

A Secure Base in Adolescence: Markers of Attachment Security in the Mother–Adolescent Relationship

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This study sought to identify ways in which adolescent attachment security, as assessed via the Adult Attachment Interview, is manifest in qualities of the secure base provided by the mother–adolescent relationship. Assessments included data coded from mother–adolescent interactions, test-based data, and adolescent self-reports obtained from an ethnically and socioeconomically diverse sample of moderately at-risk 9th and 10th graders. This study found several robust markers of adolescent attachment security in the mother–adolescent relationship. Each of these markers was found to contribute unique variance to explaining adolescent security, and in combination, they accounted for as much as 40% of the raw variance in adolescent security. These findings suggest that security is closely connected to the workings of the mother–adolescent relationship via a secure-base phenomenon, in which the teen can explore independence in thought and speech from the secure base of a maternal relationship characterized by maternal attunement to the adolescent and maternal supportiveness.

From the earliest days of research on attachment organization in infants and in adults, researchers have been seeking to identify the qualities in the caregiver–child relationship that are linked to attachment security (Ainsworth, Blehar, Waters, & Wall, 1978; De Wolff & van Ijzendoorn, 1997; Main, Kaplan, & Cassidy, 1985). Much of this research has pursued Ainsworth et al.'s (1978) findings of links between maternal sensitivity and infant attachment security. The modest overall correlation between maternal sensitivity and infant security reported in meta-analyses of research of this type ($r = .24$), suggests progress but also significant limitations in our understanding of the markers of security in the child–caregiver relationship (De Wolff & van Ijzendoorn, 1997; Thompson, 1997). The current study seeks to extend our understanding of the relationship markers of attachment security to adolescence by developing and examining a framework for

assessing markers of adolescent attachment security within the mother–adolescent relationship.

In adolescence, attachment security has been positively linked to outcomes ranging from peer popularity to higher self-esteem and inversely related to outcomes ranging from depression to delinquency (Allen, Moore, Kuperminc, & Bell, 1998; Kobak, Sudler, & Gamble, 1991; van Ijzendoorn & Bakermans-Kranenburg, 1996). Furthermore, the attachment security of female adolescents who are parenting their own infants has been found to predict their infant's security, suggesting the potential relevance of adolescent attachment organization to understanding intergenerational continuities in attachment patterns (Ward & Carlson, 1995).

Unlike in infancy, adolescent attachment security is formally assessed as a characteristic of an internal state of mind, rather than as a feature of a particular attachment relationship (Main & Goldwyn, 1998). Yet, the construct of attachment security seems best viewed not as being either an intrapsychic or a relationship construct, but rather as an organizational construct that is likely to be reflected both in intrapsychic development and in multiple aspects of ongoing attachment relationships (Sroufe & Waters, 1977; Thompson, 1997). Understanding attachment as an organizational construct in adolescence thus requires examining ways in which its functioning may be observed via both intrapsychic and relational approaches (Allen & Land, 1999). Linking adolescent security to actual mother–adolescent relationship

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qualities can also provide a window into the optimal functioning of the attachment system in key relationships during adolescence. This window in turn may help in suggesting the mechanisms by which adolescent security becomes translated into the numerous functional outcomes with which it has been linked.

This study tested the hypothesis that adolescent attachment security will be manifest in the parent-adolescent relationship in terms of an adolescent analogue of the secure-base phenomenon observed in infancy and childhood. The secure-base phenomenon refers to the infant or child's enhanced ability to explore the surrounding environment when doing so from the base of a secure attachment relationship with a caregiver (Bowlby, 1988). In coding the Adult Attachment Interview, the formal title for the secure classification—Autonomous, Yet Valuing of Attachment—reflects a balance of exploration and secure-base behavior analogous to that found in securely attached infants (Main & Goldwyn, 1998). While in infancy, exploration focuses on the physical environment; in adolescence, exploration is far more likely to focus on the adolescent's emotional and cognitive independence from parents (Allen, Hauser, Bell, & O'Connor, 1994). A secure base for an adolescent should thus be seen in a strong relationship with parents that nevertheless permits and encourages adolescents' strivings for cognitive and emotional autonomy (Allen & Land, 1999). This study examined four potential markers of an adolescent era secure-base phenomenon: maternal attunement to the adolescent, adolescent deidealization of the mother, adolescent perceptions of maternal supportiveness, and the ability of the mother-adolescent dyad to reaffirm their relationship even while disagreeing.

Maternal sensitivity has received the greatest attention as a likely correlate of attachment security in infancy and seems likely to be an integral part of the secure-base phenomenon in adolescence as well (De Wolff & van Ijzendoorn, 1997). This study examined one component of sensitivity—the degree to which mothers are attuned to their adolescents' internal states. To the extent the mother is well attuned to her adolescent, she is also well situated to provide a secure base for the adolescents' exploration, by responding appropriately to the adolescent's autonomy strivings and providing a safe haven for the adolescent in times of emotional stress. For example, a mother who is attuned to the ways in which her adolescent does and does not feel self-confident is likely to be more adept at handling adolescent struggles around vulnerable topics without undermining the adolescent's self-confidence. Although one prior study has shown a weak, long-

term prediction from maternal sensitivity to her infant to the later attachment security of that infant as an 18-year-old (Beckwith, Cohen, & Hamilton, 1999), no prior research has examined aspects of maternal sensitivity or attunement in relation to security in adolescence.

A second potential marker of the secure-base phenomenon in adolescence is the adolescent's deidealization of the parent (Main & Goldwyn, 1998). An idealized view of parents is thought to be typical of the black-and-white thinking of childhood. In adolescence, however, this view typically gives way to the more critical, logical scrutiny that formal operational thinking permits (Hill & Palmquist, 1978; Inhelder & Piaget, 1958). This gradual deidealization of parents is seen as essential in allowing the adolescent to begin to explore his or her cognitive and emotional autonomy vis-à-vis parents—to see them as fallible humans with both strengths and weaknesses (Allen & Land, 1999). Attachment security is hypothesized to be a necessary part of this process in that it provides the adolescent with the mental and emotional latitude, or epistemic space, to begin to realistically assess a parent's likely strengths and weaknesses (Kobak & Cole, 1994; Main, 2000). In adult-attachment interviews, idealization is coded as a marker of insecurity based on a careful assessment of discrepancies between an interviewee's evaluative descriptions versus specific memories of their early relationships with their parents (Main & Goldwyn, 1998). This study examined whether adolescents can provide direct self-reports reflecting idealization versus deidealization in their current views of their mothers as a marker of attachment security.

Reduced idealization of the parent is not, of course, akin to rejection of the attachment relationship, but rather is expected in the context of a secure relationship in which the parent is perceived as being emotionally supportive. Said differently, a secure base with parents should be perceived by the adolescent as clearly supportive, but not so perfect and ideal as to discourage exploration of the world beyond the family. Perceived emotional support is thus considered as another component of the adolescent secure base, but particularly when assessed in conjunction with adolescent deidealization. Without also considering the idealization-deidealization process, it becomes difficult to distinguish an adolescent's report of actual parental support from the idealized view of parents that some insecure adolescents are likely to hold. This difficulty may account for the very modest correlations found between attachment security and

self-reports about parental support in research to date (Crowell, Fraley, & Shaver, 1999). This study explored the idea that parental support is linked to adolescent security, but that adolescent reports of parental support are most informative when they are considered in conjunction with information about adolescents' progress in deidealizing the parental relationship.

Finally, this study sought to observe directly the secure-base phenomenon in action by examining the extent to which parent and teen worked to maintain their relationship as they discussed a disagreement in which the teen was striving to establish autonomy. Similar to the infant secure base, the secure base in adolescence requires both parties in a relationship working in a goal-corrected partnership to maintain the relationship as the adolescent explores his or her autonomy (Allen & Land, 1999; Bowlby, 1969/1982; Hazan & Zeifman, 1999). Revealed differences tasks, in which parent and adolescent discuss an ongoing area of disagreement, provide an excellent opportunity to observe this goal-corrected partnership operating under the stress of a significant disagreement. Prior observations of family interactions in similar tasks have suggested that the ability to maintain relatedness while discussing a disagreement in adolescence is predicted from infant strange-situation security and is predictive of attachment security assessed at age 25 (Allen & Hauser, 1996; Becker-Stoll & Fremmer-Bombik, 1997). These findings are consistent with Kobak, Cole, Ferenz-Gillies, Fleming, and Gamble's (1993) report that attachment security is linked to absence of dysfunctional anger in mother-teen problem solving.

Implicit in any consideration of the manifestation of attachment security in the mother-adolescent relationship is that the mother's own attachment organization is also likely to contribute to the qualities of this relationship and to the adolescent's attachment security. The concordance between maternal and adolescent security was not expected to be as strong as reported in mother-infant assessments, in part because security in adolescence is assessed as a state of mind with respect to both current and past experiences in multiple-attachment relationships (Allen & Land, 1999). Nonetheless, maternal security was expected to show some relation to qualities of the mother-adolescent relationship, at a minimum because security has been found to predict qualities of adults' other close relationships (Crowell, Treboux, & Waters, 1999; Kobak, Ferenz-Gillies, Everhart, & Seabrook, 1994; Kobak & Hazan, 1991). This study thus considered maternal security as a predictor of adolescent

attachment security, with the expectation that any concordance between maternal and adolescent attachment security would be mediated by the markers of the secure-base phenomenon in the parent-adolescent relationship as outlined earlier.

The relation between adolescent attachment security and components of the secure-base phenomenon in the mother-adolescent relationship was examined in an ethnically and socioeconomically diverse sample of moderately at-risk 9th and 10th graders. The sample was selected to allow assessments within a maximally meaningful range of psychosocial and family functioning, including adolescents and families functioning both adequately and poorly. Assessments included data coded from mother-adolescent interactions and interviews, test-based data, and adolescent self-reports. Several specific hypotheses and research questions were examined to elucidate the nature of the links between maternal relationship characteristics and adolescent attachment security: First, maternal attunement to the adolescent's self-perceptions was examined as a marker of adolescent security, both directly and after accounting for any effect of the adolescent's actual self-perceptions. Second, adolescents' deidealization of their mothers was examined as a marker of adolescent security. Third, the *conjoint* predictive power of deidealization and adolescents' overall perceptions of maternal supportiveness was examined, as deidealization was considered particularly likely to be related to security when it co-existed with adolescents' overall perceptions of maternal supportiveness (as opposed to deidealization reflecting overall derogation of the maternal relationship). Fourth, evidence that the mother-adolescent relationship could maintain a degree of positive relatedness in the face of discussion of an important disagreement was examined as a marker of security. Fifth, the relation of maternal attachment security to adolescent attachment security was considered. Finally, the extent to which identified markers of adolescent attachment security were redundant predictors versus additive predictors of distinct components of the variance in adolescent security was examined to develop a more comprehensive model of the relationship-based manifestations of attachment security in adolescence.

Method

Participants

Data for the analyses in this study were collected from 126 adolescents in 9th and 10th grade (64 male

and 62 female) and their mothers. The mean age of the adolescents was 15.9 years ($SD = .8$), with a range from 14 to 18 years. The self-identified racial or ethnic background of the sample was 62% European American, 37% African American, and 1% with other backgrounds. In our sample, 30% of adolescents were living with both biological parents. The median family income was \$25,000, with a range from less than \$5,000 to more than \$60,000, and parents' median education level was a high school diploma with some post-high school training, with a range from less than an eighth-grade education to completion of an advanced degree.

Adolescents were recruited through public school systems serving rural, suburban, and moderately urban populations. Ninth and 10th graders were selected for inclusion in the study based on the presence of at least one of four possible academic risk factors: failing a single course for a single marking period, any lifetime history of grade retention, 10 or more absences in one marking period, and any history of school suspension. These broad selection criteria were established to sample a sizable range of adolescents who could be identified from academic records as having the potential for future academic and social difficulties, including both adolescents who were already experiencing serious difficulties and those who were performing adequately with only occasional, minor problems. As intended, these criteria identified approximately one half of all 9th- and 10th-grade students as eligible for the study.

Procedure

After adolescents who met study criteria were identified, letters were sent to each family of a potential participant explaining the investigation as an ongoing study of the lives of teens and families. These initial explanatory letters were then followed by phone calls to families who indicated a willingness to be contacted. If both the teen and the parent(s) agreed to participate in the study, the family was scheduled to come to our offices for two 3-hour sessions. Families were paid a total of \$105 for participation. At each session, active, informed consent was obtained from parents and teens. In the initial introduction and throughout both sessions, confidentiality was assured to all family members, and adolescents were told that their parents would not be informed of any of the answers they provided. Participants' data were protected by a Confidentiality Certificate issued by the U.S. Department of Health and Human Services, which pro-

tected information from subpoena by federal, state, and local courts. Transportation and child care were provided if necessary.

Measures

Adult Attachment Interview and Q-set. This structured interview (George, Kaplan, & Main, 1996; Kobak et al., 1993) probes individuals' descriptions of their childhood relationships with parents both in abstract terms and with requests for specific supporting memories. For example, participants were asked to list five words describing their early childhood relationships with each parent and to describe specific episodes that reflected those words. Other questions focused on specific instances of upset, separation, loss, trauma, and rejection. Finally, the interviewer asked participants to provide more integrative descriptions of changes in relationships with parents and the current state of those relationships. The interview consisted of 18 questions and lasted 1 hour on average. Slight adaptations to the adult version were made to make the questions more natural and easily understood for an adolescent population (Ward & Carlson, 1995). Interviews were audiotaped and transcribed for coding.

The Adult Attachment Interview (AAI) Q-set (Kobak et al., 1993) was designed to parallel the Adult Attachment Interview Classification System (Main & Goldwyn, 1998) but to yield continuous measures of qualities of attachment organization. Each rater read a transcript and provided a Q-sort description by assigning 100 items to nine categories ranging from most to least characteristic of the interview, using a forced distribution. All interviews were blindly rated by at least two raters with extensive training in both the Q-sort and the Adult Attachment Interview Classification System.

These Q-sorts were then compared with a dimensional prototype sort for secure versus anxious interview strategies, reflecting the overall degree of coherence of discourse, the integration of episodic and semantic attachment memories, and a clear objective valuing of attachment. The individual correlation of the 100 items of an individual's Q-sort with a prototype sort for a maximally secure transcript was then used as that participant's scale security score (ranging from -1.00 to 1.00). The Spearman-Brown interrater reliabilities for the final security scale score were .84 and .85 for adolescents and their mothers, respectively. Although this system was designed to yield continuous measures of qualities of attachment organization, rather than to replicate classifications from the Main and

Goldwyn (1998) system, we also compared the scores we obtained with a subsample ($n = 76$) of adolescent AAIs that were classified by an independent coder with well-established reliability in classifying AAIs (U. Wartner). We did this by converting the Q-sort scales described earlier into classifications using an algorithm described by Kobak et al. (1993). Using this approach, we obtained an 84% match for security versus insecurity between the Q-sort method and the classification method ($\kappa = .68$).

Maternal attunement to adolescent self-perceptions. In this measure, we assessed how well mothers understood their adolescents' self-perceptions by asking them to estimate their adolescents' actual responses to a widely used self-perception profile. Adolescents first completed 8 of the 9 scales (40 items) of the 45-item Adolescent Self-Perception Profile (the job competence scale was omitted; Harter, 1988). For each item, two sentence stems were presented side by side, for example: "Some teenagers find it hard to make friends," but "For other teenagers it's pretty easy." Adolescents were asked to decide which stem best described them and whether the statement was "sort of true" or "really true" for them. This measure yielded scales for adolescents' perceived scholastic and athletic competence, social acceptance, romantic appeal, behavioral conduct, physical appearance, close friendship competence, and overall self-worth. The overall positivity of adolescents' self-perceptions, which was used as a covariate in some analyses, was obtained by taking the mean of the 40 items that were the basis for the individual scales described earlier (Cronbach's $\alpha = .92$).

Mothers were then instructed to complete the same measure of Adolescent Self-Perceptions as closely as possible to how they thought their teen would fill out the measure, as a marker of the accuracy of their understanding of their teens' likely reported self-perceptions. For each item, the absolute magnitude of mothers' errors in their predictions of their adolescents' responses was tallied (ranging from 0 to 3 points of error for each item). These errors were then summed and averaged to yield a total error score. We then reverse scored this average error score (by subtracting it from 3) to yield a measure of maternal attunement to adolescent self-perceptions. The mean score for attunement, 2.18 (of a possible 3), thus indicated that on average, mothers misestimated their teens' scores by 0.82 points (of a possible 3-point range of error). This attunement measure displayed good internal consistency (Cronbach's $\alpha = .83$).

Adolescent deidealization of mother. Deidealization was assessed using the Mother-Father-Peer Scale (Epstein, 1983). This measure uses 5-point Likert items to assess perceived qualities of the adolescent's relationship with mother, father, and peers. This study used scales from this instrument with respect to the relationship with mother. Deidealization was assessed from seven items assessing presence or absence of unrealistically positive views of the childhood relationship with mother. Participants indicated the extent to which they agreed or disagreed with statements such as, "When I was a child, my mother was an ideal person in every way." These items were then summed (with stronger disagreement with idealized statements receiving higher scores) and averaged to yield a measure of adolescent deidealization of their mothers. Internal consistency for this measure was high (Cronbach's $\alpha = .82$).

Maternal supportiveness. This measure was obtained by standardizing and averaging the z scores of scales from two measures that tap related aspects of the overall quality of the mother-adolescent relationship. The Mother-Father-Peer Scale (Epstein, 1983) uses 10 items similar in format to those described earlier to assess maternal acceptance (e.g., "When I was a child, my mother gave me the feeling that she liked me as I was; she didn't feel she had to make me over into someone else."). Two scales from the Inventory of Parent and Peer Attachment (Armsden & Greenberg, 1987) were used to assess adolescents' perceptions of the quality of communication and trust in their relationship with their mothers, each of which was assessed with eight 5-point Likert items. In spite of its title, this measure is not considered a proxy for security of attachment organization and displays only a very weak relationship to other indices of attachment organization when considered in isolation (Crowell, Treboux, & Waters, 1993). The internal consistency of the sum of these three scales (acceptance, communication, and trust) was high (Cronbach's $\alpha = .87$).

Relationship-maintaining behavior during disagreements. Adolescents and their mothers participated in a revealed-differences task in which they discussed a family issue about which they disagreed. Typical topics of discussion included money (19%), grades (19%), household rules (17%), friends (14%), and brothers and sisters (10%); other possible areas included communication, plans for the future, alcohol and drugs, religion, and dating. These interactions were videotaped and then transcribed.

Both the videotapes and transcripts were used to code the mother-adolescent interactions for beha-

vivors exhibiting autonomy using the Autonomy and Relatedness Coding System (Allen, Hauser, Bell, McElhaney, & Tate, 1998). Concrete behavioral guidelines were used to code both mothers' and adolescents' individual speeches on 1 or more of 10 subscales. This study assessed the 2 positive overall scales derived from this system. The Displaying Relatedness scale captures validating statements and displays of engagement and empathy with the other party and their statements. The Displaying Autonomy scale captures behaviors in which the adolescent or mother present their reasoning underlying their disagreement in a confident, not shrill, manner. Each scale is coded separately for mothers' and adolescents' behaviors. Given our interest in assessing dyadic-level processes and the high correlation between relatedness scales (correlation between mothers' scores and adolescents' scores = .60, $p < .0001$), maternal and adolescent codes were combined (after standardizing) for the Displaying Relatedness scale. However, mothers' versus teens' behaviors displaying their own autonomy were considered less conceptually interrelated (displaying one's own autonomy does not necessarily enhance the other person's autonomy in the relationship), and their scores were far less strongly correlated ($r = .28$, $p < .01$); hence, these scales could not be combined across mothers and teens and were kept separate.

Two trained coders coded each interaction and their codes were then summed and averaged. Interrater reliability was calculated using intraclass correlation coefficients as $r = .86$ for dyadic displays of positive relatedness, and $r_s = .88$ and $.82$ for adolescent and maternal displays of autonomy,

respectively, all of which are considered in the excellent range for this coefficient (Cicchetti & Sparrow, 1981). Past research using this coding system has found it to be a reliable predictor of both family and adolescent functioning (Allen, Hauser, Bell, et al., 1994; Allen, Hauser, Eickholt, Bell, & O'Connor, 1994). Although some earlier research combined scales for displaying autonomy and displaying relatedness, more recent work has shown the value of examining the scales as well (Allen et al., 2002; McElhaney & Allen, 2001).

Results

Preliminary Analyses

Means and standard deviations for all substantive variables are presented in Table 1. Initial analyses examined the role of gender, racial or ethnic minority status, and family income on the primary measures examined in the study. Numerous main effects were found for gender, racial or ethnic minority status, and family income on the various predictor and outcome variables used in this study. These demographic factors are thus included in all primary analyses reported next. We also examined possible moderating effects of these demographic factors on each of the relationships described in the primary analyses next. No such moderating effects were found.

Primary Analyses

The hypotheses of this study were addressed with both simple correlational analyses, assessing each of

Table 1
Means and Standard Deviations of Attachment, Mother-Adolescent Relationship, and Demographic Variables

	<i>M</i>	<i>SD</i>
Adolescent attachment security (I)	.24	.39
Maternal attachment security (I)	.27	.36
Maternal attunement to teen (T)	2.18	.28
Maternal supportiveness (A)	.00	1.00
Dyadic relatedness (O)	.00	1.00
Adolescent autonomy (O)	1.93	.89
Maternal autonomy (O)	2.69	.70
Adolescent deidealization (A)	2.70	2.43
Family income	\$32,659	\$20,417
Adolescent gender	64 Males 50.8%	62 Females 49.2%
Adolescent racial/ethnic minority status	48 Minority (38.1%)	78 Nonminority (61.9%)

Note. I = coded from interviews; T = assessed via test; A = adolescent reported; O = observed.

Table 2
Univariate Correlations Among Attachment and Relationship Measures

	Maternal security	Maternal attunement	Maternal supportiveness	Dyadic relatedness	Adolescent autonomy	Maternal autonomy	Adolescent deidealization
Adolescent attachment security	.21*	.35***	.32***	.33***	.14	-.03	.34*
Maternal attachment security		.03	-.03	.34***	.35***	.08	.33*
Maternal attunement			.06	.16	.22**	-.00	.20*
Maternal supportiveness				.15	-.04	.03	-.28*
Dyadic relatedness					.46***	.28***	.15
Adolescent autonomy						.28***	.21*
Maternal autonomy							.06

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 3
Partial Correlations Among Attachment and Relationship Measures (Partialling for Gender, Income, and Racial/Ethnic Minority Status)

	Maternal security	Maternal attunement	Maternal supportiveness	Dyadic relatedness	Adolescent autonomy	Maternal autonomy	Adolescent deidealization
Adolescent attachment security	.04	.25***	.41**	.20*	-.04	-.05	.20*
Maternal attachment security		-.11	-.02	.20*	.22*	.06	.18*
Maternal attunement			.11	.04	.09	-.01	.09
Maternal supportiveness				.20*	-.02	.04	-.28**
Dyadic relatedness					.36***	.26**	-.04
Adolescent autonomy						.27**	.06
Maternal autonomy							.20*

* $p < .05$.

** $p < .01$.

*** $p < .001$.

the hypothesized correlates of adolescent attachment security individually (with and without demographic controls), and with multivariate analyses considering the hypothesized mechanisms by which these correlates might act together to predict adolescent attachment security.

Correlational analyses. For descriptive purposes, Table 2 presents the results of simple univariate correlations among the key variables of interest in the study. Notably, there are numerous correlations with adolescent attachment security (among both family relationship measures and demographic factors) and a small, but significant degree of concordance between maternal and adolescent attachment security. The one construct not related to adolescent attachment security was adolescents' or parents' displays of autonomy while disagreeing.

Table 3 presents these same correlations, partialling for adolescents' gender, racial or ethnic minority status (dummy coded), and total family income. Although maternal attachment security was no longer significantly related to adolescent attachment

security after partialling for the effects of demographic factors, and was still not related to autonomy behaviors in the dyad, each of the other hypothesized predictors displayed a significant univariate relation to adolescent attachment security in the hypothesized direction. Specifically, adolescents' reports of maternal supportiveness, adolescents' deidealization of their mothers, maternal attunement to the adolescent's self-perceptions, and displays of relatedness in the midst of disagreements were positively related to adolescent security. Neither adolescents' nor mothers' displays of their own autonomy were related to adolescent security.

Regression analyses. Regression analyses were used to address specific hypotheses about the interrelation of markers of the quality of the mother-adolescent relationship as predictors of adolescent attachment security.

Is maternal attunement more than a proxy for adolescent self-perceptions? In assessing maternal attunement using the test-based measure employed in this study, one question that arises is whether the

Table 4

Predicting Adolescent Attachment Security From Maternal Attunement to Adolescent Self-Perceptions (Controlling for Both Demographic Factors and Overall Positivity of Adolescents' Self-Perceptions)

	β	Adolescent attachment security	
		ΔR^2	Total R^2
Step 1			
Gender (1 = M; 2 = F)	.16		
Race (1 = White; 2 = African Amer.)	-.29**		
Family income (age 16)	.14		
		.17***	.17***
Step 2			
Overall Positivity of Adolescent Self-Perceptions	.15+	.02+	.19***
Step 3			
Maternal attunement to adolescent self-perceptions	.25**	.05**	.24***

Note. β weights are from variable's entry into model. Model $N = 122$.

* $p < .05$.

** $p < .01$.

*** $p < .001$. + $p < .10$.

Table 5

Predicting Adolescent Attachment Security From Adolescents' Perceptions of Positive Maternal Supportiveness and Adolescent Deidealization of Mother (Controlling for Demographic Factors)

	β (final model)	Adolescent attachment security		ΔR^2	Total R^2
		β (if each variable at Step 2 is entered alone)	ΔR^2 (if each variable at Step 2 is entered alone)		
Step 1					
Gender (1 = M; 2 = F)	.17*				
Race (1 = White; 2 = African Amer.)	-.29**				
Family income (age 16)	.18				
				.20***	.20***
Step 2					
Adolescent deidealization of mother	.30***	.20*	.02*		
Maternal supportiveness	.44***	.41***	.13***		
				.20***	.40***

Note. β weights are from variable's entry into model. Model $N = 118$.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

measure may simply be capitalizing on an underlying relationship between adolescent self-perceptions and attachment security. As Table 4 indicates, analyses of the overall positivity of adolescent self-perceptions revealed only a trend toward a relation with adolescent security when entered into a regression model following demographic factors. When the overall positivity of adolescent self-perceptions was entered before the maternal attunement measure as a predictor of adolescent security, the maternal attunement measure remained a clear predictor of adolescent attachment security. These findings indicate that maternal attunement is not simply a proxy for adolescent self-perceptions in its relation to adolescent security.

Conjoint effect of adolescent deidealization and reported maternal supportiveness. Although initial correlations and partial correlations evidenced clear relations of adolescent security to both adolescent deidealization and adolescent reports of maternal supportiveness, it was hypothesized that these two constructs would be most likely to predict adolescent security when examined in combination. Table 5 presents the results of a regression model in which maternal supportiveness and adolescent deidealization were both entered simultaneously into a model predicting adolescent security, after first entering demographic controls. Table 5 also presents columns for comparison purposes providing the β weights and ΔR^2 for each predictor variable in Step 2 if it was

Table 6

Predicting Adolescent Attachment Security From Maternal Attachment Security, Adolescents' Perceptions of Positive Maternal Supportiveness, and Adolescent Deidealization of Mother

	Adolescent attachment security		ΔR^2	Total R^2
	β (entry)	β (final)		
Step 1				
Maternal security	.19*	.01	.04*	.04*
Step 2				
Dyadic relatedness while disagreeing	.27**	.27**		
Adolescent deidealization of mother	.29**	.29**		
			.15***	.19***

Note. Model $N = 118$.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

considered in isolation from the other variable in Step 2 in the model (i.e., the β and ΔR^2 for deidealization considered alone and the β and ΔR^2 for supportiveness considered alone).

Comparison of the β s from the simultaneous model with β s from the model when each variable was considered in isolation indicates that for both constructs, the inclusion of the other construct in the model increased the strength of its relation to adolescent security. Examination of the ΔR^2 s from the model considering each variable in isolation and the model examining their joint prediction indicates that a substantial increment in ΔR^2 (5%) is provided by examining these two predictors together versus in isolation. This finding, as hypothesized, reflects a modest suppressor effect in which the relation of maternal supportiveness to adolescent security becomes greater when the effect of any adolescent idealization or deidealization of mothers is taken into account. Alternatively, this effect could also be interpreted as indicating that the effects of adolescent deidealization are more powerful to the extent that deidealization is examined in the context of whether the overall relationship is viewed positively—deidealization may be less meaningful in a relationship that is so deeply flawed that recognizing its flaws says little about the adolescent's state of mind.

Mediators of the link between maternal and adolescent attachment security. Although the relation of maternal to adolescent attachment security was only significant before controlling for demographic effects, previous interest in this concordance has been sufficient that this study considered possible mediators of the absolute concordance (not accounting for demographic factors) of maternal and adolescent security. Table 6 presents results of an analysis in

which maternal security is entered first into a regression equation, followed by the two relationship constructs with which it was correlated—dyadic displays of relatedness in the face of disagreements and adolescent deidealization of mothers. These results indicate that when dyadic relatedness and adolescent deidealization are entered into the model, they are both significant predictors, but that the effect of maternal security as a predictor falls to near zero and becomes nonsignificant. These results meet all of the formal criteria outlined by Baron and Kenny (1986) for stating that the relation of maternal security to adolescent security is mediated by displays of relatedness when discussing disagreements and by adolescent deidealization of mothers.

Are the identified markers of adolescent security redundant versus unique contributors to explaining variance in adolescent security? This question was addressed with hierarchical regression analyses to examine the extent to which the different identified markers of mother-adolescent relationship quality contributed independent versus redundant variance to explaining adolescent security, and to provide an estimate of the percentage of the total variance in adolescent security that could be explained by these relationship markers. In this analysis, demographic factors were entered first, followed by measures ordered from the most observational to the most self-report in nature (i.e., placing those with the least methodological similarity to the AAI first). Thus, demographic measures were followed by displays of dyadic relatedness, maternal attunement, maternal supportiveness, and adolescent deidealization, each entered sequentially, as described in Table 7. Notably, each relationship index contributed additional variance to explaining adolescent security,

Table 7
Predicting Adolescent Attachment Security From Multiple Indicators of Adolescent–Mother Relationship

	Adolescent attachment security		ΔR^2	Total R^2
	β (entry)	β (final)		
Step 1				
Gender (1 = M; 2 = F)	.16	.16		
Race (1 = White; 2 = African Amer.)	–.28**	–.11		
Family income (age 16)	.06	.10		
			.19***	.19***
Step 2				
Dyadic relatedness while disagreeing	.23**	.14+	.04**	.23***
Step 3				
Maternal attunement to teen self-perceptions	.22**	.16*	.04**	.27***
Step 4				
Maternal supportiveness	.34***	.41***	.10***	.38***
Step 5				
Adolescent deidealization of mother	.30***	.30***	.06***	.44***

Note. Model $N = 115$.

* $p < .05$.

** $p \leq .01$.

*** $p \leq .001$. + $p < .10$

which resulted in a strong overall prediction of adolescent security, accounting for 43% of the variance in this measure (a 24% improvement over what could be predicted by demographic factors alone). Even in the final simultaneous model, all relationship predictors remained, although the measure of dyadic relatedness was significant only at the trend level after accounting for other predictors.

Because the magnitude of this relation raises the possibility that these relationship markers might serve as proxies for attachment interview assessments under some conditions, analyses next assessed the absolute concordance (i.e., without accounting for demographic factors) between these markers and security. All four indicators significantly contributed in this model (not presented in table form) and combined to account for 40% of the variance. Even allowing for shrinkage given multiple predictors, the adjusted R^2 for these four predictors was just more than 37% of the variance in adolescent security, equivalent to $R = .61$.

Exploratory overall model of predictors of adolescent security. The final analysis performed was an exploratory structural equation model that simultaneously examined demographic factors, the relationship variables of interest and maternal security in predicting adolescent security. The model was analyzed using MX Statistical Modeling software (Neale, Boker, Gie, & Maes, 1999) and used likelihood-based estimates for confidence intervals, which are considered more accurate than standard error-based estimates (Neale & Miller, 1997). This

model is presented in Figure 1. Because data were obtained cross-sectionally, this model tested only one of many possible competing causal models and is presented as descriptive and illustrative, rather than as evidence to support causal interpretations. The model depicted considered the four secure-base markers examined as manifestations of a latent secure-base construct, which was strongly related to adolescent security. Demographic factors were considered as most likely to operate via their relationship to maternal security and maternal–adolescent relationship variables. Maternal security was examined as potentially operating via influences on adolescent deidealization and displays of relatedness in the face of disagreements. The model fit the data well by conventional indices (RMSEA = .043, $\chi^2 = 24.22$, $p > .23$). This fit does not definitely establish the presence of causal relations among the variables, but did suggest that the model adequately summarized the data and that the potential causal relations outlined were not inconsistent with the data.

Discussion

This study found attachment security in adolescence to be manifest in a mother–adolescent relationship that can best be described as an adolescent analogue to the secure-base phenomenon observed in secure infant–parent relationships. Secure adolescents were characterized by their ability to autonomously evaluate their relationships with their mothers and

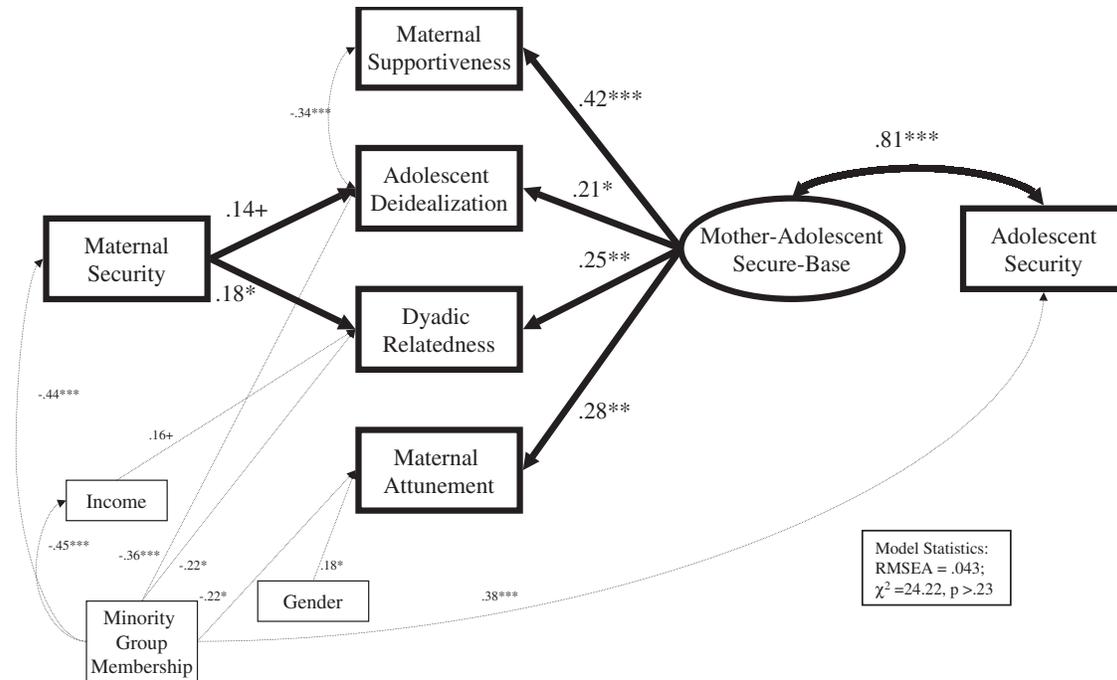


Figure 1. Structural model illustrating potential mediated pathways connecting adolescent security to family characteristics.

to amicably discuss disagreements in the context of relationships characterized by maternal attunement and supportiveness. Said differently, adolescents were able to explore their intellectual and emotional independence and autonomy from the secure base of a high degree of positive relatedness with their mothers. This process of establishing autonomy in intellectual terms from the secure base of a well-regarded, well-maintained relationship with an attuned parent appears highly analogous to the infant’s process of exploring physical independence from the secure base of a sensitive, responsive attachment figure.

Multiple markers of this secure-base phenomenon, assessed via interview, observational, test-based, and self-report measures, were found to be substantial and largely nonredundant contributors to explaining a sizable percentage of the variance in adolescent attachment security. Given the extensive and growing body of findings that adolescent attachment security is linked to adaptation at the intrapsychic, familial, and extrafamilial levels (Allen, Moore, et al., 1998; Hauser, Gerber, & Allen, 1998; Kobak et al., 1991; van Ijzendoorn & Bakermans-Kranenburg, 1996), these findings begin to develop a needed picture of the ways in which this security is manifest within a primary attachment relationship during adolescence. Next, each of the identified relationship markers of adolescent security is first considered for its individual meaning, followed by

discussion of the implications of the conjoint operation of these relationship markers for our understanding of attachment security.

Maternal attunement to adolescent self-perceptions was found to be robustly predictive of adolescent security, even after accounting for demographic factors and the other relationship markers examined. This study developed a test-based approach by assessing maternal attunement in terms of the accuracy of mothers’ estimates of their teens’ reported self-perceptions. This approach provides a face-valid and relatively precise answer to the question: “How well does a mother understand her teen’s perceptions of himself or herself?” Such knowledge appears likely to be critical if the mother–adolescent relationship is to serve as a secure base for the adolescent’s exploration of independent thought and discourse. This attunement may help mothers avoid inadvertently stumbling across the adolescent’s “weak spots” during disagreements. For example, a negotiation about time spent with friends versus time spent with family may be far more threatening and require more maternal sensitivity for an adolescent who feels unable to make friends easily. A mother who understands her adolescent’s self-perceptions in this arena will be positioned to handle disagreements about these issues with far greater tact and sensitivity.

Maternal attunement also likely reflects that the adolescent feels secure enough with his or her

mother to let her be aware of his or her self-perceptions—attunement isn't possible without at least some adolescent communicativeness. In this study, predictions from attunement were also observed beyond predictions from the overall positivity of adolescents' self-perceptions. For attachment purposes, the nature of the adolescent's self-perceptions mattered far less than whether the adolescent's mother was aware of those perceptions. The technique employed to assess attunement was developed specifically for this study, but it has potential application for assessing other relationships at other points in the lifespan (e.g., marital interactions). Even in infancy, for example, it might be useful to assess the accuracy of parents' predictions of their infant's behavior in emotionally salient situations (Thompson, 1997).

A second way in which the adolescent secure base was linked to adolescent attachment security was via secure adolescents' deidealization of their mothers. Notably, this deidealization did not appear to be part of a wholesale rejection or even an overall negative view of the mother-adolescent relationship. Rather, secure teens were also characterized by their reports of greater supportiveness from their mothers. Furthermore, a modest suppressor effect appeared when these two measures were used simultaneously to predict security: Adolescent deidealization of mothers displayed a stronger association with adolescent security when maternal supportiveness was taken into consideration. This can be seen as one manifestation of the ability to explore views that may differ from those of one's parent (e.g., seeing their faults) while maintaining the secure base of a close relationship with that parent. Although self-reports have a weak history in efforts to assess attachment states of mind (Crowell, Fraley, et al., 1999), data from this study suggest that these reports may be of greater use if the reporter's level of idealization or deidealization is taken into account. Findings regarding deidealization in this study also likely reflect the similarity of this construct to the quality of idealization of attachment figures used in identifying insecure-dismissing individuals in the AAI (Main & Goldwyn, 1998). Nonetheless, this study suggests that deidealization may now be assessed via a simple self-report instrument in a way that links it to attachment security and that may strengthen the linkages of other self-report measures to attachment security.

Adolescent security was also associated with mothers' and adolescents' displays of relatedness while discussing a significant area of disagreement. One interpretation of this finding is that these

displays reflect an explicit mechanism by which the secure base may be established and supported in adolescence. Secure adolescents may be most free to explore their autonomy in disagreements, with the knowledge that both they and their mothers can work together to maintain their relationship while disagreeing. This finding can be interpreted as evidence that one marker of adolescent security is the goal-corrected partnership in which each member of the dyad works to maintain certain mutual set-goals (e.g., maintaining positivity in their relationship), particularly when such set-goals are challenged, for example, by discussion of a disagreement. It should be noted that the dyadic relatedness measure did not simply focus on the overall quality of positivity or negativity in parent-adolescent interactions, but rather on a discrete set of relationship-maintaining behaviors that occur in response to adolescent autonomy strivings (Allen, Hauser, Bell, et al., 1994). This approach thus bears a significant functional resemblance to the infant strange-situation procedure, in which the attachment relationship is assessed in terms of relationship-maintaining behaviors following the stressor of a challenge to the relationship (i.e., a separation). Past research has found that in contrast to the findings of the focused assessment of interactions in this study, more global ratings of positivity or negativity in the parent-teen relationship do not appear clearly linked to attachment security (Beckwith et al., 1999).

In some respects, the most striking finding of this study was not of the individual predictors of attachment security, but of the additivity across predictors. Each predictor contributed unique variance to explaining adolescent security, and as a result, these multiple indicators of a secure-base relationship between adolescents and their mothers combine to predict an impressive degree of the variance in teen security. In analyses assessing the simple concordance between security and secure-base phenomenon (i.e., not considering demographic effects), these four measures combined to predict 40% of the variance in teens' attachment security ($R = .63$). This is particularly striking given that the attachment measure itself was coded with a reliability of only $r = .84$, which creates a logical upper bound on any correlations that may be observed. These findings address questions about the salience of the maternal relationship in mid- to late-adolescence (Allen & Land, 1999) by indicating that the adolescent's attachment security remains strongly and integrally linked to the maternal relationship during this period. Although further refinement and replication of these constructs would

first be required, the approach used in this study might ultimately serve as the beginnings of an efficient alternative means of assessing attachment processes in adolescence (given that all of the measures used in this study can be administered and scored or coded in less than 2 hr of total time). Such an approach, in conjunction with continued use of the AAI, could aid in strengthening the nomothetic net of related measures and constructs that supports attachment research during this phase of the lifespan.

Mothers' attachment security bore a small absolute relationship to teen security, although this relationship became insignificant in some analyses when demographic factors were entered into predictive models. The mother-teen concordance in attachment security observed in this study was strikingly smaller than concordances observed in research on maternal and infant attachment (van Ijzendoorn, 1995). One obvious explanation is that unlike in infancy, where attachment is assessed directly in terms of the mother-infant relationship, adolescent security was assessed not as a dyadic property, but rather as a state of mind regarding attachment experiences in general (Main et al., 1985). Thus, other relationships, with fathers, older siblings, therapists, and perhaps even close friends, all appear likely to influence this state of mind over time (Cassidy & Kobak, 1988; Thompson, 1999). This explanation is not entirely satisfying, however, as the remainder of findings from this study make clear just how closely tied adolescent security is to the mother-adolescent relationship. One further explanation of the relatively low concordance between maternal and adolescent attachment security is that the qualities of maternal attachment system may be fairly distinct from those of the maternal caregiving system, particularly when it comes to parenting adolescents (George & Solomon, 1999). Said differently, infants may evoke strong feelings from mothers that activate their attachment system as it is assessed via the AAI. Adolescents clearly also arouse strong feelings in their mothers, but these feelings and the challenges they create are in all likelihood different from those aroused by caring for infants. The resulting interactions are clearly closely linked to the adolescent's attachment system, but may be more strongly linked to maternal systems other than the attachment system, such as systems involving caregiving, assertion and rule setting, and so on (George & Solomon, 1999). The findings of this study suggest there may be important facets of mothers' orientations toward parenting their adolescents that are observable in their interactions with

their adolescents, but that extend beyond what is directly assessed in their own AAIs.

The final structural model tested in this study, though not designed to establish the direction of any causal influences, indicates that data from this study were at least consistent with a model in which maternal security is influenced by demographic factors and in turn influences adolescent security indirectly by permitting adolescent deidealization and maintenance of the relationship during discussion of disagreements. These findings are consistent with the results of several studies that have found that parental security predicts qualities of parenting at other stages in the lifespan (Cohn, Cowan, Cowan, & Pearson, 1992; Crowell & Feldman, 1988; Das Eiden, Teti, & Corns, 1995; Pederson, Gleason, Moran, & Bento, 1998). These models suggest that one could view maternal security as operating in a very modest way on adolescent security by allowing the mother to provide a safe relationship from which the adolescent could progress in the task of deidealizing his or her mother. Further longitudinal research is needed to explore more fully the potential causal implications of such a model.

Consistent with the limits of its correlational methods, this study does not take a stance with respect to the nature of any causal relation between the secure-base phenomenon observed and attachment security. It appears equally plausible that security may lead to secure-base phenomenon, that secure-base phenomenon may lead to or heighten adolescent security, or that other overarching qualities of the mother-adolescent relationship produce both security and secure-base phenomenon. Although longitudinal research can begin to tease apart some of these possibilities, it seems most sensible at this point to consider both interview-based assessments of attachment states of mind and multimethod assessments of secure-base phenomenon in the mother-adolescent relationship as simply being different manifestations of the same underlying process. From that perspective, the major contribution of this study is to help delineate the specific relational mechanisms consistent with secure-base theory, through which attachment security is manifest in late adolescence. Given the extensive evidence that attachment security is linked to psychosocial functioning in adolescence and to parenting of the next generation of offspring, it remains for future studies to assess how these relational mechanisms may mediate links between attachment and functioning, and how they may evolve as adolescents move into new close relationships and parenting relationships in adulthood.

Although this study advances our understanding of the relation of attachment security to markers of an ongoing secure-base relationship between mother and adolescent assessed using multiple methods—including tests, observations, and self-reports—there is nonetheless a number of limitations to these findings that bear consideration. First, because this study sought to assess relations of attachment to social functioning in a moderately at-risk sample, for whom differences in levels of functioning would be most likely to be meaningful, the results cannot be generalized to other populations without further replication. This caveat applies particularly to any efforts to interpret demographic effects observed in these data. Although demographic effects were substantial in some cases, they may well reflect sample-selection effects, or they may simply serve as epiphenomena that carry the effects of other unmeasured environmental factors (e.g., parental stress, effects of racism, etc.). Although this study in general took the most conservative approach of removing these effects analytically in most analyses, it is possible that this approach also removed meaningful variance related to these unmeasured environmental factors. To the extent that this was the case, the analyses presented that did not account for demographic factors would be more useful to consider. Second, to the extent that adolescent security is derived from experiences in multiple-attachment relationships, understanding the role of other such relationships, such as the paternal relationship—which several studies suggest becomes increasingly important in adolescence (Phares, 1992; Phares & Compas, 1992)—will be important for future research to explore. Finally, the Q-sort attachment methodology employed in this study, though clearly empirically linked to classifications using the Adult Attachment Interview Classification System, did not allow assessment of insecure/unresolved classifications. This does not invalidate the present findings, as unresolved attachment organization is a superordinate classification that coexists with an otherwise secure, dismissing, or preoccupied attachment organization. It does suggest, however, that future studies might explore the role of this additional aspect of attachment organization in terms of its manifestations within the parent–adolescent relationship.

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