Attachment Styles, Emotion Regulation, and Adjustment in Adolescence

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Attachment style differences in psychological symptomatology, self-concept, and risky or problem behaviors were examined in a community sample (N = 1,989) of Black and White adolescents, 13 to 19 years old. Overall, secure adolescents were the best-adjusted group, reporting the poorest self-concepts and the highest levels of symptomatology and risk behaviors. In contrast, avoidant adolescents reported generally high levels of symptomatology and poor self-concepts but similar levels of risk behaviors to those found among secure. Mediation analyses suggested that the observed differences in problem behaviors were at least partially accounted for by the differential experience of distress symptoms (primarily hostility and depression) and by social competence. Finally, patterns of attachment effects were similar across age, gender, and racial groups, with some important exceptions.

During adolescence, the hierarchy of attachment figures (Bowlby, 1969, 1982) is gradually reshuffled as young people increasingly direct their attachment behaviors and concerns toward peers rather than parents (Furman & Buhrmester, 1992; Hazan & Zeifman, 1994). Although parents are generally not completely displaced as attachment figures during this period, or perhaps ever, they slowly become what Weiss (1982) called "attachment figures in reserve." By the end of this period, sometime in early adulthood, most people settle on a single romantic partner who will serve for years, if not for the remainder of life, as a primary attachment figure. While making this transition, many adolescents alter their conceptions of and feelings about themselves and experiment with a range of exploratory behaviors (e.g., sex and substance use) that may be developmentally functional but nonetheless carry substantial risk of harm (Baumrind, 1987). Despite the co-occurrence of these phenomena during adolescence, little is known about how attachment patterns are related to the emotional experiences, attempts at self-definition, and exploratory behaviors characteristic of this developmental period. The present study, therefore, examined individual differences in attachment styles as predictors of adjustment in a representative community sample of Black and White adolescents and tested three broad sets of hypotheses linking attachment styles to psychological symptomatology, self-concept, and a range of developmentally relevant risk or problem behaviors.

Attachment Theory and Attachment Styles

John Bowlby (1969, 1973) was the first to present a coherent model of the process by which the bond between mother and infant develops and the functions that this bond serves. He argued that, because of the prolonged dependence of an infant on its mother, behavioral mechanisms evolved to protect the immature offspring and to increase its chances of survival to reproductive age. Essentially, mother and infant are thought to have evolved a coordinated relationship in which the infant's signals of distress or fear are noted by the mother, who in turn offers comfort and protection, as well as a secure base from which the infant can explore the environment. According to Bowlby (1969), these early caregiving experiences are internalized as working models that not only serve as a prototype for future relationships with significant others but also provide unwritten rules for how one experiences, expresses, and copes with distressing emotions.

Ainsworth and her colleagues (Ainsworth, 1973; Ainsworth, Blehar, Waters, & Wall, 1978) subsequently developed a system for identifying and describing individual differences in attachment among mother–infant dyads. They found that infants differed in the way they handled the stress of being left alone by their mother in a strange situation—a laboratory room equipped with a host of novel toys. The majority of infants, called securely attached, became somewhat subdued or distressed in their mother's absence but expressed warm, relieved greetings and were...
quickly soothe by her when she returned. The remaining infants
coped in two strikingly different ways, both of which Ainsworth
et al. called insecurely attached. Some—labeled anxious—am-
bigual—protested and cried when their mother left, as well
as while she was gone. They acknowledged their mother's return
and sought to be held, but surprisingly (given their obvious
distress at her departure) continued to seem angry and distraught
when she tried to calm them. The third group, called avoidant,
seemed undisturbed by their mother's departure and cool, if not
disinterested, when she returned. They did not seek physical
paddling or comforting and appeared to be prematurely self-
reliant.

Hazan and Shaver (1987; Shaver, Hazan, & Bradshaw, 1988)
suggested that these same patterns are evident in adolescent and
adult romantic and marital relationships, and they developed a
simple measure (based on Ainsworth's descriptions of the three
infant types) to assess them. From scores of studies with college
students and adults (see Shaver & Hazan, 1993, and Rothbard &
Shaver, 1994, for reviews), a portrait has emerged of the three
types of individuals identified by this attachment measure. Sec-
urely attached adults are self-confident, socially skilled, open
to and interested in close relationships with romantic partners,
and likely to form relatively stable and satisfying long-term
relationships. Anxious, or anxious-ambivalent, adults lack self-
confidence; are worried about rejection and abandonment; are
prone to bouts of jealousy and anger at relationship partners who
are perceived as untrustworthy; are eager to become involved in
romantic relationships despite their perils; and are likely to en-
gage in inappropriately intimate self-disclosures, to fall in love
quickly and perhaps indiscriminately, and to experience frequent
breakups and reunions. Avoidant adults may or may not be
interested in close relationships, but nevertheless they are un-
comfortable with closeness, are disinclined to become involved in
long-term romantic relationships, are uncomfortable with self-
disclosure, and are relatively inhibited and socially un-
skilled. Although genetic and temperamental differences may
contribute to these patterns (e.g., Goldsmith, Bradshaw, &
Rieser-Danner, 1986; Seifer, Schiller, Sameroff, Resnick, & Ri-
ordan, 1996), attachment theory underscores the contributions
made by interactions with key attachment figures during infancy
and childhood who were sensitive and responsive (thereby in-
ducing feelings of security and adequate care), inconsistent in their
responding (inducing anxiety, vigilance, and anger), or cool,
rejecting, and unsupportive (inducing prematurity self-reliance
and suppression of neediness and vulnerability).

Thus, a substantial body of literature indicates that attachment
theory has important implications for understanding interpere-
tonal adaptation. Also central to Bowlby's original theory
(1969, 1973), but less well researched, is the notion that early
caregiver exchanges provide a critical context within which the
child organizes emotional experience and learns to regulate feel-
ings of security. According to Bowlby, the desire to maintain
feelings of security is a universal goal, although the specific
strategies people use to achieve this goal vary with their attach-
ment history. When, for example, the attachment figure is avail-
able and responsive to the child's distress signals, the child
learns that he or she can effectively regulate distressing emotions
and experiences. Under less optimal circumstances, however, the
child learns that the experience of distress is associated with
negative outcomes, and that distressing emotions cannot be ef-
fectively regulated. On the basis of these early experiences, Bow-
ly (1969) argued, expectancies regarding the experience of
negative emotions and preferred styles of coping with these
emotions are internalized in the form of working models. Work-
ing models are thought to include both conscious and uncon-
scious schematic elements that guide perceptions and trigger
characteristic emotions, as well as defense mechanisms, or rules
for regulating emotion and for processing or failing to process
certain kinds of attachment-relevant information. (See Shaver,
Collins, & Clark, 1996, for an overview of the internal working
models construct.) These models are thought to persist across
time and exert pressure toward continuity in affective experience
and behavior. Kobak and Scerri (1988) provided a good sum-
mary of attachment theory's account of individual differences
in emotion regulation:

Secure attachment [is] organized by rules that allow acknowledg-
ment of distress and turning to others for support, avoidant attach-
ment by rules that restrict acknowledgment of distress and the
associated attachment attempts to seek comfort and support, and
anxious–ambivalent attachment by rules that direct attention
toward distress and attachment figures in a hypervigilant manner
that inhibits the development of autonomy and self-confidence. (p. 142)

In other words, secure individuals should be able to acknow-
ledge and then cope effectively with negative emotions, avoidant
individuals try not to acknowledge negative emotions and conse-
quently may act emotionally without full knowledge of the rea-
as, and anxious individuals are highly emotionally expressive
but often cannot regulate their emotions or emotionally driven
behavior effectively in line with personal interests or social
norms.

Consistent with these notions, a number of recent studies
provide evidence of attachment style differences in the nature
of emotional experience and psychological adjustment (see
For example, insecure attachment has been associated with
greater loneliness, shame proneness, anger, resentment, anxiety,
depression, paranoia, fear of evaluation, self-consciousness,
pathological narcissism, and somatic symptoms, as well as lower
self-esteem and less self-confidence. Also consistent with these
notions, several recent studies suggest that people with different
attachment styles cope with or regulate negative emotions in
theoretically expected ways. In one study (Simpson, Rholes, &
Nelligan, 1992), for example, more securely attached women
were found to use their partners as a source of comfort and
reassurance in an anxiety-provoking situation, whereas more
avoidant women withdrew from their partners both emotionally

1 Throughout this article, we use the term emotion regulation to refer
to the conscious and unconscious procedures people use to manage or
minimize negative emotions. We do not directly assess these procedures
but rather infer that the link between the experience of negative emotions
and certain maladaptive behaviors reflects or results from maladaptive
efforts to regulate negative emotions. In so doing, we do not mean to
imply that emotion regulation is maladaptive per se or that emotion
regulation cannot also involve the regulation of positive emotions (see,
e.g., Westen, Mulderrisogla, Fowler, Shedler, & Koren, 1997).
and physically. Similarly, Mikulincer and colleagues (Mikulincer, Florian, & Wells, 1993) found that securely attached adults used more support-seeking strategies in the aftermath of the Gulf War, whereas anxious adults used more emotion-focused coping and avoidant adults used more distancing strategies.

Data such as these lend indirect support to the existence of working models, suggesting that strategies that first evolved during infancy in the context of caregiver exchanges persist across time and are generalized to a range of situations and experiences that evoke negative emotions. Thus, one might also expect to find systematic relationships between attachment styles and risky or problem behaviors (e.g., excessive or problematic involvement in sexual behavior or substance use) that may signal distress, or represent alternative styles of expressing or coping with that distress. Although only a handful of studies has examined this link, they provide initial support for a relationship between insecure attachment and increased problematic or risky behaviors. For example, insecurely attached college students were found in one study to report greater use of alcohol to regulate negative affect (Brennan & Shaver, 1995). Avoidance has also been linked to a propensity to engage in casual sex (Brennan & Shaver, 1995; Simpson & Gangestad, 1991), possibly as a way to avoid intimacy.

The Present Study

On the whole, then, attachment theory and research provide a strong basis for hypothesizing that adolescents who differ in their predominant attachment styles will exhibit characteristic patterns of adjustment across a wide range of domains. Accordingly, the present study tested three broad sets of hypotheses relating attachment style differences, as assessed by Hazan and Shaver's (1987) three-category prototype measure, to adjustment in a representative sample of Black and White adolescents. In so doing, we address several important gaps in the existing literature.

First, we provide the most comprehensive test to date of attachment theory's implications for adjustment. Although prior research has examined attachment differences in one or a few isolated indicators of adjustment, no study has examined adjustment across a broad range of plausible indicators. This deficit is particularly acute for more behaviorally oriented indicators, such as excessive or problematic alcohol use, maladaptive sexual behavior, and other forms of antisocial behavior. Indeed, although Bowlby's interest in attachment theory began in clinical work with delinquent and otherwise troubled youth (see, e.g., his 1946 monograph, Fifty-Four Juvenile Thieves, which preceded attachment theory but presaged its central themes), few attachment researchers have examined behavioral outcomes such as these. (See Pottharst, 1990, for rare exceptions.) Examining adjustment across a broad set of outcomes is important not only for assessing the generality and breadth of attachment effects but also for exploring plausible mediators of these effects. As described more fully below, we expect that at least part of the hypothesized attachment style differences in overt behavioral indicators of adjustment will be explained by differences in psychological distress and self-competence.

Second, we extend the study of romantic attachment patterns downward from the usual adult and college-student samples into the period of adolescence; few if any studies have included participants below the age of 18 (the typical age of college freshmen enrolled in psychology courses). By examining attachment processes in early to late adolescence, the results of the present study provide a much-needed bridge between studies of infants and children and those of adults—a bridge spanning a developmental period in which people's attachment concerns typically undergo a significant transformation.

Lastly, the present study represents an important extension of prior research to a representative population-based sample. Almost all of the existing research findings are based on convenience samples of college students or unrepresentative samples of adults. (For an isolated and recent exception, see Mickelson, Kessler, & Shaver, 1997.) Consequently, we do not know whether prior findings will generalize to more representative and diverse samples.

Attachment Style, Psychological Symptomatology, and Self-Concept

Following Bowlby's (1980) argument that secure attachment leads to the development of effective coping skills and a sense of self-efficacy and self-worth (a "positive model of self"), we hypothesized that secure adolescents relative to their anxious and avoidant counterparts would exhibit superior adjustment across a broad range of measures indexing psychological well-being and positive self-concept. Thus, with only a few exceptions (discussed below), we expected secure versus insecure differences on measures of symptomatology and self-concept.

First, Ainsworth et al. (1978) recorded the intense anger of anxious-ambivalent infants whose needs for their attachment figure were frustrated, and several studies of adults (reviewed by Shaver & Clark, 1994) have found that anxious-ambivalent infants are highly expressive of anger. Anxious-ambivalent infants are also more likely to express anxiety and distress, as, for example, when briefly left alone by mother during the strange situation test. Thus, we expected anxious adolescents, compared with their secure and avoidant counterparts, to report higher levels of anger and hostility, as well as higher levels of other negative emotions such as anxiety and depression. Theoretically, avoidants are also distressed, but they have learned to deny or suppress negative emotions, especially anger, because in early childhood, emotional expression increased the likelihood of caregiver rejection (Main & Weston, 1982). Thus, we did not expect highly elevated levels of self-reported negative emotion, especially anger, among avoidants. Second, because avoidant adults have fewer intimate relationships (Collins & Read, 1990; Hazan & Shaver, 1987), they are often socially withdrawn, and may lack social skills, we expected avoidant adolescents to perceive themselves as less socially competent than anxious or secure adolescents. Third, and more exploratory, was our inclusion of a measure of self-reported intellectual competence, an aspect of a person's "model of self" not usually included in attachment studies. As we explain in more detail later, we expected anxious adolescents to perform the most poorly of the three attachment-style groups in the academic arena and, therefore, for these performance deficits to be mirrored in self-perceptions of relatively low academic competence.
Attachment Style and Risky or Problematic Behaviors

Following Bowlby’s (1946) early insights and the Pottharst (1990) group’s preliminary studies of deviance, delinquency, and attachment history, we hypothesized that attachment style would be related to a range of risky or problematic behaviors among adolescents, including drug and alcohol use, indiscriminate or precocious sexual behavior, delinquency, and educational underachievement. In particular, we expected anxious–ambivalent adolescents to report the highest levels of these behaviors. First, problem behaviors in adolescence (especially delinquent behaviors, substance use, and sexual behavior) are widely thought to represent outward manifestations of internally experienced distress or, alternatively, maladaptive efforts to cope with that distress (e.g., Blatt, 1991; Dohrenwend & Dohrenwend, 1976; Gjerde, Block, & Block, 1988). Accordingly, anxious–ambivalents, who have been shown to have difficulty managing their negative emotions and are expected to exhibit the highest levels of generalized distress, should be especially likely to engage in these “acting-out” behaviors. Second, hostility and aggression assessed in childhood are among the strongest and most reliable predictors of both substance use and delinquent behaviors during adolescence (see Dryfoos, 1990, for a review). Thus, anxious–ambivalents, who are especially prone to experiencing hostile feelings, may engage in these behaviors as one way to vent their hostility. Third, to the extent that involvement in sexual behavior, substance use, and delinquency is partly a social phenomenon dependent on frequent interaction with one’s peers (see Moore & Arthur, 1989, and White, Bates, & Johnson, 1990, for supporting data), we expected anxious–ambivalent adolescents, who are likely to seek out social experiences, to have more exposure and opportunity to engage in these behaviors, especially compared with their avoidant counterparts. Finally, anxious–ambivalents, who are eager to be socially accepted and approved, may be the least able of the three attachment types to resist peer pressure to engage in risky behaviors, especially in the sexual arena, where fears of abandonment and the desire to be coupled seem particularly likely to interfere with good judgement.

In contrast, avoidant adolescents, who have fewer social skills (Collins & Read, 1990) and consistently report less social involvement (Feeney & Noller, 1990), might be expected to have trouble initiating sexual activity and be reluctant to join peers in experimentation with substances. Indeed, in one prospective study (Shedler & Block, 1990), children who were described at age 11 in classic avoidant terms (e.g., keeping thoughts and feelings to themselves; withdrawing and disengaging under stress; being shy, reserved, suspicious, and distrustful of others; and making social contacts slowly) were the least likely ever to have tried drugs by age 18. We expected, however, that once these behaviors were initiated, avoidant adolescents would be more likely than their secure counterparts to report high or problematic levels of them because of the higher levels of distress they are likely to experience and their generally less adaptive modes of coping with that distress. In contrast, we expected secure adolescents to “explore” various behavioral domains—in the sense that Bowlby (1982) and Ainsworth (1973) talked about secure infants having the courage to explore novel environments—even though they should not generally become involved in overuse of drugs or in social pathology. This link between adjustment and exploratory behavior was also observed in the Shedler and Block study, where the best-adjusted adolescents were not those who abstained completely but those who experimented with substances without becoming pathologically involved.

As previously mentioned, we also expected anxious adolescents to perform poorly in the academic arena, just as their adult counterparts have been shown to do in the occupational arena. For example, anxious adults reportedly feel preoccupied with social acceptance and are easily distracted at work; they have trouble completing projects, slack off after receiving praise, and have been found to earn less money, even when relevant variables such as education and gender are controlled (Hazan & Shaver, 1990). In contrast, avoidant adults have not been shown to lag behind their securely attached counterparts and may even become overly involved in their work as a way to avoid intimacy in relationships (Hazan & Shaver, 1990). Hence, we expected similar patterns in adolescence wherein anxious–ambivalent adolescents underachieve academically relative to their nonanxious peers, who in turn are not expected to differ in this arena.

Psychological Distress and Social Competence as Mediators of Attachment Style Effects on Risky or Problem Behaviors

To the extent that risky or problem behaviors are attributable to attachment dynamics, it should be possible to show, using multivariate mediational analyses (Baron & Kenny, 1986), that some of the attachment-related distress emotions mediate the statistical relation between attachment style and developmentally relevant risky or problem behaviors. In most prior studies of romantic attachment, relations between attachment measures and either social behavior in close relationships or relational outcomes were interpreted in terms of the kinds of emotional dynamics described in our earlier quotation from Kobak and Sceery (1988), but these emotional dynamics were rarely measured systematically or modeled statistically. The present study, which included measures of these attachment-related emotions and competencies as well as measures of risky or problematic behaviors, was designed to permit the needed mediational tests. In particular, we tested the hypotheses that (a) heightened levels of generalized distress and hostility would at least partially explain the tendency for anxious–ambivalent adolescents to be more heavily involved than their secure or avoidant counterparts in a range of so-called acting-out behaviors and (b) lack of social competence would partially explain why avoidant adolescents are less likely than their nonavoidant counterparts ever to have had sex or used illegal substances.

Gender, Race, and Age

Finally, the unique size and composition of our sample permitted us to address several issues concerning the generalizability of major findings on attachment patterns and correlates to younger, more diverse samples. We first examined the distribution of attachment styles across gender, race, and age (early, mid-, and late adolescents) subgroups. However, because there were no strong theoretical reasons to predict differences in these
distributions, and because the distribution of responses on the attachment measure has been highly consistent across universities, countries, genders, and the age levels studied to date, we expected no differences in our sample. We also explicitly tested attachment effects across major demographic subgroups. Although we did not have compelling theoretical reasons to expect that relations between attachment style and symptomatology, self-concept, or risky behaviors would vary across major demographic subgroups, we wanted to explore these possibilities. In contrast to past studies, our sample was sufficiently large and diverse on these dimensions to permit relatively powerful tests of these interactions.

Method

Sample and Procedure

This study used data from a subset of 2,011 Black and White adolescents who participated in a larger study of psychosocial factors affecting health risk behavior (see Cooper, 1994; Cooper, Peirce, & Husselid, 1994, for details). Random-digit-dial techniques were used to identify a sample of 2,544 adolescents, aged 13 to 19 at the time of screening, residing within the city limits of Buffalo, New York. Interviews were completed with 2,052 of these teens for an 81% completion rate. Although completion rates did not differ by race or age, a slightly higher percentage of females than males were interviewed (83% vs. 79%). In addition, parental education level was slightly higher among respondents than nonrespondents (13.4 years vs. 12.8 years), although occupation ranks (using U.S. Census Bureau categories) did not differ.

Telephone exchanges concentrated in primarily Black neighborhoods were oversampled to yield a final sample that was 48% White, 44% Black, and 8% other racial groups (mostly Hispanic and Asian American), compared with 65% White, 31% Black, and about 5% other in the city of Buffalo (1990 U.S. Census). The sample was approximately half female and half male, and respondents were fairly evenly distributed across the 13 to 19 age range, with a mean of 16.7 years.

Data were collected from October 1989 through December 1990. Face-to-face interviews were conducted by 30 professionally trained interviewers using a structured interview schedule. Interviewers and respondents were always matched on sex and, when possible, on race (about 75% of the cases). Average interview length was 2 hr, and respondents were paid $25 for participating. Forty-one respondents who did not complete the attachment measure were excluded from the current sample, resulting in a sample size of 2,011 for this report.

The interview contained both interviewer-administered and self-administered portions. Sexual behavior and attitudes were assessed using interviewer administration of less threatening questions and private, self-administration of more sensitive questions. Respondents were provided with simply worded definitions of sexual behavior to ensure a common understanding of key terms. Self-reports of delinquent behavior, symptomatology, and body image were also self-administered.

Measures

Attachment style. Attachment style was measured in two ways using a slightly modified version of Hazan and Shaver's (1987, 1990) questionnaire, the only self-report measure available when the study was designed. Each respondent was first asked whether he or she had ever been involved in a serious romantic relationship. If the answer was yes, the respondent was asked to answer the attachment questions with respect to experiences during those relationships. If the answer was no, the respondent was asked to imagine what his or her experiences would be like in such relationships. Respondents read each of three attachment-style descriptions and rated how self-characteristic each style was on a 7-point Likert-type scale (which produced three quantitative ratings). They were then asked to choose which one of the three styles was most self-descriptive (a categorical measure). The three answer alternatives were worded as follows:

Avoidant. I am somewhat uncomfortable being close to others; I find it difficult to trust them completely, difficult to allow myself to depend on them. I am nervous when anyone gets too close, and often, love partners want me to be more intimate than I feel comfortable being.

Anxious—ambivalent. I find that others are reluctant to get as close as I would like. I often worry that my partner doesn't really love me or won't want to stay with me. I want to get very close to my partner, and this sometimes scares people away.

Secure. I find it relatively easy to get close to others and am comfortable depending on them. I don't often worry about being abandoned or about someone getting too close to me.

The construct validity of both the categorical and quantitative measures has been established in more than 30 studies conducted since 1987 (see Shaver & Clark, 1994, and Shaver & Hazan, 1993, for reviews).

In the present study, a procedure used by Mikulincer and others (e.g., Mikulincer, Florian, & Tollefson, 1988; Mikulincer & Nachshon, 1991) was used to distinguish consistent from inconsistent responders. Respondents were excluded from further analyses if their highest Likert rating failed to correspond to the attachment style chosen as most self-characteristic.

Psychological symptomatology. The Brief Symptom Index (BSI; Derogatis & Melisaratos, 1983) was used to assess distress related to the recent experience of eight psychological and somatic symptoms. The BSI and its parent instrument, the SCI-90-R (Derogatis, Rickels, & Rock, 1976), have been found to be sensitive to low levels of symptomatology in normal population samples (Derogatis & Melisaratos, 1983). Respondents rated on a 5-point scale (1 = not at all, 5 = extremely) the extent to which they had been bothered or distressed by each symptom during the past month. Subscales contained five to eight items and assessed the following eight dimensions: (a) general anxiety, (b) phobic anxiety, (c) depression, (d) hostility, (e) obsessive–compulsive symptoms, (f) paranoid ideation, (g) psychoticism, and (h) somatization.

Self-concept. Positive self-concept, or perceived self-competence, was assessed across five specific domains: (a) social competence with one's peers (primarily opposite-sex peers), (b) athletic skill and ability, (c) intellectual competence, (d) general physical appearance, and (e) body image. Each scale consisted of four to six items, answered on a 6-point scale ranging from agree strongly to disagree strongly. Items were taken from three well-established self-concept measures (Marsh & O'Neill's Self-Description Questionnaire III [SDQ-III], 1984; Peterson, Schulenberg, Abramowitz, Offer, & Jarcho's Self-Image Scale for Young Adolescents, 1984; Straufer's Personal Evaluation Inventory [reviewed in Blascovich & Tomaka, 1991]) and adapted to a common format.

Risk or problem behaviors. Developmentally relevant behaviors indicative of adjustment were assessed across four broad domains: (a) academic achievement, (b) delinquency, (c) sexual behavior, and (d) substance use. Indicators of adjustment problems in the academic domain included average grades received in school (1 = mostly D's and F's, 8 = mostly A's), total number of years held back in school, and educational aspirations (coded as the highest year in school the respondent expected to complete).

Delinquent behavior was assessed using a combination of items fielded in several major studies of adolescent problem behavior (Hawkins, 1988; Jessee, Donovan, & Costa, 1989; Johnston, 1980). Factor analysis revealed three dimensions, each consisting of four behaviors. Violent delinquency included fist fights, gang fights, causing injury
to another person that required medical treatment, and use of weapons (knife, gun, or clubs) to threaten or harm another person. Property crimes included breaking and entering, car theft, shoplifting, and fire setting. Finally, truancy assessed problems at home or school, including skipping school, suspension or expulsion, running away from home, and staying out all night without permission. Indices were formed by counting the number of behaviors in which the respondent had ever engaged.

Five indicators of substance use were included. First, a simple dichotomy was created comparing those who ever versus never used drugs or alcohol. The remaining substance use indicators were computed only among those who had ever used either alcohol or drugs (n = 1,151). Heavy drinking was assessed by a composite of two items assessing the frequency of drinking five or more drinks on a single occasion and of drinking to intoxication, both in the past 6 months. Respondents answered each item on a 9-point scale, ranging from never to every day. Problem drinking was assessed by the mean number of problems experienced in five life domains (e.g., with parents, friends, dating partners, at school or work) due to alcohol use during the past 6 months. Items were taken from Jessor et al. (1989). For both of the 6-month alcohol indices, those who ever drank but not in the past 6 months (n = 132) were given a score of zero. Drug involvement was assessed by a count of the number of different drugs the adolescent had ever used. Included in the list of drugs were (a) marijuana or hashish, (b) cocaine or crack, (c) any drug not prescribed by a doctor that you shoot with a needle, and (d) any other drug that you take to get high or feel good. (The majority of drugs reported in the last category were hallucinogens.) An additional item assessed whether the respondent had ever sold drugs. Thus, scores could range from 0 to 5. Finally, the frequency of smoking marijuana or hashish during the past 6 months was assessed by a two-part question in which respondents were first asked if they had ever smoked marijuana or hashish, followed by a second question ascertaining the number of times in the past 6 months. Responses were coded on a 5-point scale where 0 = not at all in the past 6 months, and 4 = once a day or more. Respondents who never smoked marijuana or hashish were assigned a missing value on this variable, hence the lower valid n (630).

Finally, adjustment in the sexual domain was assessed by five behavioral indices: (a) whether the respondent had ever had sex (0 = no, 1 = yes); (b) the number of sexual partners; (c) whether the respondent had ever had sex with a stranger (defined as someone the respondent had just met; 0 = no, 1 = yes); (d) whether he or she had ever had a sexually transmitted disease, including gonorrhea, syphilis, genital herpes, chlamydia, and AIDS (0 = no, 1 = yes); and (e) whether the respondent had ever been pregnant or gotten someone else pregnant (0 = no, 1 = yes). The last four indices were computed only among respondents who had ever had sex (n = 1,018). Number of partners was computed by averaging two items assessing the total number of partners with whom the respondent had ever had intercourse and the number in the past 6 months. Both items were answered on a 7-point scale where 1 = 1 person and 7 = more than 15 people. When the response category indicated a range (e.g., 5–7 people), responses were recoded to the midpoint of the range (e.g., 6). The category “15 or more people” was coded as 17 (only 9 people chose this category for either the lifetime or 6-month time frame). Thus, the recoded variable was scaled to reflect as accurately as possible the actual number of partners the respondent had had. Averaging across the two time frames had the effect of weighting recent behavior more heavily. The sexual behavior measures were taken from major national surveys of adolescent sexual behavior, including the work of Zelnick and Kantner (1979), the National Survey of Family Growth (National Center for Health Statistics, 1985), and the National Survey of Adolescent Males (Sonenstein, 1988). Descriptive statistics and reliability estimates (Cronbach’s alpha) for all variables used in the analyses are provided in Table 1.

### Table 1

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>Range</th>
<th>Valid n</th>
<th>α</th>
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<td>Distress</td>
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<td>0.69</td>
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<tr>
<td>Paranoid ideation</td>
<td>0.59</td>
<td>0.62</td>
<td>0–4.0</td>
<td>1,596</td>
<td>0.65</td>
</tr>
<tr>
<td>Psychosomatic</td>
<td>0.65</td>
<td>0.53</td>
<td>0–3.5</td>
<td>1,596</td>
<td>0.74</td>
</tr>
<tr>
<td>Somatization</td>
<td>3.80</td>
<td>0.73</td>
<td>1.5–6.0</td>
<td>1,596</td>
<td>0.70</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>4.54</td>
<td>1.38</td>
<td>1.0–6.0</td>
<td>1,596</td>
<td>0.88</td>
</tr>
<tr>
<td>Heterosocial competence</td>
<td>4.24</td>
<td>0.95</td>
<td>1.8–6.0</td>
<td>1,596</td>
<td>0.56</td>
</tr>
<tr>
<td>Academic ability</td>
<td>4.77</td>
<td>1.00</td>
<td>1.0–6.0</td>
<td>1,596</td>
<td>0.78</td>
</tr>
<tr>
<td>Intellectual ability</td>
<td>4.28</td>
<td>1.31</td>
<td>1.0–6.0</td>
<td>1,596</td>
<td>0.80</td>
</tr>
<tr>
<td>Body image</td>
<td>5.63</td>
<td>1.37</td>
<td>1.0–8.0</td>
<td>1,594</td>
<td></td>
</tr>
<tr>
<td>Average grades</td>
<td>0.34</td>
<td>0.57</td>
<td>0–3.0</td>
<td>1,594</td>
<td></td>
</tr>
<tr>
<td>Educational aspirations</td>
<td>15.60</td>
<td>1.50</td>
<td>9.0–17.0</td>
<td>1,594</td>
<td></td>
</tr>
<tr>
<td>Delinquency</td>
<td>1.49</td>
<td>1.29</td>
<td>0–4.0</td>
<td>1,599</td>
<td>0.77</td>
</tr>
<tr>
<td>Violent behavior</td>
<td>0.52</td>
<td>0.79</td>
<td>0–4.0</td>
<td>1,599</td>
<td>0.61</td>
</tr>
<tr>
<td>Property crime</td>
<td>1.54</td>
<td>1.22</td>
<td>0–4.0</td>
<td>1,599</td>
<td>0.61</td>
</tr>
<tr>
<td>Truancy</td>
<td>0.72</td>
<td>0.45</td>
<td>0–1.0</td>
<td>1,600</td>
<td></td>
</tr>
<tr>
<td>Substance abuse</td>
<td>1.80</td>
<td>2.07</td>
<td>0–8.0</td>
<td>1,151</td>
<td>0.87</td>
</tr>
<tr>
<td>Frequency of heavy drinking</td>
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<td>0.44</td>
<td>0–3.2</td>
<td>1,151</td>
<td>0.61</td>
</tr>
<tr>
<td>Alcohol-related problems</td>
<td>0.83</td>
<td>0.93</td>
<td>0–5.0</td>
<td>1,151</td>
<td>0.55</td>
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<tr>
<td>Frequency of marijuana use</td>
<td>1.32</td>
<td>1.29</td>
<td>0–4.0</td>
<td>630</td>
<td></td>
</tr>
<tr>
<td>Sexual behavior</td>
<td>0.64</td>
<td>0.49</td>
<td>0–1.0</td>
<td>1,600</td>
<td></td>
</tr>
<tr>
<td>Ever had sex (%)</td>
<td>0.38</td>
<td>0.49</td>
<td>0–1.0</td>
<td>1,018</td>
<td></td>
</tr>
<tr>
<td>Sex with a stranger (%)</td>
<td>0.09</td>
<td>0.28</td>
<td>0–1.0</td>
<td>1,018</td>
<td></td>
</tr>
<tr>
<td>Ever had an STD (%)</td>
<td>0.22</td>
<td>0.41</td>
<td>0–1.0</td>
<td>1,018</td>
<td></td>
</tr>
<tr>
<td>Ever had pregnancy (%)</td>
<td>3.01</td>
<td>2.77</td>
<td>0.5–17.0</td>
<td>1,018</td>
<td></td>
</tr>
<tr>
<td>Number of partners</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note.** Alphas are provided only for multi-item indices.

### Results

#### Comparison of Consistent and Inconsistent Respondents

Respondents were categorized as inconsistent if their highest Likert rating on the three attachment prototypes did not match the one prototype they chose as most self-descriptive. A total of 411 respondents, or 20% of the sample, were inconsistent across the two attachment measures. This percentage is substantially higher than that reported in earlier studies (Mikulincer et al., 1990, and Mikulincer & Nachshon, 1991, for example, classified 8% to 7% of their respondents as inconsistent). Consistent and inconsistent responders were found to differ along a number of important dimensions.2 Because of these differences, 2Inconsistent responders were significantly younger (16.4 years vs. 16.9 years, t = 3.98, p < .001) and less likely to have had romantic relationship experience (68% vs. 77%; χ² = 12.2, p < .001). Moreover, inconsistent responders had been held back more times in school (0.51...
we adopted the procedure used by Mikulincer and Nachshon and excluded inconsistent respondents from further analyses.

Description of the Respondents

Consistent respondents (n = 1,600) — henceforth called simply the respondents — were 51% female; 44% African American, 49% White, and 7% other; and 16.9 years old, on average (±1.98 years). Similar to the distribution of attachment styles observed in prior studies, 56% of respondents were classified as secure, 21% as avoidant, and 23% as anxious—ambivalent. This distribution is also similar to the proportions (59%, 20%, and 17%, respectively) observed among 15- to 24-year-olds in a recently conducted nationally representative sample (Mickelson et al., 1997).

Examination of the attachment style distribution by major demographic characteristics revealed, as expected, no significant differences by race or age. Contrary to expectation, however, the distribution was related to gender. Among males, 64% were classified as secure, 22% as anxious—ambivalent, and 14% as avoidant compared with 49% secure, 24% anxious, and 27% avoidant among females (χ² = 47.40, p < .001). Thus, males were more likely than females to present themselves as secure, whereas females were more likely than males to portray themselves as avoidant. Various subgroup comparisons showed that these differences, which are not usually found in studies of middle and upper-middle-class White college students, were also not found in the present sample either among 18- and 19-year-old White respondents or among college students regardless of ethnic background (Gender × Attachment χ² = 3.3, p > .20 in both subgroups). This suggests that gender differences in attachment style may be more common among younger, non-White, or less well-educated individuals — the groups who have heretofore been underrepresented in studies of attachment style.

Attachment style was also related to relationship experience (χ² = 16.9, p < .001). Among respondents with such experience (n = 1,211), the distribution was 57% secure, 25% anxious, and 19% avoidant, compared with 55% secure, 17% anxious, and 28% avoidant among those without experience (n = 369). In other words, avoidant adolescents were more common among those without relationship experience and anxious—ambivalent adolescents were more common among those with relationship experience, whereas secure were about equally prevalent in the two groups. This association could not be explained by age or gender. Attachment style was not related to age and although it was related to gender, the association between experience and attachment style was observed among both male and female respondents (both χ² values > 8.0, p < .05). These data suggest, therefore, that anxious adolescents may enter into relationships more readily than their avoidant peers or, alternatively, that avoidant adolescents become more anxious (e.g. more concerned about abandonment) as a consequence of relationship experience.

Preliminary analyses revealed no significant interactions between attachment style and relationship experience as predictors of our dependent variables. Hence, we combined experience and inexperienced respondents in all subsequent analyses.

Attachment Styles, Psychological Symptomatology, and Self-Concept

Two multivariate analyses of covariance (MANCOVAs) were conducted to examine the relationship between attachment style and the sets of psychological symptom and self-concept measures. All MANCOVAs were conducted in the following manner (a) Gender, race, age, and all possible two-way interactions among these variables were entered on the first step as controls (b) a single three-category attachment style variable was entered on Step 2; and (c) two-way interactions between the attachment style variable and gender, race, and age were entered on Step 3. When interactions involving age were tested, adolescents were divided into three age groups roughly corresponding to early (13 to 14 years old, n = 348), mid- (15 to 17 years old, n = 668), and late (18 to 19 years old, n = 582) adolescence. For analyses testing race interactions, the group of adolescents who were neither Black nor White was omitted (n = 111) because they were both racially and ethnically heterogeneous (including Hispanics, Asian Americans, and Native Americans). However in all other analyses where age and race were used as covariates age was included in its continuous form and race was coded White versus non-White.

Psychological symptomatology. As shown in the top pane of Table 2, attachment style, entered on Step 2 after the block of demographic covariates, accounted for more than 5% of the variance in the set of symptom measures. Examination of the univariate results indicated that attachment style accounted for significant variance in all eight measures. As predicted, the majority of differences (six of eight) were observed between securely and insecurely attached adolescents, with the secure group reporting significantly better adjustment than either insecure group for these outcomes. Also consistent with expectation secure adolescents reported the lowest levels of depression and hostility, avoidant adolescents reported intermediate levels, and anxious—ambivalent adolescents reported the highest levels with all groups differing significantly from each other. Contrary
Figure 1. Gender X Attachment interaction predicting general anxiety.

Table 2

| Covariate Adjusted Means for Psychological Symptoms by Attachment Style |
|-------------------|--------|--------|--------|
| Variable          | $\eta^2$ | Avoidant | Anxious | Secure |
| Distress          | .053*** | 0.90a  | 0.94b  | 0.69b  |
| General anxiety   | .030*** | 0.53a  | 0.59a  | 0.35b  |
| Phobic anxiety    | .039*** | 0.87    | 0.99    | 0.58b  |
| Depression        | .067*** | 1.23    | 1.38    | 1.09b  |
| Hostility         | .019*** | 0.72    | 0.73    | 0.61b  |
| Obsessive compulsive tendencies | .031*** | 1.22  | 1.25    | 0.99b  |
| Paranoid ideation | .065*** | 1.27    | 1.37    | 0.94b  |
| Psychoticism      | .056*** | 0.76    | 0.76    | 0.46b  |
| Somatization      | .013*** | 0.72    | 0.73    | 0.61b  |
| Satisfaction      | .050*** | 3.49    | 3.68    | 3.95    |
| Heterosocial competence | .074*** | 4.35  | 4.29    | 4.65b  |
| Athletic ability  | .017*** | 4.00    | 4.05    | 4.32b  |
| Intellectual ability | .014*** | 4.00    | 4.05    | 4.45b  |
| General appearance | .048*** | 4.00  | 4.05    | 4.45b  |
| Body image        | .021*** | 4.03    | 3.97    | 4.31b  |

Note. $n = 1,596$. Means with different subscripts differ significantly at $p < .05$.

*** $p < .001$.

to prediction, however, the two insecurely attached groups did not differ on general anxiety.

Results of the interaction tests (data not shown) indicated that the main effects shown in Table 2 were generally invariant across Black and White adolescents (multivariate $F$ for the block of Race X Attachment interactions = 1.34, $p > .15$). In contrast, consistent patterns of interaction effects were obtained between attachment and both gender and age (multivariate $Fs$ for both blocks of interaction terms > 1.60, $ps < .05$). Examining the block of gender interactions revealed that three of the eight individual terms (i.e., general anxiety, depression, and psychoticism) were significant at $p < .05$. As shown in Figure 1, although females reported higher levels of anxiety than males across all three attachment styles, this difference was substantially greater among anxiously attached adolescents. The form of the interaction was highly similar for depression and psychoticism (not shown), indicating that anxiously attached adolescent females reported greatly elevated levels of psychological distress relative to all other Gender X Attachment subgroups.

Examination of the univariate Age X Attachment interactions revealed six significant ($p < .05$) effects predicting general anxiety, depression, hostility, phobic anxiety, paranoid ideation, and psychoticism. Because the form of these interactions was similar across all six outcomes, we present only one plot. As shown in Figure 2, avoidant and secure adolescents exhibited similar patterns, reporting increased levels of distress during mid-adolescence followed by decreases in late adolescence. These patterns were differentiated, however, by the relatively greater increase in middle adolescence observed among avoidants relative to secure. In contrast, anxiously attached adolescents reported the highest levels of symptomatology in the youngest age group, followed by a drop and subsequent leveling off among middle and late adolescents. These patterns suggest different, or differently timed, developmental trajectories for each attachment style.

Self-concept. As shown in the lower panel of Table 2, attachment style accounted for nearly 6% of the variance in the set of self-concept variables, after the block of demographic covariates was entered; all univariate effects were significant as well. As predicted, post hoc comparisons indicated that, with only two exceptions (discussed below), differences were observed between securely and insecurely attached adolescents, with the secure group reporting substantially more positive self-concepts than either insecure group. In contrast to the general pattern, but also as expected, anxious-ambivalent adolescents reported the lowest level of intellectual competence, followed by avoidant adolescents, and then secure adolescents, whereas avoidants reported the lowest level of social competence, followed by anxious-ambivalent adolescents, and then secures. These effects were invariant across gender, race, and age categories (multivariate $Fs$ for all interaction blocks < 1.60, $ps > .05$).

Attachment Style and Risky or Problem Behaviors

Following the procedures described above, four MANCOVAs were conducted to examine the relationship between attachment style and the four sets of behaviors (educational underachievement, delinquency, substance use, and sexual behavior). In addition, four individual outcome variables (ever used drugs, frequency of marijuana use, ever had sex, and ever gotten pregnant [among females only]) were analyzed in separate analyses of covariance (ANCOVAs) because of differences in the number
of respondents with valid data on these measures. As shown in Table 3, attachment style, entered on Step 2 after the demographic covariates, uniquely accounted for small but significant increments in variance across all dependent variable sets in the multivariate analyses and in three of the four univariate analyses.

Educational underachievement. As shown in the top panel of Table 3, there were significant univariate effects for all three education measures. As predicted, anxious adolescents reported significantly lower grades and lower educational aspirations than either avoidant or secure adolescents, who did not differ from each other. In addition, anxious adolescents had been held back in school more often than secure adolescents, whereas avoidant adolescents did not differ significantly from either group. Finally, main effects of attachment on educational underachievement were not qualified by gender, race, or age (all multivariate $F$s < 1.40, $p$s > .20).

Delinquent behaviors. As shown in the second panel of Table 3, there was a significant multivariate effect of attachment style on delinquent behaviors, although only two of the univariate effects were significant. As expected, anxious adolescents reported significantly higher levels of property offenses than avoidant adolescents, whereas securely attached adolescents were intermediate in their reports and did not differ from either insecure group. Anxiously attached adolescents also reported significantly higher levels of truant acts than either the secure or the avoidant group, who did not differ from each other. Finally, there were no attachment style differences in violent behavior, and no interactions between attachment style and gender, race, or age in the prediction of the delinquency measures (multivariate $F$s < 1.00, $p$s > .50).

Substance use. As shown in the third panel of Table 3, attachment style accounted for a small but significant increment in explained variance in the proportion of adolescents who had ever used alcohol or drugs. Examination of the covariate-adjusted means revealed that, as hypothesized, avoidant adolescents were less likely ever to have used alcohol or drugs (66%) compared with anxious-ambivalent (75%) or secure (73%) adolescents. This effect was not qualified by interactions with gender, race, or age ($F$s < 1.00, $p$s > .65). Among the subset of adolescents who had used drugs or alcohol ($n = 1,151$), attachment style predicted the extent and nature of use. As hypothesized, both insecure groups reported a higher level of drug involvement than securely attached adolescents. In addition, although there were no attachment style differences in the frequency of heavy drinking, anxiously attached adolescents reported significantly more drinking problems in the past six months than either secure or avoidant adolescents. Among those adolescents who had ever used marijuana ($n = 630$), anxious adolescents reported significantly more frequent use than did secure adolescents. None of these main effects was qualified by gender, race, or age (multivariate $F$s < 1.13, $p$s > .35).

Sexual behavior. As shown in the bottom panels of Table 3, attachment style accounted for significant variance in virginity status and, among the sexually active respondents, in the range and nature of sexual experiences. Examination of the covariate-adjusted means for virginity status showed that only 52% of avoidant adolescents had ever had sexual intercourse, compared with more than 69% and 66%, respectively, of anxious and secure adolescents. Thus, as predicted, avoidant adolescents were significantly less likely to have had intercourse than their anxious and secure counterparts, who did not differ from each other. However, this main effect was qualified by a significant ($p < .05$) interaction with gender. Examination of the pattern of adjusted means among male and female adolescents showed that, although about 10% fewer female than male respondents were sexually active among both the avoidant (44% vs. 51%) and secure (55% vs. 66%) groups, anxiously attached female adolescents were at least as likely as their anxious male counterparts to be sexually active (66% vs. 63%). Among the subset of sexually experienced adolescents ($n = 1,018$), attachment style accounted for significant variance in the set of sexual experience variables. As predicted, both anxious (43%) and avoidant adolescents (42%) were significantly more likely than secure adolescents (32%) to report having had sex with a stranger. Moreover, although the univariate effect for having ever been (or gotten someone) pregnant was only marginally significant, this effect was significant among the subset of sexually active female adolescents for whom pregnancy data are likely to be more accurate. More than 37% of anxiously attached females had been pregnant compared with 27% and 25%, respectively, of their secure and avoidant counterparts. Thus, anxiously attached adolescents appeared to be especially likely to have experienced a pregnancy, and both insecure groups reported elevated rates of casual sex. There were no attachment style differences in having ever had a sexually transmitted disease or in the number of sexual partners.

However, two of these outcomes were qualified by significant race interactions: ever having had sex with a stranger and ever having been pregnant (the latter among females only). Examination of the adjusted means revealed a similar pattern across these outcomes in which White avoidant adolescents but Black anxious adolescents reported the highest levels of problematic sexual behavior. Specifically, 57% of White avoidant adolescents reported having had sex with a stranger compared with 39% and 27%, respectively, of anxious-ambivalent and secure adolescents. In contrast, 38% of Black anxious adolescents reported having sex with a stranger compared with roughly 30% in the other two attachment groups. Similarly, 36% of Black anxiously attached adolescent females reported having ever been pregnant compared with about 22% in the other two groups. In contrast, 22% of White avoidants had ever been pregnant compared with 16% in the other two groups. Finally, a similar
Behaviors when attachment effects are in the equation; and (d) mediational analyses.

Gender, race, and age were controlled, as in prior analyses. Results are presented in Table 4. Unstandardized regression coefficients for the attachment contrasts prior to entering the hypothesized mediators are shown in the top panel, and the unstandardized coefficients for the same contrasts after entering the mediators, as well as the coefficients for the mediators themselves are shown in the bottom panel. (The data in the top panel of Table 4 are essentially redundant with information presented in Table 3. However, they are summarized here in a somewhat different format to facilitate direct comparison of the attachment contrasts before and after entering the hypothesized mediators.)

As shown in the first row of Table 4, anxious and secure adolescents differed significantly on 9 of the 12 contrasts prior to inclusion of the hypothesized mediators, and on 6 of the 9 previously significant contrasts afterward (see first row, second panel of Table 4). In addition, the magnitude of four of the six coefficients that remained significant (viz., educational aspirations, truancy, alcohol problems, drug count) was reduced from 15% to 40% of their original size, thus suggesting partial mediation of these effects. As shown in the second row of Table 4, anxious and secure adolescents differed significantly on 9 of the 12 contrasts prior to entering the hypothesized mediators, and on 3 of the 4 afterward. The magnitude of the 1 contrast that remained significant (viz., ever had sex) was also reduced (by 33%) as a result of including these mediators. Finally, as shown in the third row of Table 4, anxious and avoidant adolescents significantly differed on 8 of the 12 contrasts prior to inclusion of the hypothesized mediators, but on only 3 of the 8 afterward. Moreover, 2 of the contrasts that remained significant (viz., truancy, ever had sex) were also reduced in magnitude (from

### Table 3

<table>
<thead>
<tr>
<th>Variable</th>
<th>Valid n</th>
<th>( \eta^2 )</th>
<th>Avoidant</th>
<th>Anxious</th>
<th>Secure</th>
</tr>
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<td>Educational underachievement</td>
<td>1,591</td>
<td>.007**</td>
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<td>5.48</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Years held back</td>
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<td></td>
<td>.040</td>
<td>.031</td>
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<td>Educational aspirations</td>
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<td>.016**</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Delinquency</td>
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<td>.005**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Violent behavior</td>
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<td>.137</td>
<td>1.48</td>
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<tr>
<td>Property crimes</td>
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<td>.46</td>
<td>.59</td>
</tr>
<tr>
<td>Truancy</td>
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<td>.009**</td>
<td></td>
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<td>1.72</td>
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<tr>
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<td></td>
<td>.665</td>
<td>.745</td>
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<tr>
<td>Substance use</td>
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<td>.014***</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Frequency of heavy drinking</td>
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<td></td>
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<td>1.86</td>
</tr>
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<td>.33</td>
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<td>Drug use count</td>
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<td>Frequency of marijuana use</td>
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<td>1.44</td>
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<td>Ever had sex</td>
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<td>.024***</td>
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<td>.520</td>
<td>.694</td>
</tr>
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<td>.009*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of partners</td>
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<td></td>
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<td>.087</td>
<td>.106</td>
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<tr>
<td>Ever been pregnant</td>
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<td>.004†</td>
<td></td>
<td>.192</td>
<td>.264</td>
</tr>
<tr>
<td>got someone pregnant</td>
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<td>.015*</td>
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<td>.254</td>
<td>.372</td>
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<tr>
<td>Ever been pregnant (females)</td>
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<td>.270</td>
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</tr>
</tbody>
</table>

Note. Means with different subscripts differ significantly at \( p < .05 \). Mean values for dichotomous variables are shown to three decimal places; all other variables are shown to two.

† \( p < .10 \) (marginally significant). * \( p < .05 \). ** \( p < .01 \). *** \( p < .001 \).
16% to 38% of their original size). Thus, evidence of complete or partial mediation was obtained for 7 of 9 anxious versus secure contrasts, 2 of 4 avoidant versus secure contrasts, and 7 of 8 anxious versus avoidant contrasts.

A careful analysis of the statistically reliable indirect effects observed in the data revealed, however, that these effects were more complex than expected. Although consistent support was obtained for many of the expected mediation effects, a number of unexpected suppression effects were also found. Suppression and mediation can be considered alternate forms of indirect effects or, equivalently, of intervening processes. Suppression is said to occur when the relationship between two independent or causal variables (e.g., attachment and anxiety) is hiding or suppressing their real relationships with a third variable (e.g., educational aspirations). Suppression occurs when the signs of the direct and indirect effects are opposing, whereas mediation occurs when the signs are in the same direction (see Cohen & Cohen, 1983; Bollen, 1989). For example, anxious adolescents held significantly lower educational aspirations than did their secure counterparts; hence, the direction of this difference was negative. At the same time, although anxious-ambivalent adolescents were both significantly more hostile and significantly more anxious than secures, hostility was negatively related to educational aspirations, but anxiety was positively related. Accordingly, the indirect effect via hostility was negative (anxious-ambivalent adolescents were more hostile, and more hostile adolescents held lower educational aspirations), whereas the indirect effect via anxiety was positive (anxious adolescents reported more general anxiety, and more anxious adolescents held higher, not lower, educational aspirations). Thus, hostility mediated the anxious-ambivalent versus secure difference in educational aspirations (both the direct and indirect effects were of the same sign [i.e., both were negative]), whereas anxiety acted as a suppressor (the direct and indirect effects were of opposing signs [i.e., negative and positive, respectively]).

It is important to note that, although controlling for a reliable mediating variable reduces the magnitude of the initial attachment effect, controlling for a reliable suppressor actually increases the magnitude of this effect. Because the total effect (i.e., the attachment effect estimated prior to including competence and distress measures) consists of a direct effect (i.e., the attachment effect after controlling for these variables) plus an indirect effect (or in the case of multiple intervening pathways, the sum of the indirect effects), the total effect must necessarily be smaller than the direct effect whenever the indirect effect (or the sum of the indirect effects) is opposite in sign to the direct effect. This is why a suppressor variable can be said to hide or suppress the true magnitude of the attachment difference.

Because of the greater-than-expected complexity of these results, Table 5 was compiled to facilitate their interpretation. Column 1 of Table 5 lists each of the initially significant attachment contrasts, and the second column specifies the direction of that effect. The third and fourth columns indicate whether the contrast remained significant after controlling for the hypothesized mediators, and the percentage by which the initial contrast was reduced, or in some cases—where suppression was observed—the percentage by which the initial difference increased as a result of adding the hypothesized mediators to the equation. Finally, the last two columns list all mediation and

<table>
<thead>
<tr>
<th>Table 4</th>
<th>Comparison of Attachment Effects With and Without Controlling for Hypothesized Mediators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variables</td>
<td>Educational aspirations</td>
</tr>
<tr>
<td>Attachment without mediators</td>
<td>0.08</td>
</tr>
<tr>
<td>Anxious (1) vs. secure (0)</td>
<td>0.04</td>
</tr>
<tr>
<td>Avoidant (1) vs. avoidant (0)</td>
<td>0.04</td>
</tr>
<tr>
<td>Attachment with mediators</td>
<td>0.04</td>
</tr>
<tr>
<td>Anxious (1) vs. secure (0)</td>
<td>0.04</td>
</tr>
<tr>
<td>Avoidant (1) vs. avoidant (0)</td>
<td>0.04</td>
</tr>
<tr>
<td>Anxiety</td>
<td>0.06</td>
</tr>
<tr>
<td>Depression</td>
<td>0.06</td>
</tr>
<tr>
<td>Hostility</td>
<td>0.06</td>
</tr>
<tr>
<td>Heritability</td>
<td>0.06</td>
</tr>
</tbody>
</table>

Note. Table values are unstandardized b weights. All analyses were conducted controlling for age, race, and gender. Continuous dependent measures were analyzed using logistic regression. To obtain results for all three attachment contrasts, we estimated two equations for each dependent measure using Clarify: The Two-Step Analysis of Dichotomous Outcomes.
ATTACHMENT AND ADJUSTMENT IN ADOLESCENCE

Table 5
Summary and Integration of Attachments Effects

<table>
<thead>
<tr>
<th>Significant contrasts without mediators</th>
<th>Direction of effect</th>
<th>Significant after mediators</th>
<th>% reduction-increase</th>
<th>Mediators</th>
<th>Suppressors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Anxious vs. secure contrasts</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Years held back</td>
<td>+</td>
<td>No</td>
<td>−50%</td>
<td>Hostility</td>
<td></td>
</tr>
<tr>
<td>Grades</td>
<td>−</td>
<td>No</td>
<td>−63%</td>
<td>Depression, hostility</td>
<td></td>
</tr>
<tr>
<td>Educational aspirations</td>
<td>−</td>
<td>Yes</td>
<td>−18%</td>
<td>Hostility</td>
<td>Anxiety</td>
</tr>
<tr>
<td>Truancy</td>
<td>+</td>
<td>Yes</td>
<td>−30%</td>
<td>Depression, hostility</td>
<td>Anxiety, social competence</td>
</tr>
<tr>
<td>Alcohol problems</td>
<td>+</td>
<td>Yes</td>
<td>−40%</td>
<td>Hostility</td>
<td></td>
</tr>
<tr>
<td>Drug involvement</td>
<td>+</td>
<td>No</td>
<td>−15%</td>
<td>Hostility</td>
<td>Social competence</td>
</tr>
<tr>
<td>Marijuana use</td>
<td>+</td>
<td>Yes</td>
<td>−32%</td>
<td>Depression</td>
<td></td>
</tr>
<tr>
<td>Sex with a stranger</td>
<td>+</td>
<td>Yes</td>
<td>0%</td>
<td>Hostility</td>
<td>Social competence</td>
</tr>
<tr>
<td>Ever pregnant</td>
<td>+</td>
<td>Yes</td>
<td>+14%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Avoidant vs. secure contrasts</strong></td>
<td>−</td>
<td>No</td>
<td>−55%</td>
<td>Social competence</td>
<td>Depression, hostility</td>
</tr>
<tr>
<td>Ever used substances</td>
<td>+</td>
<td>Yes</td>
<td>0%</td>
<td>Social competence</td>
<td>Social competence</td>
</tr>
<tr>
<td>Drug involvement</td>
<td>−</td>
<td>Yes</td>
<td>−33%</td>
<td>Social competence, anxiety</td>
<td>Depression, hostility</td>
</tr>
<tr>
<td>Sex with a stranger</td>
<td>+</td>
<td>Yes</td>
<td>+6%</td>
<td>Hostility</td>
<td>Social competence</td>
</tr>
<tr>
<td><strong>Anxious vs. avoidant contrasts</strong></td>
<td>−</td>
<td>No</td>
<td>−30%</td>
<td>Depression, hostility</td>
<td></td>
</tr>
<tr>
<td>Grades</td>
<td>−</td>
<td>No</td>
<td>−19%</td>
<td>Hostility</td>
<td></td>
</tr>
<tr>
<td>Educational aspirations</td>
<td>+</td>
<td>No</td>
<td>−62%</td>
<td>Depression, hostility, social competence</td>
<td></td>
</tr>
<tr>
<td>Property crimes</td>
<td>+</td>
<td>Yes</td>
<td>−38%</td>
<td>Depression, hostility, social competence</td>
<td></td>
</tr>
<tr>
<td>Truancy</td>
<td>+</td>
<td>No</td>
<td>−53%</td>
<td>Depression, hostility, social competence</td>
<td></td>
</tr>
<tr>
<td>Ever used substances</td>
<td>+</td>
<td>No</td>
<td>−29%</td>
<td>Hostility</td>
<td></td>
</tr>
<tr>
<td>Alcohol problems</td>
<td>+</td>
<td>No</td>
<td>−16%</td>
<td>Depression, hostility, social competence</td>
<td></td>
</tr>
<tr>
<td>Ever had sex</td>
<td>+</td>
<td>Yes</td>
<td>0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ever pregnant</td>
<td>+</td>
<td>Yes</td>
<td>+14%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Dash indicates no reliable effect.

*In the present analyses, the direction of the attachment effect before and after adding the hypothesized mediators was always the same. Hence, "direction of effect" applies equally to the total effect (before hypothesized mediators) and the direct effect (after hypothesized mediators).

Suppressor effects that can be considered statistically reliable by the criteria outlined above (Baron & Kenny, 1986), or by Cohen and Cohen's (1983) criteria for indirect effects.

As summarized in Table 5, and schematically represented in Figure 3, consistent support was found for the hypothesized mediational role of hostility and depression in accounting for anxious-ambivalent versus secure differences in problem behaviors. Indeed, eight out of nine anxious versus secure differences were accounted for, at least partially, by the fact that anxiously attached adolescents were more depressed (three of the differences), more hostile (seven of the differences), or both (two of the differences). At the same time, however, the fact that anxious-ambivalent adolescents experienced higher levels of general anxiety and were less socially competent than their secure counterparts served to keep them from even greater involvement in these problematic behaviors and, consequently,
to minimize the magnitude of the anxious–ambivalent versus secure differences in several problem behaviors. Thus, evidence of offsetting indirect effects—that is, of both mediation and suppression—was present for 4 of the 10 comparisons. Indeed, despite the fact that evidence for reliable mediation (via hostility) was found for anxious versus secure differences in the proportions who had ever had sex with a stranger, there was no net change in the magnitude of the attachment effect as a result of including the set of hypothesized mediators. This suggests that the mediation effect via hostility was roughly equal in size to the offsetting suppression effect via anxiety.

Examination of the pattern of avoidant versus secure differences revealed that, as expected, lack of social competence was a contributing factor to the lower rates of sexual experience and substance use found among avoidant adolescents relative to their secure counterparts. However, somewhat unexpectedly, anxiety also contributed to this difference. Thus, another reason why avoidants were less likely than secure ever to have had sex is that they were more anxious, which in turn seemed to deter sexual contact. Perhaps avoidant adolescents were less likely than secure to take certain kinds of risk (e.g., approaching an attractive opposite sex person or making a sexual overture) that might lead to a sexual encounter. In addition to these mediational effects, offsetting suppression effects via depression and hostility were observed on these relationships. Thus, it appears that because of their relatively high levels of depression and hostility, avoidant adolescents were more likely than they otherwise would have even to have had sex or used substances.

In contrast to their lesser likelihood of ever having had sex or used drugs, avoidant adolescents who ever engaged in these behaviors exhibited more pathological levels of involvement, as expected, than did their secure counterparts. Accordingly, in our mediational analyses suggest that avoidant adolescents were more likely than secure to have had sex with a stranger and to have used multiple types of drugs, in part because they were more hostile. At the same time, these avoidant adolescents were somewhat less involved than they otherwise would have been if not for their social skill deficits.

Finally, and as expected, anxious versus avoidant differences in risky or problem behaviors were largely explicable in terms of differences in depression, hostility, and social competence. That is, anxious adolescents relative to their avoidant counterparts not only appeared to be more strongly motivated to engage in these behaviors to vent or express their heightened hostility and depression but were also better equipped to do so by virtue of their somewhat better social skills.

Discussion

The present study examined attachment style differences in adjustment in a representative sample of Black and White adolescents using Hazan and Shaver's (1987) three-category measure of attachment. Overall, our results provide strong support for the robustness of attachment style differences in adjustment and the usefulness of conceptualizing these differences in emotion-regulation terms. Moreover, with three noteworthy exceptions, associations between attachment styles and adjustment were invariant across developmental phases of adolescence and across race and gender. These results are discussed more fully below.

Attachment Style, Emotion Regulation, and Adjustment

Analyses of attachment style differences in adjustment indicated that the three attachment types exhibited unique and theoretically consistent profiles of symptoms and problems. In line with the notion that secure attachment leads to the development of adaptive ways of coping with negative emotions and a sense of self-efficacy, secure adolescents reported generally superior functioning across multiple developmentally relevant domains. In contrast, both insecure groups were poorly adjusted relative to secure adolescents, although each exhibited a unique pattern of maladjustment. Anxious–ambivalent adolescents were the most poorly adjusted overall, reporting not only the highest symptom levels and the poorest self-concepts, but also the highest levels of problematic or risky behaviors. In contrast, although avoidant adolescents evidenced levels of symptomatology nearly equal to those of their anxious counterparts, the two insecure groups differed in important and theoretically predictable ways. Avoidant adolescents, relative to anxious adolescents, were significantly less hostile and depressed, more academically able, less socially competent, less likely to have had romantic relationship experience, and less involved in both delinquent and substance use behaviors. In fact, avoidant adolescents did not differ from their secure counterparts on the majority of the risk or problem behaviors, and were significantly less likely than secure ever to have had sex or used substances. Thus, the three attachment types exhibited distinctive patterns of adjustment, patterns that can be linked theoretically to differences in the ways the three types are thought to experience, express, and regulate negative emotions.

Results of our mediation analyses provided clear support for this interpretation. In particular, we found that anxious–ambivalent adolescents were especially prone to risk or problem behaviors, at least in part because of the high levels of negative affect they experienced. Interestingly, our data point to hostility as an especially important explanatory factor. Not only were anxious adolescents significantly more hostile than either secure or avoidant adolescents, but hostility was also found to be the single most robust intervening variable in terms of the number of reliable intervening relationships and the average magnitude of these effects. Thus, just as anxious infants have been observed to strike out at their caregivers in the strange situation, anxious adolescents may engage in problematic behaviors as one way to vent their hostile feelings. Although both insecure groups experienced heightened levels of negative affect relative to secure and, apparently, were motivated to engage in risky or problem behaviors to express or cope with these negative emotions, only anxious adolescents had sufficient social skills to engage in these highly peer-involved behaviors. Thus, as anticipated, anxious adolescents seem especially likely to engage in problematic behaviors because of their particular constellation of affective and social traits.

The data also suggest that avoidant adolescents, who exhibited a profile of risk or problem behaviors that was similar to that of secure adolescents, differed from secure adolescents in the underlying processes that accounted for their generally non-
problematic levels of involvement. Although avoidant adolescents were more distressed than secure ones and, therefore, presumably more strongly motivated to engage in risky or problem behaviors to manage their distress, they lacked the requisite social skills to do so. Thus, the generally low and nonproblematic levels of involvement in most risk behaviors observed among securely attached adolescents appeared to reflect their relative psychological health, whereas among avoidant adolescents, it appeared to stem from anxiety and social deficits.

Considered collectively, these findings indicate that adolescents with different attachment types exhibit distinctive patterns of adjustment, and that these patterns are interpretable in terms of characteristic styles of experiencing, expressing, and regulating negative emotions. These findings also underscore the importance of moving beyond simple descriptions of attachment style differences to examine underlying mediational processes. These analyses enabled us not only to draw stronger inferences about the role of emotion regulation in risky or problem behaviors but also to delineate specific processes that may underlie and account for attachment style differences in acting-out behaviors.

**Invariance of Attachment Effects Across Race, Gender, and Developmental Period Within Adolescence**

Results of interaction tests indicated that attachment effects on psychological symptoms, self-concept, and risky or problem behaviors were largely invariant across gender and race, and across early, mid-, and late adolescence, with three noteworthy exceptions. First, a consistent pattern of Gender × Attachment interactions predicting symptomatology revealed that anxious-ambivalent females reported elevated levels of depression, general anxiety, and psychosomatic relative to all other Gender × Attachment subgroups. Similarly, anxious-ambivalent females were significantly more likely than their nonanxiously attached female counterparts ever to have had sex, and at least as likely as their anxiously attached male counterparts to have done so. Given the pervasive nature of gender differences in sexual experience that virtually always find males to be more sexually experienced (see Miller, Christopherson, & King, 1993, for a review), this finding is both surprising and potentially important. On the whole, these data portray anxiousty attached female adolescents as an especially vulnerable and troubled group. Although this pattern was not specifically anticipated, it is plausible that the troubled status of anxiously attached females is partly attributable to the more intense socialization pressures to conform to gender role norms to which adolescent girls are thought to be subjected (see Hill & Lynch, 1983, for a review). Because anxious individuals have been shown to be more reactive to stress (e.g., Feeney & Kirkpatrick, 1996), this combination of increased socialization pressures and heightened stress reactivity may account for the elevated levels of distress observed among anxiously attached female adolescents.

Second, a consistent pattern of Age × Attachment interactions predicting distress raised the possibility that secure, anxious, and avoidant adolescents follow different, or differently timed, developmental trajectories over the course of adolescence. Securely attached adolescents appeared to follow the more normative pattern in which symptom levels rise during mid-adolescence and then decline by late adolescence (Petersen, 1988). Although avoidant adolescents appeared to follow a similarly timed developmental course, the magnitude of the increase in mid-adolescence was greater, and the decline in late adolescence smaller, than that reported by secure. In contrast, anxiously attached adolescents reported peak levels of distress during early adolescence followed by a decline and stabilization in mid- to late adolescence, albeit at higher, more dysfunctional levels of distress. These data suggest that anxiously attached adolescents experience the onset of turbulent emotions at an earlier and potentially more vulnerable age than their nonanxiously attached counterparts. The early onset of distress, in turn, may set the stage for the ongoing problems that seemed to characterize anxious adolescents throughout adolescence.

Finally, a consistent pattern of Race × Attachment interactions was observed for sexual behavior. The form of these interactions indicated that, among Whites, avoidant adolescents were the most likely of the three attachment groups ever to have had sex with a stranger, to have been pregnant, and to have had an STD; whereas among Blacks, anxiously attached adolescents reported the highest rates of these behaviors. These data, therefore, replicate the findings reported for avoidant adolescents in earlier studies using predominantly or exclusively White samples and, at the same time, raise the possibility that sexual expressions of avoidance and anxious-ambivalence vary across racial or ethnic boundaries. Thus, although patterns of attachment differences in sexual behavior were invariant across age and, with the exception noted above, also across gender, evidence of potentially important differences were observed across racial groups. Given that pervasive differences in sexual behavior exist across Black and White adolescents (see Miller et al., 1993, for a review), it seems plausible that the psychological meanings attached to sexual behavior differ across these racial groups. Such differences, in turn, may at least partially explain the differential patterns of sexual expression associated with avoidance and anxious-ambivalence. Why these differences would occur only among the two insecure groups, however, is unclear. Future research using ethnically and racially diverse samples should attempt to replicate these differences and explore sociocultural meanings attached to sexual behavior, or different functions served by sexual behavior, among Blacks and Whites.

In sum, results of the present study indicate that the majority of attachment effects were invariant across gender and racial groups, and across major developmental periods within adolescence. Nonetheless, the presence of several patterns of consistent differences across these groups cautions us against making overly broad generalizations about attachment processes and underscores the need to pay greater attention to sample characteristics and issues of generalizability in future research.

**Demographic Correlates of Attachment Styles**

The present study also provided important new information about the distribution of attachment styles in an ethnically, racially, and socioeconomically diverse sample, and for an age group not previously studied. In this sample, we found overall proportions of attachment types that were similar to those observed in prior studies, and no differences in these proportions across racial groups or across age groups within adolescence. In
contrast, however, to the gender-neutral findings usually obtained with this measure, more males than females in the present study reported secure attachment, and more females than males reported avoidant attachment. As discussed previously, however, there were no significant gender differences among older White respondents or among respondents who were in college, and the proportions of each attachment style observed in these subsets were highly similar to those reported in prior samples with comparable age and racial composition. This suggests that—given similar age and racial characteristics—our results are compatible with findings from past research. At the same time, however, these findings raise the possibility that the gender distribution of attachment types in the general adolescent population differs from that found among college students and other less representative samples used in past studies. Interestingly, a recent study by Mickelson et al. (1997), conducted among a nationally representative sample of adults (up to age 54), also found gender differences. However, they were opposite in direction to those observed in the present study, with women reporting more secure attachment than men (61% vs. 57%), and men reporting more avoidant attachment than women (28% vs. 23%). Thus, it seems possible that women become increasingly secure as they age, whereas men become increasingly avoidant.

Implications of the Present Study

The results of the present study hold a number of potentially important implications for future research and theory on attachment styles and processes, as well as for our understanding of adjustment during adolescence. First, these data indicate that, when a broad range of outcomes is examined, the three attachment groups exhibit distinctive profiles. Although the secure—insecure distinction accounted for most of the variance in psychological symptoms and self-concept, consistent differences between the two insecure groups emerged for the more overt behavioral indicators of adjustment. Results of our mediation analyses provide further support for the distinctiveness of the three types by raising the possibility that unique constellations of underlying processes account for the differential involvement of the three attachment groups in risky or problematic behaviors. Evidence supporting the distinctiveness of these profiles and, in particular, differences between the two insecure groups should help to mitigate concerns that attachment style differences can be summarized along a single good—bad, or secure—insecure, dimension.

That these profiles are likely to be replicable is indirectly supported by the convergence of our findings with those from several major studies of personality that found evidence for the existence of three distinct personality types that bear striking resemblance to our attachment style groups (e.g., Block, 1971; Caspi & Silva, 1995; Eisenberg & Fabes, 1992; Robins, John, Caspi, Moffitt, & Stouthamer-Loeber, 1996). For example, Robins et al. found that three groups (one well-adjusted and two maladjusted groups) were empirically distinguishable on the basis of caregiver responses to the personality descriptions contained in the California Child Q-Set. Similar to our secure group, their well-adjusted or resilient group reported the lowest overall levels of distress and relatively low levels of acting-out behaviors. Of the two poorly adjusted groups, their undercontrolled group, like our anxious—ambivalent group, reported the highest levels of both distress and acting-out behaviors and were generally viewed as the most problematic and troubled group by caregivers and teachers alike. Finally, their overcontrolled group closely resembled our avoidant group. They experienced high levels of distress symptoms, coupled with levels of acting-out behaviors that were, for the most part, indistinguishable from those observed among the best-adjusted group. These groups also exhibited patterns of differences in social skill, extroversion, and self-confidence that were strikingly similar to those observed in the present study for the three attachment groups. Likewise, our groups bore strong resemblance to the three groups of adolescent drug users described by Shedler and Block (1990) in terms of the overall configuration of distress symptoms, acting-out behaviors, and social facilities, as previously described.

When considered collectively, the results of the present study highlight the value of examining a broader array of outcomes than is typically examined. Indeed, our results indicate that, when a broad array of outcomes is considered, the three attachment types exhibit unique and theoretically cogent psychological and behavioral profiles. Had we examined only psychological symptoms, self-concept, or any particular risky or problem behavior in isolation, these patterns would not have been evident.

Results of the mediation analyses also lend indirect support to the idea that experimenting with at least some types of risky behaviors may serve adaptive and developmentally appropriate needs, as Shedler and Block (1990) and others (e.g., Baumrind, 1987) have argued. Not only were such generally adaptive characteristics as lower anxiety and higher social competence found to promote involvement in a number of these behaviors, but also the best-adjusted (secure) group was found to engage in most of these behaviors to at least some extent. This pattern of results suggests that these behaviors have the potential to serve adaptive and developmentally appropriate needs during adolescence, as well as maladaptive needs. Thus, researchers and parents alike may need to distinguish between what are normal, transitional risk-taking behaviors that, though potentially dangerous, are developmentally adaptive and those pathological expressions for which secondary gains are virtually absent. Toward this end, distinguishing between these behaviors in terms of the underlying functions they serve may be an essential first step toward developing a more adequate understanding of the causes of risk or problem behaviors during adolescence. Furthermore, when such behaviors serve more dysfunctional needs, these data raise the possibility that teaching low-functioning adolescents more adaptive ways to manage hostility might reduce their involvement in these problematic behaviors.

Caveats and Conclusions

Despite the theoretical cohesiveness of these findings, several limitations of the present study should be acknowledged. First, although our results suggest that the Hazan and Shaver (1987) attachment-style measure is suitable for use in a representative, racially diverse sample of adolescents, future researchers nonetheless should consider modifying or supplementing this measure to ensure a higher proportion of usable responses. For example, because adolescents, especially younger ones, may
know more about their behavior in close friendships than in romantic relationships, adolescents might classify themselves more reliably if the domain of behaviors and experiences were broadened from romantic relationships to all close relationships. Alternatively, use of a multi-item self-report measure (e.g., Collins & Read, 1990) or of a more extensive face-to-face interview (e.g., Bartholomew & Horowitz, 1991) might also yield more reliable categorization. Because of its cost and complexity, however, the latter alternative may prove infeasible in large, population-based studies such as the present one. In addition, it will be important for future research using adolescent or representative population samples to include the newer four-category attachment style measure developed by Bartholomew and colleagues (Bartholomew & Horowitz, 1991). Indeed, the failure in the present study to obtain differences on anxiety between the two insecure groups may stem from our inability to distinguish between subtypes of avoidant adolescents (one of whom is expected to be more anxious than the other) identified in Bartholomew's work.

Second, the use of cross-sectional data cannot adequately test the assumption underlying our mediational analyses that negative emotions are causally antecedent to risky or problem behaviors. Although this causal ordering is consistent with theory and was empirically supported by our analyses, future research using closely spaced, repeated assessments (e.g., diary methods) would provide a more adequate test of this model. Similarly, although results of the present study suggest potentially important differences in developmental trajectories during adolescence for the three attachment types, confident interpretation of these differences in truly developmental terms must await future research using prospective or longitudinal designs.

Finally, some of the observed differences between the attachment style groups appear small in absolute terms, especially for risky or problem behaviors. We would argue, however, that small should not be equated with unimportant in this case. As Ahadi and Diener (1989) recently demonstrated, a relatively low ceiling (e.g., an r of .45) exists on the maximum effect size that can be observed between any single determinant and a given outcome, when that outcome is determined by even a few (e.g., four) factors. Given that outcomes such as drug use, delinquency, and pregnancy are likely to be determined by many factors, it may be unreasonable to expect more than small effects. Furthermore, the presence of significant moderation and suppression effects suggests that a simple main effects analysis understimates the true effect size for at least some outcomes or some subgroups. Finally, despite the small magnitude of these effects in terms of variance accounted for, many of them nonetheless translated into substantively important differences between the attachment groups (e.g., a 12% difference in pregnancy rates). Thus, when considered in light of the complexity of the outcomes and of the processes that link attachment with these outcomes, as well as the likelihood that attachment is a more distal determinant in the causal chain, we would argue that these effects are substantively important despite their apparent small size.

In summary, results of the present study suggest that attachment processes have important implications for adjustment across a broad range of psychological and behavioral domains during adolescence, and they underscore the usefulness of conceptualizing attachment processes in terms of characteristic styles of experiencing, expressing, and regulating negative emotions. They further suggest that attachment processes operate similarly, though not identically, across gender and racial groups and across major developmental periods within adolescence. Taken as a whole, they add substantially to the growing evidence for the usefulness of attachment theory as a framework for understanding human functioning across the lifespan.

References


Received July 19, 1996
Revision received June 23, 1997
Accepted June 23, 1997