Sexual Orientation

What has research taught us about sexual orientation?

To motivate is to energize and direct behavior. So far, we have considered the energizing of sexual motivation but not its direction. We express the direction of our sexual interest in our sexual orientation—our enduring sexual attraction toward members of our own sex (homosexual orientation) or the other sex (heterosexual orientation). We experience this attraction in our interests, thoughts, and fantasies (who’s that person in your imagination?). Cultures vary in their attitudes toward homosexuality. In Chile, 32 percent of people say homosexuality “is never justified,” as do 98 percent of Kenyans and Nigerians (Pew, 2006). Yet whether a culture condems or accepts homosexuality, heterosexuality prevails and homosexuality survives.

Gay men and lesbians often recall childhood play preferences like those of the other sex (Bailey & Zucker, 1995). But most homosexual people report not becoming aware of same-sex attraction until during or shortly after puberty, and not thinking of themselves as gay or lesbian (their socially influenced identity) until later in their teens or twenties (Garnets & Kimmel, 1990; Hammack, 2005). As adolescents, their friendship quality is similar to that of “straight” teenagers, and as adults, their partnerships are “remarkably similar” in love and satisfaction to those of heterosexual couples (Busseri et al., 2006; Peplau & Fingerhut, 2007).

Sexual Orientation Statistics

How many people are exclusively homosexual? About 10 percent, as the popular press has often assumed? Nearly 25 percent, as average Americans estimated in a 2011 Gallup survey (Morales, 2011)? Not according to more than a dozen national surveys that have explored sexual orientation in Europe and the United States, using methods protecting the respondents’ anonymity. The most accurate figure seems to be about 3 percent of men and 1 or 2 percent of women (Chandra et al., 2011; Herbenick et al., 2010a). Estimates derived from the sexual activity of unmarried partners reported in the 2000 U.S. Census suggest that 2.5 percent of the population is gay or lesbian (Tarmann, 2002). Fewer than 1 percent of survey respondents—for example, only 12 people out of 7076 Dutch adults in one survey (Sandfort et al., 2001)—reported being actively bisexual. A larger number of adults—13 percent of women and 5 percent of men in a U.S. National Center for Health Statistics survey—report some same-sex sexual contact during their lives (Chandra et al., 2011). And more people report having had an occasional homosexual fantasy.

What does it feel like to be homosexual in a heterosexual culture? If you are heterosexual, one way to understand is to imagine how you would feel if you were shunned or fired for openly admitting or displaying your feelings toward someone of the other sex; if you overheard people making crude jokes about heterosexual people; if most movies, TV shows, and advertisements portrayed (or implied) homosexuality; and if your family members were pleading with you to change your heterosexual lifestyle and to enter into a homosexual marriage.

In one British survey, of the 18,876 people contacted, 1 percent were seemingly asexual, having “never felt sexually attracted to anyone at all” (Bogaert, 2004, 2006b).
Sexual orientation is not an indicator of mental health. “Homo-sexuality, in and of itself, is not associated with mental disorders or emotional or social problems,” declares the American Psychological Association (2007). Moreover, same-sex civil unions provide emotional, social, and health benefits similar to those of heterosexual unions (Herek, 2006; King & Bartlett, 2006; Kurdek, 2005). But some homosexual individuals, especially during adolescence and if feeling rejected by parents or harassed by peers, struggle with their sexual attractions and may contemplate suicide (Balsam et al., 2005; Kitts, 2005; Plöderl & Farta-cek, 2005; Ryan et al., 2009). They may at first try to ignore or deny their desires, hoping they will go away. But they don’t. Then they may try to change, through psychotherapy, willpower, or prayer. But the feelings typically persist, as do those of heterosexual people—who are similarly incapable of becoming homosexual (Haldeman, 1994, 2002; Myers & Scanloni, 2005). Moreover, as we noted in Chapter 6, people’s sexual orientation is so basic to who they are that it operates subconsciously, by drawing their attention toward particular flashed nude images not consciously perceived.

Most of today’s psychologists therefore view sexual orientation as neither willfully chosen nor willfully changed. “Efforts to change sexual orientation are unlikely to be successful and involve some risk of harm,” declared a 2009 American Psychological Association report. Sexual orientation in some ways is like handedness: Most people are one way, some the other. A very few are truly ambidextrous. Regardless, the way one is endures. This conclusion is most strongly established for men. Compared with men’s sexual orientation, women’s tends to be less strongly felt and potentially more fluid and changing (Chivers, 2005; Diamond, 2008; Peplau & Garnets, 2000). Men’s lesser sexual variability is apparent in many ways, notes Roy Baumeister (2000). Across time, across cultures, across situations, and across differing levels of education, religious observance, and peer influence, adult women’s sexual drive and interests are more flexible and varying than are adult men’s. Women, more than men, for example, prefer to alternate periods of high sexual activity with periods of almost none, and are somewhat more likely than men to feel and act on bisexual attractions (Mosher et al., 2005). Baumeister calls women’s more varying sexuality a gender difference in erotic plasticity.

In men, a high sex drive is associated with increased attraction to women (if heterosexual) or men (if homosexual). In women, a high sex drive is associated with increased attraction to both men and women (Lippa, 2006, 2007a). When shown pictures of heterosexual couples, in either erotic or nonerotic contexts, heterosexual men look mostly at the woman while heterosexual women look more equally at both the man and the woman (Lykins et al., 2008). Likewise, heterosexual men gaze more at female than male swimsuit models, while heterosexual women...
gaze more equally at both (Lippa et al., 2010). And when shown sexually explicit film clips, men’s genital and subjective sexual arousal is mostly to preferred sexual stimuli (for heterosexual viewers, depictions of women). Women respond more nonspecifically to depictions of sexual activity involving males or females (Chivers et al., 2007).

Origins of Sexual Orientation

If our sexual orientation is indeed something we do not choose and seemingly cannot change (most clearly so for males), then where do these preferences—heterosexual or homosexual—come from? See if you can anticipate the conclusions that have emerged from hundreds of research studies by responding yes or no to the following questions:

1. Is homosexuality linked with problems in a child’s relationships with parents, such as with a domineering mother and an ineffectual father, or a possessive mother and a hostile father?
2. Does homosexuality involve a fear or hatred of people of the other gender, leading individuals to direct their sexual desires toward members of their own sex?
3. Is sexual orientation linked with levels of sex hormones currently in the blood?
4. As children, were most homosexuals molested, seduced, or otherwise sexually victimized by an adult homosexual?

The answer to all these questions appears to be No (Storms, 1983). In interviews with nearly 1000 homosexuals and 500 heterosexuals, Kinsey Institute investigators assessed nearly every imaginable psychological cause of homosexuality—parental relationships, childhood sexual experiences, peer relationships, dating experiences (Bell et al., 1981; Hammersmith, 1982). Their findings: Homosexuals are no more likely than heterosexuals to have been smothered by maternal love or neglected by their father. And consider this: If “distant fathers” were more likely to produce homosexual sons, then shouldn’t boys growing up in father-absent homes more often be gay? (They are not.) And shouldn’t the rising number of such homes have led to a noticeable increase in the gay population? (It has not.) Most children raised by gay or lesbian parents grow up straight and well-adjusted (Gartrell & Bos, 2010).

Homosexual people do, however, appear more often in certain populations. One study (Ludwig, 1995) of the biographies of 1004 eminent people found homosexual and bisexual people especially overrepresented among poets (24 percent), fiction writers (21 percent), and artists and musicians (15 percent). Gay more than straight men also express interest in occupations that attract many men, such as decorator, florist, and flight attendant (Lippa, 2002). (Given that some 96 percent of men are not gay, most men in such occupations may nevertheless be straight.)

Men who have older brothers are also somewhat more likely to be gay, report Ray Blanchard (1997, 2008a,b) and Anthony Bogaert (2003)—about one-third more likely for each additional older brother. If the odds of homosexuality are roughly 2 percent among first sons, they would rise to nearly 3 percent among second sons, 4 percent for third sons, and so on for each additional older brother (see FIGURE 11.15). The reason for this curious phenomenon—the fraternal birth-order effect—is unclear. Blanchard suspects a defensive maternal immune response to foreign substances produced by male fetuses. With each pregnancy with a male fetus, the maternal antibodies may become stronger and may prevent the fetus’ brain from developing in a male-typical pattern. Consistent with this biological explanation, the fraternal birth-order effect occurs only in men with older brothers born to the same mother (whether reared together or not). Sexual orientation is unaffected by adoptive brothers (Bogaert, 2006b). The birth-order effect on sexual orientation is not found among women with older sisters, women who were womb-mates of twin brothers, and men who are not right-handed (Rose et al., 2002).

FIGURE 11.15
The fraternal birth-order effect
Researcher Ray Blanchard (2008a) offers these approximate curves depicting a man’s likelihood of homosexuality as a function of his number of older brothers. This correlation has been found in several studies, but only among right-handed men.
So, what else might influence sexual orientation? One theory has proposed that people develop same-sex erotic attachments if segregated by gender at the time their sex drive matures (Storms, 1981). Indeed, gay men tend to recall going through puberty somewhat earlier, when peers are more likely to be all males (Bogaert et al., 2002). But even in tribal cultures in which homosexual behavior is expected of all boys before marriage, heterosexuality prevails (Hammack, 2005; Money, 1987). (As this illustrates, homosexual behavior does not always indicate a homosexual orientation.)

The bottom line from a half-century’s theory and research: If there are environmental factors that influence sexual orientation, we do not yet know what they are. This reality has motivated researchers to consider more carefully other possible biological influences on orientation, including evidence of homosexuality in the animal world, and the influences of differing brain centers, genetics, and prenatal hormone exposure.

The Brain and Sexual Orientation

Researcher Simon LeVay (1991) studied sections of the hypothalamus taken from deceased heterosexual and homosexual people. As a gay scientist, LeVay wanted to do “something connected with my gay identity.” To avoid biasing the results, he did a blind study, not knowing which donors were gay. For nine months he peered through his microscope at a cell cluster he thought might be important. Then, one morning, he broke the code: One cell cluster was reliably larger in heterosexual men than in women and homosexual men. “I was almost in a state of shock,” LeVay said (1994). “I took a walk by myself on the cliffs over the ocean. I sat for half an hour just thinking what this might mean.”

It should not surprise us that in other ways, too, brains differ with sexual orientation (Savic & Lindström, 2008; Swaab, 2008). Remember our maxim: Everything psychological is simultaneously biological. But when do such brain differences begin? At conception? In the womb? During childhood or adolescence? Does experience produce these differences? Or is it genes or prenatal hormones (or genes via prenatal hormones)?

LeVay does not view the hypothalamus as a sexual orientation center; rather, he sees it as an important part of the neural pathway engaged in sexual behavior. He acknowledges that sexual behavior patterns may influence the brain’s anatomy. In fish, birds, rats, and humans, brain structures vary with experience—including sexual experience, reports sex researcher Marc Breedlove (1997). But LeVay believes it more likely that brain anatomy influences sexual orientation. His hunch seems confirmed by the discovery of a similar hypothalamic difference between the male sheep that do and don’t display same-sex attraction (Larkin et al., 2002; Roselli et al., 2002, 2004). Moreover, report University of London psychologists Qazi Rahman and Glenn Wilson (2003), “the neuroanatomical correlates of male homosexuality differentiate very early postnatally, if not prenatally.”

Responses to hormone-derived sexual scents also point to a brain difference (Savic et al., 2005). When straight women are given a whiff of a scent derived from men’s sweat, their hypothalaminus lights up in an area governing sexual arousal. Gay men’s brains respond similarly to the man’s scent. But straight men’s brains show the arousal response only to a female hormone derivative. Other studies of brain responses to sex-related sweat odors and to pictures of male and female faces find similar gay-straight differences (Kranz & Ishai, 2006; Martins et al., 2005).

Genes and Sexual Orientation

Are these sex-related brain differences genetically influenced? Evidence does indicate a genetic influence on sexual orientation. “First, homosexuality does appear to run in families,” note Brian Mustanski and Michael Bailey (2003). “Second, twin studies have established that genes play a substantial role in explaining individual differences in sexual orientation.” Identical twins are somewhat
more likely than fraternal twins to share a homosexual orientation (Alanko et al., 2010; Långström et al., 2008, 2010). (Because sexual orientations differ in many identical twin pairs, especially female twins, we know that other factors besides genes are also at work.)

By genetic manipulations, experimenters have created female fruit flies that during courtship act like males (pursuing other females) and males that act like females (Demir & Dickson, 2005). “We have shown that a single gene in the fruit fly is sufficient to determine all aspects of the flies’ sexual orientation and behavior,” explained Barry Dickson (2005). With humans, it’s likely that multiple genes, possibly in interaction with other influences, shape sexual orientation. One study financed by the U.S. National Institutes of Health is analyzing the genes of more than 1000 gay brothers in search of such genetic markers.

Researchers have speculated about possible reasons why “gay genes” might exist. Given that same-sex couples cannot naturally reproduce, why would such genes survive in the human gene pool? One possible answer is kin selection. Recall from Chapter 4 the evolutionary psychology reminder that many of our genes also reside in our biological relatives. Perhaps, then, gay people’s genes live on through their supporting the survival and reproductive success of their nieces, nephews, and other relatives (who also carry many of the same genes). Gay men make generous uncles, suggests one study of Samoans (Vasey & VanderLaan, 2010).

An alternative “fertile females” theory suggests that maternal genetics may be at work (Bocklandt et al., 2006). Recent Italian studies confirm what others have found—that homosexual men have more homosexual relatives on their mother’s side than on their father’s (Camperio-Ciani et al., 2004, 2009; Zietsch et al., 2008). And, compared with the maternal relatives of heterosexual men, the maternal relatives of homosexual men produce more offspring. Perhaps the genes that dispose women to be strongly attracted to men, and therefore to have more children, also dispose men (including some of their male relatives) to be attracted to men (LeVay, 2011).

**Prenatal Hormones and Sexual Orientation** Elevated rates of homosexual orientation in identical and fraternal twins suggest that not just shared genetics but also a shared prenatal environment may be a factor. In animals and some human cases, prenatal hormone conditions have altered a fetus’ sexual orientation. German researcher Gunter Dorner (1976, 1988) pioneered research on the influence of prenatal hormones by manipulating a fetal rat’s exposure to male hormones, thereby “inverting” its sexual orientation. In other studies, when pregnant sheep were injected with testosterone during a critical period of fetal development, their female offspring later showed homosexual behavior (Money, 1987).

A critical period for the human brain’s neural-hormonal control system may exist between the middle of the second and fifth months after conception (Ellis & Ames, 1987; Gladue, 1990; Meyer-Bahlburg, 1995). Exposure to the hormone levels typically experienced by female fetuses during this time appears to predispose the person (whether female or male) to be attracted to males in later life. “Prenatal sex hormones control the sexual differentiation of brain centers involved in sexual behaviors,” notes Simon LeVay (2011, p. 216). Thus, female fetuses most exposed to testosterone, and male fetuses least exposed to testosterone, appear most likely later to exhibit gender-atypical traits and to experience same-sex desires.

On several traits, gays and lesbians appear to fall midway between straight females and males (Table 11.1 on the next page; see also LeVay, 2011; Rahman & Koerting, 2008). For example, lesbians’ cochlea and hearing systems develop in a way that is intermediate between those of heterosexual females and heterosexual males, which seems attributable to prenatal hormonal influence (McFadden, 2002). Gay men tend to be shorter and lighter, even at birth, than straight men, while women in same-sex marriages were mostly heavier than average at birth (Bogaert, 2010; Frisch & Zdrazilovic, 2010). Fingerprint ridge counts may also differ: Although most people have more fingerprint ridges on their right hand...
than on their left, some studies find a greater right-left difference in heterosexual males than in females and gay males (Hall & Kimura, 1994; Mustanski et al., 2002; Sanders et al., 2002). Given that fingerprint ridges are complete by the sixteenth fetal week, this difference may be due to prenatal hormones. Prenatal hormones also are a possible explanation for why data from 20 studies revealed that “homosexual participants had 39 percent greater odds of being non-right-handed,” and why men with older biological brothers are also more likely to be left-handed (Blanchard, 2008; Lalumière et al., 2000). In addition to these and other natural markers of sexual orientation, faces and facial expressions can enable people’s “gaydar” to identify gays and lesbians with better than chance accuracy (Freeman et al., 2010; Rule & Ambady, 2008; Rule et al., 2011). Such differences often appear early, in the gender nonconformity of many (but not all) “pre-gay” children. In one study, raters viewed video clips of children without being told their later sexual orientation. The average pre-gay child was rated as more gender nonconforming than the average pre-straight child, especially after age 10 (Rieger et al., 2008).

Another you-never-would-have-guessed-it gay-straight difference appears in studies showing that gay men’s spatial abilities resemble those typical of straight women (Cohen, 2002; Gladue, 1994; McCormick & Witelson, 1991; Sanders & Wright, 1997). On mental rotation tasks such as the one illustrated in FIGURE 11.16, straight men tend to outscore women. (So do women who were womb-mates of a male co-twin [Vuoksimaa et al., 2010].) Studies by Qazi Rahman and colleagues (2003, 2008) find that, as on a number of other measures, the scores of gays and lesbians fall between those of heterosexual males and females.

### TABLE 11.1

<table>
<thead>
<tr>
<th>Biological Correlates of Sexual Orientation</th>
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<tbody>
<tr>
<td><strong>Gay-straight trait differences</strong></td>
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<tr>
<td>Sexual orientation is part of a package of traits. Studies—some in need of replication—indicate that homosexuals and heterosexuals differ in the following biological and behavioral traits.</td>
</tr>
<tr>
<td>- spatial abilities</td>
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<td>- fingerprint ridge counts</td>
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<td>- auditory system development</td>
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<td>- handedness</td>
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<td>- occupational preferences</td>
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<td>- relative finger lengths</td>
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<td>- gender nonconformity</td>
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<td>- age of onset of puberty in males</td>
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<td>- male body size</td>
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<td>- sleep length</td>
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<td>- physical aggression</td>
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<tr>
<td>- walking style</td>
</tr>
<tr>
<td>On average (the evidence is strongest for males), results for gays and lesbians fall between those of straight men and straight women. Three biological influences—brain, genetic, and prenatal—may contribute to these differences.</td>
</tr>
</tbody>
</table>

| **Brain differences**                      |
| - One hypothalamic cell cluster is smaller in women and gay men than in straight men. |
| - Anterior commissure is larger in gay men than in straight men. |
| - Gay men’s hypothalamus reacts as do straight women’s to the smell of sex-related hormones. |

| **Genetic influences**                     |
| - Shared sexual orientation is higher among identical twins than among fraternal twins. |
| - Sexual attraction in fruit flies can be genetically manipulated. |
| - Male homosexuality often appears to be transmitted from the mother’s side of the family. |

| **Prenatal influences**                    |
| - Altered prenatal hormone exposure may lead to homosexuality in humans and other animals. |
| - Right-handed men with several older biological brothers are more likely to be gay, possibly due to a maternal immune-system reaction. |

On average (the evidence is strongest for males), results for gays and lesbians fall between those of straight men and straight women. Three biological influences—brain, genetic, and prenatal—may contribute to these differences.
But straight women and gays both outperform straight men at remembering objects’ spatial locations in tasks like those found in memory games (Hassan & Rahman, 2007).

The consistency of the brain, genetic, and prenatal findings has swung the pendulum toward a biological explanation of sexual orientation (Rahman & Wilson, 2003; Rahman & Koerting, 2008). This helps explain why sexual orientation is so difficult to change, and why a BBC Internet study of more than 200,000 people found the same gay-straight differences in personality and interests worldwide (Lippa, 2007a,b, 2008).

Still, some people wonder: Should the cause of sexual orientation matter? Perhaps it shouldn’t, but people’s assumptions matter. Those who believe that sexual orientation is biologically disposed also express more accepting attitudes toward homosexual people (Allen et al., 1996; Haslam & Levy, 2006; Kaiser, 2001; Whitley, 1990).

To gay and lesbian activists, the new biological research is a double-edged sword (Diamond, 1993; Roan, 2010). If sexual orientation, like skin color and sex, is genetically influenced, that offers a further rationale for civil rights protection. Moreover, it may alleviate parents’ concerns about their children being unduly influenced by gay teachers and role models. At the same time, this research raises the troubling possibility that genetic markers of sexual orientation could someday be identified through fetal testing, that a fetus could be aborted simply for being predisposed to an unwanted orientation, or that hormonal treatment in the womb might engineer a desired orientation.

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**RETRIEVAL PRACTICE**

- Which THREE of the following five factors have researchers found to have an effect on sexual orientation?
  - A domineering mother
  - Size of certain cell clusters in the hypothalamus
  - Prenatal hormone exposure
  - A distant or ineffectual father
  - For men, having multiple older biological brothers

**Answers:** b, c, e

---

**FIGURE 11.16**

Spatial abilities and sexual orientation. Which of the four figures can be rotated to match the target figure at the top? Straight males tend to find this an easier task than do straight females, with gays and lesbians intermediate. (From Rahman et al., 2003, with 60 people tested in each group.)

**Answer:** Figures a and d.

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Sex and Human Values

Is scientific research on sexual motivation value free?

Recognizing that values are both personal and cultural, most sex researchers and educators strive to keep their writings value free. But the very words we use to describe behavior can reflect our personal values. Whether we label certain sexual behaviors as “perversions” or as part of an “alternative sexual lifestyle” depends on our attitude toward the behaviors. Labels describe, but they also evaluate.

Sex education separated from the context of human values may also give some students the idea that sexual intercourse is simply a recreational activity. Diana Baumrind
(1982), a University of California child-rearing expert, observed that an implication that adults are neutral about adolescent sexual activity is unfortunate, because “promiscuous recreational sex poses certain psychological, social, health, and moral problems that must be faced realistically.” One recent study asked 2055 married people when they started having sex (while controlling for education, religious engagement, and relationship length). Those whose relationship first developed to a deep commitment, such as marriage, reported greater relationship satisfaction and stability—and better sex (Busby et al., 2010).

Perhaps we can agree that the knowledge provided by sex research is preferable to ignorance, and yet also agree that researchers’ values should be stated openly, enabling us to debate them and to reflect on our own values. We should remember that scientific research on sexual motivation does not aim to define the personal meaning of sex in our own lives. You could know every available fact about sex—that the initial spasms of male and female orgasm come at 0.8-second intervals, that the female nipples expand 10 millimeters at the peak of sexual arousal, that systolic blood pressure rises some 60 points and the respiration rate to 40 breaths per minute—but fail to understand the human significance of sexual intimacy.

Surely one significance of sexual intimacy is its expression of our profoundly social nature. Sex is a socially significant act. Men and women can achieve orgasm alone, yet most people find greater satisfaction—and experience a much greater surge in the prolactin hormone associated with sexual satisfaction and satiety—after intercourse and orgasm with their loved one (Brody & Tillmann, 2006). With the satisfaction of intimacy and relationship surpassing the satisfaction of self-stimulation, there is a yearning for closeness in sexual motivation. Sex at its human best is life-uniting and love-renewing.

## The Need to Belong

### What evidence points to our human need to belong?

Separated from friends or family—isolated in prison, alone at a new school, living in a foreign land—most people feel keenly their lost connections with important others. We are what Aristotle called the *social animal*. “Without friends,” wrote Aristotle in his *Nicomachean Ethics*, “no one would choose to live, though he had all other goods.” We have a need to affiliate with others, even to become strongly attached to certain others in enduring, close relationships. Human beings, contended the personality theorist Alfred Adler, have an “urge to community” (Ferguson, 1989, 2001, 2010). Roy Baumeister and Mark Leary (1995) have assembled evidence for this deep need to belong.

## Aiding Survival

Social bonds boosted our ancestors’ survival rate. By keeping children close to their caregivers, attachments served as a powerful survival impulse. As adults, those who formed attachments were more likely to reproduce and to co-nurture their offspring to maturity. To be “wretched” literally means, in its Middle English origin (*wrecche*), to be without kin nearby.

Survival also was enhanced by cooperation. In solo combat, our ancestors were not the toughest predators. But as hunters, they...