

Attachment and Autonomy as Predictors of the Development of Social Skills and Delinquency During Midadolescence

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This study examined adolescent attachment organization as a predictor of the development of social skills and delinquent behavior during midadolescence. Delinquent activity and skill levels were assessed for 117 moderately at-risk adolescents at ages 16 and 18, and maternal and adolescent attachment organization and autonomy in interactions were assessed at age 16. Adolescent attachment security predicted relative increases in social skills from age 16 to 18, whereas an insecure-preoccupied attachment organization predicted increasing delinquency during this period. In addition, preoccupied teens interacting with highly autonomous mothers showed greater relative decreases in skill levels and increases in delinquent activity over time, suggesting a heightened risk for deviance among preoccupied teens who may be threatened by growing autonomy in adolescent-parent interactions.

John Bowlby's (1969/1982) attachment theory has led to great strides in understanding the development of social behavior and psychopathology in infancy and early childhood, but the theory is only just beginning to be applied to adolescence. A broad array of findings including demonstrated continuities in attachment organization across the lifespan and across generations (Benoit & Parker, 1994; Hamilton, 2000; M. J. Ward & Carlson, 1995; Waters, Merrick, Treboux, Crowell, & Albersheim, 2000), long-term predictions from attachment organization to later psychosocial functioning (L. A. Sroufe, 1983; Urban, Carlson, Egeland, & Sroufe, 1991), and the possibility of altering attachment organization with intervention (van den Boom, 1994) suggest that attachment theory may potentially shed valuable light on adolescent social development and deviant behavior. This study examined two distinct roles of attachment organization in relation to developing social skills and delinquency during midadolescence: first, the role of *direct predictor* of changing levels of social skills and delinquent behavior, and second, the role of *moderator* of the link between the normative development of adolescent autonomy and adolescent skill development and deviance.

In adolescence, security of attachment organization is evaluated with the Adult Attachment Interview (Main & Goldwyn, 1998),

which assesses the internal coherence of the adolescent's current attachment-related memories, affects, and cognitions and the adolescent's realistic, positive expectations about attachment relationships. Adolescents are classified as "secure/autonomous" when they are able to describe attachment experiences in ways that are coherent, internally consistent, and appropriately balanced in recounting positive and negative features of those experiences.

Attachment organization for insecure adolescents may fall into one of several groups.¹ Adolescents who are insecure and preoccupied with attachment appear to become overstimulated or confused during the attachment interview. They also fail to attend to the normal expectations of social discourse, often lapsing into angry diatribes, irrelevant digressions, or vague and inconsistent descriptions of attachment experiences. These adolescents may or may not report conscious preoccupation with attachment figures, but their discourse and behavior appear organized to give heightened and disproportionate attention to attachment needs and experiences. They may, for example, focus excessive attention on anger over past slights by an attachment figure (Hesse, 1999). The intense dysfunctional anger that preoccupied individuals often display is linked to an increased risk of a range of problems in social functioning early in the lifespan (Ainsworth, Blehar, Waters, & Wall, 1978; Dozier, Stovall, & Albus, 1999; Rubin & Lollis, 1988). In adolescence, an insecure preoccupation with attachment experiences has been linked cross-sectionally to both lower levels of social competence and higher levels of deviant behavior (Allen,

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¹ In addition to the organized forms of attachment insecurity discussed, there is an additional form of insecurity reflecting *disorganized* or *disoriented* attachment surrounding loss or trauma that was not examined in this study.

Moore, Kuperminc, & Bell, 1998; Cooper, Shaver, & Collins, 1998).

In contrast, adolescents who are classified as “dismissing” of attachment are characterized by discourse that minimizes consideration of attachment-related experiences. An insecure-dismissing adolescent might, for example, derogate the importance of attachment experiences, profess inability to recall such experiences, or create idealized pictures of past experiences in which detailed memories are lacking. Among severely disturbed populations, insecure adolescents who are dismissing of attachment relationships have been found to be more likely to display conduct disorders, just as insecure avoidance has been linked to conduct problems in infancy and childhood (Allen, Hauser, & Borman-Spurrell, 1996; Fagot & Kavanagh, 1990; Rosenstein & Horowitz, 1996).

We hypothesized that attachment security would predict increasing social skills and decreasing levels of delinquency over time. A secure attachment organization should allow adolescents to process and integrate their experiences in social relationships more accurately and with greater sophistication (Cassidy, Kirsh, Scolton, & Parke, 1996). This in turn should allow the adolescent to better read the subtle emotional cues in interactions with peers and adults so as to develop increasingly sophisticated social skills over time. In contrast, insecure adolescents are more likely to misperceive or defensively exclude information about attachment experiences. This in turn may lead to distorted judgments and negative expectations about others—expectations that have been strongly linked to problems in social functioning (Cassidy et al., 1996; Dodge, 1993; Slough & Greenberg, 1990). For insecure-preoccupied adolescents, adolescent delinquency may be pursued as a crude form of attachment behavior in that it calls out for parental attention. Delinquency may thus serve to heighten the intensity of interactions with attachment figures, albeit in an angry, dysfunctional manner (Allen, Moore, et al., 1998). Such dysfunctional attachment behavior is a hallmark of the insecure-preoccupied organization earlier in the lifespan (Cassidy & Berlin, 1994). For insecure-dismissing adolescents, adolescent delinquency may result from rejection of the norms of attachment figures (i.e., parents) and of their efforts at behavioral control, given the tendency of dismissing adolescents to minimize the importance of attachment relationships (Allen, Moore, & Kuperminc, 1997; Gottfredson & Hirschi, 1990). Although cross-sectional links between insecurity and both delinquency and lack of social skills have been previously established, no research to date has examined whether the *development* of delinquent behavior or poor social skills during adolescence may be related to adolescents’ attachment organization.

In addition to its hypothesized direct relations to adolescent skills and deviance, attachment organization appears likely to moderate the influence of other primary developmental processes on adolescent social functioning (Fuhrman & Holmbeck, 1995; Greenberg, 1999; Holmbeck, 1996). The emergence of increasing autonomy in adolescent–parent interactions is one such primary developmental process that appears susceptible to disruption by attachment insecurity (Allen & Land, 1999; Ryan, Kuhl, & Deci, 1997). Although establishing autonomy in discussions with parents appears to be a positive developmental change for those adolescents with the social skills and emotional balance to handle it (Allen, Hauser, Bell, & O’Connor, 1994; Steinberg, 1990), under

adverse conditions, autonomy in interactions with parents may take on more negative characteristics (McElhaney & Allen, 2001).

This study examined the hypothesis that for insecure-preoccupied adolescents, the normative development of autonomy in interactions with parents will be particularly problematic. Earlier in the lifespan, the infant analogue to preoccupation with attachment relationships (insecure-resistant attachment) has been associated with very high levels of dysfunctional anger when separation from an attachment figure occurs (Ainsworth et al., 1978; Bretherton, Ridgeway, & Cassidy, 1990). In childhood, this attachment organization has been associated with perception of separations in distorted and threatening ways (L. A. Sroufe, Carlson, Levy, & Egeland, 1999). Yet the increasing autonomy that characterizes parent–teen interactions clearly represents an implicit separation in thoughts and feelings. In addition, increasing autonomy foreshadows the larger physical separation that occurs at the end of adolescence (Hill & Holmbeck, 1986). This autonomy is expected to be threatening to the preoccupied individual and to increase the likelihood of angry or dysfunctional behavior in response. For insecure-preoccupied adolescents who are unsettled by autonomy within the parent–teen relationship, delinquent behavior may both express their anxiety and frustration and also serve as an attempt, albeit dysfunctional, to maintain the intensity of the parent–teen bond.

Childhood research also provides additional support for the hypothesized moderating role of attachment preoccupation on the relation of autonomy to behavior problems. In childhood, poor behavioral control has been observed when the emotional overstimulation that characterizes an insecure-resistant attachment organization is combined with a reduction in parental constraints on child autonomy (Cassidy & Berlin, 1994; J. W. Sroufe, 1991; L. A. Sroufe, 1983). It appears that increased autonomy acts as a releasing agent for the overstimulated child’s pent-up energy and frustration, a process that may appear in analogous form for preoccupied adolescents facing increasing autonomy. In sum, existing research with infants and children suggests that the increasing autonomy of adolescence may threaten preoccupied adolescents, lead them to dysfunctional anger, and then release controls on their behavior. What would otherwise be a positive developmental event—increases in autonomy—appears more likely to create a risk for deteriorating behavioral control over time for this important subset of preoccupied adolescents.

Cowan (1997) argued persuasively for the need to take a family systems view of attachment phenomena, which further suggests that insecure preoccupation anywhere within the family system (e.g., in either adolescents or parents) may well lead to difficulties handling increasing autonomy within the parent–adolescent dyad. For example, insecurely preoccupied parents also might find adolescent autonomy strivings highly disturbing. The future separation implied by those strivings may greatly increase their own anxiety and anger and lead them to undermine their adolescent’s development. Similarly, insecurely preoccupied adolescents may be unable to handle their own autonomy within the family, or they may find autonomy demonstrated by parents to be particularly disruptive, given the separation it implies. Thus, this study examined autonomy and attachment organization in both adolescents and their parents so as to consider potential family systems effects in the data.

The idea that attachment and increasing autonomy might interact in such complex ways has been previously suggested (Fuhrman & Holmbeck, 1995; Holmbeck, 1996; Lamborn & Steinberg, 1993), but research on this topic has been limited by the lack of well-validated measures of adolescent attachment, by measures of autonomy processes based primarily on adolescent self-reports, and by the absence of research designs capable of examining development over time. Given the dramatically higher levels of deviant behavior that occur during adolescence as compared with other life stages (Moffitt, 1993), with this study we sought to begin to develop and test explanations for adolescent deviance that take into account the unique developmental demands of adolescence (e.g., an increased focus on autonomy), as these demands interact with individual adolescent vulnerabilities to lead to deviant behavior.

This study considered attachment organization and autonomy in adolescent–mother interactions as predictors of changes in levels of adolescent social skills and delinquent behavior over a 2-year period from age 16 to age 18. We first examined the hypothesis that adolescent attachment insecurity and in particular insecure preoccupation with attachment would predict relative deficiencies in social skill development as well as relative increases in delinquent activity over time. Next we examined the hypothesis of a moderating effect of a preoccupied attachment organization on adolescent-autonomy processes, in which the presence of high levels of autonomy in the parent–adolescent dyad would predict the development of weaker adolescent social skills and higher levels of delinquency over time for insecurely preoccupied adolescents. We further examined the hypothesis that for adolescents in families with insecurely preoccupied mothers, higher levels of adolescent autonomy in discussions would be associated with lower levels of adolescent skill development and increasing levels of delinquency. We assessed these hypotheses using a combination of observational, test, and self-report data within a moderately at-risk sample of midadolescents that was specifically targeted to allow hypotheses to be examined within a maximally meaningful range of psychosocial functioning (e.g., including substantial numbers of adolescents functioning both adequately and poorly).

Method

Subjects

Data for the analyses in this study were initially collected from 125 ninth and tenth graders (63 boys and 62 girls) and their mothers, 117 of whom were followed with complete data collection two years later. Adolescents were recruited through public school systems serving rural, suburban, and moderately urban populations. Ninth and tenth graders were selected for inclusion in the study on the basis of 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, or 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 already experiencing serious difficulties and those who were performing adequately with only occasional, minor problems. As intended, these criteria identified approximately half of all 9th- and 10th-grade students as eligible for the study. Of this preidentified at-risk group, approximately half agreed to participate in the study following an initial mailing with follow-up calls to those expressing interest. Complete data for the first wave of measures in this study was obtained from 125 individuals and their mothers.

The mean age of the adolescents at Time 1 was 15.9 years ($SD = 0.81$). The mean age at Time 2 was 18.1 years ($SD = 1.00$). The self-identified racial–ethnic background of the sample was 68% European American, 32% African American, and less than 1% other. The at-risk nature of the sample was seen demographically in that 30% of adolescents were living with both biological parents. The median family income was \$25,000 (range was from less than \$5,000 to greater than \$70,000), and parents' median education level was graduation from high school with some training post high school, with a range from less than an eighth-grade education to completion of an advanced degree. In terms of behaviors, the sample reported an average of 23.3 delinquent acts in the prior 6 months, with 62% of adolescents having been previously suspended from school at least once and 6% having been expelled from school at least once.

Of 125 adolescents included at Wave 1, 117 had all data (with exception of social skills data, discussed below) at Wave 2. Of the missing adolescents, only 2 refused participation at Wave 2 (return rate = 98.4%). Six additional adolescents were missing complete data on at least one measure (other than skills measures), yielding 93.6% complete data return rate, excepting skills data. Attrition analyses on these very small sample sizes revealed no significant differences for those returning versus refusing or for those with and without missing data on any of the baseline measures of demographic factors, social skills, or delinquency; parent or teen attachment measures; or family interaction measures. In addition, because of an equipment difficulty in the administration of the social skills measure, skills data at Time 2 were available for only 106 of the 117 individuals who otherwise had complete data; analyses of data on social skills thus proceeded with 106 adolescents. Analyses also indicated no differences between this group and the larger sample on any baseline measures in 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 further 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-hr 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 that protected information from subpoena by federal, state, and local courts. Transportation and childcare were provided if necessary.

Attachment interviews were administered to mothers and adolescents in the first session, along with assessments of adolescent problem behaviors. Assessments of adolescent social skills and autonomy in family interactions were obtained in the second session. This same procedure was followed at the second wave of data collection, which took place 2 years after the first wave.

Measures

Adult Attachment Interview (AAI) and Q Set. This structured interview (George, Kaplan, & Main, 1996; Kobak, Cole, Ferenz-Gillies, Fleming, & Gamble, 1993) was administered to both mothers and adolescents. It 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 then 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 hr on average. Slight adaptations to the adult version were made to make the questions more natural and easily understood for an adolescent population (M. J. Ward & Carlson, 1995). Interviews were audiotaped and transcribed for coding.

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

These Q sorts were then compared with three dimensional prototype sorts developed by a panel of attachment experts (Kobak et al., 1993): 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; preoccupied strategies, reflecting angry preoccupation with attachment figures or rambling and extensive but ultimately unfocused discourse about attachment experiences, suggesting a high degree of mental entanglement with attachment figures; and dismissing strategies, reflecting inability or unwillingness to recount attachment experiences, idealization of attachment figures that is discordant with reported experiences, and lack of evidence of valuing attachment. (A fourth prototype for deactivating versus hyperactivating strategies, representing the overall balance of dismissing and preoccupied styles, was not used in this study). The correlation of the 100 items of an individual's Q sort with the 100 items from the prototype sort for each dimension was then taken for each subject as that subject's scale score for that dimension (ranging from -1.00 to 1.00). These dimensions had been previously validated (Kobak et al., 1993) and found to capture classifications from the AAI Classification System with good accuracy. The Spearman-Brown interrater reliabilities for the final scale scores were .84, .89, and .82 for the secure, dismissing, and preoccupied scales, 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, when scale scores in this study were reduced to classifications (by simply using the largest Q-scale score above .20 as the primary classification; Kobak et al., 1993) and compared with a subsample ($n = 76$) of the adolescent AAIs classified by an independent coder with well-established reliability in classifying AAIs (Ulrike Wartner), 74% received identical codes ($\kappa = .56, p < .001$), and 84% matched in terms of security versus insecurity ($\kappa = .68$).

Autonomy and Relatedness Coding System. 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 behaviors 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 one or more of 10 subscales. Two of these subscales (stating reasons and exhibiting confidence) were combined to yield the Displaying Autonomy Scale, which was the scale of primary interest in this study (other scales capture elements of relatedness and of negative behaviors regarding autonomy and relatedness). The Displaying Autonomy Scale captures two aspects of the ways in which each member of a dyad handles the disagreement being discussed.

First, it captures the extent to which each individual presents the reasoning underlying his or her position. The scale focuses on the individual's use and presentation of a reasoned argument, rather than on the quality of reasoning being displayed. Second, this scale captures the degree of confidence displayed by each member during the discussion. As expected, these two subscales for displays of autonomy (reasoning and confidence) were significantly correlated ($r_s = .70$ and $.67$ for adolescents and mothers, respectively).

Two trained coders coded each interaction, and their codes were then averaged. Interrater reliability was calculated using intraclass correlation coefficients as $r = .86$, which is considered excellent (Cicchetti & Sparrow, 1981). Copies of this coding manual are available on request. 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 autonomy scale separately when focusing explicitly on autonomy issues in families (McElhaney & Allen, 2001).

Delinquency was measured with an instrument initially validated and normed in a longitudinal study of a national probability sample of adolescents (Elliott, Huizinga, & Menard, 1989). Delinquency was measured as the total number of times youths reported engaging in each of 37 nonoverlapping classes of illegal behavior (designed to assess all significant youth criminal behavior, except for drug use) during the previous 6 months. When obtained by sensitive interviewers who have first established rapport with interviewees, self-reports of problem behaviors have long been found (a) to correlate significantly with reports obtained from independent observers and official records, (b) to be adequately reliable, and (c) to eliminate systemic biases present in official records of deviant behavior (Elliott et al., 1989; Huizinga & Elliott, 1986).

Social skills of adolescents were assessed with a performance test of effectiveness and sophistication of social problem-solving strategies that was obtained by rating adolescents' responses to an inventory of nine hypothetical social dilemmas, drawn from the Adolescent Problem Inventory for Boys (Freedman, Rosenthal, Donahoe, Schlundt, & McFall, 1978) and the Problem Inventory for Adolescent Girls (Gaffney & McFall, 1981). We selected highly similar items from the boys' and girls' measures to maximize comparability across gender while retaining the properties of the original measures, a procedure with demonstrated validity (Allen, Leadbeater, & Aber, 1994; Kuperminc, Allen, & Arthur, 1996). Adolescents reported their most likely responses to the hypothetical dilemmas, which included conflicts with peers, parents, and other adults. Responses were audiotaped and then later scored for the overall effectiveness of the strategies and the level of sophistication of interpersonal negotiation strategies. The coding system for effectiveness of strategies was developed by the authors of these measures, and extensive reliability and validity data have been reported on both the male and female measures, including consistent findings of links to delinquent behavior and to predictions of changing levels of deviance, even among high-risk youth (Allen, Leadbeater, et al., 1994; Freedman et al., 1978; Hunter & Kelley, 1986; C. I. Ward & McFall, 1986). Two trained raters reliably coded the effectiveness of each adolescents' strategies (intraclass correlation = $.94$) on 9-point scales (0 = *least effective*; 8 = *most effective*). Raters' scores were averaged for each item, and item scores were averaged across situations to construct an overall score across this inventory of challenging situations.

Results

Preliminary Analyses

Means and standard deviations for all substantive variables are presented in unstandardized form in Table 1. Distributions of all variables were first examined for adherence to distributional as-

Table 1
Means and Standard Deviations of Attachment, Autonomy, Skill, and Delinquency Variables

Variable	<i>M</i>	<i>SD</i>
Teen attachment security	0.24	0.39
Teen attachment preoccupation	0.05	0.22
Teen attachment dismissal	0.12	0.40
Maternal attachment security	0.27	0.36
Maternal attachment preoccupation	0.13	0.23
Maternal attachment dismissal	0.03	0.35
Teen display of autonomy	1.93	0.90
Maternal display of autonomy	2.69	0.70
Teen social skills at age 16	4.61	1.17
Teen social skills at age 18	4.50	1.08
Teen delinquency at age 16 (log-transformed)	1.65	1.48
Teen delinquency at age 18 (log-transformed)	1.26	1.44

assumptions of the inferential statistics used. The total delinquency score was positively skewed and was transformed with a natural logarithmic transformation prior to analyses. Next, initial analyses examined the role of gender, racial-ethnic minority status, and family income on the primary measures examined in the study. Numerous main effects were found for gender, racial-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 below. We also examined possible moderating effects of these demographic factors on each of the relationships described in the primary analyses below. No such moderating effects were found.

For descriptive purposes, simple univariate correlations were also examined between all variables of interest and are presented in Table 2. Adolescents' level of demonstrated social problem-solving skills was negatively correlated with delinquency at each time point, as expected, though correlations were not so high as to suggest that the two reflected identical constructs.

The overall attachment security scale was highly correlated with the insecure-dismissing scale for both adolescents and mothers ($r_s = -.95$ and $-.89$ for adolescents and mothers, respectively). This finding in all likelihood reflected the relatively high proportion of dismissing attachment classifications in the sample. Because of the redundancy indicated by the high correlations among

the security and dismissing scales, the dismissing scale was not used in further analyses, and reports regarding the security scale can also reasonably be interpreted as reflecting a "nondismissing" scale.

Primary Analyses

The first question we addressed was whether attachment organization was indeed a predictor of changing levels of adolescent social skills. We addressed this question using a hierarchical regression model to predict adolescents' social skills at Time 2 after first entering into the model the level of skills at Time 1, followed by Time 1 demographic factors. Next, we entered adolescents' security at Time 1, followed by adolescents' preoccupation with attachment. Because initial levels of the outcome of interest, such as social skills, are entered first into all equations predicting the final level of this outcome, the other predictor variables (i.e., autonomy and attachment) are thus being tested for their relation to the *residual* of the outcome variable. This approach of predicting a future level of a variable, such as social skills, while accounting for predictions from initial levels (e.g., stability) yields one marker of change in that variable: increases or decreases in its final state relative to predictions based on initial levels (Cohen & Cohen, 1983). Results are presented in Table 3. These results indicate that attachment security is a significant predictor of social problem-solving skills at age 18, even after accounting for levels of skills at age 16. This finding supports our hypothesis that adolescent attachment security would predict skill gains (relative to adolescents with insecure attachment organizations). These results are presented in Steps 3 and 4 of Table 3.

Next, we examined the hypothesis that an interaction between adolescent preoccupation within the family and displays of autonomy in observed adolescent-mother interactions would predict relative changes in adolescent skill levels. Interaction terms were computed as the product of the centered main effects variables. We first examined the interaction of preoccupation with adolescents' own displays of autonomy within the family and then examined the interaction of preoccupation with displays of maternal autonomy within the family. A significant prediction of relative change in skill levels was found only for the interaction of adolescent preoccupation and maternal displays of autonomy, and not for the interaction of preoccupation with the adolescent's own displays of autonomy. The significant interactions with maternal displays of

Table 2
Intercorrelations Among Attachment, Autonomy, Skill, and Delinquency Variables

Variable	1	2	3	4	5	6	7	8	9	10
1. Teen attachment security	—	-.39***	.21*	-.08	.13	-.02	.21*	.39***	-.05	-.04
2. Teen attachment preoccupation		—	.06	.01	.06	.03	-.26**	-.27**	.18*	.15
3. Maternal attachment security			—	-.51***	.35***	.08	-.08	.10	.00	-.05
4. Maternal attachment preoccupation				—	-.10	.13	.10	-.03	-.04	.09
5. Teen display of autonomy					—	.28**	.05	.12	.14	.05
6. Maternal display of autonomy						—	-.06	-.09	.05	.23*
7. Teen social skills at age 16							—	.46***	-.46***	-.32***
8. Teen social skills at age 18								—	-.37***	-.57***
9. Teen delinquency at age 16									—	.47***
10. Teen delinquency at age 18										—

* $p < .05$. ** $p \leq .01$. *** $p < .001$.

Table 3
Predicting Change in Problem-Solving Skills From Age 16 to Age 18 From Adolescent Attachment Organization and Maternal Displays of Autonomy

Variable	β	ΔR^2	Total R^2
Step 1: Social problem-solving skills (age 16)	.46***	.21***	.21***
Step 2			
Gender	.13		
Race	-.23*		
Family income (age 16)	.04		
Statistics for step		.08**	.29***
Step 3: Teen attachment security	.25**	.04**	.33***
Step 4: Teen preoccupation (age 16)	-.12	.01	.34***
Step 5: Maternal display of own autonomy	-.07	.01	.35***
Step 6: Teen Preoccupation \times Maternal Autonomy	-.19*	.03*	.38***

Note. $N = 106$. Beta weights reflect variables' entry into the model.
^a For gender, 1 = male and 2 = female. For race, 1 = White and 2 = Black.
 * $p < .05$. ** $p \leq .01$. *** $p < .001$.

autonomy in predicting residualized change in social skills are presented in Step 6 of Table 3 and are depicted graphically in Figure 1. Post hoc tests of these interactions, following techniques prescribed by Aiken and West (1991), indicated that the slope of the line for high teen preoccupation significantly differed from zero ($p < .04$), suggesting a significant inverse relation between maternal autonomy and social skills change for more preoccupied teens. The slope of the line for less preoccupied teens did not significantly differ from zero. These findings suggest that for preoccupied teens, maternal displays of autonomy were predictive of sharply decreasing levels of social skills over time. In sum, after

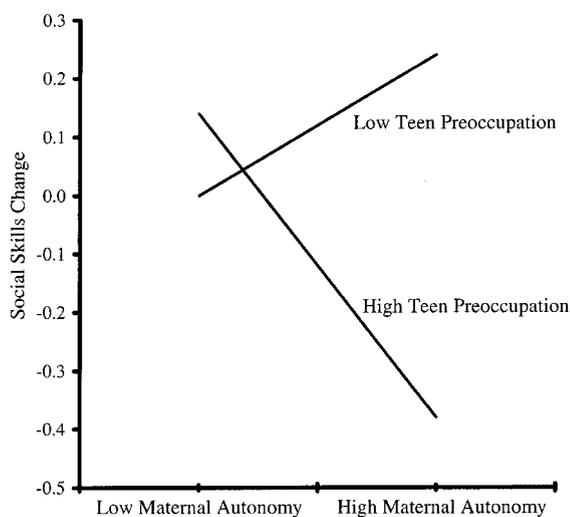


Figure 1. Moderating effect of preoccupation on the relation of maternal autonomy to adolescent social skills development. All variables are presented as standardized; low and high refer to values -1 SD and 1 SD from the mean.

Table 4
Predicting Change in Teen Delinquency From Age 16 to Age 18 From Adolescent Attachment Organization and Maternal Displays of Autonomy

Variable	β	ΔR^2	Total R^2
Step 1: Total delinquency (age 16)	.47***	.22***	.22***
Step 2			
Gender	-.26**		
Race	.00		
Family income (age 16)	.07		
Statistics for step		.07*	.29***
Step 3: Teen attachment security	-.01	.00	.29***
Step 4: Teen preoccupation (age 16)	.21*	.04*	.33***
Step 5: Maternal display of own autonomy	.16*	.02*	.35***
Step 6: Teen Preoccupation \times Maternal Autonomy	.23**	.05**	.40***

Note. $N = 117$. Beta weights reflect variables' entry into the model.
 For gender, 1 = male and 2 = female. For race, 1 = White and 2 = Black.
 * $p < .05$. ** $p \leq .01$. *** $p < .001$.

accounting for age 16 levels of social skills, an additional 9% of the variance in skill levels could be accounted for by the combination of attachment organization and autonomy behaviors.

We next turned to examination of changing levels of delinquency over time by predicting age 18 delinquency in an equation in which we first entered age 16 delinquency, followed by demographic factors, followed by attachment and autonomy predictors. Results are presented in Table 4. These results indicate that overall attachment security was not linked to changing levels of delinquency over time but that insecure preoccupation was a significant predictor of levels of adolescent delinquency at age 18 even after accounting for levels at age 16. This indicates that insecurely preoccupied adolescents were becoming more delinquent over time in comparison with the rest of the sample.

We next examined the hypothesis that an interaction between adolescent preoccupation with attachment and displays of autonomy in observed adolescent-mother interactions would predict relative changes in adolescent levels of delinquency over time. As above, we considered the interaction of adolescent preoccupation with both the adolescent's own displays of autonomy and maternal displays of autonomy. A significant prediction of relative change in levels of delinquency was found, but again only for the interaction of adolescent preoccupation and maternal displays of autonomy and not for the interaction of preoccupation with adolescent displays of autonomy. The significant interactions with maternal displays of autonomy in predicting residualized change in delinquency are presented in Step 6 of Table 4 and are depicted graphically in Figure 2. Post hoc tests of these interactions indicated that the slope of the line for high teen preoccupation significantly differed from zero ($p < .05$), suggesting a significant relation between maternal autonomy and relative changes in delinquency for more preoccupied teens. The slope of the line for less preoccupied teens did not significantly differ from zero. These findings suggest that for more preoccupied teens, greater maternal displays of autonomy were predictive of increasing levels of delinquency over time. In sum, after accounting for age 16 levels of delinquency, an additional 11% of the variance in delinquency could be accounted for by the combination of attachment organization and autonomy behaviors.

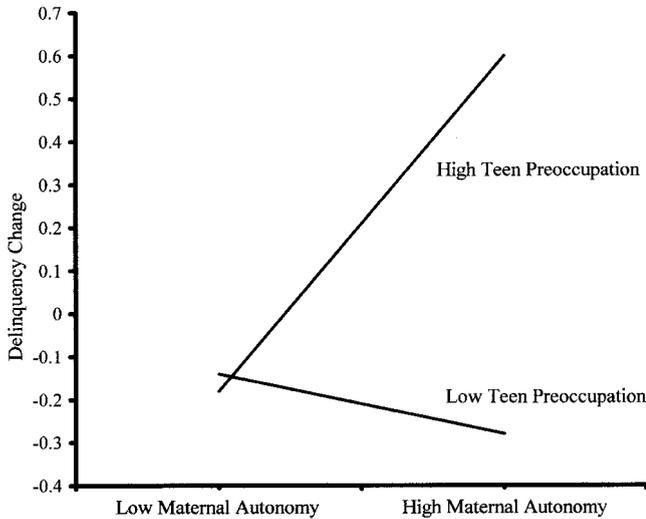


Figure 2. Moderating effect of preoccupation on the relation of maternal autonomy to adolescent delinquency development. All variables are presented as standardized; *low* and *high* refer to values -1 SD and 1 SD from the mean.

Finally, we examined the hypothesis that maternal preoccupation would interact with teen autonomy development in predicting adolescents' changing levels of social skills and delinquency. Although we examined interactions of insecurity with both mothers' own displays of autonomy and teens' displays of autonomy, we found significant effects only for the interaction of maternal insecurity with teens' displays of autonomy in predicting residualized change in levels of adolescent social skills. Results are presented in Table 5 and depicted graphically in Figure 3. Post hoc tests revealed that the slopes of the lines depicted differed significantly from zero only in the more extreme clinical ranges (i.e. trend-level significance at ± 2 SDs and full significance at $p < .05$ at levels of preoccupation greater than ± 4 SDs from the mean).

Table 5
Predicting Change in Problem-Solving Skills From Age 16 to Age 18 From Maternal Attachment Preoccupation and Adolescent Displays of Autonomy

Variable	β	ΔR^2	Total R^2
Step 1: Social problem-solving skills (age 16)	.45***	.21***	.21***
Step 2			
Gender	.11		
Race	-.21*		
Family income (age 16)	.04		
Statistics for step		.06*	.27***
Step 3			
Maternal attachment preoccupation	-.02		
Teen display of autonomy (age 16)	.00		
Statistics for step		.00	.27***
Step 4: Maternal Preoccupation \times Teen Autonomy	-.18*	.03*	.30***

Note. $N = 102$. Beta weights reflect variables' entry into the model. For gender, 1 = male and 2 = female. For race, 1 = White and 2 = Black. * $p < .05$. *** $p < .001$.

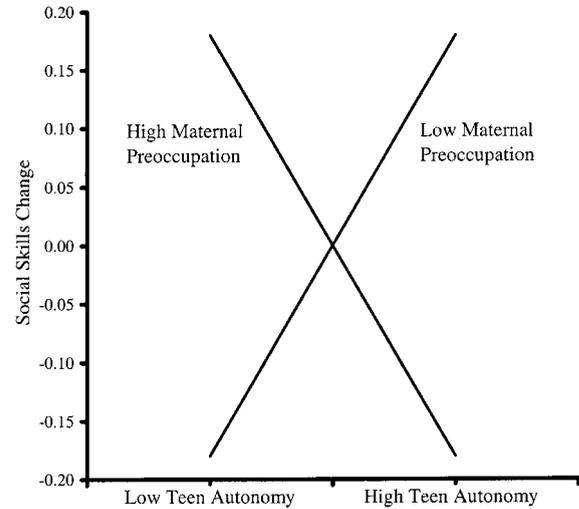


Figure 3. Moderating effect of maternal preoccupation on the relation of adolescent autonomy to adolescent social skills development. All variables are presented as standardized; *low* and *high* refer to values -1 SD and 1 SD from the mean.

These results indicate that whereas teens who were displaying high levels of autonomy in interactions with mothers tended to increase in relative social skills over time if their mothers were less preoccupied, they tended to decrease in relative social skills over time if their mothers more preoccupied. In sum, after accounting for age 16 levels of social skills, an additional 3% of the variance in skill levels could be accounted for by the combination of attachment organization and autonomy behaviors. No predictions were found for the interaction of maternal autonomy with maternal security, nor were any predictions found for changing levels of teen delinquency over time.

For exploratory purposes, we also considered whether overall adolescent or mother insecurity would interact with autonomy displays to predict outcomes in models paralleling those described for preoccupation above. No such effects were found.

Discussion

This study examined adolescent attachment organization and developing adolescent autonomy as predictors of changing levels of social skills and delinquent behavior during midadolescence. As hypothesized, adolescent attachment organization at age 16 predicted relative changes in levels of social skills and delinquent behavior. Overall attachment insecurity predicted decreases in social skills (relative to more secure adolescents), and attachment preoccupation predicted relative increases in delinquency when it occurred in conjunction with high levels of maternal autonomy.

These findings are consistent with literature associating attachment insecurity with externalizing behaviors at other points in the lifespan (Fagot & Kavanagh, 1990; Rosenstein & Horowitz, 1996). The findings go beyond this existing literature, however, in showing not simply cross-sectional associations but rather that attachment organization can help explain *changes over time* in functioning during adolescence. Given the high degree of stability in rank orderings of individuals' rates of deviant behavior from childhood

through adulthood (Loeber, 1991), one might wonder whether it was even feasible to try to predict relative changes in levels of problematic behavior in a sample of midadolescents. Although not all expected predictions were obtained, this study was nevertheless able to account for approximately 10% of the change in social skill levels and delinquent activity over a 2-year period. Although these nonexperimental findings do not establish causality, one explanation for these results is that insecurity in adolescence may have impeded the adolescent's ability to accurately process and integrate the affective components of the increasingly complex social interactions of this period, leading to deteriorating functioning over time. These results clearly suggest that lawful developmental change does occur in patterns of problematic behavior during midadolescence and that adolescent attachment organization may be a promising place to intervene in efforts to reduce the incidence of adolescent delinquent behavior.

One of the clearest findings of this study was of a moderating effect of preoccupied attachment on the relation between displays of autonomy in the family and relative changes in adolescent social functioning over time. A more preoccupied adolescent attachment organization was most strongly predictive of relative decreases in skill levels when preoccupation co-occurred with strong maternal displays of autonomy. Maternal displays of autonomy, which many studies have found to be linked to positive social outcomes (Allen, Hauser, Bell, et al., 1994; Allen, Hauser, Eickholt, et al., 1994), were neutral to positive in their relation to outcomes in this study, but only for nonpreoccupied adolescents. For preoccupied adolescents, maternal displays of autonomy were associated with higher levels of delinquency over time.

It is interesting to note that a complementary moderating effect was also found when maternal preoccupation was paired with adolescent displays of autonomy, with the more extreme version of this combination tending to predict relative decreases in adolescent social skills over time. In each moderating finding observed, the effect was always of an individual's attachment preoccupation interacting with displays of autonomy by the other member of the dyad. This suggests the importance of taking a family-systems perspective on attachment and autonomy within the family (Cowan, 1997; Marvin & Stewart, 1990). Both sets of moderating effects suggest that individuals who are more preoccupied with attachment relationships may be most unsettled not by their own developing autonomy but by autonomy displayed by their partner in the interaction. Given that maternal and adolescent insecure preoccupation were not correlated, the findings of moderating effects of attachment organization on the meaning of autonomy within the family for both teens and mothers provide two relatively independent pieces of data in support of this notion.

One explanation for these findings is that for more preoccupied individuals, autonomy displayed by the other member of the dyad was highly threatening. For preoccupied individuals, who have difficulty gaining cognitive or emotional distance from their dependency in attachment relationships, seeing another's displays of autonomy (and hence independence) may evoke fear, followed by anger that the other person will not be available to meet attachment needs. Of note, qualitative inspection of the videotapes of interactions with preoccupied adolescents in which mothers displayed high levels of autonomy suggested that these mothers tended to display their own autonomy in somewhat rigid and overly forceful terms. For example, they frequently launched into long mono-

logues in defense of their position. These monologues were reasoned and confident but far less flexible and open than the confident, reasoned statements of the mothers of nonpreoccupied adolescents.

Such noninteractive displays of autonomy may be particularly threatening to adolescents whose attachment organization is more oriented toward heightened interaction with parents. Observing one's mother display her autonomy rigidly and forcefully may also serve a releasing function that sanctions assertion of one's impulses, as some childhood research has suggested (J. W. Sroufe, 1991). This in turn could lead to dysregulation of behavior and to dysfunctional efforts to gain parental attention and interaction. In short, these findings are consistent with the idea that preoccupied individuals may be somewhat "autonomy phobic," especially regarding someone else's display of autonomy. Delinquent and unskillful adolescent behavior has the predictable effect of bringing about a great deal of parent-teen involvement and interaction—interaction that may be desirable to a preoccupied individual in spite of its likely angry and conflictual nature (Allen, Moore, et al., 1998) and may be a response to insecurity arising from observing maternal autonomy.

An analogy to attachment in infancy may be illustrative here. In the infant Strange Situation attachment paradigm, insecure-ambivalently-attached infants (the counterpart to insecurely preoccupied adolescents) frequently express a very high degree of distress upon separation from mothers (i.e., displays of maternal autonomy), and upon reunion their attachment behavior often consists of angry gestures and dysfunctional efforts to reunite with the parent (Ainsworth et al., 1978). Preoccupied adolescents may well be reacting to displays of maternal autonomy by using delinquent behaviors both to express anger toward parents who are displaying their own autonomy and to express their distress and need for parental attention.

The finding that preoccupation with attachment is a risk factor in the context of a partner's autonomy suggests that for families with more preoccupied adolescents or parents, adolescence itself may be risky, given the increasing autonomy in family interactions that characterizes this period (Collins, 1990; Hill & Holmbeck, 1986; Steinberg, 1990). As such, these findings may be useful in identifying one of the routes by which the developmental transformations of adolescence lead to the rapid increase in delinquency during this period. Moffitt (1993) noted that although significant stability exists from childhood conduct problems to adolescent delinquency, much delinquency in adolescence arises *de novo*. It may be that some of this emerging and costly delinquent activity stems from the confluence of the preexisting vulnerability of a preoccupied attachment organization and the new developmental challenge of increasing autonomy in relationships. The appearance of an interaction of preoccupation and autonomy could also be useful in explaining the somewhat surprising findings in the literature that for some adolescents, various autonomy-promoting interactions in adolescence, such as high levels of youth employment (Steinberg & Dornbusch, 1991) and the presence of independent adult mentors (McCord, 1992), may lead to increased risk for deviant behavior.

One of the more important implications of these findings is that they suggest a need to move beyond simple, "one size fits all" main effects explanations of optimal family functioning, particularly with respect to autonomy processes. Although for the large

majority of adolescents, autonomy development within the family appears to be a positive factor, this does not appear to be universally true. Rather, a model is emerging of autonomy development within the family as a normative part of adolescent development, but one that also presents a significant challenge. Adolescents with secure attachment organizations may well be up to meeting this challenge of observing their mothers behaving more autonomously. They may in fact find these displays to be “releasing” in the positive sense of freeing them to learn to be more autonomous themselves and to gain social skills over time; nonpreoccupied adolescents in this study fared well over time when exposed to maternal displays of autonomy. However, adolescents who are struggling with issues of autonomy already, as reflected in their preoccupation with attachment experiences, may find the normative challenge of coping with maternal displays of autonomy to be threatening and overwhelming. Sensitive parenting for these adolescents might well involve mothers focusing more on helping their adolescents understand and express their own views and on buttressing the relationship rather than focusing heavily on presenting logical and dispassionate reasoning supporting their own position.

These findings are consistent with a *branching pathways* model of the development of psychopathology, in which earlier risk factors become manifest in later psychopathology only in the presence of specific environmental challenges (L. A. Sroufe, 1997). Understanding the moderating influences of individual characteristics on social–environmental factors, such as autonomy development, is critical to developing interventions tailored to the needs of individual adolescents and their families (Tolan, Guerra, & Kendall, 1995; Tolan & Loeber, 1993; Weisz & Weersing, 1999). These findings are consistent with emerging research suggesting that autonomy processes may be associated with far less positive outcomes for families in risky environments (McElhaney & Allen, 2001) and with findings that a range of presumably positive parenting behaviors may be linked to lower levels of deviance only for children and adolescents who are not showing evidence of disturbed attachment relationships (Allen, Moore, et al., 1998; Wootton, Frick, Shelton, & Silverthorn, 1997). This study provides further evidence that a child or adolescent’s attachment organization may fundamentally alter the meaning and consequences of the parenting behavior to which they are exposed.

Although this study advances our understanding of the relation of attachment organization to the development of adolescent deviant behavior by using multiple methods—including tests, observations, and self-reports repeated over time—there are nonetheless a number of limitations to these findings that bear consideration. First, although longitudinal studies of change allow for more opportunities to examine potentially causal processes than does cross-sectional research, they cannot in and of themselves support causal inferences. Second, 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, and because we used a unique process to select the specific sample used in this study, the results cannot be generalized to normal populations without further replication. Third, lack of data on fathers limits our ability to draw inferences about this important part of the family system and creates a clear need for future research involving fathers. Fourth, the findings obtained in some cases suggested slightly different predictors of changes in

social skills and delinquent behaviors. These differences may arise out of the relatively modest power of a study this size, or they may suggest some instability in the patterns of predictions obtained or the presence of unexplained distinctions in processes leading to social skill development versus those leading to avoidance of delinquent behavior.

Limits to the attachment and autonomy data also suggest several areas where further research might be profitable. Because attachment security was so strongly negatively correlated with dismissing attachment organization, it was not possible to examine dismissing attachment organization separately. Results for security could therefore almost as easily be interpreted as the inverse of results for insecure-dismissing attachment. This correlation also suggests that there were relatively few adolescents in the study who would have met criteria to be classified as having a primary attachment organization of insecure-preoccupied. This means that predictions from the preoccupation observed may have in many cases reflected effects of moderate levels of preoccupation within an overall secure attachment organization. Also, the Q-sort attachment methodology used in this study 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, but it suggests one avenue for future research. It should also be noted that the measures of autonomy that were used focused on a particular context for the display of such autonomy: within verbal discussions. Consideration of autonomy as defined in other ways (e.g., as reflecting emotional alienation) would likely lead to differing results (Fuhrman & Holmbeck, 1995).

Finally, the 2-year longitudinal window of this study, although optimal for examining changes over substantial periods of time, does not provide information about the intervening processes that may have led to these changes. Further research is now needed to clarify the mechanisms by which attachment organization may influence the development of poor social skills and deviant behavior over the course of adolescence.

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