Avoidant romantic attachment and female orgasm: testing an emotion-regulation hypothesis

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Recent research indicating that roughly a third of the variation in female orgasmic frequency is heritable leaves a substantial amount of non-heritable variation to be explained. Given that emotion regulation is central to attachment theory and that attachment insecurity in infancy and avoidance in adulthood are not heritable, it was predicted that (higher levels of) avoidance would predict (lower levels of) female orgasmic frequency. Results of an Internet survey of 323 women (mean age = 24.39 years) proved consistent with this hypothesis. Results are discussed in terms of developmental influence on adult reproductive behavior, evolution, and the characteristics of the sample.

Keywords: adult attachment; avoidant attachment; female orgasm; orgasmic frequency; reproductive strategies

Introduction

Scientifically speaking, the function of the female orgasm remains a mystery. Evolutionary biologists in particular debate its function and even whether it has one. Whereas some contend that the female orgasm evolved to promote intimacy and pair-bonding (Fisher, 1992), and thereby paternal investment (Alexander, 1979), others advance a more mechanical and less psychological argument. During the female copulatory orgasm the cervix rhythmically dips into a semen pool, thereby increasing sperm retention (by about 5%) relative to intercourse without orgasm (Baker & Bellis, 1993, 1995), along with the probability of conception. Orgasmicity is also linked to fluctuating asymmetry (FA), a presumed marker of genetic fitness (e.g., good immune system), as females mated to higher than lower FA partners report significantly more copulatory orgasms (Thornhill, Gangestad, & Comer, 1995). The fact that females may select extra-pair partners of higher genetic quality than in-pair partners (Baker & Bellis, 1993; Smith, 1984), coupled with the observation that females are more likely to retain more sperm following orgasm with extra-pair than in-pair partners, raises the prospect that ancestral females may have benefited from extra-pair sex/orgasm in one of two ways, as insurance against possible in-pair partner infertility and as a means of bearing offspring of higher genetic quality (Baker & Bellis, 1993; Smith, 1984). Consistent with this analysis is the finding that females seem to time their extra-pair copulations to coincide with their fertile period (Baker & Bellis, 1993),
In contrast to such adaptational analyses, Symons (1979) and others argue that the female orgasm has no evolutionary function whatsoever. Indeed, Gould (1987) and Lloyd (2005) contend that the clitoris has, like the male nipple, no purpose. Having been formed early in development when body plans of both sexes are the same, this primordial structure grows into a penis in males but remains vestigial in females, retaining its neural connections linking physical stimulation to the brain’s pleasure centers.

Regardless of the evolutionary function (or lack thereof) of the female orgasm, recent evidence indicates that 31% of the variation in female orgasmic frequency during sexual intercourse and 37% during non-copulatory sexual contact is heritable (Dawood, Kirk, Bailey, Andrews, & Martin, 2005; see also Dunn, Cherkas, & Spector, 2005). While such heritable variation raises the prospect that natural/sexual selection has played some role in the evolution of female sexual responsiveness, the very data highlighting genetic influences simultaneously calls attention to nonheritable factors contributing to variation in female orgasm during sex. Nonheritable factors implicated to date in female orgasmic frequency include SSRI antidepressants (Ashton, Hamer, & Rosen, 1997), self-image, previous negative sexual experiences, emotional intimacy, sexual stimuli, and relationship and emotional satisfaction (Basson, 2001; Waite & Joyner, 2001). We argue here that a largely nonheritable aspect of psychological functioning, namely avoidant romantic attachment, may also contribute to individual differences in female orgasmic frequency.

Attachment theory is, fundamentally, as much a theory of emotion regulation as a theory of the development of interpersonal bonds (Cassidy, 1994; Sroufe, Egeland, Carlson, & Collins, 2005). From a developmental perspective, insecure-avoidant attachment, theorized and sometimes found to be the forerunner of avoidant states of mind regarding attachment in adulthood (Fraley, 2002; van IJzendoorn, 1995), is considered to reflect the ‘‘minimizing’’ of emotional signals regarding the desire to be close to significant others, especially the principal caregiver (Cassidy, 1994). Theoretically, a history of rejection and a failure to secure comfort when distressed leads to the distancing of the self from negative emotions and the suppression of expression of such feelings, and perhaps others as well.

Insecure-resistant attachment, in contrast, sometimes found to be a forerunner of a highly anxious, preoccupied state of mind regarding attachment in adulthood (Fraley, 2002; van IJzendoorn, 1995), reflects a distinctly different emotion-regulation strategy. Due to inconsistent care, the child comes to exaggerate or ‘‘maximize’’ signals of distress to evoke care and comfort (Cassidy & Berlin, 1994). Secure attachment is presumed to reflect the balanced and open expression of a full range of emotions that develops due to a history of sensitive caregiving that does not require the infant/child to manipulate emotional expression to get its needs met (Cassidy, 1994).

Social psychological research on adult romantic relationships highlights two distinct dimensions of attachment which, when studied from a dimensional and categorical perspective, prove to be related to relationship functioning, including sexuality. The anxiety dimension taps the degree to which an individual fears abandonment and rejection, whereas the avoidance dimension reflects the degree to which an individual is uncomfortable with trust, dependency, and psychological closeness (Brennan, Clark, & Shaver, 1998). Secure romantic attachment, reflecting low levels of avoidance and anxiety, is associated with long, stable, and satisfying relationships characterized by high investment, trust, and friendship (Collins & Read, 1990; Simpson, 1990). Moreover, secures are less likely than insecures to experience negative and more likely to experience positive post-coital emotions (Brennan et al., 1998), are more open to sexual exploration, and enjoy a variety of ‘‘normative’’ sexual activities (Hazan, Zeifman, & Middleton, 1994).
Individuals with an insecure attachment orientation (i.e., high anxiety and/or high avoidance), in contrast, are more likely to endorse promiscuous sexual behavior (Brennan et al., 1998) and, in the case of females, experience sexual intercourse at an earlier age, have more lifetime partners, and more infidelity (Bogaert & Sadava, 2002). Furthermore, individuals scoring high on attachment anxiety exhibit an obsessive, dependent style of love (Collins & Read, 1990; Feeney & Noller, 1990; Shaver & Hazan, 1988) and a preference for the more affectionate and intimate aspects of sexuality (i.e., hugging, cuddling) relative to the genital aspects (e.g., intercourse) (Hazan et al., 1994). Consistent with the view that attachment anxiety reflects fears of abandonment and rejection, anxious females engage in sexual intercourse to establish or induce intense closeness, thereby reducing attachment-related insecurities (Schachner & Shaver, 2004).

Individuals manifesting high attachment avoidance have relationships characterized by low satisfaction, a high break-up rate (Hazan & Shaver, 1987; Kirkpatrick & Davis, 1994), and low intimacy (Levy & Davis, 1988), self-disclosure, (Mikulincer & Nachson, 1991), and communication levels (Collins & Read, 1990), the latter of which is directly related to limited sexual satisfaction (Bridges, Lease, & Ellison, 2004; Mikulincer & Shaver, 2007, Chapter 12). Avoidant people are not only more likely than others to engage in one-night stands and to endorse the view that “sex without love is pleasurable” (Brennan & Shaver, 1995), but also to report less enjoyment of physical sex (Hazan et al., 1994) and greater acceptance of casual/uncommitted sex (Feeney, Noller, & Patty, 1993). Notably, avoidant individuals appear to engage in sexual contact to impress their peers, avoid emotional intimacy, and enhance self esteem rather than to cope, feel valued, or express love for their partner (Schachner & Shaver, 2004).

In view of research linking attachment with emotion regulation, relationship functioning, and sexuality, it is noteworthy that recent behavior-genetic research on infant and adult attachment converges in showing that whereas attachment insecurity in infancy and avoidance in adulthood are not heritable, overt manifestations of distress in infancy and anxiety in adulthood are heritable. In a twin study of 354 English and Dutch infants, 52% of the variance in attachment security was explained by shared environment and 48% by unique environmental factors and measurement error; genetic factors accounted for 77% of the variance in temperamental reactivity (Bokhurst, Bakermans-Kranenburg, Fearon, van IJzendoorn, Fonagy, & Schuengel, 2003). In a twin study of 478 Canadian adults, 40% of the variance in attachment anxiety was attributable to genetic factors, with non-shared environmental factors accounting for the remaining variation. Critically, none of the variance in attachment avoidance proved attributable to genetic factors, whereas 30% was explained by shared environment (Crawford, Livesley, Jang, Shaver, Cohen, & Ganiban, 2007).

Three points made through this paper collectively lead to the prediction that higher levels of attachment avoidance in particular will be related to lower levels of female orgasmic frequency. First, female orgasmic responsiveness involves emotional intimacy and satisfaction. Second, substantial variation in female orgasmic frequency is not heritable. Third, attachment avoidance, characterized by a discomfort with trust, dependency, and psychological closeness, is a non-heritable, developmentally-induced proclivity to minimize emotional signals regarding the desire to be close to significant others.

Despite extensive research on adult romantic attachment and relationship functioning, only a single and very recent study has examined linkages between attachment and female orgasmic responsiveness. Contrary to the just-derived prediction, this work showed that it was the heritable dimension of adult romantic attachment, namely anxiety, rather than its
nonheritable counterpart, avoidance, that predicted frequency of orgasm in a sample of married/cohabiting Israeli Jewish women averaging almost 45 years of age (Birnbaum, 2007). The fact that insecure-avoidant attachment in infancy is virtually nonexistent among the Israeli Jewish population (van IJzendoorn & Sagi, 1999) raises questions as to whether the same results would emerge in a very different sample using the same measure of adult romantic attachment.

Method
Participants
A total of 323 females ranging in age from 18 to 55 years \( (M = 24.39) \) served as participants in this Internet-administered study. Of these, approximately 74% were North American, British, Scottish, Irish, or Welsh; approximately 70% were Caucasian; 67% had a Body Mass Index (BMI) that fell within the “normal” range of 18.5–24.9; and 56% reported high school diploma or equivalent as “highest earned degree.” Almost 62% of participants were going steady, cohabiting, engaged, or married, and 86% reported primary sexual orientation as heterosexual. Another 524 persons visited the study website, 34 of whom were males and ineligible, 147 of whom decided not to participate, and 343 of whom were excluded from the analysis sample due to extensive missing answers (i.e., more than 50% of the orgasm and 30% of attachment items) or erroneous data (e.g., 18 years old with a post-doctoral degree), a frequent occurrence in Internet-based research (Birnbaum, 2000; Reips, 2002).

Procedure
Female participants were passively recruited via several online psychological survey sites (i.e., listing link to survey) to take part in the study. Multiple submissions were controlled by using cookies and (temporary) records of the respondent’s computer IP address to ensure this. Following presentation of the consent form, participants were asked whether they were male or female and at least 18 years of age; male respondents were re-directed to a website where it was re-iterated that the study was solely for females. Respondents were asked first to provide demographic details before being questioned about their experience of orgasm; the measure of romantic attachment orientation was administered thereafter.

Measures
Demographics
Information was obtained on respondent age, nationality, ethnicity, height/weight, highest degree earned, relationship status, and sexual orientation. Height and weight were used to calculate participants’ Body Mass Index (BMI), which served as a moderator variable in the analysis because recent research documents improved sexual arousal and orgasm among overweight and obese participants who lowered their BMI (Kim, Kang, Kim, & Youn, 2006).

Orgasmic frequency
An internally consistent \( (z = .77) \) measure of orgasmic frequency based on the mean of four questions regarding frequency of orgasm during sex was developed for this study,
with each question rated on a 5-point scale ranging from “never” to “very frequently,” with an additional option of “not applicable; do not have this type of sexual experience”: “In general, how often do you experience orgasm during sex?” “How often do you experience orgasm when a partner stimulates your genitals with his/her hand?” “How often do you experience orgasm when a partner stimulates your genitals with his/her mouth?” “How often do you experience orgasm during sexual intercourse?”

Adult romantic attachment

Two dimensions of romantic attachment, avoidance and anxiety, were measured by means of the 36-item Experiences in Close Relationships questionnaire (Brennan et al., 1998). Respondents were instructed to think about how they generally experience close relationships (rather than about a specific or current partner) and rate the degree to which each statement accurately described their feelings in close relationships, using a 7-point scale ranging from “strongly agree” to “strongly disagree.” Eighteen items measured avoidance (e.g., “I prefer not to show a partner how I feel deep down”; $x = .91$) and 18 measured anxiety (e.g., “I worry about being abandoned”; $x = .93$).

Results

Table 1 presents the correlations among all variables. Greater frequency of orgasm was related to being older, having a higher BMI, and being in an enduring relationship of some kind (i.e., going steady, cohabiting, being engaged or married). As hypothesized, greater avoidance was associated with less frequent orgasm. Anxiety was not significantly related to orgasm, even though avoidance and anxiety were modestly positively related (as in Brennan et al., 1998).

Hierarchical regression was used to determine if avoidance and/or anxiety predicted orgasmic frequency after controlling for age, BMI, and education, and whether any of these covariates predicted the outcome in interaction with either of the attachment measures (after centering age, BMI, avoidance, and anxiety at their respective means). All six interactions, as well as the interaction of anxiety and avoidance, were tested individually. For reasons outlined on the following page as well as in the discussion, relationship status, which also was correlated with the outcome, was not treated as a covariate initially. Results in Table 2 show that the three control variables accounted for a

Table 1. Intercorrelations of predictor and criterion variables.

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Note: $n$ ranges from 249 to 321. Education and relationship status were dummy coded: Education, 0 = high school degree or less, 1 = A levels (due to the international sample) or higher; Relationship status, 0 = not in a relationship, 1 = in a relationship.

*p ≤ .05; **p ≤ .01; ***p ≤ .001, two-tailed.
nonsignificant 3% of the variance in the outcome, that the two attachment variables accounted for a significant 4% increase in the variance explained, and that higher levels of avoidance predicted less orgasmic frequency, with no significant effect emerging for anxiety. None of the interactions proved significant.

The fact that avoidance rather than anxiety predicted orgasmic frequency, a finding directly contrary to results reported by G.E. Birnbaum (2007), raised the prospect that differences across studies in the relationship status of respondents might have contributed to the contrasting findings, as all of G.E. Birnbaum’s (2007) participants, but not those in the present study, were involved in established relationships (i.e., married or cohabiting). To explore this possibility, analyses were re-run adding three terms to the regression model. Relationship status, defined in terms of “in a relationship” or “not in a relationship” (dummy coded), was included as a main effect and the two two-way interactions between relationship status and each attachment variable were tested. Neither interaction proved significant, and the significant effect of avoidance held across models 2 and 3. Moreover, although relationship status predicted orgasm frequency when entered into the first step of the model ($\beta = .18$, $p = .01$), this relation became insignificant once the attachment variables were included in the second step. To insure that the failure to detect a moderating effect of relationship status was not an artifact of how relationship status was operationalized, alternative strategies of coding relationship status were explored (i.e., distinguishing single, going steady, and cohabiting/married), but doing so did not change already reported results. In sum, no evidence emerged that the absence of an effect of anxiety or the presence of an effect of avoidance was moderated by whether a female was or was not in a relationship or by the particular kind of relationship she was in.

**Discussion**

As hypothesized, results indicated that higher levels of avoidant romantic attachment predict lower levels of female orgasmic frequency. This finding is consistent with earlier cited evidence that avoidance is related to less enjoyment of physical sex, low satisfaction and intimacy in relationships, and relationships of shorter duration. We regard the anticipated linkage between avoidant romantic attachment and frequency of female orgasm as important from a theoretical standpoint even though the predicted relation proved modest in magnitude. Worth noting, nevertheless, is that the 4% variance
explained in frequency of orgasm by avoidant romantic attachment was based on a
research design that could not control for heritability. Given that approximately a third of
the variation in orgasmic frequency appears to be heritable (Dawood et al., 2005; Dunn
et al., 2005) and that avoidant romantic attachment has itself been found not to be
heritable (Crawford et al., 2007), it may well be the case that the explanatory power of the
latter with respect to the former is larger than appears so in the present work, especially
with regard to nonheritable influences on female orgasmic frequency. Only genetically-
 informed studies can determine whether this is the case.

However consistent the reported results were with an emotion-regulation view of
avoidance in attachment relationships (Cassidy, 1994; Sroufe et al., 2005), it must be
acknowledged that our results proved contrary to those of G.E. Birnbaum (2007). In her
Israeli work that did not come to our attention until after data collection and primary
analysis were completed, G.E. Birnbaum (2007) found that it was attachment anxiety
rather than avoidance that predicted female orgasm frequency. Importantly, although
G.E. Birnbaum (2007) reports that avoidance was not associated with her composite score
of orgasmic frequency after controlling for attachment anxiety, avoidance proved to be
significantly associated with one of G.E. Birnbaum’s (personal communication, 18
November 2005) orgasm items in just the manner that might be expected given the results
of the present study. The more highly an individual scored on attachment avoidance, the
more she reported “that being aroused to orgasm is a difficult task” \( r = .27, p < .01 \).
This finding would be expected given that emotional intimacy is part of achieving orgasm
(Basson, 2001) and that avoidant females characteristically avoid emotional intimacy.

Nevertheless, one possible explanation of the divergent findings across studies involves
the measurement of the dependent variable. Whereas the three questions in G.E.
Birnbaum’s (2007, personal communication, 18 November 2005) work concerned achiev-
ing orgasm in general, with two of the questions worded in terms of “difficulty in reaching
orgasm” (i.e., “How frequently did you find reaching orgasm a difficult task?”; “Please rate
the extent to which you find that being aroused to orgasm is a difficult task”), in the current
study, like the genetic research on orgasmic frequency discussed earlier (Dawood et al.,
2005; Dunn et al., 2005), respondents were specifically asked about frequency of orgasm
resulting from distinct sexual activities (i.e., oral sex, manual stimulation, sexual inter-
course), as well as orgasmic frequency in general. Our point here is not that a more general
form of the question would show an association with anxiety whereas a more specific
wording would show an association with avoidance, but rather that we chose to use orgasm
questions in line with heritability studies as we were specifically investigating a non-heritable
aspect predicted to be related to orgasmic frequency, namely attachment avoidance.

In addition, because of low rates of female copulatory orgasm, it is essential to
distinguish between sexual practices when studying the female orgasm. In G.E.
Birnbaum’s (2007) study, it is unclear about which sexual practice(s) a respondent was
thinking when answering orgasm questions. Thus, a distinct strength of the current study
is the use of specific questions regarding sexual practices leading to orgasm. Further,
whereas the difficulty questions used in G.E. Birnbaum’s (2007) study assume that orgasm
is a goal of sexual activity for avoidant females, the frequency question does not, which
suggests a confound in G.E. Birnbaum’s (2007) study. Indeed, because females with higher
levels of attachment avoidance engage in sexual contact, in part, to avoid emotional
intimacy rather than (as anxious females do) to establish closeness and reassurance
(Schachner & Shaver, 2004), and because emotional intimacy is part of achieving orgasm
(Basson, 2001), we contend that questions regarding orgasmic frequency are more
appropriate.
In addition to considering how orgasm was operationalized, two other explanations of differences in results across the two studies merit consideration; both highlight differences in sampling. Whereas G.E. Birnbaum (2007) recruited only women in enduring relationships (i.e., married, cohabiting), who thus averaged almost 45 years of age, no such restrictions were placed on our Internet survey which resulted in a much younger sample (mean age: 24 years), only some of whom were involved in enduring relationships. Recall that in addition to controlling for age, we ran several analyses with different “relationship status” coding schemes to determine if relationship status could account for the divergent findings, but this did not prove to be the case. Nevertheless, more work on this (and the age issue) is called for in view of the risks of embracing null findings.

Differences across the only two studies that have now examined linkages between romantic attachment and female orgasmic frequency could also be due to the fact that all of G.E. Birnbaum’s (2007) participants were Israeli Jews. This is important in any study of variation in attachment, especially if conceived as a developmental construct, because there is repeated evidence that Israeli Jewish infants almost never develop insecure-avoidant attachments (van IJzendoorn & Sagi, 1999), even though they manifest levels of avoidance similar to Western samples when queried using standard adult attachment questionnaires (G.E. Birnbaum, personal communication, 8 November 2005). This is irrespective of their rearing experiences, whether living in kibbutzim and sleeping away from their families in “children’s houses” (Sagi, van IJzendoorn, Aviezzer, Donnell, & Mayseless, 1994) or residing in more traditional nuclear family settings, with and without extensive nonmaternal child care experience (Sagi, Koren-Karie, Gini, Ziv, & Joels, 2002). These observations raise the possibility that it is primarily when avoidant romantic attachment reflects a developmental history of insecure-avoidant attachment (which it is unlikely to do amongst Israelis) that theoretically anticipated linkages between avoidant romantic attachment and frequency of orgasm should be expected (or will be detected). Such a result would be in line with developmental perspectives on human reproductive strategies (Belsky, 1999; Simpson, 1999).

Intriguingly, the fact that something as susceptible to developmental influence as avoidant attachment is related to sexual response in adulthood is consistent with evolutionary thinking linking early attachment and the quality of early parenting with reproductive strategy, that is, the way in which adults mate, relate, and parent (Belsky, Steinberg, & Draper, 1991; Chisholm, 1996). Indeed, this observation returns us to the question with which we opened this article, the much-debated evolutionary function of female orgasm. Could it be part of an evolved mechanism for translating developmental experiences in close family relationships into tactics for mating and relating?

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The first and second authors contributed equally to this paper.

References


