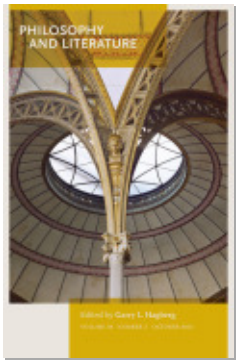
Pride and Prejudice or Family and Flirtation?: Jane Austen's Depiction of Women's Mating Strategies



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PRIDE AND PREJUDICE OR FAMILY AND FLIRTATION? JANE AUSTEN'S DEPICTION OF WOMEN'S MATING STRATEGIES

Abstract. Jane Austen's works may be perennially popular because they excel at the three kinds of adaptive advantage that Denis Dutton proposed to explain the pervasiveness of fiction. Based on brief personality sketches assembled from her novels, contemporary readers readily identify her characters' mating strategies. They accurately match characters to actual behaviors portrayed in the novels, and would interact with the characters in ways that protected their own reproductive interests. Thus, Austen's character descriptions provide low-cost, low-risk surrogate experiences of encounters with realistic personas, and promote readers' understanding of others' motivations and behaviors in order to regulate their own behavior adaptively.

I

In *The Art Instinct,* Denis Dutton promoted a theoretical framework that "has more validity, more power, and more possibilities than the hermetic discourse that deadens so much of the humanities."[1] This framework is Charles Darwin's theory of evolution by natural and sexual selection. Dutton proposed to seek "human universals that underlie the vast cacophony of cultural differences and across the globe" (*AI,* p. 39), based on a shared, evolved human nature.

This contrasts with the relativistic presumptions of those falling under the shadow of Margaret Mead and Clifford Geertz, or "the dogmas of Freud, the speculations of Jung, the sterile formulations of behaviorism,

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all variously empty or misleading" (p. 37). Also, Dutton believed that evolutionary science could have important implications for cultural products, including works of fiction. He dismissed the influential Stephen J. Gould's notion that complex human cultural activities are nonadaptive byproducts of an oversized human brain that somehow conferred additional benefits to our savannah ancestors.

We follow Dutton and other pioneers in the emerging field of literary Darwinism, which promotes the use of evolutionary theory for understanding literary fiction, amongst other products of human culture.[2] As social scientists, we take an empirical approach, using fictive works to gather data and test research hypotheses.[3] In this essay, we propose that Jane Austen's novels are perennially popular because she excels at all three kinds of adaptive advantage that Dutton proposed to explain the pervasiveness of fiction (*AI*, p. 110). These interconnected aspects are to: (1) provide a low-cost, low-risk surrogate experience; (2) be richly instructive sources of factual (or putatively factual) information; and (3) encourage us to explore the points of view, beliefs, motivations, and values of other human minds, in order to adaptively respond in our own behavior. Austen's intuitive evolutionary psychology creates a tutorial in romantic relationships that precedes the confirmatory research by nearly two centuries, and one that is intelligible to readers across history and context.

Our previous studies have supported the notion that proper and dark heroes in early nineteenth-century British Romantic–era novels resemble, respectively, long-term and short-term male reproductive strategies.[4] Readers readily inferred a character's mating strategy based on a brief personality sketch assembled from descriptions in the novels, associating proper heroes with loyalty, reliability, high parental investment, and risk aversion, and dark heroes with risk taking, high mating effort, and sexual promiscuity. Women preferred proper heroes for long-term committed relationships but usually chose dark heroes, who might embody higher genetic quality, for brief sexual affairs. Men were generally wary of dark heroes, avoiding them as business partners, sons-in-law, and companions for their girlfriends.

Nearly two centuries after her death, Jane Austen remains one of the most popular authors of fiction. Her works have been translated into more than thirty languages and adapted for numerous film and television productions. Some argue that only Shakespeare rivals her fame. It is possible that Austen's pervasive notoriety is in part due to her sophisticated understanding and portrayal of human sexuality. Indeed,

Austen may have been an intuitive evolutionary psychologist, as she so obviously understood the nature of women's mating preferences.[5]

Brian Boyd makes this point apparent when he argues, "All Austen's novels are love stories. Their power depends on the universal and central human problem—a problem we share with most of the animal kingdom—of choosing and winning the right sexual partner" ("JMC," p. 15). Furthermore, as Peter Graham shows, Austen and Charles Darwin were remarkably similar in their ability to observe and analyze courtship rituals.[6] Her novels vary substantially in plot and dramatic content, but all follow a very particular theme: the trials and tribulations of young women entering the mating market and searching for their ideal partner. Austen is a shrewd analyst of human behavior, and even her first, anonymously published novel was praised for its realism in the psychological portrayal of characters and social dynamics.

Women's mating strategies have evolved through natural and sexual selection over thousands of generations of hominids and humans, preceded by millions of generations of earlier mammalian ancestors. Thus, although cultural and social context certainly plays an important role in shaping these strategies, we also expect to see consistencies that span history and setting. The romantic drama in Austen's works was constrained by the social realities of her day and the practices of the gentry class that she and her characters inhabited. Women and men could not date or interact in private, and families and minders closely guarded young women. Of course, novels written about good men and women who follow all the social rules and carefully avoid misadventures may not be that interesting, marketable, or even realistic. Just as is true for the young in any era, some of the young adults in Austen's fictive worlds bend and break the social norms and expectations of the day. Austen's novels are inhabited by crafty women, both male and female flirts, and male seducers. Thus, Austen's characters provide an interesting range of variation in personality and mating strategies within a specific cultural climate.

Austen's women are active agents, despite their patriarchal setting, and they actively compete for access to a limited set of desirable mates. Austen recognized the importance of female choice, which was later suggested by Darwin to be a driving force behind sexual selection. Her characters assess and attempt to enhance their own level of beauty, they gossip, flirt, and denigrate others—all strategies women use to obtain and retain mates.

Aggregate differences in women's and men's mating strategies result from sex differences in parental investment. Women are typically more selective of their sexual partners because they are much more limited in the number of children they can have, and they invest considerably more in their children than men do.[7] Evolutionary psychologists are paying increasing attention to individual variation in women's mating strategies and the active role that women play in mating. Both women and men pursue long-term and short-term relationships. Despite the dramatic potential costs of short-term mating for women, such as raising offspring without a reliable partner, they may benefit through the man's immediate provisioning of resources and protection, and the opportunity to evaluate a potential long-term partner. Women may also benefit from the genes of a short-term partner, providing her offspring with a genotype that is successful in the current environment. Both women and men can also pursue mixed strategies, forming long-term partnerships but also engaging in short-term sexual unions.

II

Austen's numerous insights as revealed by her portrayal of female mating strategies resemble those of modern evolutionary psychologists. Each of her novels contains several young female characters of contrasting personalities and behaviors. Indeed, she seems particularly adept at portraying female psychology and relationship dynamics. Her insights and intuitive understanding of women may have enabled her to portray female mating strategies that extend beyond the specific social and historical settings of her time. Hence, contemporary readers may be able to infer a character's mating strategy based on the hints provided by the descriptions of personality traits that are sprinkled throughout the novels.

For the current study, we incorporated an extensive set of measures and a refined set of personality descriptions. We included all passages from these novels that contain substantial remarks on a female character's personality, but removed any mention of her behaviors within romantic relationships. We developed a battery of items describing behaviors and tendencies that are associated with long-term and short-term female reproductive strategies, female mating competition, maternal and kin investment, risky behavior, and time preferences for future versus present rewards. These items represent behavioral tendencies consistent with long-term and short-term mating strategies found in the evolutionary

psychology literature (see details below). We also developed a series of items based on the actual behaviors of characters in social and romantic relationships as depicted in the novels.

We proposed that study participants would be able to accurately infer aspects of reproductive strategies and hypothetically interact with the characters in ways that would maximize their own reproductive success. Participants' ratings of the likelihoods of behaviors and tendencies should reliably cluster into sets consistent with long-term and short-term mating strategies across characters. The average ratings of characters for these item sets should then, in turn, correspond to the mating strategies depicted in the novels. Both women and men should also be wary of short-term, opportunistic, and/or uncommitted female strategists. We expected women would be less comfortable with their boyfriends spending extended time with the short-term strategists than with the long-term strategists, as the short-term strategists may be more likely to have an affair. We predicted men would see the long-term strategists as more suitable as hypothetical mothers for their children compared to the short-term strategists. We also expected that participants would be able to match the characters' brief personality sketches to the actual reproductive strategies detailed in the novels, even when information on their behavior within interpersonal relationships is omitted.

III

Undergraduate participants (*N* [number of participants] = 332; 226 female; *M* [mean] age = 20; *SD* [standard deviation] age = 3) at two public Midwestern universities completed anonymous surveys at their convenience over the Internet. Women and men did not significantly differ in age. Participants who reported that they were most sexually attracted to the same sex or equally to both sexes (1 percent of women and 5 percent of men) were excluded from the analytic sample. Respondents identified their ethnicity as white/Caucasian (90 percent), Hispanic (3 percent), African American (2 percent), Asian (2 percent), Native American (one participant), Pacific Islander (one participant), or other (3 percent).

Procedure. Participants read brief personality descriptions of female characters from Jane Austen's *Pride and Prejudice* and *Mansfield Park* assembled from passages found throughout the novels, in a separate survey section for each novel. We excluded information on romantic relationship behavior and/or mating strategy. We also excluded

information on the characters' physical appearances, to focus attention on behavioral patterns. To facilitate comprehension of our study, we describe the characters' relationships below.

The characters chosen from *Pride and Prejudice* were Jane and Lydia Bennett. Jane is shy, demure, and reserved. She does not exert much effort on finding a suitable man, but rather waits passively for men to approach her, drawn by her notable physical beauty. She is the eldest of five sisters, feels responsible for setting a good example, and acts politely and with modesty. Although she initially hides her affections for her potential mate, Mr. Bingley, they end up happily married.

Lydia is vastly different from her sister Jane. Rather than waiting for men to come to her, she takes the initiative and expresses her interest in them, pursuing potential mates without discretion. She is young, headstrong, and frivolous, with a passion for socializing and flirting with the military officers garrisoned nearby. Lydia elopes with an officer named Wickham but does not marry him, risking her own reputation as well as those of her sisters. Wickham eventually marries Lydia under an agreement that ensures him a small income from the Bennett family, but their marriage soon sinks into mutual indifference.

The characters selected from *Mansfield Park* were Fanny Price and Maria Bertram. Fanny is a poor young girl living with her rich aunt, uncle, and four cousins; she is treated as socially inferior by most of her relatives. Fanny is primarily driven by feelings of guilt and obligation because she harbors deep affections for her cousin Edmund (the only one who is nice to her), but knowing this would displease her benefactors, she represses them. She is constantly stretched in her desire to please others and does not expose her true feelings unless she knows that others are in agreement. Fanny is sensitive, shy, intelligent, virtuous, trustworthy, and everyone's confidante. She refuses to marry a man she cannot respect. Edmund eventually realizes his love for Fanny, she reveals her own feelings, and they marry happily.

Maria Bertram is Fanny's cousin. She is engaged to Mr. Rushworth, a wealthy but foolish young man. Despite her engagement, a wealthy visitor, Henry Crawford, expresses his interest in her, and she competes with her sister, Julia, for Henry's attentions. At one point, Maria sneaks off alone with Henry while visiting her fiancé's estate, and agrees to appear in a private play that may jeopardize her marriage. She is angered by Henry's leaving after the play, but refuses her father's offer to end her engagement to Rushworth, whom she now claims she wants to marry. Mr. Rushworth and Maria are married, but she later elopes with Henry.

Rushworth divorces Maria, but Henry does not propose to her and the two separate. She is left to the mercy of her family and ends up living with her aunt.

The order of characters was counterbalanced so that participants read the description of Jane before that of Lydia, and then the description of Maria before that of Fanny. Participants completed three tasks: First, they rated items on an eleven-point decile scale ranging from 0 to 100 percent. All participants rated each character based on the following questions: "To what extent do you think you would like this person?" "How well do you think you would get along with this person?" and "To what extent would this person be able to form a long-term committed relationship?" Men also responded to the question, "To what extent would you want this person to be the mother of your child?" and women to the question, "How comfortable would you be with this person accompanying your boyfriend on a three-week trip to another city?"

Second, participants rated the likelihood of characters exhibiting any of twenty-four behaviors associated with long-term or short-term female reproductive strategies, adapted from scales examining the mating strategies of fictional male characters.[8] Long-term strategy items included: "be good at taking care of children," "be a loyal and faithful wife," "use most of her wealth to support her family," and "be caring and emotionally supportive in a long-term relationship." Short-term strategy items included "wear flashy, expensive clothes," "knowingly hit on someone else's boyfriend," "cheat on her partner," and "spread potentially harmful gossip about her rivals." Third, participants chose the character that was more likely to exhibit behaviors related to reproductive strategies as actually depicted in the novels. We generated five items from each character, presented in randomized order (see Table 1).

Analyses. We examined differences in ratings between characters within each novel using paired sample *t*-tests. We conducted principle axis factoring (PAF) on the twenty-four mating strategy items, using an iterative process to isolate dimensions and ease interpretation. For items that loaded .30 or above on multiple factors, we removed the item with the most similar loading across factors and reran the PAF until no items loaded on multiple factors. We created average scores for each factor and compared participants' ratings between characters within each novel using mixed design analysis of variance (ANOVA) models. Finally, we assessed participants' matches of characters' interpersonal behaviors based on binomial tests.

Table 1. Participants' Accuracy in Identifying Interpersonal Behaviors by Character

Character	Percent Accurate	Item
		Pride and Prejudice
Jane	95	Forgive all faults of others
Jane	94	Feel truly grateful for anything that betters her life
Jane	85	Withhold information in order to preserve the reputation of a person she does not like
Jane	79	Be unaware of her own desirability
Jane	30	Accidentally lose a partner because she seems uninterested
Lydia	92	Use tricks to ensnare a man into a relationship
Lydia	89	Elope (get married without telling her family)
Lydia	84	Ask for financial favors from others in order to live above her means
Lydia	69	Go out of her way to meet eligible men
Lydia	60	Get married to an unpleasant man rather than remain single
		Mansfield Park
Maria	90	Sulk when she is not the center of attention
Maria	90	Marry for money or status
Maria	89	Have an affair
Maria	89	Flirt with men other than her partner in public
Maria	75	Enter into an unhappy union to spite the man she truly loves
Fanny	88	Love only one person for her entire life
Fanny	77	Endure something emotionally difficult for the sake of a potential partner
Fanny	76	Refuse marriage to a wealthy man because she thinks he is immoral
Fanny	74	Risk a life of solitude rather than give up on an unrequited love
Fanny	43*	Say things she doesn't mean in order to please her partner

Note: * indicates $p < .05$; all other trends, $p < .001$.

IV

For *Pride and Prejudice,* all participants predicted that they would like Jane more than Lydia, $F(1,330) = 513.48$, $p < .001$, and get along better with Jane than with Lydia, $F(1,330) = 564.99$, $p < .001$. In addition, all participants predicted that Jane would be more capable of forming a long-term committed relationship than Lydia, $F(1,330) = 729.16$, $p < .001$. Women had higher expectations for both characters forming a long-term committed relationship than did men, $F(1,330) = 4.22$, $p = .041$. There were no other effects of participant sex or interactions between participant sex and character for these items. As for the sex-specific items, women were more comfortable with Jane accompanying their boyfriends on a three-week trip to another city than with Lydia, $t(225) = 5.88$, $p < .001$, and men would rather have Jane as the mother of their imaginary child, $t(105) = 16.00$, $p < .001$.

The pattern of results for characters in *Mansfield Park* was very similar, though with more modest effects. Although all participants predicted that they would like Fanny more than Maria, $F(1,330) = 26.71$, $p < .001$, men predicted a slightly greater liking for both characters compared to women, $F(1,330) = 4.63$, $p = .032$. Participants predicted that they would get along with Fanny better than with Maria, $F(1,330) = 63.54$, $p < .001$, and that Fanny would be more capable of forming a long-term committed relationship than Maria would, $F(1,330) = 17.60$, $p < .001$. There were no effects of participant sex or interactions between participant sex and character for any item. With respect to the sex-specific items, women were more comfortable with Fanny accompanying their boyfriends on a three-week trip to another city than with Maria, $t(225) = 10.48$, $p < .001$, and men would rather have Fanny as the mother of their imaginary child, $t(105) = 4.08$, $p < .001$.

The PAF analysis identified two factors that together explained 70 percent of the variance. Of the twenty-four items, eleven loaded uniquely on each factor and thirteen loaded on both factors. Similar patterns were found for the varimax orthogonal rotation and the direct oblimin nonorthogonal rotation. We performed fourteen iterative PAFs, ending with eleven items that loaded uniquely on one factor.

For the dimensions derived from the items on the characters' likely behaviors, we named the first factor "Family," as the content of the items represented high parental and kin investment, stable long-term romantic relationships, low risk taking, and long time horizons (i.e., stronger preferences for future rewards than immediate rewards). The

order of factor loadings were as follows: "be good with children," "be a loyal and faithful wife," "put her family (i.e., parents, siblings) above all others," "be caring and emotionally supportive in a long-term relationship," "work hard at her job even though she did not like it," "be ready to adopt the children of a relative if the relative died," and "use most of her wealth to support her family."

We named the second factor "Flirtation," as these items represented a high mating-effort strategy and promiscuous sexuality. The order of the factor loadings was as follows: "be lots of fun at parties," "wear flashy, expensive clothes," "be successful in competing with other women for the same man," and "be attractive to men for a brief sexual relationship." The Family scale demonstrated very high inter-item reliabilities across characters (see Table 2). The Flirtation scale also demonstrated very high inter-item reliability for ratings of Fanny; however, reliabilities for other characters were modest.

Table 2. Scale Properties by Character

Character	Family		Flirtation	
	Cronbach's α	M, 95 Percent Confidence Interval	Cronbach's α	M, 95 Percent Confidence Interval
Jane	.868	77.8, 76.3–79.3	.592	42.0, 40.2–43.9
Lydia	.893	30.3, 28.6–32.0	.694	60.9, 59.1–62.7
Maria	.907	52.1, 50.3–53.8	.690	57.5, 55.9–59.2
Fanny	.880	70.3, 68.7–72.0	.834	28.0, 26.1–29.9

The two-by-two mixed design ANOVA examining scores on Family and Flirtation scales for characters in *Pride and Prejudice* yielded a significant interaction between character and dimension, $F(1,330) = 1012.70$, $p < .001$. There were also main effects for scale (Family versus Flirtation), $F(1,330) = 6.22$, $p = .013$, and character, $F(1,330) = 279.90$, $p < .001$. Jane was rated substantially higher than Lydia on Family; Lydia was rated higher than Jane on Flirtation (see Table 2). Jane was rated higher on Family than on Flirtation, and Lydia was rated higher on Flirtation than on Family. Jane received higher scores overall than Lydia, and scores on Family were higher overall than scores on Flirtation.

The pattern of contrasts was similar for characters in *Mansfield Park*. The two-by-two mixed design ANOVA found a significant interaction between character and scale, $F(1,330) = 451.92$, $p < .001$. There were also main effects for scale, $F(1,330) = 342.52$, $p < .001$, and character, $F(1,330) = 52.05$, $p < .001$. Fanny was rated substantially higher than Maria on Family; Maria was rated higher than Fanny on Flirtation (see Table 2). Fanny was rated higher on Family than on Flirtation, while participants rated Maria equivalently across scales. Maria received higher scores overall than Fanny did, and scores on Family were higher overall than scores on Flirtation.

Participants were generally very accurate in matching characters to their actual relationship behaviors, as the majority correctly chose nine out of ten items for each novel (see Table 1). For example, participants generally thought that Jane was more likely to forgive all faults of others, Lydia was more likely to use tricks to ensnare a man into a relationship, Maria was more likely to have an affair, and Fanny was more likely to love only one person for her entire life. However, participants generally selected Lydia as more likely to accidentally lose a partner because she seemed uninterested, and the majority thought that Maria would be more likely to say things she did not mean in order to please her partner. All choices demonstrated statistically significant trends.

V

This study furthers the emerging field of literary Darwinism, which uses evolutionary theory for understanding literary fiction. Dutton notes that evolutionary researchers seek to understand why the mind is designed to find stories interesting. We invert this relationship to address why particular stories are so successfully designed to promote interest. Dutton considered Kant's *The Critique of Judgment* (1790) the most influential theory of art published between the Greeks and modern times, and the notion of disinterestedness its central contribution. Our interest in an object or experience is proportional to our shared stake in it. We find stories intellectually and emotionally satisfying when they provide us with a valuable imaginative experience, which Dutton argued was the most important of his twelve cross-cultural criteria for the appreciation of art (*AI*, pp. 51–52). Austen's accurate description of the dynamics of romantic relationships provides an insightful guide for her readers, regardless of their cultural settings.

We concur with others who have argued that Austen addressed themes that are relevant to evolved human nature and as salient today as in her era; primarily, those of women's mating strategies. Results supported our hypotheses that modern readers would be able to accurately infer aspects of the mating strategies of Austen's female characters and express preferences for social relationships that would be to their own mating advantage. As Dutton noted, Austen is particularly adept at creating a feeling of shared sensibility between narrator and reader in the understanding of the motives and behaviors of her characters (*AI*, pp. 125–26).

Participants' ratings for behavioral tendencies clustered into two groups of dimensions, clearly representing components of long-term and short-term mating strategies. The former included high investment in offspring and other kin, stable long-term romantic relationships, and preferences for future rewards as compared to immediate gratification. The latter included high mating-effort strategy and sexual promiscuity. Readers accurately assessed characters on these dimensions, consistent with the description of the characters' relationships in the novels, without explicit information on these behaviors. Participants also generally matched the relationship events portrayed in the novels with the appropriate characters.

The two items that participants did not accurately attribute were exhibited by characters with long-term reproductive strategies, but these may have been matched with the short-term strategists because they were interpreted negatively. Fanny would "say things she [didn't] mean in order to please her partner," which participants may have interpreted as manipulating her mate to her own advantage rather than trying to preserve her partner's happiness. Likewise, Jane did accidentally lose a partner, at least temporarily, because she seemed uninterested. Participants may have interpreted this as callous rather than demonstrating introversion and a lack of assertiveness.

Although Austen's works were written in an era with social constraints that are markedly different from those of today, our findings show that she portrayed human nature with substantial accuracy, which may be the foundation of her enduring popularity. As Boyd notes:

> [Austen] repeatedly focuses on something as elemental to our species as female choice. . . . Despite her normal meekness, Fanny Price, although strongly pressured by her suitor himself and her own most powerful relatives to accept Henry Crawford, insists on declining him, since she can

> already see someone she could trust far more as a partner and a father to her children; and she is proven right to do so. ("JMC," p. 16)

> Neglected at first, Fanny triumphs at last. Despite all her initial disadvantages of situation, she lands the best man around, the staunchest partner, through her superior ability to read the minds of others—to see Henry's weaknesses, to see that no one else comes close to matching Edmund's strengths—and through Edmund's ability in turn to read her superior capacity for reading others. In this light *Mansfield Park,* like other Austen novels, seems almost an evolutionary romance, in which the cognitive arms race will be won by the socially sensitive. ("JMC," pp. 21–22)

One possible limitation is that it is conceivable that some participants may have previously read these novels and thus would be familiar with the actions of the characters. The character descriptions, rather than being a continuous portion of the text, were assembled from passages found throughout the novels, and the characters were never mentioned by name, which may have reduced the likelihood of identification. In addition, participants were not informed that the descriptions were drawn from Austen's work. However, in future research, it would be potentially useful to obtain information on participants' reading history to control for this possibility. It would also be interesting to determine whether those who read more romance fiction were better able to accurately infer mating strategies based on personality attributes, due to familiarity with the genre.

As others have claimed, Austen was possibly an intuitive evolutionary psychologist because she clearly comprehended human nature as it applies to women's mate preferences. The fact that participants living in today's world can readily identify and distinguish between the mating strategies of the characters in Austen's work attests to their accuracy, and provides evidence that these are tapping evolutionarily relevant features. Dutton noted that "works pass David Hume's famous Test of Time because they are 'naturally fitted to excite agreeable sentiments' in human beings of every epoch" (*AI,* p. 36).

The current study fills an important gap in the emerging field of literary Darwinism by investigating variation in women's reproductive strategies, an area also currently underrepresented in evolutionary psychology. In addition, most studies within literary Darwinism use evolutionary theory as a basis for standard qualitative literary interpretations, whereas this project incorporates the empirical hypothesis testing of psychological science. We believe that an interdisciplinary approach is necessary

to understanding human nature comprehensively. We reverse engineer Austen's precocious evolutionary insights, though this in no way detracts from the magnificence of her works. As Dutton articulated in *The Art Instinct*, after all our analyses are done, "the aesthetic masterpieces we love so much lose nothing of their beauty and importance" (*AI*, p. 9).

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1. Denis Dutton, *The Art Instinct: Beauty, Pleasure, and Human Evolution* (New York: Bloomsbury Press, 2009), p. 1; hereafter abbreviated *AI*.

2. For more on literary Darwinism, see *Evolution, Literature, and Film: A Reader*, ed. Brian Boyd, Joseph Carroll, and Jonathan Gottschall (New York: Columbia University Press, 2010); Joseph Carroll, *Evolution and Literary Theory* (Columbia: University of Missouri Press, 1995); and *The Literary Animal: Evolution and the Nature of Narrative*, ed. Jonathan Gottschall and David Sloan Wilson (Evanston: Northwestern University Press, 2005).

3. On the applicability of quantitative methods to literary analyses, see Jonathan Gottschall, "Quantitative Literary Study: A Modest Manifesto and Testing the Hypotheses of Feminist Fairy Tale Studies," in Gottschall and Wilson, *The Literary Animal*, pp. 199–244 (p. 204).

4. See Daniel J. Kruger, Maryanne L. Fisher, and Ian Jobling, "Proper and Dark Heroes as Dads and Cads: Alternative Mating Strategies in British Romantic Literature," *Human Nature* 14 (2003): 305–17; Daniel J. Kruger and Maryanne L. Fisher, "Males Identify and Respond Adaptively to the Mating Strategies of Other Men," *Sexualities, Evolution, and Gender* 7 (2005): 233–44; Daniel J. Kruger and Maryanne L. Fisher, "Alternative Male Mating Strategies Are Intuitive to Women," *Current Research in Social Psychology* 11 (2005): 39–50; and Daniel J. Kruger and Maryanne L. Fisher, "Women's Life History Attributes Are Associated with Preferences in Mating Relationships," *Evolutionary Psychology* 6 (2008): 245–58.

5. For descriptions and discussions of Jane Austen's popularity, see Brian Boyd, "Jane, Meet Charles: Literature, Evolution, and Human Nature," *Philosophy and Literature* 22 (1998): 1–30, hereafter abbreviated "JMC"; Claire Harman, *Jane's Fame: How Jane Austen Conquered the World* (Edinburgh: Canongate Books, 2009); Joseph Carroll, "Human Universals and Literary Meaning: A Sociobiological Critique of *Pride and Prejudice*, *Villette*,

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6. See Graham, *Jane Austen and Charles Darwin*.

7. For discussions of sex differences in reproductive strategies, see Helen Fisher, *Anatomy of Love: The Mysteries of Mating, Marriage, and Why We Stray* (New York: Simon and Schuster, 1992); and Robert L. Trivers, "Parental Investment and Sexual Selection," in *Sexual Selection and the Descent of Man, 1871–1971,* ed. Bernard Campbell (Chicago: Aldine, 1972), pp. 136–79.

For discussions of variation in women's mating strategies, see David M. Buss and David P. Schmitt, "Sexual Strategies Theory: An Evolutionary Perspective on Human Dating," *Psychological Review* 100 (1993): 204–32; Maryanne L. Fisher and Anthony Cox, "Four Strategies Used during Intrasexual Competition for Mates," *Personal Relationships* 18 (2011): 20–38; Maryanne L. Fisher, Justin R. Garcia, and Rose S. Chang, *Evolution's Empress: Darwinian Perspectives on the Nature of Women* (New York: Oxford University Press; 2013); and Steven W. Gangestad and Jeffrey A. Simpson, "The Evolution of Human Mating: Trade-Offs and Strategic Pluralism," *Behavioural and Brain Sciences* 23 (2000): 573–644.

8. See Kruger and Fisher, "Alternative Male Mating Strategies."