

## Reciprocal Relations Between Parenting and Adjustment in a Sample of Juvenile Offenders

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The over-time reciprocal links between parenting and adolescent adjustment were examined in a sample of 1,354 serious adolescent offenders followed for 3 years (16 years of age at baseline,  $SD = 1.14$ ). Parallel processing growth curve models provided independent estimates of the impact of parenting on adolescent functioning as well as the impact of adolescent functioning on parenting. Positive adolescent development was facilitated by high parental warmth and low parental hostility. Parental monitoring predicted less problematic behavior, but less positive functioning as well. Predictably, parents became warmer and less hostile in response to positive adolescent development, and less warm in response to problematic adolescent functioning. Parental monitoring declined when adolescents exhibited either positive or problematic functioning.

Authoritative parenting, a style of parenting that is high in warmth and firm control, consistently predicts positive development in adolescence, as indexed by measures of psychosocial maturity, academic competence, and lower levels of both internalizing and externalizing problems (Goldstein & Heaven, 2000; Reitz, Dekovic, Meijer, & Engels, 2006; Simons-Morton & Chen, 2005; Steinberg, 1987, 2001; Steinberg, Lamborn, Darling, Mounts, & Dornbusch, 1994; Vazsonyi & Belliston, 2006). Even within ethnically and socioeconomically diverse populations (Mason, Cauce, Gonzales, & Hiraga, 1996; Steinberg, Mounts, Lamborn, & Dornbusch, 1991) and across countries (Claes et al., 2005; Vazsonyi & Belliston, 2006), authoritative parenting remains a positive influence on adolescent development (Steinberg, 2001). Although most of these studies are cross-sectional or focus on short-term longitudinal effects, recent research suggests that authoritative parenting has a positive effect on development over time (Simons & Conger, 2007).

The finding that authoritative parenting is associated with positive adolescent development comes largely from studies of community samples. Research on parenting and adolescent adjustment in antisocial or delinquent populations is more limited than research on normative samples. In some sense, to the extent that authoritative parenting among normative samples is protective against problematic outcomes, we should expect lower levels of authoritative parenting among families of delinquents to begin with (i.e., leading to more delinquent behavior). But delinquent and antisocial behaviors are multiply determined—influences unrelated to parenting could lead to this behavior. Similarly, parents may respond to their child's delinquency by trying to use more effective, authoritative parenting tactics. In this manner, authoritative parenting among troubled adolescents may serve as a protective factor, leading to greater desistance from this behavioral trajectory. Recent studies have found, for example, that parental support and authoritative management are associated with increased school engagement (Annunziata, Hogue, Faw, & Liddle, 2006) and fewer violent offenses (Herrenkohl, Hill, Hawkins, Chung, & Nagin, 2006) among high-risk youth.

In this study, we examine over-time links between parenting and adolescent adjustment in a population of very serious juvenile offenders (i.e.,

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adolescents who have been convicted of felony offenses). Serious juvenile offenders are less frequently studied than other high-risk populations. Although statistically significant links between authoritative parenting and adolescent adjustment are also found within these samples (Jones, Cauffman, & Piquero, 2007; Steinberg, Blatt-Eisengart, & Cauffman, 2006), longitudinal research that more firmly establishes the contribution of authoritative parenting to positive development in this population is lacking. From a theoretical standpoint, it is important to ask whether well-established "truths" about development (e.g., that authoritative parenting facilitates adolescent adjustment) are equally valid in atypical populations. In addition, one very practical reason to study the link between parenting and adjustment in a sample of juvenile offenders is that efforts to improve the quality of parenting are commonly incorporated into interventions designed to prevent or treat delinquency (Greenwood, 2006).

Although authoritative parenting is defined by the combination of parental warmth and parental control, in this study, we look at these two dimensions separately in order to ascertain their independent contributions to adolescent adjustment. Several writers have suggested that it is important to "unpack" authoritative parenting in order to better understand which aspects of the style are predictive of different adolescent outcomes (Gray & Steinberg, 1999). There is some evidence that different features of authoritative parenting are associated with different aspects of adolescent development, with the degree of parental regulation (e.g., high parental monitoring or control) more predictive of misbehavior, and the emotional tenor of the relationship (e.g., high parental warmth or low hostility) more predictive of socioemotional development. In this study, we further distinguish between the presence of warmth and the absence of hostility, because there is some evidence that the family relationships of antisocial youth may be characterized not only by a lack of warmth but also by especially high levels of antagonism and conflict (Loeber & Stouthamer-Loeber, 1986).

Although the correlation between authoritative parenting and positive adolescent adjustment is well established, many writers have raised questions about causality and directions of effects, as most studies assess these factors at the same time point (Cowan, 2005). It is well established, at least in community samples, that parents' actions are influenced or modified in response to how their children behave. Several studies of child effects on

parenting, for example, find that positive parent behaviors decline, and negative parental control increases, in response to children's antisocial behavior (Albrecht, Galambos, & Jansson, 2007; Ge et al., 1996; Reitz, Dekovic, & Meijer, 2006; Rueter & Conger, 1998; Stice & Barrera, 1995). Yet, while the call for parenting and adolescent development to be studied bidirectionally continues to be made (Bell, 1968; Cowan, 2005; Reitz, Dekovic, & Meijer, 2006), few researchers have taken this approach (Coley & Medeiros, 2007; Crouter & Booth, 2003; O'Connor, 2002). For the most part, studies either consider parenting as a concurrent correlate of adolescent functioning, an independent variable predicting adolescent functioning, or (less often) a dependent variable affected by adolescent functioning. Very few studies have looked at the over-time, reciprocal interplay of parenting and adolescent behavior, and no studies, to our knowledge, have done so in a sample of serious juvenile offenders.

Short-term longitudinal studies that have examined cross-lagged relations between parenting and adolescent antisocial behavior have found support for both causal pathways. Some studies have found that the quality of parenting precedes and predicts adolescent antisocial behavior (Burt, McGue, Krueger, & Iacono, 2005; Neiderhiser, Reiss, Hetherington, & Plomin, 1999). At the same time, studies also show that adolescents' antisocial behavior disrupts effective parenting and that parents may become hostile and rejecting in the face of their child's delinquency (Conger & Ge, 1999; Conger & Simons, 1997). Indeed, in some cases, the impact of adolescent deviance on parenting is stronger than that of parenting on deviance (Albrecht et al., 2007; Jang & Smith, 1997; Kerr & Stattin, 2003), and some studies find child effects on parenting where parenting effects on child functioning are entirely absent (Reitz, Dekovic, Meijer, & Engels, 2006). On the other hand, having an adolescent who is charged with a serious felony offense may lead some parents to rethink their parenting strategies and adopt more responsive, authoritative styles (perhaps influenced by parent skills training programs).

The reciprocal interplay between parenting and antisocial behavior is central to several influential perspectives on delinquency, most importantly, Patterson's (1982) theory of coercive family processes. According to this view, adolescents are more likely to affiliate with deviant peers in response to overt parental hostility (Dishion, Patterson, Stoolmiller, & Skinner, 1991) and poor parental monitoring (Ary, Duncan, Duncan, & Hops, 1999;

Dishion, Capaldi, Spracklen, & Li, 1995). As adolescents turn to deviant peers and increase their involvement in antisocial activity, parents further disengage (Dishion, Nelson, & Bullock, 2004; Dishion, Poulin, & Medici Skaggs, 2000). Parental disengagement causes increased opportunities for delinquent behavior, which in turn adversely affects the quality of parenting (Laird, Pettit, Bates, & Dodge, 2003; Patterson, Reid, & Dishion, 1992; Rueter & Conger, 1998). However, although portions of this coercive cycle has been described in numerous publications, surprisingly few empirical studies have included repeated assessments of parenting and antisocial behavior in which each construct is measured more than once or twice over a period of time. One study of at-risk children found evidence for independent bidirectional effects of parent and child behavior over a 1-year interval (Beauchaine, Webster-Stratton, & Reid, 2005), but the absence of research over a longer time frame makes it difficult to assess the relative contributions of the two pathways (parenting to adolescent adjustment vs. adolescent adjustment to parenting) to the overall process. Further, having an adolescent charged with a serious crime may serve as a turning point for parents to rethink their childrearing strategies. Similarly, this may serve as a wake-up call for delinquent youth to improve their behavior and gain their parents' support.

The current report presents findings from a longitudinal extension of a cross-sectional study in which authoritative parenting was shown to be associated with greater psychosocial maturity and stronger academic orientation, and fewer internalizing and externalizing problems in a sample of serious juvenile offenders (Steinberg, Blatt-Eisengart, & Cauffman, 2006). This study examines the connection between parenting and adolescent development in the same sample over a 3-year period using parallel growth curve models that permit the simultaneous examination of child effects and parenting effects. It is expected that lower parental warmth, greater parental hostility, and lower parental monitoring will predict declines in adolescents' positive functioning (i.e., psychosocial maturity, academic orientation) and increases in problematic functioning (i.e., internalized distress, delinquency), and that lower positive functioning and greater problematic functioning among adolescents will evoke less warmth, more hostility, and less vigilant monitoring from their parents. In addition, we test whether these bidirectional parent-child associations are moderated by the child's age.

## Method

### *Participants*

Participants were adolescents enrolled in the Pathways to Desistance Study (Mulvey et al., 2004), a prospective study of 1,354 serious juvenile offenders (1,170 boys, 184 girls) in Phoenix, Arizona (Maricopa County;  $n = 654$ ) and Philadelphia, Pennsylvania (Philadelphia County;  $n = 700$ ; Schubert et al., 2004). Adolescents were eligible for study participation if they were between 14 and 17 years of age at the time of enrollment into the study and had been convicted of a felony or similarly serious nonfelony offense (e.g., a misdemeanor weapons offense, misdemeanor sexual assault). Three steps were taken to ensure adequate sample heterogeneity in terms of criminal offending and gender. First, because a large proportion of offenses committed by adolescents are drug offenses, the proportion of juvenile boys with drug offenses was capped at 15% of the sample at each of the sites. Second, all youth whose cases were being considered for trial in the adult system were eligible for enrollment (even if the offense was a drug offense). Third, all girls meeting the age and adjudicated crime requirements were eligible for enrollment. Eighty percent of the eligible offenders whom we located and invited to participate in the research agreed to enroll in the study.

To assess participation bias in the sample, we compared eligible youth who did and did not enroll in the study. Results suggested that the enrolled participants had more prior petitions (i.e., arrests leading to formal charges; 2.1 vs. 1.5 years for nonparticipants), were somewhat younger at first petition (13.9 vs. 14.2 years for nonparticipants), were somewhat younger at adjudication (15.9 vs. 16.1 years for nonparticipants), and were somewhat more likely to be non-Hispanic Caucasian (25% vs. 20% for nonparticipants). Although statistically significant, these differences are modest in magnitude. Additional study and participant details can be found in Schubert et al. (2004).

The baseline interview was conducted, on average, 36.9 days ( $SD = 20.6$ ) after participants' adjudication (for those in the juvenile system) or their decertification (i.e., waiver) hearing in Philadelphia or an adult arraignment in Phoenix (if in the adult system). At the time of the baseline interview, participants were 16 years of age ( $SD = 1.14$ ) and predominantly lower socioeconomic status, with fewer than 6.3% of the participants' parents holding a 4-year college degree, and 33% of participants' parents having less than a high school education.

The sample is 41.5% African American, 33.5% Hispanic American, 20.2% non-Hispanic Caucasian, and 4.8% are other ethnicities.

### *Procedures*

The juvenile court in each locale provided the names of eligible adolescents (based on age and adjudicated charge). Interviewers then attempted to contact each eligible juvenile and his or her parent or guardian to ascertain the juvenile's interest in participation and obtain parental consent. Participant assent and parent or guardian consent were obtained for youth under age 18. All participants were consented as an adult when they reached 18. Once the appropriate consents had been obtained, interviews were conducted in either a facility (if the juvenile was confined), the juvenile's home, or a mutually agreed-upon location in the community.

The baseline interview was administered over 2 days in two 2-hr sessions. Interviews and participants sat side by side facing a computer, and questions were read aloud to avoid comprehension problems caused by reading difficulties. Respondents could answer the questions aloud or, to maximize privacy, enter their responses on a keypad (although in some facilities, this option was not available; we did not track whether information was entered by the interviewer after hearing the participant's answer or by the participant via keypad). When interviews were conducted in participants' homes or in community settings, attempts were made to conduct them out of the earshot of other individuals. Honest reporting was encouraged, and confidentiality was reinforced by informing participants of the requirement for confidentiality placed upon the study by the U.S. Department of Justice, which prohibited the disclosure of any personally identifiable information to anyone outside the research staff (youth were informed that the only exceptions to confidentiality were if the participant expressed plans to hurt himself or herself or someone else, described a specific plan to commit a crime in the future, or disclosed that someone is in jail for a crime the participant committed, or if child abuse is suspected). All recruitment and assessment procedures were approved by the Institutional Review Boards (IRBs) of the participating universities, and adolescents were paid \$50 for their participation in the baseline interview (when allowed by facility rules), \$65 at 6 months, \$75 at 12 months, \$100 at 18 months, \$115 at 24 months, \$130 at 30 months, and \$150 at 36 months.

Participants were reinterviewed every 6 months following the baseline interview. The follow-up interviews were each completed in 1- to 2-hr session, and participant compensation increased at each time point. The present analyses cover a total of seven time points, each 6 months apart, for a total of 3 years. The percentage of completed interviews among enrolled participants ( $N = 1,354$ ) before passing out of the window of opportunity for that specific time point (i.e., within 6 weeks of the scheduled follow-up) were 93% at the 6-month follow-up, 93% at the 12-month follow-up, 91% at the 18-month follow-up, 91% at the 24-month follow-up, 91% at the 30-month follow-up, and 91% at the 36-month follow-up. Thus, attrition from the study was very low. The average proportion of time participants spent in the community (as opposed to institutional placement in a treatment or correctional facility) during each 6-month period was 56% at the 6-month follow-up, 66% at the 12-month follow-up, 67% at the 18-month follow-up, 76% at the 24-month follow-up, 71% at the 30-month follow-up, and 72% at the 36-month follow-up.

### *Measures*

*Parenting dimensions.* Adolescents completed self-report measures about their parents' behaviors during every 6-month period in which they spent any time living at home. Previous research has shown adolescent perceptions of parenting to be a reliable and valid indicator of parenting behaviors (e.g., Boyce et al., 1998; Silk, Morris, Kanaya, & Steinberg, 2003). Adolescents who were not incarcerated for the entire recall period were asked: "Right now or in the past 6 months, have you lived with a step-mother [step-father] or another adult female [male] who was responsible for raising you?" If adolescents lived with two parental figures, scales were completed for mothers and fathers separately (adolescents not living with biological parents who lived with a step parent or other adult who is "responsible for raising you" were instructed to answer the questions about this maternal or paternal figure). Both parents' scores were averaged to create an overall parenting score for each of the parenting dimensions (for adolescents living with a single parent, reports of this sole parent's behavior were used to generate overall parenting scores). Previous studies have combined maternal and paternal parenting scores in cases where they are moderately correlated (e.g.,  $r_s = .44-.68$ ; Reitz, Dekovic, & Meijer, 2006), similar

to what was found in the present sample ( $r_s = .33-.43, p < .001$ ).

Parenting was measured across three dimensions: warmth, hostility, and monitoring. An adaptation of the Quality of Parental Relationships Inventory (Conger, Ge, Elder, Lorenz, & Simons, 1994) was used in order to measure *parental warmth* (e.g., "How often does your mother/father let you know she/he really cares about you?") and *parental hostility* (e.g., "How often does your mother [father] throw things at you?"). The 42-item scale assessed parental warmth and hostility for each parent (21 to assess the maternal relationship and 21 to assess

the paternal relationship) on a 4-point scale ranging from *never* to *always* ( $\alpha$  for maternal warmth = .92;  $\alpha$  for paternal warmth = .95;  $\alpha$  for maternal hostility = .85;  $\alpha$  for paternal hostility = .88). An adapted version of the Parental Monitoring Inventory (nine items,  $\alpha = .80$ ; Steinberg, Lamborn, Darling, Mounts, & Dornbusch, 1994) was used in order to assess the amount of parent supervision or *parental monitoring*. Five items assessed parental knowledge (e.g., "How much does X know about how you spend your free time?") and were answered on a 4-point scale ranging from *doesn't know at all* to *knows everything*. Participants who lived with their primary caregiver were also asked four additional items, also scored on a 4-point scale ranging from *to never* to *always*, in order to assess parental monitoring of the adolescent's behavior (e.g., "How often do you have a set time to be home on weekend nights?"). At baseline, parental warmth ( $M = 3.06, SD = 0.69$ ), parental monitoring ( $M = 2.70, SD = 0.72$ ), and parental hostility ( $M = 1.59, SD = 0.42$ ) were relatively normally distributed (see Tables 1 and 2 for descriptive statistics and interscale correlations).

*Psychosocial maturity*. Four constructs were used to indicate participants' psychosocial maturity. *Temperance* was measured using two subscales of the Weinberger Adjustment Inventory (WAI; Weinberger & Schwartz, 1990): impulse control (eight items, e.g., "I say the first thing that comes into my mind without thinking enough about it" [reverse coded]) and suppression of aggression (seven items, e.g., "People who get me angry better watch out" [reverse coded]). Participants ranked

Table 1  
Mean Values and Standard Deviations of Measures at Baseline

	M	SD	n	Percent
<b>Covariates</b>				
Age	16.38	1.02		
Gender			1,062	85.8
Black			495	40.0
Hispanic			425	34.3
White			258	20.8
Other			59	4.8
<b>Predictors and outcomes</b>				
Parental warmth	3.06	0.69		
Parental hostility	1.58	0.42		
Parental monitoring	2.81	0.86		
Psychosocial maturity	2.45	0.48		
Academic orientation	2.45	0.68		
Internalized distress	0.53	0.63		
Delinquency	0.25	0.18		

Table 2  
Correlations of Measures Across Seven Time Points

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Parental warmth													
2. Parental hostility	-.35***												
3. Parental monitoring	.26***	-.15***											
4. Psychosocial maturity	.29***	-.26***	.20***										
5. Academic orientation	.23***	-.19***	.27***	.36***									
6. Internalized distress	-.09**	.23***	-.01	-.27***	-.09**								
7. Delinquency	-.19***	.31***	-.24***	-.38***	-.25***	.29***							
8. Sex	-.07**	.06*	.13***	.12***	.09**	.14***	-.13***						
9. Black	.21***	-.05	-.05	.22***	.06*	-.14***	-.18***	-.02					
10. Hispanic	-.07*	-.02	-.04	-.19***	-.02	.08**	.05	-.04	-.59***				
11. White	-.14***	.06*	.11***	-.02	-.05	.03	.12***	.05	-.42***	-.37***			
12. Other	-.05	.03	-.02	-.05	.002	.06*	.09**	.02	-.18***	-.16***	-.12***		
13. Street time	-.24***	-.08**	.09**	.11***	.12***	-.11***	-.18***	.27***	-.13***	.02	.15***	-.04	
14. Age at baseline	-.03	.09**	-.30***	.07*	-.08**	.06*	.08**	.01	-.01	.01	-.02	.05	.02

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

the frequency in which their past 6-month behavior matched a series of these statements on a 1 (*false*) to 5 (*true*) scale ( $\alpha = .84$ ). *Empathy* was measured using the consideration of others subscale of the same instrument (WAI; seven items, e.g., "Doing things to help other people is more important to me than almost anything else,"  $\alpha = .73$ ). *Personal responsibility* was measured using the Personal Responsibility subscale of the Psychosocial Maturity Inventory (PSMI Form D; 30 items,  $\alpha = .90$ ; e.g., "Luck decides most things that happen to me" [reverse coded]; Greenberger, Josselson, Knerr, & Knerr, 1974); participants responded on a 4-point scale (*strongly agree* to *strongly disagree*). *Resistance to peer influence* (Steinberg & Monahan, 2007) was measured using a mean score across 10 items of two conflicting scenarios (e.g., "Some people go along with their friends just to keep their friends happy" and "Other people refuse to go along with what their friends want to do, even though they know it will make their friends unhappy,"  $\alpha = .73$ ) in which participants rate on a 4-point scale the degree to which the statement is accurate (i.e., *sort of true* or *really true*). Interscale correlations revealed that the four constructs were low to moderately correlated (see Table 2). All four constructs were recoded on a 5-point scale (0–4) and were aggregated at each wave to produce an overall psychosocial maturity score at each time point.

*Academic orientation.* Two constructs were used in order to assess academic orientation for participants currently enrolled in school: *School orientation* (seven items, e.g., "School work is very important to me,"  $\alpha = .82$ ) and *bonding to teachers* (three items, e.g., "Most of my teachers treat me fairly,"  $\alpha = .66$ ; Cernkovich & Giordano, 1992) on a 5-point scale. The small number of items on the latter scale is the likely cause of the relatively lower alpha. Interscale correlations revealed that school orientation was positively associated with bonding to teachers (see Table 2). These two constructs were recoded on a 5-point scale (0–4) and were aggregated at each wave to give an overall academic orientation score at each time point.

*Internalized distress.* Two subscales were used from the Brief Symptom Inventory (Derogatis & Melisaratos, 1983) in order to assess *anxiety* (e.g., six items, "Feeling tense or keyed up,"  $\alpha = .78$ ) and *depression* (six items, e.g., "Feeling no interest in things,"  $\alpha = .81$ ). Responses indicate on a 5-point scale the extent to which they have been bothered (*not at all* through *extremely*) in the past week by various symptoms. These two constructs were highly correlated (see Table 2) and were aggregated

at each wave to produce an overall internalized distress score.

*Delinquency.* Delinquency was assessed with respect to three sets of behaviors that occurred in the past 6 months (i.e., since the previous assessment): *aggressive offending* (11 items, e.g., "Have you beaten up, threatened, or physically attacked someone as part of a gang,"  $\alpha = .76$ ) and *income-related offending* (11 items, e.g., "Have you taken something from another person by force, without a weapon?"  $\alpha = .74$ ), using the Self-Report of Offending measure (Huizinga, Esbenson, & Weiher, 1991), and *substance abuse-related social problems* (17 items, e.g., "Have you had complaints from your family because of your drug and alcohol use?" count variables; Chassin, Rogosch, & Barrera, 1991). Interscale correlations revealed that the three constructs were moderately related (see Table 2). All three constructs were scaled as a proportion score and were aggregated at each wave to give an overall delinquency score at each time point (proportion of problems in the past 6 months).

#### Data Analysis

First, independent growth curve models were calculated for all outcome variables. Predictors included intercepts (at baseline), time (at 6-month intervals), and the interactions between intercepts and time with age, gender, and ethnicity. Quadratic effects were not included because they did not significantly contribute to the variance in the dependent variables. Age, sex (with male as the reference group), and ethnicity (with White as the reference group) were modeled on the intercept and slope.

Adolescents' reports of parental hostility and monitoring declined over time, but reports of warmth did not change (see Table 3). Perceptions of parenting did not vary by age or sex, but a few differences emerged as a function of ethnicity. Compared to other youth, Black adolescents' reports of parental warmth were relatively higher at baseline and increased more over time, and reports of parental monitoring were lower at baseline, and increased more over time. In contrast, Hispanic adolescents' reports of parental warmth were lower than those of other youth at baseline, and their reports of monitoring decreased more over time.

In general, adolescents' psychosocial maturity increased over time. Older adolescents, Black adolescents, and females reported higher psychosocial maturity at baseline. Hispanic adolescents reported lower psychosocial maturity at baseline. For the

Table 3  
Independent Parent and Adolescent Behavior Growth Models

	Parenting models						Adolescent models							
	Warmth		Hostility		Monitoring		Psychosocial maturity		Academic orientation		Internalized distress		Delinquency	
	B	SE	B	SE	B	SE	B	SE	B	SE	B	SE	B	SE
Time	3.07***	0.02	1.46***	0.01	2.80***	0.03	2.48***	0.01	2.44***	0.02	0.50***	0.02	0.25***	0.01
Age at baseline	0.03	0.06	0.05	0.16	0.01	0.06	0.19*	0.08	-0.16	0.24	0.17	0.09	-0.48	0.51
Sex	0.03	0.02	-0.04	0.05	0.02	0.02	0.11***	0.03	0.07	0.04	0.13***	0.03	-0.56**	0.17
Race (reference White)														
Black	0.12***	0.03	1.15	0.86	-0.09*	0.04	0.29***	0.04	0.10	0.09	-0.19***	0.04	-1.36***	0.24
Hispanic	-0.07*	0.03	-1.16	0.87	0.05	0.04	-0.24***	0.04	-0.02	0.05	0.11**	0.04	0.05	0.24
Other	-0.01	0.01	-0.01	0.37	0.01	0.01	-0.03	0.02	-0.002	0.02	0.03	0.02	0.20	0.11
Time (slope)	-0.01	0.01	-0.02***	0.002	-0.11***	0.02	0.03***	0.002	0.07***	0.01	-0.08***	0.01	-0.17***	0.01
Time × Age at Baseline (slope)	0.19	0.21	-1.90	1.82	-0.11	0.27	1.39	0.98	3.97	2.01	-0.36	0.26	-0.206**	0.74
Time × Sex (slope)	-0.09	0.08	-0.34	0.67	0.07	0.09	0.45	0.34	0.62	0.34	0.04	0.09	-0.44	0.24
Time × Black (slope)	0.27**	0.10	1.15	0.86	0.35*	0.15	0.21	0.46	-1.28	0.73	0.03	0.13	-1.18***	0.34
Time × Hispanic (slope)	-0.15	0.10	-1.16	0.87	-0.29*	0.15	-0.79	0.45	0.36	0.40	-0.09	0.12	-0.38	0.34
Time × Other (slope)	-0.01	0.05	-0.01	0.37	0.01	0.05	0.08	0.20	0.25	0.21	-0.05	0.05	0.17	0.15

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

sample as a whole, academic orientation increased over time. There was an interaction with age, such that older adolescents reported greater increases in academic orientation over time. In general, internalized distress declined over time. Hispanic adolescent offenders and females reported greater internalized distress at baseline (Black adolescents reported less internalized distress). Additionally, delinquency decreased as a whole over time. Black adolescents and females reported less delinquency at baseline, and Black adolescents and older adolescents reported steeper declines in delinquency over time.

Parallel processing growth curve models were used to examine the development of each adolescent outcome variable (e.g., psychosocial maturity) and each parenting dimension (e.g., parental warmth), simultaneously over time (see Figure 1). A total of 12 parallel growth curve models were conducted (3 dimensions of parenting × 4 adolescent outcomes). The random effects that were generated using growth modeling were used to measure individual differences in development. These random effects are then referred to as “growth factors,” which are continuous latent variables.

Mplus was used in order to use flexible multilevel modeling techniques that are not available in other software programs (e.g., correlated residuals over time, regressions among the outcomes over time,

allowances for missing data). Similar to a structural equation modeling approach, the time values are allowed to be parameters in the model so that the growth function can be estimated. Additionally, Mplus allows for the simultaneous analysis of multiple processes (Muthén & Muthén, 1998–2006). In this study, parallel growth processing models were used, such that two-part (or two-equation) multiple regression models are modeled by separate, but correlated and regressed, growth functions (Muthén & Muthén, 1998–2006). The regressions from one model to the other are lagged simultaneously such that the adolescent outcomes are regressed on parenting dimensions from the previous wave, and parenting outcomes are regressed on adolescent outcomes from the previous wave. Autoserial regressions were also conducted to control for adolescent adjustment and parenting at previous waves, so that the predictive relations from wave  $n$  to wave  $n + 1$  (i.e., cross-lagged regressions) are able to be assessed without inflating the associations.

Age, sex, ethnicity, and time not spent in residential placement (included here because it affects adolescents’ opportunities to engage in certain externalizing behaviors, and computed as the proportion of time during the 6-month interval spent in the community) were controlled for at the intercept and at the growth factor (baseline and slope) and the residuals were allowed to covary. That is, the slope represents a change over time from the

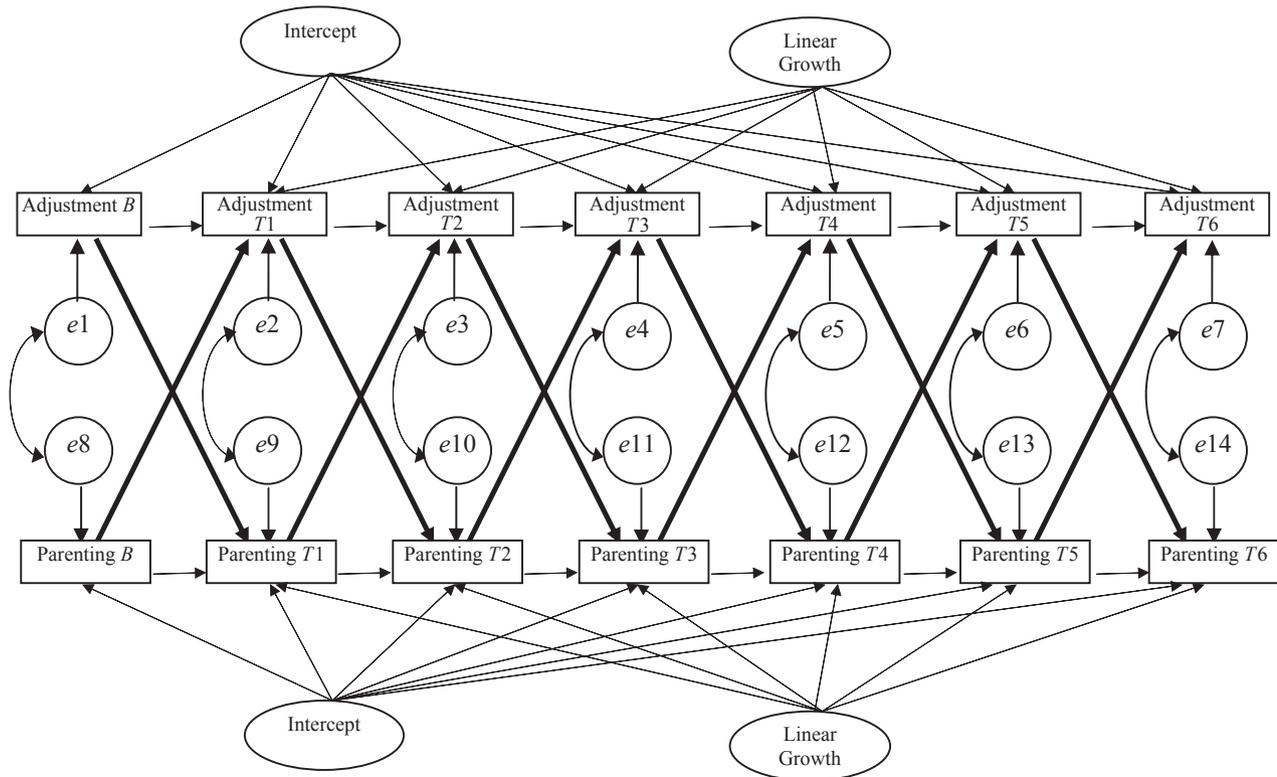


Figure 1. Path diagram of the conceptual model using parental warmth and adolescent psychosocial maturity as an example. Note. Pathways that are bolded include the cross-lagged regressions that test the association between parent-to-child behaviors and child-to-parent behaviors at 6-month intervals. Intercepts and linear growth constructs were allowed to covary within and across growth models. Ethnicity, gender, age, and street time were allowed to covary with the intercept and linear growth constructs of both growth models.

age at initial assessment, and significant covariates at the intercept and slope represent differences at initial assessment and growth, respectively. Based on recommendations by Hu and Bentler (1999), accepted models met at least the minimum criteria for adequate fit (comparative fit index  $\geq .95$ , root mean square error of approximation  $\leq .06$ ).

## Results

Parenting and adolescent outcomes were simultaneously modeled as parallel growth functions. Results indicated that parent-adolescent bidirectional influences across time did not vary (i.e., fit indices increased when these relations were constrained to be held equal across time). Additionally, models examining the interaction between age and various predictors (both parent and child) were unstable and had difficulty converging. That is, although participants enrolled in the study at different ages, the bidirectional relations across time were statistically the same across participants regardless of time of measurement. Accordingly,

cross-lags and autoserail regressions were constrained to be equal across time periods for all models.

### Parental Influences on Adolescent Adjustment

*Parental warmth.* Parental warmth was a significant predictor of both positive and problematic adolescent adjustment (see Table 4). Specifically, adolescents who characterized their parents as relatively higher in warmth were more likely to evince increases in psychosocial maturity and academic orientation, and declines in internalized distress and delinquency, even after controlling for concurrent perceptions of parental warmth and measures of adjustment.

*Parental hostility.* Parental hostility was also a significant predictor of both positive and problematic adolescent adjustment. Specifically, adolescents who characterized their parents as relatively higher in hostility were more likely to evince declines in psychosocial maturity and academic orientation, and increases in internalized distress and delinquency, even after controlling for concurrent per-

Table 4  
*Bidirectional Effects of Adolescent Adjustment and Parenting*

Adolescent adjustment	Path (wave <sup>n+1</sup> on wave <sup>n</sup> )	Parenting					
		Warmth		Hostility		Monitoring	
		Parameter (SE)	R <sup>2</sup> (range)	Parameter (SE)	R <sup>2</sup> (range)	Parameter (SE)	R <sup>2</sup> (range)
Psychosocial maturity	Parenting on adjustment	.13 (0.02)***	.49-.55***	-.07 (0.01)***	.32-.54***	-.15 (0.04)***	.46-.62***
	Adjustment on parenting	.04 (0.01)***	.56-.72***	-.10 (0.01)***	.55-.72***	-.05 (0.01)***	.55-.72***
	Adjustment on adjustment	.09 (0.01)***		.10 (0.01)***		.10 (0.01)***	
	Parenting on parenting	.12 (0.02)***		.01 (0.02)		.14 (0.03)***	
Academic orientation	Parenting on adjustment	.10 (0.02)***	.50-.56***	-.06 (0.01)***	.32-.54***	-.10 (0.04)*	.46-.56***
	Adjustment on parenting	.09 (0.02)***	.25-.49***	-.14 (0.03)***	.27-.49***	-.07 (0.02)***	.26-.49***
	Adjustment on adjustment	.14 (0.02)***		.11 (0.02)***		.11 (0.02)***	
Internalized distress	Parenting on parenting	.10 (0.01)***		-.01 (0.01)		.24 (0.05)***	
	Parenting on adjustment	-.04 (0.02)	.50-.58***	-.03 (0.01)**	.38-.57***	-.11 (0.04)**	.46-.68***
	Adjustment on parenting	-.05 (0.01)***	.20-.47***	.11 (0.01)***	.20-.47***	-.06 (0.01)***	.20-.48***
	Adjustment on adjustment	.18 (0.02)***		.18 (0.02)***		.18 (0.02)***	
Delinquency	Parenting on parenting	.04 (0.01)***		-.08 (0.01)***		.05 (0.01)***	
	Parenting on adjustment	-.23 (0.07)***	.50-.57***	-.15 (0.03)***	.38-.56***	-.46 (0.12)***	.48-.64***
	Adjustment on parenting	-.04 (0.001)***	.13-.50***	.08 (0.003)***	.12-.50***	-.04 (0.002)***	.15-.51***
	Adjustment on adjustment	.06 (0.01)***		.08 (0.01)***		.06 (0.01)***	
	Parenting on parenting	.04 (0.01)***		-.07 (0.01)***		.07 (0.01)**	

Note. R<sup>2</sup> = the proportion of variance accounted for in the dependent variable by the independent variables, including cross-lagged and auto-serial associations, across seven time points (range). The lowest and highest R<sup>2</sup> values across the seven independent effects are reported for both dependent variables (first row = parenting variable, second row = adolescent adjustment variable) in each model. \*p < .05. \*\*p < .01. \*\*\*p < .001.

ceptions of parental hostility and measures of adjustment.

*Parental monitoring.* Parental monitoring was a significant predictor of both positive and problematic adolescent adjustment. Specifically, after controlling for concurrent parental monitoring and measures of adolescent adjustment, adolescents who characterized their parents as relatively higher in monitoring were more likely to evince declines in internalized distress and delinquency. Unexpectedly, however, adolescents who reported relatively higher parental monitoring also were more likely to evince declines in psychosocial maturity and academic orientation.

*Adolescent Influences on Parenting*

*Parental warmth.* Significant child effects on parenting emerged, indicating that adolescents' behaviors influenced their parents over time. Psychosocial maturity, academic orientation, internalized distress, and delinquency all were significant predictors of parental warmth. Specifically, adolescents who scored relatively higher in measures of psychosocial maturity and academic orientation were more likely to report that their parents

became warmer over time, controlling for concurrent measures of adolescent adjustment and parental warmth. Likewise, adolescents who scored relatively high in measures of internalized distress and delinquency were more likely to report that their parents became less warm over time.

*Parental hostility.* Psychosocial maturity, academic orientation, internalized distress, and delinquency all were significant predictors of parental hostility, even after controlling for concurrent measures of adolescent adjustment and parental hostility. Specifically, adolescents who scored relatively higher on measures of psychosocial maturity and academic orientation were more likely to characterize their parents as decreasing in hostility over time. However, adolescents who scored relatively higher on measures of internalized distress and delinquency were also more likely to characterize their parents as decreasing in hostility over time.

*Parental monitoring.* Similar to the pattern of results reported with parental hostility, positive and problematic adolescent adjustment predicted declines in parental monitoring over time. Specifically, higher scores on psychosocial maturity, academic orientation, internalized distress, and delinquency predicted decreases in parental moni-

toring, controlling for concurrent measures of adolescent adjustment and parental monitoring.

### Discussion

It has long been theorized that parenting behaviors and adolescent behaviors are reciprocally interrelated, influenced by each other over time in a dynamic and interactive interplay. However, the statistical tools needed to test these theoretical models have only recently become available. The results of this study confirm that both parents and adolescents are each influenced by the others' behavior. Even after taking into account previous parenting behaviors and adolescent adjustment, we find significant bidirectional relations: Parenting predicts changes in adolescent behavior, and adolescent behavior predicts changes in parenting. Further, and similar to previous research testing bidirectional influences (Beauchaine et al., 2005), these bidirectional relations do not differ between older and younger adolescents. It is not clear whether the absence of age differences in patterns of relations between parenting and adjustment in the present sample is due to the relatively older age of the adolescents (the average adolescent in the study was followed from 16 to 19) or to the atypical nature of the sample, in whom normative psychosocial maturity may be stunted (see Steinberg, Chung, & Little, 2004).

The strength of this article lies in both its methodological design and statistical modeling approach. Empirical research rarely has examined the interconnected patterns of both adolescent adjustment and parenting over time in a fashion that reflects contemporary models of human development, which emphasize change through integrated systems. Additionally, research has rarely tested developmental theories derived from normative populations in vulnerable samples, such as incarcerated youth, or has examined links between parenting and adolescent adjustment during the transition to adulthood.

### Limitations

Before turning to a discussion of specific findings, several cautionary notes should be mentioned. Because many of the study participants were incarcerated at the time of one or more of their interviews, it was not possible to observe adolescents and parents interacting. Although several lines of research point to the significance of adolescents'

perceptions of parenting as influences on their mental health (Boyce et al., 1998; Silk et al., 2003), it is important to note that the measures of parental warmth, hostility, and monitoring used here were derived from adolescent reports, and it is difficult to disentangle the contribution of common method variance to observed correlations between parenting and adolescent behavior. Presumably, controlling for concurrent relations between parenting and adolescent outcomes while examining their over-time reciprocal links accounts for the common method and source variance the measures share, so this issue is less problematic than it would be in a cross-sectional study. Nevertheless, it is important to examine the over-time reciprocal links between adolescent adjustment and parenting with observational as well as self-report data. The sample is also limited by its disproportionate number of males. Unfortunately, the size of the female subsample was too small to test whether the bidirectional effects differed by sex.

In light of the large number of analyses that were conducted, the risk of Type I errors was increased. However, all of the interpreted models accounted for significant variation in the dependent variables at  $p < .001$ , and each significant effect accounted for between 12% and 72% of the variance at each time point.

### *Parental Influences on Adolescent Adjustment*

Overall, the observed influences of parents on adolescent adjustment in this sample of juvenile offenders are consistent with what has emerged from studies of community samples. The contribution of parental warmth to healthy adolescent adjustment is well documented in the literature (Goldstein & Heaven, 2000; Reitz, Dekovic, & Meijer, 2006; Simons-Morton & Chen, 2005; Steinberg, 1987, 2001; Steinberg et al., 1994; Vazsonyi & Belliston, 2006), including studies of high-risk populations and samples of serious juvenile offenders (Jones et al., 2007; Steinberg, et al., 2006). Although less attention has focused on parental hostility, prior research also has found that hostility negatively affects adolescent adjustment (Bender et al., 2007; Buehler, Benson, & Gerard, 2006; Hale, Engels, & Meeus, 2006; Loeber & Stouthamer-Loeber, 1986; Neiderhiser et al., 1999; Reitz, Dekovic, & Meijer, 2006; Steinberg et al., 2006).

Although the benefits of parental warmth and the costs of parental hostility are clear-cut, the effects of parental monitoring are not. Surprisingly, higher parental monitoring predicted *decreases* in

positive adjustment. It is not clear why this is the case. One possibility is that the adolescents in this sample, who averaged 16 at the beginning of the study, and who, given their antisocial histories, likely have problems with authority, experienced high levels of monitoring as intrusive and not supportive of positive adjustment. Whatever the explanation, the present results are consistent with emerging evidence that at least under some circumstances or in some samples, the impact of monitoring may be mixed (Boyer, 2006; Fletcher, Steinberg, & Williams-Wheeler, 2004; Kerr & Stattin, 2000; Stattin & Kerr, 2000).

#### *Adolescent Influences on Parenting*

Many of the observed over-time effects of adolescent behavior on parenting were expected. Not surprisingly, higher levels of adolescent psychosocial maturity and academic orientation predicted increases in parental warmth and decreases in hostility. Parental disengagement in response to adolescent problem behavior, as indicated by a decrease in monitoring, was also found, a finding that is consistent with other research (Dishion et al., 2000, 2004; Laird et al., 2003; Patterson et al., 1992; Rueter & Conger, 1998). However, positive adjustment also predicted decreases in parental monitoring, consistent with the possibility that adolescents receive greater autonomy and decision-making authority in response to positive psychosocial maturity (Bynum & Kotchick, 2006). We also find that parents become less warm and hostile in response to their teenagers' involvement in delinquency and internalized distress, a finding that is consistent with predictions from studies of coercive family processes and with the notion that problematic adolescent behavior may elicit parental disengagement.

#### *Concluding Remarks*

The fact that parental influences on adolescent functioning are detected when controlling for adolescents' impact on their parents gives us greater confidence in the power of parents, even in late adolescence, and even within a population that many believe is resistant to parental influence. It is important to note that we have no information on the quality of parenting to which adolescents were exposed prior to their arrest and are therefore unable to examine whether and in what ways parenting contributed to the initiation of these youth's delinquent behavior or how parents may have

altered their behavior in response to the onset of their child's delinquency. Although positive parenting clearly did not prevent the adolescents in this sample from becoming delinquent, it was nonetheless associated with desistance from antisocial activity.

The present findings are consistent with evaluations of interventions for serious juvenile offenders, which point to the relatively greater effectiveness of family-based treatments, including multisystemic therapy, functional family therapy, and multi-dimensional treatment foster care (Greenwood, 2006). The evidence here points to the particular importance of parental warmth as a positive influence on adolescent behavior and to the special significance of parental hostility as a negative one; accordingly, interventions designed to increase warmth and diminish hostility in parents of antisocial youth may be especially valuable. Given the mixed findings regarding parental monitoring, it may be useful to reconsider whether increasing parental vigilance, at least in families of older offenders, is a prudent strategy.

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