The Nature of Adult Twin Relationships: An Attachment-Theoretical Perspective

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Twin relationships have been hailed as one of the most unique and intimate kinds of relationships. Unfortunately, there is a paucity of empirical research that addresses the interpersonal nature of twin relationships. In this article, the authors argue that attachment theory may provide a useful framework for understanding the nature of twin relationships. The authors present data indicating that (a) twins are more likely than nontwin siblings to use their sibling as an attachment figure; (b) the developmental course of twin attachment differs from that of other attachments; and (c) certain factors, such as genetic relatedness, empathy, including the other in the self, and shared experiences, may impact the extent to which twins use one another as attachment figures.

Twin relationships have captivated the public imagination for centuries. From classic literature to modern media, twinships have been portrayed as one of the most unique and intimate of interpersonal bonds (Burlingham, 1952; Koch, 1966; Neyer, 2002b; Segal, 1997, 1999; Woodward, 1998). Although there is no shortage of psychological studies that employ twin samples, few of these studies have addressed the nature of the twin relationship itself. In this article, we argue that attachment theory (Bowlby, 1969; Hazan & Shaver, 1987) may offer a valuable framework for understanding the nature of twin relationships in adulthood. We begin with a brief review of attachment theory, focusing on the features that differentiate attachment from nonattachment relationships. On the basis of our review of existing twin research, we suggest that twin relationships meet many of the criteria of attachment relationships: They are characterized by proximity seeking, separation distress, and the use of one another as a safe haven and secure base. To empirically evaluate this hypothesis, we report a study designed to compare the extent to which adult twins and nontwins use their siblings as attachment figures. We also explore some of the factors that may influence the extent to which twin and nontwin siblings use one another as attachment figures, such as feelings of empathy, shared activities, the inclusion of the other in the self, and genetic relatedness.

Although twins have figured prominently in the history of psychological science, their role has primarily been to serve as a tool for behavioral genetic research (e.g., Bouchard, 2004). It is our hope that this article will help inspire a shift toward the psychological study of the relationship between twins as a phenomenon worthy of investigation in its own right (see Neyer, 2002b; Segal, 1999). Such research would prove valuable not only for helping us better understand the nature of the twin bond, but also for refining and extending contemporary theories of how close relationships develop, function, and shape human experience.

Attachment Theory and the Attachment Behavioral System

During the early stages of life, infants exhibit a strong propensity to seek and maintain contact with a limited set of caregivers. Bowlby (1969) hypothesized that such tendencies are the result of a motivational system—the attachment behavioral system—that

1 Although the majority of research conducted on adult attachment is concerned with individual differences in attachment organization, or “attachment styles,” the primary objective of the research reported here is to understand the development of attachment bonds—regardless of whether those relationships are secure or insecure. In doing so, we are drawing on a long-standing theoretical distinction between attachment as a normative phenomenon (i.e., an affectional bond that characterizes the relationship between two people) and attachment as an individual difference variable (i.e., a style of relating in intimate relationships, see Fraley & Davis, 1997; Hazan & Shaver, 1990; Hazan & Zeifman, 1994). We return to the question of attachment styles in the General Discussion.
functions to regulate proximity between an infant and the primary caregivers. According to Bowlby, the evolution of such a system would have been critical to the survival of species that were born with limited capacities for feeding, exploration, and defense. Hence, infants are born with a set of innate behavioral responses (such as crying and searching) and features (such as large eyes) that attract the attention of potential caregivers. As children develop, they begin to use goal-directed strategies for maintaining proximity to an attachment figure. When the attachment figure is perceived as distant or inaccessible, the child actively searches for the parent or may resist separation by crying and clinging. In contrast, when the attachment figure is nearby or accessible, the infant experiences “felt security” (Sroufe & Waters, 1977), is more sociable, and is more willing to explore the environment freely.

Although Bowlby was focused primarily on understanding the nature of the infant–caregiver relationship, he believed that attachment characterized human experience from the cradle to the grave. It was not until the mid 1980s, however, that researchers began to take seriously the possibility that the attachment system may be operative in adulthood. Hazan and Shaver (1987) were two of the first researchers to explore Bowlby’s ideas in the context of adulthood, specifically, in adult romantic relationships. According to Hazan and Shaver, the emotional bond that develops between romantic partners is partly a function of the same motivational system—the attachment behavioral system—that gives rise to the emotional bond between infants and their caregivers. Since Hazan and Shaver’s (1987) groundbreaking work, researchers have discussed the possibility that other kinds of adult relationships may serve as attachment relationships, including friendships (Fraley & Davis, 1997); relationships with family members, such as siblings and grandparents (Ainsworth, 1989; Trinke & Bartholomew, 1997); and relationships with God (Kirkpatrick, 1995; 2004).

The Features of an Attachment Bond

Attachment relationships are characterized by four features or functions (Ainsworth, 1991; Hazan & Zeifman, 1994). First, an attachment figure is used as a target for proximity maintenance. Both infants and adults enjoy being in the presence of their attachment figures and actively seek those figures when they accomplish something or when they feel threatened. Second, both infants and adults experience separation distress when the relationship is disrupted. Separations from nonattachment figures generally do not elicit distress or vigorous attempts to reestablish contact. Third, the attachment figure serves as a safe haven. When a person is distressed, he or she often seeks the attachment figure for contact, assurance, and safety. Although distressed infants may accept care from other adults, infants are rarely soothed effectively unless they are in the presence of a primary attachment figure (Bowlby, 1969; Heinicke & Westheimer, 1965). Fourth, people use their attachment figures as a secure base from which to explore the world. Young children, for example, are comfortable with the exploration of strange new environments only to the extent to which they know that the attachment figure is nearby and accessible if needed. Similarly, adult romantic partners are often much more comfortable exploring careers and leisure activities when they know that their partner is accessible.

Although attachment relationships are expected to be “close” relationships, theoretically, there is no reason to assume that a close relationship must be an attachment or that an attachment relationship is necessarily a close or satisfying one (Cassidy, 1999). In other words, attachment relationships are assumed to be a different kind of relationship, one that serves psychological functions that typically are not served by other highly interdependent relationships (Ainsworth, 1991; Cassidy, 1999; Weiss, 1991). A person, for example, may have a satisfying relationship with his or her roommate, but may not use that person as a secure base from which to explore the world. Alternatively, someone may be attached to a parent but find the relationship to be an insecure one—one in which the person’s needs are repeatedly unmet. In theory, close relationships and attachment relationships are distinct (Weiss, 1991), despite the fact that, in practice, attachment relationships are likely to be close and satisfying ones.

Attachment Hierarchies

In infancy as well as in adulthood, people are likely to have multiple attachment figures. Bowlby (1969) discussed the notion that infants could have multiple attachment objects and that “responsiveness to crying and readiness to interact socially are among the most relevant variables” (p. 315) in determining who will be chosen as an attachment figure. The mother is the most likely candidate in most cases, but fathers, siblings, aunts, uncles, and grandparents may also serve as attachment figures (Ainsworth, 1991).

The infant’s various attachment figures typically form what has been called a “hierarchy” of attachment figures (Collins & Read, 1994; Trinke & Bartholomew, 1997). Infants do not treat all attachment figures as equivalent; some are preferred over others. Most infants prefer to seek comfort from their mothers when distressed; in the mother’s absence, however, infants may look to other attachment figures to meet their attachment needs. Bowlby (1969) used the term monotropy to denote the tendency for infants to prefer one attachment figure over others for comfort and security.

As a child grows older, he or she has an opportunity to expand his or her network of attachment relationships. Trinke and Bartholomew (1997) extended the work of Hazan, Hutt, Sturgeon, and Bricker (1991) by developing a self-report measure to assess attachment hierarchies. Trinke and Bartholomew (1997) found that most young adults have multiple attachment figures, including family members, romantic partners, and friends. Mothers seem to be given special status as attachment figures, followed by romantic partners and best friends. Siblings were chosen less often than partners, mothers, and fathers. These and other studies (e.g., Doherty & Feeney, 2004; Fraley & Davis, 1997) show that when young adults become involved in romantic relationships, their romantic partners typically move to the top of the existing attachment hierarchy, with the exception of mothers, who may continue to occupy a privileged position in the hierarchies of many young adults.

Attachment in Twin Relationships

Part of what has been missing in the study of twins is a theoretical model for understanding the nature of the bond between them. In this section, we argue that attachment theory provides a valuable framework for understanding the ways in which twins
relate to one another. We begin by explaining the developmental context of twinship and why that context may facilitate the establishment of attachments between twins. Next, we review briefly existing qualitative and quantitative research on twin relationships, emphasizing the findings as they bear on the key markers of an attachment relationship: proximity seeking, separation distress, and the use of a relationship partner as a safe haven and a secure base. The primary purpose of this review is to demonstrate the tenability of the idea that twinships may be attachment relationships, but we also focus more generally on the notion that sibling relationships may sometimes function as attachments.

Twin Development and Attachment

Like all infants, twins use a variety of behaviors, such as locomotion and vocalization, to engage a particular figure who will provide safety and security. These behaviors result in what Ainsworth, Blehar, Waters, and Wall (1978) called “clear-cut attachment” around the age of 6–8 months. At this stage of development, an infant does not easily accept substitutes for the primary attachment figure and is particularly sensitive to the figure’s accessibility and responsiveness. In the case of twins, the mother must simultaneously meet the needs of two infants. As such, twins almost always receive less individual attention from their mothers than singleton children (Lyttton, 1977). In fact, some research suggests that mothers speak to their twin infants only half as often as they speak to their singleton infants (Lyttton, 1977; see also Ainslie, 1997). Therefore, as Ainslie notes, “at the developmental juncture when the mother is uniquely important to her infant, the mother of twins is most likely to feel overwhelmed by the demanding task of meeting the needs of two infants at the same time” (Ainslie, 1997, p. 22). Further, the added demands required by the “twin situation” may alter the mother–infant relationship in important ways during the first year of life (Ainslie, 1997).

Twin infants clearly seek proximity to their mother and attempt to receive the same amount of interaction with her as do singleton children. Also, during the first couple of years of life, they appear to be relatively uninterested in the presence of the cotwin, although the presence of the cotwin may have a soothing effect (Leonard, 1961). In other words, the presence of the cotwin does not diminish the need for the mother, nor does the twin prefer the company of the cotwin to that of the mother. Savic (1980) observed 3 singletons and 3 sets of twins in their homes over the course of 8 months and found that toddler twins showed a clear preference for their mother over their cotwin. Savic (1980) observed similar behaviors among twins between the ages of 14 and 36 months; they tended to interact with each other only if the mother or other social partners were unavailable.

Twins begin to interact with each other in a relationship-oriented manner around the age of 36 months, following the end of the separation-individuation process (Mahler, Pine, & Bergman, 1975) at which time the child shifts from having an extremely limited awareness of self and the outside world to experiencing him- or herself as a separate, integrated person. Part of this process involves an increasing interest in social partners and objects other than the mother. Although the mother herself is still meticulously scrutinized and explored, she becomes a secure base from which the child can explore the environment and the child begins to actively investigate other aspects of the world. In the case of twins, the cotwin is a readily accessible object or partner. It is during this important period of development that twins become increasingly involved with one another (see Ainslie, 1997, for an in-depth discussion of these developmental processes among twins).

siblings as attachment figures and factors that may promote sibling attachment

Although siblings are generally not used as attachment figures in infancy or adulthood (Trinke & Bartholomew, 1997), there is no theoretical reason why they cannot hold a special place in a person’s attachment hierarchy (Ainsworth, 1991), especially among twins. In fact, Ainsworth (1991) suggested that not only are sibling attachments possible, but they can be facilitated by several factors, including the inaccessibility of other attachment figures, the trust that is developed through play interactions, and shared experiences.

When the mother is perceived as inaccessible, siblings may turn to each other for security, comfort, and care. Older siblings, who may be more likely to play a parental, caregiving role with their younger siblings, may be available to serve as supplementary attachment figures for them, providing security and comfort when they are needed (Ainsworth, 1991). Stewart (1983) studied 3- and 4-year-old children who were left alone together in a waiting room without their mothers. He observed that half of his sample provided assurance and care to their younger siblings (see also Stewart & Marvin, 1984). These observations suggest that a child as young as 3 or 4 years of age may serve as an attachment figure to a younger sibling when the primary caregiver is unavailable.

In addition to the inaccessibility of other attachment figures, Ainsworth (1991) suggested that siblings who are close in age may form attachment relationships because they are likely to be playmates and to develop relationships characterized by cooperation, reciprocity, and mutual trust. These qualities are common in attachment relationships and may contribute to the formation of secure attachment in sibling friendships (Fraley & Davis, 1997). Further, shared background experiences may promote attachment. Although siblings experience differences with respect to particular activities and interests, their long history of shared experience promotes similarities in their perception of situations and in value systems that influence their decisions and mutual understanding. This mutual understanding may be especially strong among twins, who are the same age and are likely to have had a greater proportion of shared experiences. Identical twins, in particular, are encouraged by parents and others to be similar and to stick together (Koch, 1966; see Vandell, 1990).

Siblings may also become attached to each other for more distal reasons. According to biological perspectives on kin relationships, people are predisposed to behave in prosocial ways toward others with whom they share genes (Hamilton, 1964; Neyer & Lang, 2003). On average, siblings share 50% of their genes with one another. As such, directing attachment behavior toward a sibling (as opposed to a nonfamily member) may benefit one’s inclusive fitness. This is especially likely to be true for identical twins, who share all of their genes. In fact, previous research has shown that identical twins grieve the loss of their cotwin with more intensity than do fraternal twins (Segal & Ream, 1998).
Features and Functions of Attachment in Twin Relationships

Although there is evidence that twins often develop close, interdependent relationships with one another, it is unclear whether these relationships qualify as attachments per se. In the sections below, we review both qualitative and quantitative research that suggests that twins may serve as attachment figures for one another across the life span. We will organize our discussion with respect to the key features and functions that are thought to define attachment relationships (Hazan & Zeifman, 1994): proximity seeking, separation distress, the use of the other as a safe haven, and the use of the other as a secure base.

Proximity seeking. In a large study of preschool-aged twins, Koch (1966) found that twins were more likely than nontwins to spend time together and share playmates. Whereas nontwin siblings said they were happier without their brothers or sisters, twins said they preferred being together. In fact, most of the twins interviewed by Koch expressed a desire to be in the same classroom. In a naturalistic observation study of twin pairs on a school playground, Segal (1999) found that identical twins showed greater physical closeness than fraternal twins. According to Segal:

When they were separated they could be seen looking around for one another every once in awhile. The slight tensions in their faces when they searched disappeared once they caught sight of their twin. This type of behavior is like interactional melodies, the finely tuned relationship patterns, observed between parents and children in parks and playgrounds around the world, in which separations are followed by searches, and eventually, joyful reunions. (p. 105)

Less is known about proximity-seeking behaviors in adult twins, but there is some evidence to suggest that twins are interested in keeping the cotwin nearby and accessible. In a study of adult twins, Tambs, Sundet, and Berg (1985) found that identical twins were psychologically closer to each other and they lived together longer than fraternal twins. In a study of twins in old age, Neyer (2002b) found that twins contacted each other more frequently and lived in closer geographical proximity than nontwin siblings.

Ainslie (1997) interviewed adult twins who described their reactions to being separated from their cotwin and noted differential reactions among twins to various kinds of separations, such as one twin taking a trip, having a steady boyfriend or girlfriend, or marrying (see also Case, 1991). One interviewee, Cindy, was particularly concerned about the accessibility of her identical twin sister, Lindy. She stated “We were separated in college and I didn’t know where she was, and she didn’t know where I was most of the time. And it was at times when I really wanted to talk to her and I just couldn’t find her anywhere that I would get really upset, like ‘Where is she!’... I would look and look, and sometimes I would ask so-and-so, and then I would go there and couldn’t find her. . . . Somebody should know where she is! Somebody should try to help me!” (Ainslie, 1997, pp. 75–76).

Separation distress. As implied by the previous quote, some twins can be easily distressed when separated from one another. This distress is particularly obvious when one twin dies (Woodward, 1998). Segal and her colleagues (e.g., Segal & Bouchard, 1993; Segal, Wilson, Bouchard, & Gillin, 1995) have conducted extensive research showing that bereaved twins experience grief more intensely for the loss of their cotwin than for other people and that the intensity of their grief is greater than that experienced by bereaved spouses. Some twins report that seeing the twin die felt like experiencing their own death (Woodward, 1998). Some twins express a sense of loneliness and loss so intense that nobody can help to ease it (Woodward, 1998). Eighty-one percent of the twins in Woodward’s (1998) sample indicated that the loss was “severe” or “marked.”

Safe haven. Twins appear to place a high priority on offering support, protection, and comfort to their cotwin in times of need and regard the solace of the cotwin as irreplaceable. In fact, twins are sometimes able to soothe each other even when others cannot (Leonard, 1961). Tancredy (1999) reported on the case of Mike, a 23-year-old identical twin who commented about his cotwin, “He always knew exactly how I felt. He was always the one person that I could turn to if I had problems, if I was scared, if I was nervous. I’d just turn to him and he knew... So if my dad would yell at us or something, we’d always buddy up and go into a room and play and we’d be fine.”

Lassers and Nordan (1978) suggest that the twin relationship is an enduring attachment and that the twin naturally retreats to the twinship for safety and security. The tendency to “fall back” on the twinship as a source of safety and security was evident in the interviews conducted by Tancredy (1999). For example, one female identical twin commented:

I think that when we were little, we used to be a lot closer. We used to do everything together. Now that we’re older we don’t do everything together. We have our own lives, so we have become more independent. It’s more like the other one is a fall back. Like I can always fall back onto my [twin] and she can always fall back onto me. Before it was always ‘us.’ . . . and now that we know other people, we are kind of like a fall back.

Secure base. There is very little research to determine the extent to which twins serve as secure bases for each other across the life span. In early childhood, it seems likely that twins use their cotwins as a secure base when they are psychologically separated from the mother. Sandbank (1999) suggests that the twin, serving as a “transitional object” in place of a teddy bear or comfort blanket, may become an alternative secure base. However, this base does not necessarily promote exploration. A base that has a tendency to move with one may inhibit exploration by focusing attention on the base rather than the territory to be explored. Moreover, when neither twin has had the security of being able to command his or her mother’s full attention, one twin may be less willing to let the mother go unless accompanied by the other twin.

Other studies suggest that exploration need not be inhibited by using one’s twin as a secure base. Koch (1966) found that children who reported feeling close to their cotwin were less apprehensive socially. Their parents reported that the twins were affectionate and responsive. Others have also observed that preschool-aged twins serve as attachment or security figures, defining attachment in terms of apparent comfort in the presence of the attachment figure and distress when separated. In a classic case study of a set of Russian twins, Luria and Yudovich (1959) noted that the preschool-aged twins were happy and energetic when they were together but were restrained and quiet when apart. In the same vein, mothers have reported that their young twins worry about each other when they are separated and help ease each other into new situations (Ainslie, 1997).
Overview of the Present Research

The studies reviewed previously suggest that twins may use their cotwin as attachment figures. Nonetheless, there have been no systematic attempts to evaluate this hypothesis among adult twins. The objective of this research is to assess the presence of attachment features and functions in twin relationships. For a point of comparison, we focus on differences between the sibling relationships of twins and nontwins. The central questions motivating this study are: (a) Are twins more likely than nontwin siblings to use their siblings as attachment figures? (b) Where are siblings positioned in the attachment hierarchies of twins and nontwins? (c) What kinds of psychological and developmental characteristics contribute to the development of an attachment bond with a sibling? On the basis of the literature reviewed previously, we hypothesized that twins would be more likely than nontwins to regard their sibling as an attachment figure, and that, among twins, cotwins would be placed at the top of the attachment hierarchy. We also hypothesized that attachment bonds would be more salient when (a) siblings had less supportive and trusting relationships with their mothers, (b) the age difference between siblings was small, (c) siblings shared many experiences while growing up, (d) siblings experienced more empathy and closeness to one another, and (e) siblings were more genetically related to one another.

Method

Participants

Sixty-two twins (30 identical, 32 fraternal) and 928 nontwins participated in this research. Only one member of a twinspace or sibling relationship was needed to complete the study. Participants were drawn from both a student population (in exchange for course credit) and the Internet community (in exchange for educational feedback about the participant’s close relationships). Participants ranged in age from 14 to 61 years (M = 23, SD = 7.8). The majority were students who participated for course credit (60%). About 78% of participants reported annual incomes under $20,000, 10% reported annual incomes between $20,001 and $40,000, 4% reported incomes between $40,001 and $60,000, and the remaining 6% reported incomes above $60,001. Regarding ethnicity, 60% of the sample reported that they were White. Additionally, 3% were African American, 19% were Asian/Asian American, 5% were Pacific Islander, 7% were Hispanic, and 3% were Middle Eastern. The remaining 3% reported “other” or did not answer. Eighty percent of the participants were women.

In this study, participants were required to answer questions about a sibling. For the nontwin sibling participants, 53% of the sample described a sibling who was younger, and 46% described a sibling who was older. The absolute age difference between siblings ranged from 1 to 22 years (M = 4.1). Fifty-three percent of the nontwin siblings were women. In the twin group, 68% of the cotwins were women. Twenty-three percent of the sample reported that they currently lived in the same household as their sibling.

Procedure

Participants completed a set of questionnaires on the Internet as part of an online study of sibling relationships. The study was posted on a Web site hosted by R. Chris Fraley called yourPersonality.net. This site contains a variety of online tests for issues of relevance to personality, attachment, close relationships, and politics. The majority of people who voluntarily visit the site are women (80%), probably because women tend to be more interested in relational issues than men (e.g., Martin, 1991). It is important to note, however, that women were neither more nor less likely to participate in the current research than that for other projects posted on that Web site. Participants were asked to register on the study Web site using a username and password. They had the option of completing the questionnaire all at once or returning to the site later and completing the questionnaire at their convenience. Once all the measures were completed, participants were thanked, debriefed, and given extensive personal feedback that was automatically generated from the participants’ responses.

Measures

Family questions. Participants answered several questions about their family. Participants were asked to report their family size while they were growing up. They also indicated their relation to the individuals they regarded as their mother and father (biological, adopted, step, foster, or other).

Sibling questions. Participants were asked to report the names, birth dates, and ages of their siblings and the sibling relation for each one (full, half, step, or adopted). This information was used to determine age differentials for nontwin siblings and the proportion of genes shared between siblings. We also asked nontwin respondents to “choose a sibling that you would like to consider for the rest of this study” and to indicate the first name of that sibling. The remaining questions about siblings (see below) were asked in reference to that particular sibling. We did not provide special directives to respondents on how to choose which sibling, if he or she had more than one, to nominate.

Zygosity. Participants who indicated that their sibling was a twin were also asked to self-report their twin type (identical, fraternal, or don’t know) and to explain how they came to know their type (e.g., blood test, cheek swab test, “doctor told me,” or “parents told me”). We used siblings’ self-reported twin type to classify the zygosity of participants. Siblings who were unsure of their twin type were excluded from the analyses.

Attachment features and functions. To assess attachment-related functions and features, we administered a modified version of the WHOTO Questionnaire (Fraley & Davis, 1997; Hazan et al., 1991) and the Attachment Network Questionnaire (ANQ; Trinke & Bartholomew, 1997). The measure included 16 items that assessed the degree to which a potential attachment figure (sibling, mother, father, romantic partner, or friend) served each of the four primary attachment functions. We constructed these scales based on attachment theory and research, choosing items that seemed to best represent these functions (see Appendix). Most items were taken from established attachment measures (e.g., the WHOTO and the ANQ). For example, proximity maintenance items included such statements as “I make an effort to stay in contact with my sibling.” The separation distress items included such statements as “When I am away from my sibling, I feel down.” The safe haven subscale included items such as “My sibling is a person I count on for advice.” Finally, the secure base subscale was composed of items such as “My sibling is the person that I...

We did not include directives because we wanted to make sure that nontwin siblings had the opportunity to rate a sibling who may be important to them. From this perspective, our design is a rather conservative one because it would undermine our ability to detect a difference between twin and nontwin siblings in the extent to which they use their siblings as attachment figures.

Zygosity was also assessed with a four-item measure, developed by researchers at the University of Minnesota, that has been shown to assess zygosity accurately in 96% of cases (Peeters, Van Gestel, Vlieetinck, Derom, & Derom, 1998). These items require participants to indicate similarity and difference characteristics that help to determine genetic similarity. For example, one item reads, “During your childhood, were you and your twin as alike as ‘two peas in a pod,’ or were you no more alike in appearance than ordinary brothers and sisters?” The point-biserial correlation between the self-report classification of zygosity and a unit-weighted composite of the Peeters et al. items was .78.
count on to always be there for me and care about me no matter what.” Participants were asked to rate the degree (from 1, strongly disagree, to 7, strongly agree) to which attachment features and functions characterize their relationships with particular people (i.e., parents, partners, and twin or nontwin siblings) rather than nominate specific individuals or provide binary responses (see Fraley & Davis, 1997, for an example of a nomination procedure). We should note that, although attachment theorists often speak about an attachment relationship as either existing or not (e.g., Cassidy, 1999), we assessed the extent to which the relationship resembled an attachment relationship quantitatively. We did so because continuous information can always be used to make classifications, if theory demands, but categorical data cannot easily be used to make graded distinctions. Although we rely on continuous ratings in the current report, we remain agnostic on the thorny issue of whether attachment relationships are truly “all or none” affairs.

Inclusion of other in self. The Inclusion of Other in Self measure is a single item designed to tap people’s sense of being closely interconnected with another person (IOS; Aron, Aron, & Smollan, 1992; Aron, Aron, Tudor, & Nelson, 1991). The IOS was designed as a measure of closeness, but it also meant to reflect the fact that closeness involves a complex sharing of characteristics, resources, and perspectives. In a close relationship, an individual acts as if some or all aspects of the relationship partner are also the individual’s own (Aron et al., 1992). A higher IOS score indicates a greater sense of interconnectedness with the target person. Participants in the present study were asked to choose one of several sets of Venn diagrams that best reflected the degree of overlap between self and other with respect to their relationship with their sibling, mother, father, friend, and romantic partner.

Quality of relationship with mother. To assess the quality of the relationship with mother, participants were asked to rate on a 1 (strongly disagree) to 7 (strongly agree) scale the extent to which each of the following adjectives characterize their relationship with their mother: honest, caring, trusting, supportive, respectful, understanding, affectionate, accepting. These ratings were averaged to create a composite index of the quality of the relationship with mother (α = .91).

Quality of relationship with sibling. To assess the quality of the relationship with their sibling, participants were asked to rate on a scale of 1 (strongly disagree) to 7 (strongly agree) the extent to which each of the following adjectives characterize their relationship with their brother or sister: honest, caring, trusting, supportive, respectful, understanding, affectionate, accepting. These ratings were averaged to create a composite index of the quality of the relationship with the sibling (α = .92).

Twin and Sibling Relationship Inventory. A Twin and Sibling Relationship Inventory (TSRI) was constructed specifically for this study to gain information about the nature of the relationship between the participant and his or her cotwin or sibling. Items on the TSRI were constructed from qualitative reports of relationships with twins (e.g., Ainslie, 1997; Schave & Ciriello, 1983) and siblings (e.g., Bank & Kahn, 1982). The TSRI contains items designed to tap the kinds of themes that have emerged from the twin literature. We used these items to create a measure of the degree of empathy experienced in the sibling relationship (“When something bad happens to my sibling, I feel bad too”; 6 items; α = .83); the extent to which siblings shared common experiences and activities while growing up (“Growing up, my sibling and I were encouraged to share everything”; 4 items; α = .74); and the degree to which siblings currently have separate lives (“My sibling and I have separate personal lives”; 4 items; α = .73).

Results

Attachment Functions Measure

Because the measure of attachment functions used in this study was novel, our first step was to explore its psychometric properties. The correlations among the four scales, as well as the means, standard deviations, and alphas, are reported in Table 1. The internal consistencies for these scales within a target relationship were high, ranging from .84 for the separation distress scale to .90 for the safe haven scale (see Table 1). Within each relationship type (i.e., sibling, mother, father, romantic partner, and friend), the four scales were highly intercorrelated (on average, .75). The high magnitude of these associations indicates that there was a single source of variation underlying the attachment function ratings. Indeed, the results of principal axis factor analyses (using oblique rotation) within each relationship domain indicated that there was one principal factor underlying the covariation among items (e.g., in the sibling domain, the first four eigenvalues were 10.95, 1.85, 1.08, and .90). Conceptually, this factor represents the extent to which a target is regarded as an attachment figure. Because this factor captured an overwhelming majority of the variance, in our primary analyses we focus on a unit-weighted composite index that captures this major source of variation within each relationship domain. This composite captures the extent to which the subject relies on the target as an attachment figure (i.e., uses the person as a target of proximity maintenance, safe haven, and secure base, and experiences separation distress in the person’s absence). The means, standard deviations, and alphas for the composite attachment scales across different kinds of relationships are presented in Table 2.

Are Twins More Likely Than Nontwins to Rely on Their Sibling as an Attachment Figure?

To determine whether twins are more likely than nontwins to use their siblings as attachment figures, we compared the average sibling attachment composite score for twins and nontwins. The means and standard deviations for attachment scores (for twins and nontwins) across relationships are presented in Table 3. Overall, twins (M = 5.35, SD = 1.22) were more likely than nontwins (M = 4.53, SD = 1.34) to regard their sibling as an attachment figure, t(981) = 4.52, p < .05, d = .64.

Do Twins and Nontwins Differ in Their Regard for Others as Attachment Figures?

We also sought to determine whether twins and nontwins differed in their use of nonsiblings (e.g., mothers, friends) as attachment figures. The means and standard deviations for each relationship are reported in Table 3. Twins were less likely than nontwins to regard mothers, t(986) = −3.67, p < .05, d = −.46, as attachment figures. A similar trend was observed with respect to fathers, t(978) = −1.81, p = .07, d = −.24, and friends, t(986) = −1.77, p = .07, d = −.23. Finally, although twins did not report being attached to their romantic partners to a lesser extent than did nontwins in the full sample, r(978) = −1.52, p = .12, d = −.19, when we conducted this analysis only on participants who were involved in dating and marital relationships, the effect emerged.

Sex did not moderate any of the analyses we report. Moreover, twins were no more likely to be male or female than were nontwins. The twins in our sample, however, tended to be 3 years older, on average, than nontwins. When we reran our key analyses (e.g., those summarized in Table 2) controlling for age, our results were unchanged.
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t(554) = -1.98, p < .05, d = -.33. Twins (M = 5.91, SD = .98) were less likely to regard their romantic partners as attachment figures than nontwins (M = 6.21, SD = .85). In summary, twins were more likely than nontwins to regard their siblings as attachment figures, and they tended to regard other people as attachment figures to a lesser extent than did nontwin siblings.

How Are Twins and Nontwin Siblings Positioned in the Attachment Hierarchy?

Although twins are more likely to use their sibling as an attachment figure than are nontwins, this finding does not necessarily imply that siblings are at the top of the attachment hierarchy for twins. To examine the placement of siblings within the attachment hierarchy, we conducted a repeated measures analysis to compare the attachment means across the five attachment targets. Sibling status (i.e., twin vs. nontwin) was treated as a between-subjects factor and target (i.e., sibling, mother, father, partner, or friend) was treated as a within-subjects factor. The analysis yielded a main effect for target, F(4, 964) = 37.8, p < .05, and an interaction, F(4, 964) = 13.97, p < .05, indicating that the pattern of means for twins differed from the pattern of means for nontwins. The means and standard deviations for attachment targets are presented in Table 3. As can be seen, partners, siblings, and friends were rated the highest among twins. This finding suggests that a twin’s cotwin does not exclusively hold the highest position in the attachment hierarchy; statistically, the cotwin scores just about as high as other important attachment figures. In contrast, however, the pattern of means for nontwins shows that siblings are placed at the bottom of the attachment hierarchy. With the exception of the higher placement of siblings for twins, a similar ordinal pattern emerged for nontwin participants for partners, friends, mothers, and fathers, respectively.

The Development of Attachment for Twin and Nontwin Siblings: A Cross-sectional Analysis

Thus far, the data suggest that twin and nontwin siblings differ in the extent to which they use their siblings as attachment figures. Specifically, twins are more likely to regard their sibling as an attachment figure than are nontwins. Moreover, nontwins are more likely to rely upon their parents for various attachment-related functions than are twins. In the set of analyses to be reported next, we sought to delineate further the differences in the ways in which twins and nontwins approach different kinds of attachment relationships.

Table 2

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<th>Attachment target</th>
<th>Mean (SD)</th>
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<td>4.53 (1.34)</td>
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<td>Mother</td>
<td>4.80 (1.48)</td>
<td>5.44 (1.32)</td>
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<td>4.24 (1.69)</td>
<td>4.62 (1.53)</td>
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<td>Friend</td>
<td>5.26 (1.03)</td>
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<tr>
<td>Partner</td>
<td>5.75 (1.07)</td>
<td>5.95 (0.99)</td>
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Note. Means with different subscripts within columns represent significant differences, p < .05.

According to attachment theory and research, as people grow older they are more likely to use their romantic partners for attachment-related functions and less likely to rely upon their parents for these purposes (Fraley & Davis, 1997). It is unclear, however, whether sibling attachments are maintained or relinquished over time.

To investigate these issues, we took advantage of the cross-sectional nature of the data to examine the association between age and attachment to various targets (i.e., siblings, parents, and romantic partners) as a function of sibling status (i.e., twin or nontwin). In each analysis, we hierarchically regressed the extent to which the target was used as an attachment figure on sibling status, age, and the interaction between sibling status and age. The regression analyses are summarized in Figure 1. Regarding attachment to siblings, there was a main effect of age and sibling status. Overall, older participants reported feeling less attached to their siblings (β = -.17, p < .05), and twins reported feeling more attached to their siblings than nontwins did (β = .15, p < .05). These effects were qualified by an interaction between age and sibling status (β = .12, p < .05). As can be seen in the upper-left panel of Figure 1, older twins felt more attached to their cotwins than did younger twins, whereas older nontwins felt less attached to their siblings than did younger nontwins.5

The association between attachment and age was quite different for other kinds of relationships. As can be seen in the upper-right panel of Figure 1, older participants reported feeling less attached to their mothers (β = -.30, p < .05), and twins reported feeling less attached to their mothers than nontwins (β = -.09, p < .05). There was no interaction between age and sibling status (β = .01, ns). A similar pattern of results was found with attachment to fathers (see the lower-left panel of Figure 1). There was a main effect of age (β = .17, p < .05), which was qualified by an interaction between age and sibling status (β = -.04, p < .05). This pattern suggests that, compared with nontwins, twins maintain their attachments to fathers as they grow older.

5 To ensure that the cross-sectional analyses were not unduly influenced by a select few older participants, we reran these and other cross-sectional analyses with a truncated age range (i.e., from 18 to 40). Both the standardized and unstandardized regression coefficients did not change in any appreciable manner. For example, the standardized coefficients for this analysis for age, sibling status, and their interaction were -.12, .13, and .11, respectively, for the truncated sample.
Finally, we examined the extent to which twin and nontwin siblings regard their romantic partner as an attachment figure over the course of their relationship. Because not everyone in our sample was involved in a dating relationship, we limited these analyses to the subsample of participants who were in exclusive relationships and studied (the log of) relationship length rather than age per se. There was a main effect of sibling status ($\beta = -.10, p < .05$) such that twins were less likely to feel attached to their partners than nontwins. Also, older respondents tended to feel more attached to their partners than younger respondents ($\beta = .11, p < .05$). There was no interaction between sibling status and relationship length ($\beta = -.05, ns$). The lower-right panel of Figure 1 illustrates these regressions.

Figure 1. Attachment to different targets (i.e., sibling, mother, father, and romantic partner) as a function of age and sibling status. Solid lines correspond to twin siblings. Dashed lines correspond to nontwin siblings.

Factors That Facilitate and Inhibit the Development of Attachment

We next examined the associations between the extent to which the sibling was used as an attachment figure and a variety of psychological, social, and developmental factors. Because our measure of sibling attachment was correlated highly with the quality of the sibling relationship ($r = .73, p < .05$), we thought it would be prudent to study the association between sibling attachment and these variables while statistically controlling sibling relationship quality. Such an analysis should enable us to identify the association between attachment and the various relationship variables independently of the quality of the relationship. The partial correlations (computed separately for the full sample, twins, and nontwin siblings) are summarized in Table 4. As can be
Integrating Genetic and Relational Perspectives on Twin and age differences between siblings. Pathy and shared interests, matter more for the development of an attachment figure. Apparently, psychological factors, such as empathy for one another, even twins, were consistent with what might be expected given the existing literature on twins.

The correlation between age differential and attachment to sibling is not reported among twins because there was no variance in the age differential among twins. *p < .05

seen, people were more likely to regard their sibling as an attachment figure if they were encouraged to spend time together as children; they do not have separate interests, personal lives, and professional lives as adults; they experience empathy for one another; and they include the other as part of the self. It is noteworthy that these patterns of associations held for both twins and nontwins and that, with a few exceptions, they were consistent with what might be expected given the existing literature on twins. The exceptions are, first, that there was not a significant negative correlation between the relationship siblings had with their mother and the extent to which they were attached to their sibling. Second, the age differential between siblings, as well as family size, was unrelated to the extent to which the sibling was used as an attachment figure. Apparently, psychological factors, such as empathy and shared interests, matter more for the development of a sibling attachment bond than structural factors, such as family size and age differences between siblings.

Integrating Genetic and Relational Perspectives on Twin Attachment

Up to this point our analyses have focused on the way in which twins and nontwins differ from one another in their sibling relationships as if there was something about twinship per se—as a relational phenomenon—that matters. It is worth noting, however, that twins differ from nontwins not only in the nature of their relationships (as we have documented) but also in their genetic relatedness: identical twins share more genes than nontwins. Moreover, even twins differ from one another with respect to genetic relatedness: identical twins share 100% of their genes whereas fraternal twins share, on average, 50% of their genes. It is possible that genetic relatedness is a critical factor in shaping the bond that develops between siblings.

Although social psychological and evolutionary perspectives are often placed in opposition to one another in contemporary psychology, we believe that it is possible to integrate these seemingly divergent perspectives on human nature. As many ethologists have noted (e.g., Hinde, 1982; Tinbergen, 1963), evolutionary theories often focus on ultimate mechanisms (e.g., factors that indirectly influence inclusive fitness or the selection of specific genotypes), whereas psychological theories often focus on proximate mechanisms (e.g., factors that more directly influence behavioral phenomena). The fact that these different kinds of explanations are often poised at different levels of analysis suggests that they are not mutually exclusive and that a comprehensive account of behavioral phenomena may require attention to each. In the following analyses, we investigate the role that genetic similarity between siblings may play in the nature of the relationship that develops between siblings. Although we will explore the role of genetic relatedness, we emphasize the way in which genetic perspectives may be integrated with relational ones to provide a more complete understanding of attachment dynamics.

For our first analysis we created a new variable—one that did not perfectly confound genetic relatedness with sibling status (i.e., twin or not twin). Specifically, we created a quasi-continuous scale using the following values: 0% for foster and adoptive siblings, 25% for step siblings, 50% for dizygotic twins and nontwin siblings, and 100% for monozygotic twins. This measure of genetic relatedness was positively correlated with the extent to which people use their siblings as attachment figures (r = .15, p < .05). The correlations between this measure and the various relational variables are reported in the right-most column of Table 4. It is noteworthy that genetic relatedness correlates with many of these relational variables. Siblings who have more of their genes in common are more likely to have had shared experiences while growing up, share common interests now, empathize with one another, and include the other into the self. They were also, to our surprise, more likely to have positive relationships with their mothers. Taken together, these findings are compatible with the notion that genetic similarity may play a broad role in shaping the nature of the relationship that develops between siblings.

Another way to examine these issues is by honing in on the distinction between nontwin siblings and fraternal twins. From a genetic perspective, these two kinds of relationships are identical—in both cases, siblings share an average of 50% of their genes. From a relational perspective, however, fraternal twins and nontwins are characterized by different kinds of experiences. Thus, if

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Note. The correlation between age differential and attachment to sibling is not reported among twins because there was no variance in the age differential among twins. *p < .05

6 It should be noted that the correlation between genetic relatedness and age differential reflects nothing more than the fact that twin siblings (who share more of their genes than nontwin siblings, on average) do not vary in their age differentials, whereas nontwin siblings have variable age differentials.

7 We should note that the question of how genetic relatedness impacts attachment is distinct from the kind of question that is addressed in a common behavior genetic study using a twin design (see Neyer & Lang, 2003). A typical behavior genetic study compares the similarity of monozygotic (MZ) and dizygotic (DZ) twins to determine whether MZ twins are more similar than DZ twins with respect to a trait. In this kind of research, it is not relevant whether MZ twins have higher or lower trait scores, on average, than DZ twins. The focus is typically on covariance structures rather than on mean structures. In our research, we are trying to determine whether MZ twins are more likely to be attached to one another than are DZ twins (and, of course, how nontwin siblings fit into this picture). The answer to this question is independent of the heritability coefficient that is estimated in a typical behavior genetic study.
fraternal siblings are more likely to use one another as attachment figures than non-twin siblings, such a finding would suggest that the twin experience might be relevant for the establishment of an attachment bond above and beyond the role of genetic similarity. Moreover, because both fraternal and identical twins are twins but differ in their genetic relatedness, if identical twins were more likely than fraternal twins to be attached to one another, such a finding would implicate a unique role for genetic similarity in shaping attachment dynamics. These kinds of predictions can be formalized as follows: From a genetic perspective, we would expect the means for attachment to sibling to be ordered in the following manner for non-twin siblings (NTS), fraternal twins (DZ), and identical twins (MZ): (NTS = DZ < MZ). From a relational perspective, the means should be ordered as NTS < (DZ = MZ). An integrated perspective would postulate roles for both kinds of factors, leading to the following prediction: NTS < DZ < MZ.

We tested these three sets of predictions using a series of planned comparisons with one-tailed tests. In the genetic comparison, we tested the difference between the means of the NTS and DZ groups and the MZ group. This contrast was significant, $t(980) = 3.73, p < .05$, indicating that non-twin siblings were less likely to be attached to their siblings than twins. The relational contrast for NTS versus DZ and MZ twins was also significant, $t(980) = 4.57, p < .05$, indicating that people who share 50% of their genes, on average, with their siblings are less attached to their siblings than people who share 100% of their genes with their siblings. Finally, we tested the ordered pairwise differences among groups. These analyses indicated that non-twins were less attached to their siblings ($M = 4.53, SD = 1.38$) than fraternal twins ($M = 4.94, SD = 1.27, \(t(951) = -1.65, p < .05, d = -0.31\)$), who, in turn, were less attached to their siblings than were identical twins ($M = 5.77, SD = 1.02, \(t(951) = -2.82, p < .05, d = -0.72\)$). These data are best explained by a perspective that assumes a role for both genetic and relational processes in the development of an attachment relationship.

In the next set of analyses, we sought to examine the pathways through which genetic relatedness might influence the nature of the sibling bond. Specifically, we evaluated an integrated model that assumes that genetic relatedness between siblings facilitates the amount of time that siblings spend together, the number of shared activities in which they engage, and the degree of empathy and closeness that is experienced. These social–relational factors, in turn, are theorized to shape the formation of the attachment bond between siblings. To test this mediational model, we followed the general guidelines outlined by Baron and Kenny (1986). Specifically, we first established that there were associations between each of the mediators and genetic relatedness and between the mediators and siblings attachment (see Table 4). Next, we regressed sibling attachment on both the relational mediators and genetic relatedness. Each hypothesized mediator, considered separately, played a significant role in mediating the relationship between genetic relatedness and the extent to which the sibling was used as an attachment figure. The Sobel $z$ values for these experiences, separate lives, empathy, and inclusion of the other in the self were 5.29, 3.13, 4.06, and 4.46, respectively (all $ps < .05$). The results for the full multivariate mediational model are summarized in Figure 2. It is important that the estimated effect of genetic relatedness on sibling attachment was virtually zero ($\beta = .04, ns$) once accounting for the various relational factors. Moreover, allowing this parameter to be freely estimated as opposed to constraining its value to zero did not lead to significant improvement in the capacity of the model to account for the observed correlations, $\chi^2(1) = 1.46, ns$. In short, these findings are consistent with the notion that genetic similarity promotes certain relational dynamics (such as an increased sense of empathy and self–other overlap) among siblings and that these factors, in turn, may help to shape the bond that develops between them.\footnote{We statistically removed sibling relationship quality from the sibling attachment scores using the residuals from a regression analysis to hone in more specifically on attachment as opposed to relationship quality. The results are the same regardless of whether relationship quality is controlled.}

**General Discussion**

Twin relationships have been hailed as one of the most unusual, intimate, and mysterious of interpersonal bonds (e.g., Burlingham, 1952; Koch, 1966; Segal, 1997; Woodward, 1998). Despite the unusual features of twin relationships, few researchers have attempted to study this kind of relationship systematically. The objective of the present research was to conceptualize twin relationships within the broad framework provided by attachment theory and to empirically test several hypotheses about twin relationships derived from this perspective.

According to attachment theory, an attachment relationship is one in which a person uses the other as a target of proximity maintenance, a safe haven during times of distress, and a secure base from which to explore the world. To examine the extent to which twins and non-twins use their siblings as attachment figures, we asked people to rate the extent to which their siblings fulfill attachment-related functions. Our data indicate that twins are more likely than non-twin siblings to regard their sibling as an attachment figure. Twins were also less likely than non-twins to use their parents as attachment figures. Although twins were more likely than non-twins to be attached to their sibling, they were not necessarily more likely to be attached to their sibling compared with other important people in their life (i.e., romantic partners and friends). In other words, although cotwins were at the top of the attachment hierarchy among twins, they shared that spot with other significant people, such as friends and romantic partners.

Our cross-sectional analyses also revealed that twins and non-twins differed in attachment as a function of age. Whereas older twins were more likely to rely upon their siblings for attachment-related functions than younger twins, older nontwins were less likely to do so than younger twins. We also found that a number of factors predict the extent to which a sibling is used as an attachment figure. For example, people were more likely to use their siblings as attachment figures if they had many shared expe-
riences with them, did not currently lead separate lives characterized by separate interests and professions, experienced a high degree of empathy for one another, and psychologically included the other as part of the self. Contrary to predictions, factors such as the age difference between siblings did not predict attachment. Siblings who were close in age were just as likely as those who were not to be attached to one another. Also, although previous authors have suggested that a negative relationship with the mother might promote sibling attachment, we did not find strong evidence for this assumption.

**Implications for Understanding Twin Relationships**

This research was inspired by two observations. First, the kinds of qualities that are claimed to be “special” about twin relationships also appear to characterize other kinds of intimate relationships. For example, there are many examples of older married couples that have astonishingly similar interests, spend all of their time together, organize their lives around each other, and are dependable sources of comfort, nurturance, and support for each other. If these relationships involve the same psychological dynamics as twin relationships, it would be worthwhile to adopt a theoretical framework that could accommodate them both. Second, as rich as the qualitative literature on twinship can be, it tends to celebrate the twin relationship—elevating it to a unique stature in the pantheon of close relationships. Although it is possible that twin relationships are truly special and unlike any other kind of human bond, we believe that the most appropriate way to establish this possibility is by comparing systematically the features of twin relationships with those of other kinds of close relationships.

Our results suggest that twin relationships are indeed special, but they are not special in the sense that they represent a relationship like no other. Instead, they appear to be attachment relationships—relationships that, although exceptional, are experienced by many people, twins and nontwins alike. There are several advantages of conceptualizing twin relationships within the broader framework of attachment theory. The most important advantage is that attachment theory provides a general framework within which to understand intimate relationships. By placing the study of twins within a well-researched theoretical framework, it is possible to refine the lens through which we view twin relationships. Attachment theory provides a rich set of constructs, such as working models, that might be valuable to study in twin relationships. It would be useful to map the ways in which working models contribute to dynamics that take place within the twinship, how relational experiences might shape those representations, and how those representations might be used (or modified) as twins forge new relationships with romantic partners. It would also be interesting, for example, to learn whether working models of the sibling relationship, as opposed to the parental one, are more influential in shaping the development of romantic relationships among twins as opposed to nontwin siblings. These kinds of issues, although not unique to attachment theory, flow naturally from an attachment theoretical perspective on twin relationships. Although the present research was focused on the normative aspects of attachment theory rather than on individual differences, we believe that re-

![Figure 2. A mediational model of the relations between genetic similarity, relational processes, and attachment. Values represent standardized path coefficients. * = p < .05.](image-url)
search on individual differences in attachment organization would be valuable for understanding the dynamics of twin relationships (see Neyer, 2002a; Sheehan & Noller, 2002).

Implications for Attachment Theory

The majority of research on adult attachment has focused on romantic relationships. Although this research has been fruitful, it has often been conducted at the expense of studying other potential attachment relationships, such as those between close friends (Fraley & Davis, 1997) or between a person and his or her God (Kirkpatrick, 1995). One of the implications of the present study is that twinships constitute another important relationship that falls within the province of attachment theory. In fact, there are several ways in which twins might provide a more fertile testing ground for basic attachment-theoretical concepts than that provided by romantic relationships. Most important, twinships, unlike romantic relationships, do not involve obvious elements of sexuality (except in the minds, perhaps, of classical psychoanalysts). One of the challenges in contemporary adult attachment research is to disentangle the effects of mating strategies from the effects of attachment security. For example, Kirkpatrick (1998) has argued that what attachment researchers call “secure” versus “insecure” attachment styles may reflect differences between long-term and short-term mating strategies. At face value, Kirkpatrick’s (1998) claim is credible. Secure adults, for example, tend to have longer lasting relationships, experience less jealousy, be less abusive, and invest more in their offspring than insecure adults (Feeney, 1999). Moreover, evolutionary psychologists have postulated that individual differences in mating strategies have their origins in early family relationships, with warm, supportive environments purportedly signaling the viability of long-term mating strategies and unstable, low-resource environments signaling the viability of short-term mating strategies (Belsky, 1999).

By studying attachment dynamics in intimate—but nonssexual relationships—it should be possible to separate genuine attachment phenomena from processes related to mating strategies. Of course, the present research was not designed to accomplish this task per se, but some of our findings are noteworthy in this regard. For example, these data suggest that twin siblings are more likely than nontwin siblings to rely upon one another as attachment figures as they grow older. This pattern is not as strong in romantic relationships. It is possible that the typical, relatively flat trajectory observed for romantic relationships reflects two competing processes. On one hand, the “natural” trajectory of an attachment relationship may be to build on itself over time, as appears to be the case with twins. On the other hand, romantic partners may be keeping one ear to the ground, so to speak, seeking other potential mates or guarding themselves emotionally against possible rejection or loss. They may also be noticing a decline in sexual attraction or arousal within their relationship, which might make them question whether the relationship is fulfilling all of their needs. This kind of relational complexity may lead to what Fisher (1992) has called the “4-year itch”—the modal breaking point of married relationships across the globe—and to the bewildering feelings of grief and loss following the breakup of a romantic/sexual relationship that a person had thought was no longer satisfying or important (Weiss, 1975). In summary, the dynamics of romantic relationships are thought to be influenced by both the attachment behavioral system and the systems underlying mating and reproduction (see Shaver, Hazan, & Bradshaw, 1988). These systems are probably coordinated most of the time, making it difficult to untangle their contribution to relational dynamics. By focusing on long-lasting relationships that do not involve sexuality, such as twin relationships, it is possible to study the way in which attachment-related phenomena develop and impact people in a manner that, at least theoretically, is free of sexuality.10

Another feature of the twin relationship that might be beneficial for understanding attachment relationships more broadly is that many twins—in particular, monozygotic twins—are of the same biological sex. Thus, the variation that typically exists in gender roles and norms within heterosexual romantic relationships are held constant in twin relationships. This would make it possible, for example, to study caregiving dynamics between people who are mutually attached without having those dynamics confounded by the kinds of gender norms that exist in many cultures (Hupka & Bank, 1996).

Attachment as a Mechanism of Inclusive Fitness

Despite the fact that attachment theory is ultimately a middle-level evolutionary theory (Simpson, 1999), there has been some tension between attachment theorists and evolutionary psychologists (Kirkpatrick, 1998). At first glance, a perspective that emphasizes the role of shared genes as a force that impacts emotional bonding may seem incompatible with attachment theory—a theory that has largely emphasized the role of people’s interpersonal histories rather than their shared genes. One of the themes emerging from this research, however, is that these seemingly different perspectives actually complement one another nicely. Specifically, if one views relationship processes as mediators of the association between genetic similarity and the development of attachment, it is possible to discuss genes, interpersonal processes, and attachment within a unified framework. In the research reported here, we found that people were more likely to develop an attachment bond with someone with whom they shared a larger proportion of their genes. Our data also suggest that this association exists because shared genes may affect relational dynamics, such as a heightened sense of empathy, that promote the development of attachment. Considering these three kinds of constructs as part of the same causal chain, rather than as competing mechanisms, might provide a useful bridge between evolutionary and social psychological models of close relationships.

In summary, what has been missing from evolutionary and genetic perspectives on social behavior is an explanation for how genetic similarity is translated into something like an attachment bond. Additionally, what has been missing from attachment theory is an account of how evolutionary models of inclusive fitness interface with what is known about attachment processes. Future theoretical work—especially as it pertains to twin relationships—would benefit from a better understanding of the complex interconnections between these different constructs (see Neyer & Lang, 2003, for a good illustration of how such work can be done).

10This could also be accomplished by studying attachment dynamics in friendships.
Limitations of the Present Research

Because this research is the first systematic investigation into the nature of adult twin relationships from an attachment perspective, it is preliminary in many respects. The number of twins who participated in the research was fairly small. It would be valuable to continue this line of work with larger samples. A second limitation of this research is that it does not focus on the twin relationship from the perspective of both members of the dyad. Like the majority of research on close relationships, this study focuses on how individuals relate to others in their lives. Although this information is valuable, there would be several advantages to focusing on dyads rather than individuals. The most important advantage would be that such a focus would allow more detailed questions to be asked about the relationship. It would also allow researchers to determine whether twins are more “in sync” with one another than other pairs of siblings or relationship partners, as is commonly reported. In an exemplary study along these lines, Neyer (2002a) showed that there was an association between feelings of security and dependency experienced among twins and that both actor and partner effects played a role in shaping the association between these variables among twin dyads and romantic couples.

Third, one of the benefits of conceptualizing twin relationships within the framework of attachment theory is the developmental emphasis of the theory. Unfortunately, we were not able to study attachment dynamics in a truly developmental fashion in this cross-sectional research. Future research on these issues would benefit enormously from adopting longitudinal designs. Finally, our research has relied exclusively on self-report measures. Beyond the issues raised in the seemingly endless debates over whether attachment can be assessed accurately via self-reports (e.g., Crowell, Fraley, & Shaver, 1999), it would be valuable to observe twin relationships in action and compare them with non-twin relationships in domains such as nonverbal communication, synchronicity (i.e., the “chameleon effect”; Chartrand & Bargh, 1999), proximity, and touch.

In closing, we note that the vast majority of psychological research on twins has used them as tools—a means for quantifying the contribution of genetic variation to human behavior. Although the science of behavior genetics is obviously important for psychologists as including other in self. Journal of Personality and Social Psychology, 60, 241–253.


References


Appendix

Attachment Features and Functions Measure

Instructions: Please take a moment to reflect on your current relationship with _____ (mother, father, partner, sibling, twin, friend). If you had a relationship with this individual, but he or she is now deceased or no longer in your life, reflect on the relationship that existed when he or she was in your life.

1. My _____ is the person that I would want to go to, to help me feel better when something bad happens to me or I feel upset.
2. I make an effort to stay in contact with my _____.
3. If I achieved something good, my _____ is the person that I would tell first.
4. My _____ is the person that I would like to be able to count on to always be there for me and care about me no matter what.
5. My life would be severely disrupted if my _____ was no longer a part of it.
6. My _____ is a person whom I count on for advice.
7. My _____ is the first person that I think of when I have a problem.
8. My _____ is the person that I would actually go to, to help me feel better when something bad happens to me or I feel upset.
9. It is important to me to see or talk with _____ regularly.
10. My _____ is a person whom I do not like to be away from.
11. My _____ is the first person that I would turn to if I had a problem.
12. My _____’s death would have a great impact on me.
13. If my _____ was no longer accessible to me, I would feel greatly distressed.
14. My _____ is my primary source of emotional support.
15. When I am away from my _____, I feel down.
16. My _____ is the person that I would actually count on to always be there for me and care about me no matter what.

Note. Items 2 and 9 are indicators of proximity seeking. Items 1, 7, 8, 11, and 14 are indicators of safe haven. Items 3, 4, 6, and 16 are indicators of secure base. Items 5, 10, 12, 13, and 15 are items of separation distress.

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93