows at age 32 (Trussell & Westoff, 1980). This finding suggests that age, and not newlywed status, may be the primary cause of sexual desire shifts in women. It may also be the case that the psychological adaptation posited by Hypothesis 1 is a context-dependent adaptation (Gangestad & Simpson, 2000). If women are married by 30, the early-30s "alarm" might awaken sexual desire to increase the probability of reproduction. If women are not married, their "biological clock" might then awaken the desire for marriage and the honeymoon stage that follows would be adaptively intertwined with increased sexual desire. The early-30s peak that we observed in women might also result from the possibility that women learn to orgasm more effectively through masturbation around age 30, and so their increase in sexual desire is due to newly found freedom to define their own sexuality (Daniluk, 1998; Haule, 1992). This may not fully suffice as an alternate explanation, however, since the same sexual freedom apparently has no effects on sexual desire increases after age 35 (Mansfield, Voda, & Koch, 1995), and again the causal pathways between biological changes and sexual behaviour shifts would remain cloudy.

A final methodological limitation of this study is its reliance on self-report as the sole source of women's sexuality. Ideally, information on female sexual desire should come from multiple sources. These might include reports from women, their partners, their friends, naturalistic observations, experimental tests,

and from known physiological substrates of sexual desire. Although the self-report scales used in the current study have high internal and temporal reliability, as well as adequate levels of convergent and discriminant validity (Schmitt & Buss, 2000), the use of only two items on some of the sexual scales in the current study is a psychometric concern. In addition, the variability of some of the measures was somewhat restricted. For example, the variability of women's self-reports of Likelihood of Sex With Someone After One Day was potentially low enough such that even if there were a relationship between promiscuity and age in women, the present measure may have lacked the sensitivity to detect it. These limitations caution against completely rejecting the viability of Hypothesis 2.

The rejection of the Hypothesis 2 prediction that affair rates will peak for women in their early-30s may seem at odds with some previous research on affair rates across the lifespan (Hunt, 1974). This previous work used magazine surveys to gauge peaks in female rates of infidelity (e.g., Baker & Bellis, 1995; Hunt, 1974). The rejection of this prediction is, however, consistent with findings using high quality, probability surveys on the incidence of affairs across the lifespan (Laumann et al., 1994; Wiederman, 1997). For example, Laumann et al. (1994) found in the National Health and Social Life Survey that the rate of self-reported affairs decreases steadily with age. Laumann et al. reported rates of extra-marital sex "in past year" of 4% among married women aged 18-29, 2.3% among women aged 30-44, and 1.4% among women ages 45-59. Using data from the General Social Survey (Davis & Smith, 1994), Wiederman (1997) reported rates of extra-marital sex "in the past year" of 3.1% among married women aged 20-29, 2.7% among women aged 30-39, 1.7% among women ages 40-49, and a steep decline in subsequent age groups. Thus, the present findings are consistent with high-quality surveys on the incidence of affairs across the lifespan—women do not become more adulterous in their early-30s.

FUTURE RESEARCH DIRECTIONS

There are two alternate explanations of our findings that future research should address. First, Hypothesis 1 stated that women will experience a sexual peak in their early-30s because of its direct effect on reproduction within long-term relationships. It



alternately could be theorized that the sexual peak—and its accompanying increase in rates of sexual intercourse—functions to cement the emotional bonds of commitment between women and their mates, without regard for reproduction, *per se*. When women provide frequent sexual access to their long-term mates, the relationship satisfaction of men tends to increase (Buss & Shackelford, 1997). Thus, the early-30s sexual peak may serve as a mate-retention technique for women. It allows women to keep their men from switching to a new and younger partner precisely at the time when women's reproductive value is beginning its age-based decline. One problem with this alternate explanation of the early-30s sexual peak, however, is that this explains only why women's sexual desire would go up at age 30. It does not explain why sexual desire steadily decreases after age 35. If this alternate explanation were true, then women might be expected to maintain high levels of desire well into their low reproductive value years, even increasing sexual frequency across late adulthood. This is clearly not the case (Laumann et al., 1994). On the other hand, perhaps cementing the long-term relationship bond is pivotal at age 30, and once cemented at that age the bond is less likely to be broken. Future research may help to explain why a peak in desire at age 30 may be critical to maintaining the emotional bond between men and women in long-term partnered relationships. One brief speculation is that the peak leads to having children, which then increases the emotional bond between long-term, marital partners (Buss & Shackelford, 1997).

A second theoretical alternative to our findings involves the prospect of women switching mates. Hypothesis 2 predicted that women's sexual desire peak increases the genetic quality or diversity in offspring through promiscuous or extra-pair copulations. It may be, however, that the early-30s increase in female sexual desire motivates women to seek the best (or a better) long-term resource investor before their reproductive value begins its age-based decline. The sexual peak, in this case, may or may not lead to reproduction, but would directly serve a mate-upgrade function in terms of paternal qualities (Greiling & Buss, 2000; Hrdy, 1981). One problem with this hypothesis is that we found no evidence of women actually engaging in higher rates of promiscuity or adultery in their early 30s. Although

extra-pair copulations at any age may be linked with obtaining genetic quality, diversity, and mate-upgrades (Greiling & Buss, 2000), the early-30s sexual peak appears not to have this function. Future research that addresses the methodological limitations noted above, however, could more fully address this theoretical nuance of Hypothesis 2.

A final issue to be addressed is whether the early-30s peak would have been relevant in our ancestral past. It is often reported—and commonly believed—that men and women probably did not live much past their 40s throughout most of human evolution (Trinkaus & Tompkins, 1990). If this were true, the present set of hypotheses would be in jeopardy because natural selection would not have had the developmental opportunity to sculpt a functional early-30s peak into women. Having a child ten years before one's own death would seem an ineffective reproductive strategy in the ancestral environment known as the Pleistocene, when humans lived as small nomadic bands of foragers (Tooby & Cosmides, 1992).

Recent evidence suggests, however, that many of the men and women of the Pleistocene probably lived well past their 40s. For example, one avenue for understanding our ancestral past is to examine modern non-industrialized cultures, especially those who still pursue the hunter-gatherer lifestyle that dominated our Pleistocene past. Among the modern people known as the Ache, who live as foragers amongst the forests of Paraguay, "An Ache woman who survived to age twenty could expect on average to live until age sixty" (Hill & Hurtado, 1996, p. 194). Indeed, among many modern foraging cultures, including the !Kung of Botswana and the Yanomamö of Venezuela, most adults who survive to adulthood continue to live into their 50s (Hill & Hurtado, 1996). There is also evidence that female menopause, which takes place around 45 in most foraging cultures (Hill & Hurtado, 1996), may have evolutionary functions associated with grandmothering (Turke, 1988). Perhaps the misconception of our ancestors "dropping dead" in their 40s may be due to the fact that childhood mortality rates among foraging peoples are often quite high compared to industrialized cultures (Howell, 1979). This may have caused the perceived average life expectancy among foragers to be rather low, even



though most modern foragers who survived childhood lived well into their 50s. Given this more accurate portrayal of our ancestral lifespan, it seems likely that natural selection had ample opportunity to sculpt among our female ancestors a functional peak in sexual desire in their early-30s.

In sum, this research provided an exploratory look at changes in female sexuality across the lifespan. We examined the proposition that a "peak" exists in female sexual desire in the early 30s. We found some support for this proposition among women from the United States and Canada. We also tested two evolutionary hypotheses about the function of the early-30s peak in women's sexuality. Although both hypotheses received some support, the hypothesis that the sexual peak functions to increase reproduction within long-term primary relationships received the most support. Along side other research on sexual desire shifts over the ovulatory cycle (Regan, 1996; Stanislaw & Rice, 1988) and across different contexts of human mating (Buss & Schmitt, 1993; Gangestad & Thornhill, 1997), the current findings suggest that it will be important for future mating researchers to take into account the temporally contingent functions of human sexual desire.

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