

## Continuity of Parenting Practices Across Generations in an At-Risk Sample: A Prospective Comparison of Direct and Mediated Associations

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A prospective model of parenting and externalizing behavior spanning 3 generations (G1, G2, and G3) was examined for young men from an at-risk sample of young adult men (G2) who were in approximately the youngest one third of their cohort to become fathers. It was first predicted that the young men in G2 who had children the earliest would show high levels of antisocial behavior. Second, it was predicted that G1 poor parenting practices would show both a direct association with the G2 son's subsequent parenting and a mediated effect via his development of antisocial and delinquent behavior by adolescence. The young fathers had more arrests and were less likely to have graduated from high school than the other young men in the sample. Findings were most consistent with the interpretation that there was some direct effect of parenting from G1 to G2 and some mediated effect via antisocial behavior in G2.

**KEY WORDS:** three generations; parenting; fathers; antisocial behavior; at risk; temperament; externalizing.

One of the major unresolved issues in developmental psychology is the extent to which parenting practices may be passed from one generation to the next, and whether this plays a role in the intergenerational transmission of social behaviors (Patterson, 1998). It is well established that poor parenting practices are associated with conduct problems or antisocial behavior in children (Dishion, French, & Patterson, 1995; Farrington, 1992, 1995; Fergusson, Horwood, & Lynskey, 1994; Gardner, 1989, 1994; Patterson, 1982, 1997; Rutter, Giller, & Hagell, 1998; Shaw et al., 1998). However, the extent to which parenting practices are passed from one generation to the next, and are associated with a cross generational stability in antisocial or conduct problem behaviors, has yet to be established.

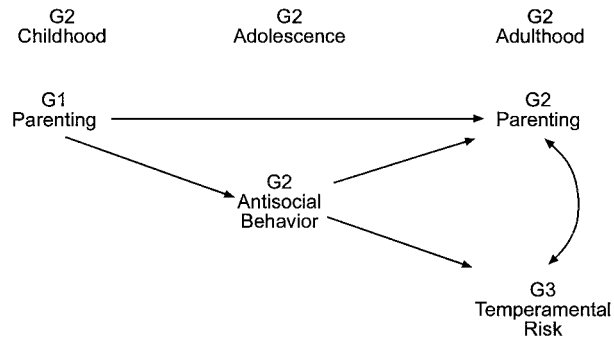
A second issue concerns the mechanisms by which intergenerational transmission of parenting might occur. Shown in Fig. 1 is a model of the intergenerational transmission of parenting and temperamental risk for exter-

nalizing, whereby parenting by G1 is viewed as having both a direct and a mediated association with parenting by G2. The direct path is hypothesized to be due to G2 learning parenting behavior in childhood and adolescence from G1, and subsequently employing similar parenting behaviors as an adult. Unless alternative parenting behaviors are learned by some other means, such as from grandparents, parental surrogates, or partners, or G2 actively rejects G1's parenting practices, there is likely to be some direct association. These latter factors, however, are expected to contribute to some discontinuity in parenting across generations.

There is some evidence from cross-sectional studies of a direct association of parenting across generations. Olsen, Martin, and Halverson (1999) asked grandmothers and mothers to self-report their parenting practices and found a significant association in both nurturing and restrictive parenting techniques. Covell, Grusec, and King (1995) similarly found that mothers and grandmothers were alike in their use of physical punishment and material rewards in response to children's transgressions. Finally, studies of the intergenerational transmission of child abuse have found that adults who were abused as children may repeat these abusive practices with their own children

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**Fig. 1.** Transmission of parenting and association with temperamental risk.

(Egeland, 1993; Pears & Capaldi, 2001). However, intergenerational transmission of child abuse is certainly not inevitable, and many adults who were abused as children are not abusive toward their own children (Kaufman & Zigler, 1993).

A mediated pathway from poor parenting by G1 to poor parenting by G2 (Fig. 1) is hypothesized to be the main intergenerational pathway for the transmission of poor parenting and antisocial behavior. The mediational association involves two steps. First, it is predicted that poor parenting by G1 is associated with the development of antisocial behavior in their sons. It has been shown in many prior studies that poor parenting is associated with antisocial behavior or conduct problems in children (Dishion, French, et al., 1995; Farrington, 1995; Gardner, 1989, 1994; Patterson, 1997; Shaw et al., 1998). In turn, the children's antisocial behavior is associated with the use of unskilled, aggressive, and coercive behaviors in interactions with others, including peers (Coie & Kupersmidt, 1983; Dishion, Andrews, & Crosby, 1995), partners (Capaldi & Clark, 1998; Giordano, Millhollin, Cernkovich, Pugh, & Randolph, 1999; Magdol et al., 1997), and offspring (Patterson & Capaldi, 1991; Simons, Wu, Johnson, & Conger, 1995).

The second step in the hypothesized mediational association of parenting across generations is an association between the development of antisocial behavior by adolescence and poor parenting in the next generation. It has been demonstrated that antisocial behaviors in parents are related to harsh and inconsistent discipline and poor supervision of children (Capaldi & Clark, 1998; Patterson & Capaldi, 1991). Patterson and Dishion (1988) found this association for both mothers and fathers. Antisocial parents seem to use a coercive interpersonal style marked by negative affect in a variety of relationships and situations, including discipline confrontations with their own children. This suggests that poor parenting by G1 would

lead to antisocial behavior in G2 that would in turn be associated with poor discipline of G3.

Antisocial behavior in adolescence is also predictive of developmental failures and an accelerated pathway to adulthood (Burton, Obeidallah, & Allison, 1996; Capaldi & Shortt, in press; Newcomb, 1987). For the current sample, antisocial behavior in G2 has been shown to lead to a number of developmental failures in adulthood such as poor education and employment outcomes, driver's license suspensions, and arrests (Capaldi & Stoolmiller, 1999; Wiesner, Vondracek, Capaldi, & Porfeli, in press). These make it likely that the establishment of the family of procreation and parenting will occur in a higher risk context (Hardy, Astone, Brooks-Gunn, Shapiro, & Miller, 1998; Serbin et al., 1998). Higher risk contexts provide less positive supports for the parent and child, and are related to the occurrence of such problems as parental separations, stress events, substance use, and depressive symptoms (Capaldi & Patterson, 1994; Conger, Ge, Elder, Lorenz, & Simons, 1994; McLoyd, Jayaratne, Ceballos, & Borquez, 1994), which are likely further to diminish parenting in two main ways: First, through taking time and attention from parenting and, second, by increasing irritability and negative affect that disrupts parenting.

A factor strongly associated with accelerated pathways to adulthood and risk contexts for G3 is that both adolescent boys and girls with higher levels of antisocial behavior are likely to become parents at a much younger age than their peers (Fagot, Pears, Capaldi, Crosby, & Leve, 1998; Scaramella, Conger, Simons, & Whitbeck, 1998; Serbin et al., 1998; Miller-Johnson, Winn, Coie, et al., 1999; Miller-Johnson, Winn, & Maumary-Gremaud, 1999; Underwood, Kupersmidt, & Coie, 1996). Many studies have shown an association between antisocial behavior, such risk factors as academic problems and school dropout, and teen parenthood (Fagot et al., 1998; Hardy et al., 1998; Jaffee, Caspi, Moffitt, Taylor, & Dickson, 2001). Young, unmarried fathers in a national sample were found to have low academic achievement, high school dropout rates, and high levels of unemployment (Lerman, 1993). Antisocial behavior and adolescent parenthood have been associated with health problems for the infant such as premature birth and injuries (Fagot et al., 1998; Serbin, Peters, & Schwartzman, 1996).

According to the theoretical model depicted in Fig. 1, continuity in poor parenting across generations is less likely when the second generation does not develop antisocial behavior. Prosocial behavior is associated with less risk of negative affect and coercive interaction styles and a more positive context in young adulthood, including less use of substances, higher levels of education and

better employment patterns, higher social support, and less stress.

Information regarding intergenerational factors associated with parenting is sparse for mothers and almost completely lacking for fathers. The purpose of this study was to examine a prospective model of parenting and early indicators of externalizing behavior spanning three generations (G1, G2, and G3) for young men from an at-risk sample of young adult men (the Oregon Youth Study; OYS) who were in approximately the youngest one third of their cohort to become fathers.

The G3 children averaged 22 months of age in the current study, which is too young for accurate assessment of conduct problems. Thus, the G3 child characteristic examined in the current study (shown in Fig. 1) was temperamental risk for externalizing, including higher activity level and higher levels of expression of anger. These factors were expected to make the child more difficult to handle during interactions with the parent, and thus to be associated with less positive interactions with parents and less consistent and harsher levels of discipline. Gilliom, Shaw, Lukon, Schonberg, and Beck (2001) found that anger at age 3 1/2 years was significantly predictive of externalizing behaviors and lack of cooperation as rated by teachers at age 6 years. The basis for these temperamental characteristics is expected to be partially genetic, as indicated by the direct arrow from G2 antisocial behavior to G3 temperamental risk in Fig. 1 (genetic factors were not measured directly in the current study). Scarr (1985, 1992) hypothesized that genetic expression was related to an evocative effect of the child in disrupting parental discipline. Children's temperament has been found to influence parenting practices (e.g., Fagot & Gauvain, 1997). A study by Ge et al. (1996), using an adoption design, found evidence for a bidirectional association of child temperament and discipline practices. However, factors both in the physical environment of the fetus such as parental substance use (Edmondson & Smith, 1994; Weinberg, 1997) and in the social environment of the infant such as parenting practices (Belsky, Fish, & Isabella, 1991; Engfer, 1993; Park, Belsky, Putnam, & Crnic, 1996) have been associated with children's temperamental characteristics. Thus, temperamental risk may be partially due to the physical environment of the fetus and also to physical and social experiences of the infant.

In summary, it was hypothesized that the young men in G2 who had children the earliest would show higher levels of antisocial and related problem behaviors. Second, it was predicted that G1 poor parenting practices, including poor supervision, discipline, parent-child relationship, and low parent involvement would show both a direct association with the G2 son's subsequent parent-

ing in his family of procreation and a mediated effect via his development of antisocial and delinquent behavior in adolescence. It was predicted that G2's level of antisocial and delinquent behavior would also show some direct association with G3 temperamental risk due to untested genetic effects. Finally, it was predicted that G2 parenting would show a concurrent association with G3 temperamental risk, which is expected to be due to bidirectional influences.

## METHOD

### Participants

Hypotheses were tested using prospective measures on three generations in the OYS and the Intergenerational Study (3GS). Original sample recruitment (OYS) was of G1 and G2 (parents and sons) and involved recruiting all fourth-grade boys who attended schools in higher crime areas of a medium-sized metropolitan region in the Pacific Northwest. A 74% recruitment rate was attained for a sample size of 204. The sample represented the area in being 90% Euro-American and was predominantly from lower- and working-class families (Hollingshead, 1975). Two young men in G2 have died, and retention rates have been 97% or higher at each year. Assessments were conducted yearly, starting in Grade 4, and were multimethod, multiagent.

The 3GS involved recruiting all biological and stepchildren of the G2 OYS men and is ongoing. As of April 2001, 111 offspring from 73 young men in OYS had participated in the first wave of 3GS assessment, at approximately 22 months of age. Of these, seven were stepchildren of the OYS subject, and one had been adopted. These cases were dropped, resulting in 103 biological offspring. Of these, one was adopted out to another family as an infant and three of the offspring were greater than two standard deviations from the mean age at the assessment, due to scheduling difficulties early in the study. These outliers were excluded from the current analyses because the assessment was less appropriate for these ages. This resulted in 99 offspring of 68 OYS participants included in the current study. The 49 boys and 50 girls ranged in age from 16.6 to 30.6 months, averaging 21.8 months, with a standard deviation of 3.6. At the time of their child's assessment, the ages of the parents ranged from 17.3 to 38.6 (mean = 23.6) and from 20.0 to 27.3 (mean = 24.0) for mothers and fathers respectively. Thus, overall, the current study involved very young parents. At the time of the G3 assessment, 79% of the fathers lived with the G3 children included in the current study, and only 2% of the fathers

did not see their child (these two cases were missing data on the father parenting variables).

### Procedures

For G2 in OYS, full assessments were collected every 2nd year through high school, starting with Year 1 at ages 9–10 years. Outcome variables involving the adolescent's behavior were collected every year. The assessments used in the current study included interviews, questionnaires, telephone interviews in Years 1 and 3 (a total of six, 3 days apart), and home observations in Years 1 and 3 (a total of three 1-hr observations per year). Teacher questionnaires were employed to sample school adjustment. Continuity was maintained when possible; however, measures were adapted to address developmental changes and to improve measurement. Details of the assessment instruments and procedures in Year 1 were presented in Capaldi and Patterson (1989).

The home observations in Years 1 and 3 were coded with the Family Process Code (Dishion et al., 1983), a real-time code. Each code is five-digit, with a code for actor, recipient, a two-digit behavioral content code, and a single-digit affect or valence code on a scale of one to five. There are 25 behavioral content codes. Ratings were filled out following the home observation. Twenty percent of the observations were inter-coder reliabilities, and coders were required to maintain at least 75% agreement.

The Year 1 assessment for G3 in 3GS (approximately 22 months of age) entailed structured parent-child tasks at the Center, as well as questionnaires and interviews for the parents. The first visit of the assessment was conducted with the mother, and a second, separate assessment was conducted with the father within the next 2 weeks.

### Measures

For the OYS, the measurement design involved several indicators for each theoretical construct, based on multiple agents and methods, especially for constructs central to the main study hypotheses, including antisocial behavior and parenting practices (Patterson & Bank, 1986). In building scales and constructs, two criteria were used. Items included in the scale had to show internal consistency (i.e., an alpha of .6 or higher and an item-total correlation of .2 [ $p$  approximately .05] or higher), and each scale had to converge with other indicators designed to assess the same construct (i.e., the factor loading for a one-factor solution had to be .3 or higher). Details of the item and factor analyses for the first year of the OYS

were described by Capaldi and Patterson (1989). Latent variables and indicators are outlined below, and detailed in Table I.

### OYS Measures of G1 Parenting and G2 Antisocial Behavior

#### *G1 Poor Parenting of G2*

The parenting skills of G1 were measured using four constructs from each of the OYS Years 1 and 3, when the boys were ages 9–10 and 11–12 years, respectively. Parent-child relations, monitoring, and discipline were combined across the study years (1 and 3). Parent-child relations assessed how well the parents and child got along together as reported by the parents and child and rated by observers. Parental monitoring was assessed by questions regarding tracking and supervision of the child's whereabouts and activities. Discipline included disciplinary practices that were harsh, inconsistent, and/or lax and was measured using observational scores of nattering and harsh behaviors as well as parental and child reports and observer ratings. The nattering score from the home observations was the probability that the parent directed some nonexplosive negative behavior toward the child, given that she/he was interacting with him. The codes included were negative verbal, coerce ambiguous, refuse, negative nonverbal, noncomply, command with negative valence, command ambiguous with negative valence, and physical interact with negative valence. Harsh or abusive discipline was the probability of abusive behavior being directed toward the boy; including, yelling, humiliating, threatening, and hitting. The home observers also rated the mother and father separately on a 5-point scale on both positive and negative discipline items.

The parenting indicators were scored such that the *poorer* the parenting, the higher the score. The parent-child relations, monitoring, and discipline constructs showed significant stability across Years 1 and 3 ( $r = .63, .50, \text{ and } .58, p < .001, \text{ respectively}$ ).

#### *Antisocial/Delinquent Behavior of G2 in Adolescence*

The antisocial and delinquent behaviors of the OYS youth were calculated as two separate constructs, and assessed in both early- and midadolescence, study Years 5 and 7, when the boys were ages 13–14 and 15–16 years. Antisocial behavior was assessed by parent, youth, and teacher reports. The youth indicator was not available in Year 7 because the telephone interviews were not conducted. Delinquency was assessed by parent and youth

Table I. Measures

Indicator <sup>a</sup>	Respondent	No. of items/indicators	Standardized Cronbach's alpha or correlation		Sample item
			Coh.1	Coh.2	
<i>G1 parenting</i>					
Monitoring (OYS Year 1)		2	.22	.25	
Child agent indicator		2	.62	.59	
Child telephone interview	Child	3	.82	.85	In the last 24 hr, did your parent's talk to you about who you played with?
Child interview	Child	7	.62	.50	How often, before you go out, do you tell your parents when you'll be back?
Child interviewer ratings	Assessor	1	—	—	This child seemed to be well supervised by his parents.
Parent agent indicator		2	.33	.32	
Parent interview indicator		2	.34	.54	
Mother's monitoring		2	.35	.22	
Parent interview	Mother	11	.76	.61	When your son gets home from school, how often is someone there within 1 hr?
Parent interviewer ratings	Assessor	1	—	—	How carefully would you say each parent monitors this child?
Father's monitoring		2	.39	.35	
Parent interview	Father	11	.74	.56	How often would you know in a day or two if your son lost a jacket or sweater?
Parent interviewer ratings	Assessor	1	—	—	How carefully would you say each parent monitors this child?
Parent telephone interview	Parent	1	—	—	How many hours did you or your spouse spend with your son yesterday?
Monitoring (OYS Year 3)		5	.62	.47	
Parent interview	Mother	5	.64	.62	How often do you talk with son about his plans for the coming day?
Parent telephone interview	Parent	2	.25	.06	How many hours did you or your spouse spend with your son yesterday?
Child interview	Child	5	.59	.67	How often do you tell your parents when you will be back?
Child telephone interview	Child	2	.50	.66	Did your parent(s) talk to you about your plans for tomorrow?
Interviewer ratings					
Parent	Assessor	1	—	—	How carefully does each parent monitor his child?
Child	Assessor	1	—	—	This child seemed to be well supervised by his parents.
Discipline (OYS Year 1)		3	.64	.67	
Observer ratings		2	.79	.77	
Observer ratings of mother	Assessor	12	.89	.87	Parent was overly strict, authoritarian, oppressive.
Observer ratings of father	Assessor	14	.83	.80	Clearly pinpointed the infraction/misbehavior when disciplining.
Parent interview		2	.18	.09	
Specific discipline practices		2	.43	.31	
Mother interview	Mother	15	.55	.66	If your son did any of the following, what would you do? (Swear or call names)

Table I. (Continued)

Indicator <sup>a</sup>	Respondent	No. of items/indicators	Standardized Cronbach's alpha or correlation		Sample item
			Coh.1	Coh.2	
Father interview	Father	15	.57	.71	If your son did any of the following, what would you do? (Cheat on test)
General discipline practices		2	.21	.38	
Mother interview	Mother	7	.67	.74	How often does your son get away with things you feel should've been punished?
Father interview	Father	7	.62	.72	How often do you get angry when you punish your son?
Family process code		2	.47	.28	
Parent nattering	Coder	—	—	—	Frequency proportion.
Parent abusive cluster	Coder	—	—	—	Frequency proportion.
Discipline (OYS Year 3)		6	.74	.80	
Parent interview		2	.48	.51	
Mother interview	Mother	10	.80	.80	How often do you get angry when you punish your son?
Father interview	Father	10	.78	.81	How often does your son get away with things you feel should've been punished?
Child interview	Child	5	.64	.54	How often do your parents agree on how to punish you?
Parent telephone interview	Parents	1	—	—	Did your son do anything in last 3 days he should've been disciplined for, but wasn't?
Observer ratings		2	.86	.89	
Mother ratings	Observer	7	.92	.89	Erratic, inconsistent, and haphazard discipline.
Father ratings	Observer	7	.90	.85	Parent seems to discipline target child well.
Parent interviewer ratings		2	.72	.51	
Mother interviewer ratings	Interviewer	1	—	—	How would you rate this parent on discipline?
Father interviewer ratings	Interviewer	1	—	—	How would you rate this parent on discipline?
Child interviewer ratings	Interviewer	1	—	—	Did this boy seem well disciplined by his parents?
Family process code: Nattering	Coder	—	—	—	Frequency proportion.
Parent-child relationship (OYS Year 1)		4	.41	.63	
Child interview	Child	2	.77	.58	How well do you get along with your mom?
Parent interview		2	.55	.49	
Mother interview	Mother	4	.70	.76	How well do you get along with your son?
Father interview	Father	4	.70	.59	Has your son been pleasant to raise?
Interviewer ratings		2	.52	.59	
Mother interviewer ratings	Interviewer	1	—	—	This parent seemed generally accepting of son.
Father interviewer ratings	Interviewer	1	—	—	This parent seemed generally accepting of son.
Observer ratings		2	.59	.65	
Mother ratings	Observer	1	—	—	There were friendly relations between mother and son.
Father ratings	Observer	2	.78	.80	Father was distant, detached from son.

Table I. (Continued)

Indicator <sup>d</sup>	Respondent	No. of items/indicators	Standardized Cronbach's alpha or correlation		Sample item
			Coh.1	Coh.2	
Parent-child relationship (OYS Year 3)		3	.67	.76	
Mother-child relationship		3	.66	.77	
Mother interview	Mother	6	.75	.78	How often does target child go out of his way to please you?
Mother interviewer ratings	Interviewer	2	.80	.72	Parent seemed generally accepting of child.
Home observer ratings	Observer	9	.89	.85	Child was physically affectionate to parent.
Father-child relationship		3	.69	.73	
Father interview	Father	6	.78	.74	In general, how well do you get along with target child?
Father interviewer ratings	Interviewer	2	.70	.62	Parent seemed generally accepting of target child.
Child interview	Child	1	—	—	Generally speaking, how well do you get along with your father?
Child report		2	.47	.58	
Armsden & Greenberg Questionnaire	Child	12	.76	.80	My parents accept me as I am.
Social Control Questionnaire	Child	7	.86	.87	How do you describe parents? (Warm/Cold).
<i>G2 behavior</i>					
Antisocial behavior (OYS Year 5)		3	.66	.68	
Parent indicator		2	.76	.70	
Parent report, CBC overt		2	.82	.60	
Mother CBC, overt	Mother	7	.80	.82	Child argues a lot.
Father CBC, overt	Father	7	.80	.77	Child gets in many fights.
Parent report, CBC covert		2	.79	.55	
Mother CBC, covert	Mother	8	.82	.68	Child destroys his own things.
Father CBC, covert	Father	7	.85	.80	Child steals at home.
Child indicator		3	.74	.68	
Telephone interview, overt antisocial	Child	8	.90	.89	In the last 24 hr, did you get into a fight?
Telephone interview, covert antisocial	Child	3	.72	.63	In the last 3 days, did you take anything that didn't belong to you?
Child interviewer ratings	Interviewer	1	—	—	How likely is it target child will have future police trouble?
Teacher Indicator		3	.93	.91	
Teacher CBC, overt	Teacher	11	.96	.95	Child is disobedient at school.
Teacher CBC, covert	Teacher	8	.91	.90	Child lies or cheats.
Teacher Questionnaire	Teacher	1	—	—	How often does he exert negative influence on his friends
Antisocial behavior (OYS Year 7)		3	.76	.72	
Parent Indicator		2	.74	.75	
Parent Report, CBC overt		2	.74	.53	
Mother CBC, overt	Mother	7	.81	.82	Child argues a lot.
Father CBC, overt	Father	7	.73	.76	Child gets in many fights.
Parent Report, CBC covert		2	.76	.74	
Mother CBC, covert	Mother	8	.84	.84	Child destroys his own things.
Father CBC, covert	Father	7	.86	.89	Child steals at home.
Peer Involvement Questionnaire		2	.14	.30	
Mother report		1	—	—	How often (does target child have) conflicts with other kids at home?
Father report		1	—	—	How often (does target child have) conflicts with other kids at home?

Table I. (Continued)

Indicator <sup>a</sup>	Respondent	No. of items/indicators	Standardized Cronbach's alpha or correlation		Sample item
			Coh.1	Coh.2	
Teacher indicator		3	.88	.86	
Teacher CBC, overt	Teacher	11	.92	.94	Child is disobedient at school.
Teacher CBC, covert	Teacher	8	.87	.84	Child lies or cheats.
Teacher Questionnaire	Teacher	1	—	—	How often does he exert negative influence on his friends
Child delinquency construct (OYS Year 5)		4	.73	.69	
Parent report, Elliot general delinquency		2	.50	.25	
Mother report, Elliot general delinquency	Mother	39	Sum	Sum	In the last year, how many times has your son sold hard drugs?
Father report, Elliot general delinquency	Father	39	Sum	Sum	In the last year, how many times has your son stolen from members of the family?
Parent Questionnaire		2	.20	.26	
Mother Report	Mother	1	—	—	Has your son ever been picked up by police for any reason?
Father Report	Father	1	—	—	Has your son ever been picked up by police for any reason?
Child report, Elliot general delinquency	Child	42	Sum	Sum	How many times in the past year have you been involved in gang fights?
Arrest records	Records	1	—	—	Total number of target child arrests through Year 5.
Child Delinquency Construct (OYS Year 7)		3	.68		
Parent interview		2	.78		
Mother interview	Mother	1	—	—	Has child done something for which he was or should've been arrested?(# offenses)
Father interview	Father	1	—	—	Has child done something for which he was or should've been arrested?(# offenses)
Child report, Elliot general delinquency	Child	42	Sum	Sum	How many times in the past year have you been involved in gang fights?
Arrest Records	Records	1	—	—	Total number of target child arrests through Year 7.
<i>G2 parenting</i>					
Father's harsh discipline		2	.25		
Report, Discipline Questionnaire	Father	6	.69		How often do you spank or swat your child when they won't mind or break a rule?
Report on father, Discipline Questionnaire	Mother	6	.69		How often do you think your partner's discipline of your child is too strict?
Father's poor discipline implementation		2	.43		
Self report, Discipline Questionnaire	Father	6	.60		How often do you let child get away with things you feel should've been punished?
Report on father, Discipline Questionnaire	Mother	6	.59		How often does your partner get angry when punishing your child?
Father's poor discipline results		2	.33		
Self report, Discipline Questionnaire	Father	5	.64		How often do you feel confident you can change or correct your child's misbehavior?

Table I. (Continued)

Indicator <sup>a</sup>	Respondent	No. of items/indicators	Standardized Cronbach's alpha or correlation		Sample item
			Coh.1	Coh.2	
Report on father, Discipline Questionnaire	Mother	5	.48		How often does your partner have to discipline child repeatedly for the same thing?
Child Rearing Task Questionnaire	Father	10	.81		How much do you enjoy bathing the child?
<i>G3 Behavior</i>					
Toddler behavior assessment, activity level	Mother	20	.72		When in the bathtub, how often did your child sit quietly?
Toddler behavior assessment, activity level	Father	20	.77		When being dressed, how often did your child squirm or try to get away?
Toddler behavior assessment, anger	Mother	28	.89		When you took an item your child shouldn't have been playing with, how often did they scream?
Toddler behavior assessment, anger	Father	28	.91		When it was bed/nap time, and your child didn't want to go, how often did they physically resist?

<sup>a</sup>For each of the given generation, the first level indicates constructs, the second level indicates Agent Indicators, and the third level, the Scales.

reports as well as by official arrest records. Parent report of delinquency was not collected in Year 7.

### *G2 Poor Parenting of G3*

Discipline of G3 by G2 was assessed using primarily the same items that had been used for assessment of G1 parenting of G2. However, at Year 1 of 3GS, no home observations were conducted, so parallel observational measures were not available (they are being collected in Year 2 of 3GS). For 3GS, a questionnaire was administered to both the G2 mother and father containing the same questions on discipline that G1 had completed about G2 for the first year of OYS. For 3GS, both parents answered the questions about themselves, as well as about the child's other parent. In the current study, only questions regarding the G2 father's behaviors were included. Subscales relating to harsh discipline, poor implementation, and lack of confidence in discipline were formed first within reporting agent (e.g., mother's report of father's poor discipline and father's self-report of poor discipline). Agent report scales were then averaged to arrive at parent report of the father's discipline subscales. The correlations between mother and father reports are shown in Table I, and varied between .25 and .43.

Father's lack of pleasure in parenting was assessed by father's self-report on the Parent-Child Rearing Task

(Fagot, 1995). This instrument consists of 10 self-report items measuring the extent to which the father liked/disliked day-to-day child rearing tasks: including, bathing, feeding, and bedtime. The indicator was scored so that higher scores represented greater dislike of these parenting activities.

### *G3 Toddler's Temperamental Risk*

The G3 child's temperamental risk or challenging behavior was assessed using the Toddler Behavior Questionnaire (Rothbart, 1981). The activity level scale contained 20 items (e.g., "How often did child run through house?"), and the anger scale was comprised of 28 items (e.g., "When it was time for bed or a nap and your child did not want to go, how often did child protest by crying loudly?"). The mother and father reports on these scales were entered as separate indicators of temperamental risk. Mother and father reports were significantly associated ( $r = .51$  and  $.50$ ,  $p < .001$  for activity level and anger, respectively).

### **Gender Effects**

Although the sample size was too low to test models by gender, we did examine whether there were any

significant gender differences in mean levels of the father parenting and temperamental risk measures. There were no differences that were significant at the .05 level. However, mother's report of the child's activity level showed a trend ( $p < .10$ ) toward higher activity levels for boys.

### Data Analytic Strategies

Structural equation model estimation was conducted in AMOS (Arbuckle, 1996). To address the issue of missing data, models were estimated using the full information maximum likelihood (FIML) procedure (Amos User's Guide, 1997; Arbuckle, 1996), which has been demonstrated to provide unbiased estimates when the data are missing at random. Variables were examined for nonnormality and outliers. Some of the variables exhibited moderate skewness; however, power transformations of the variables did not improve the fit of the model and therefore untransformed variables were used. Once acceptable fit was achieved in the latent construct measurement model, the hypothesized structural model was tested and evaluated using goodness of fit indices.

Hypotheses regarding mediation were tested first by examining the significance of the direct association between the latent variables and second by examining whether the direct association became nonsignificant in the presence of significant mediated pathways (Baron & Kenny, 1986). In the latter case, the association could best be described as mediated. Because multiple children in the same family were included, analyses were repeated including only firstborns to test the robustness of the findings.

## RESULTS

### Risk Levels for Three-Generational Sample (3GS) Fathers

A comparison was made of men with a biological child in the current three-generational modeling analyses, versus the rest of the men in OYS (a combination of non-fathers, stepfathers, men with a biological child who was not participating, and men with a biological child who was still too young to participate) on two indicators of risk, namely, arrest record and high school graduation. The 3GS men were about age 22 years at the birth of the child and age 24 years at the child assessment for the study. Sixty-eight men (33% of the sample) were included in the current three-generational sample (note that some men had more than one biological child in the analyses). Fifty-one

percent of these men had two or more arrests by age 23–24 years, and 38% had five or more arrests. Of the men not in the current three-generational sample, 34% had two or more arrests by age 23–24 years, and 20% had five or more arrests. Of the 3GS men, 34% had graduated from high school, and 40% had no graduation and no General Equivalency Diploma (GED). Of the non-3GS men, 57% graduated from high school, and 27% had no graduation and no GED. A chi-square test indicated that the 3GS fathers had significantly lower education levels than the non-3GS men, Pearson chi-square (2) = 9.43,  $p < .01$ . An analysis of variance of the mean number of arrests for the two groups was also significant, indicating higher number of arrests in the 3GS group,  $F(1, 204) = 12.96$ ,  $p < .001$ .

### Measurement Model

The correlation matrix for the 15 indicators, along with means and standard deviations, are shown in Table II. Hypotheses were tested using the Amos structural equation modeling program (Amos User's Guide, 1997) and full information maximum likelihood estimation, allowing for using all data points ( $N = 99$ ), as compared with listwise deletion whereby any case missing an indicator is eliminated from the model. As a first step, a measurement model was estimated.<sup>3</sup> Fit indices indicated an acceptable fit to the data, once several error terms were allowed to covary, chi-square (79,  $N = 99$ ) = 81.17,  $p = .41$ , comparative fit index (CFI) = .999, normed fit index (NFI) = .973. Factor loadings and standard errors for the model are shown in Table III. There were three indicators for G1 parenting, whereas the remaining latent variables were comprised of four indicators. Each was significantly associated with the factor at or above  $p < .05$ . G1 parenting and G2 antisocial/delinquent behavior showed relatively strong convergence of indicators. Associations were rather more uneven for G2 parenting and G3 temperamental risk.

Shown in Table IV are the covariances between the latent variables. All associations were significant at  $p < .05$  or greater. Therefore, as hypothesized, there was a significant direct association found between G1's poor parenting of their G2 study son and G2's subsequent poor parenting of his offspring when a young man, approximately 12 years later. Also as hypothesized, poor parenting by G1 was associated with the level of G2's antisocial behavior in adolescence, which, in turn, was significantly

<sup>3</sup>The models tested had a larger number of parameters in proportion to observations than generally recommended (Kline, 1998). The models were reestimated with the number of parameters reduced by fixing loadings. The results were essentially the same. Only the models with the larger number of estimated parameters are shown.

Table II. Matrix of Indicators

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
G1 poor parenting															
1. Poor monitoring	—														
2. Poor parent-child relations	.38	—													
3. Poor discipline	.41	.59	—												
G2 antisocial/delinquent behavior															
4. Year 5 antisocial behavior	.08	.34	.29	—											
5. Year 5 delinquency	.06	.35	.25	.69	—										
6. Year 7 antisocial behavior	-.08	.42	.30	.69	.56	—									
7. Year 7 delinquency	.09	.37	.33	.68	.66	.74	—								
G2 poor parenting.															
8. Harsh discipline practices	.06	.12	.07	.08	-.08	.14	-.07	—							
9. Poor discipline implementation	.10	.28	.32	.28	.08	.30	.21	.10	—						
10. Low confidence in discipline	.17	.29	.22	.19	.02	.30	.18	.30	.57	—					
11. Low pleasure in parenting	.18	.33	.34	.06	.08	.20	.20	.19	.16	.17	—				
G3 temperamental risk															
12. Mother report, activity level	.03	.00	.02	.04	.10	.17	.03	.09	.26	.21	.18	—			
13. Father report, activity level	.11	.15	.09	.06	.24	.32	.19	.21	.20	.21	.19	.51	—		
14. Mother report, anger	.20	.16	.23	.17	.08	.13	.11	.45	.47	.17	.37	.13	.13	—	
15. Father report, anger	.13	.25	.27	.04	.14	.20	.18	.26	.36	.47	.32	.17	.27	.48	—
Mean	0.40	0.28	0.34	0.35	0.43	0.42	0.31	1.78	1.72	2.07	1.99	4.24	4.30	3.84	3.87
Standard deviation	.93	.83	.73	.80	.95	.89	.94	.47	.43	.48	.50	.60	.58	.82	.88
N	99	99	99	96	99	97	97	91	91	92	87	99	84	98	81

predictive of his poor parenting practices as a young man. G2's level of antisocial behavior was also associated with his son or daughter's level of temperamental risk. Finally, as predicted, G2's poor parenting was associated with the G3 child's concurrent level of temperamental risk. The direct association of G1's poor parenting of G2 and G3's

temperamental risk was not expected. It is possible that the association will be mediated by G2's antisocial behavior and G2's poor parenting.

Mediated Versus Direct Prediction Models

Shown in Table V are the path coefficients and *t*-scores for the model testing the hypothesis that the associations of G1's poor parenting with both G2's parenting of G3 and G3's temperamental risk would be mediated by G2's antisocial behavior (Model 1). The model showed an acceptable fit to the data, chi-square (81) = 86.76, *p* < .31, CFI = .998, NFI = .971. All paths shown in the model were significant at the .05 level or above. Therefore, the findings of Model 1 were consistent with the hypothesis that the across-generational association of poor parenting was mediated by the G2 father's development

Table III. Factor Loadings for the Measurement Model

	Loading	SE
G1 parenting		
Low supervision	.52	.16
Poor parent-child relationship	.88	—
Harsh and inconsistent discipline	.72	.14
G2 antisocial/delinquent behavior		
Antisocial behavior age 13-14 years	.74	.11
Delinquency age 13-14 years	.52	.13
Antisocial behavior age 15-16 years	.90	—
Delinquency age 15-16 years	.86	.12
G2 parenting		
Harsh discipline	.41	.24
Poor discipline implementation	.53	.21
Confidence in discipline ability	.61	—
Low pleasure in parenting	.40	.29
G3 temperamental risk		
Father report activity level	.46	.10
Mother report activity level	.20	.10
Father report anger	.83	—
Mother report anger	.58	.17

Table IV. Correlation Matrix of Latent Variables (N = 99)

Variable	1	2	3	4
1. G1 poor parenting	—			
2. G2 antisocial/delinquent behavior	.51**	—		
3. G2 father's poor parenting	.46**	.37**	—	
4. G3 child's temperamental risk	.37**	.30*	.84***	—

\* *p* ≤ .05. \*\* *p* ≤ .01. \*\*\* *p* ≤ .001.

**Table V.** Mediated and Direct Prediction Models

Variable	Model 1 (mediated)	Model 2 (direct)	Model 3 (direct + mediated)
<i>Path coefficients and t-scores</i>			
G1 poor parenting to G2 antisocial behavior	.52 (4.15***)	.54 (4.35***)	.52 (4.13***)
G1 poor parenting to G2 father poor parenting	—	.38 (3.01**)	.23 (1.67†)
G2 antisocial behavior to G2 father poor parenting	.38 (3.07**)	—	.26 (1.84†)
G2 antisocial behavior to G3 temperamental risk	.32 (2.41*)	.22 (1.79†)	.32 (2.39*)
<i>Covariance of disturbance terms</i>			
G2 Father poor parenting and G3 temperamental risk	.82 (4.17***)	.82 (4.05***)	.82 (4.09***)
<i>Variance accounted for</i>			
Percent of variance accounted for in G2 poor parenting	14	14	18
Percent of variance accounted for in G3 temperamental risk	10	5	10

†  $p \leq .10$ . \*  $p \leq .05$ . \*\*  $p \leq .01$ . \*\*\*  $p \leq .001$ .

of antisocial behavior by adolescence. In addition, it appeared that the association of G1 poor parenting with G3 temperamental risk may also be mediated by the G2 father's antisocial behavior.

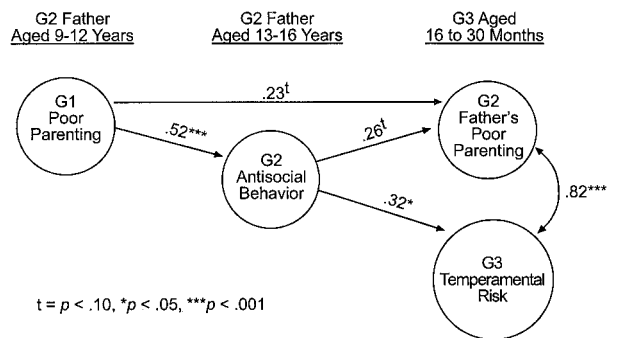
This model was compared to one in which the cross-generational association of parenting was hypothesized to be direct, rather than mediated by antisocial behavior (Model 2, Table V). This model was also an acceptable fit to the data; chi-square (81) = 87.50,  $p < .29$ , CFI = .998, NFI = .971. The direct path from poor parenting by G1 to poor parenting by G2 was significant. The association between G2's antisocial behavior and G3's temperamental risk approached significance. The percentage of variance explained in G2's poor parenting was the same in the direct and mediated models (14%), however, less variance was explained in G3's temperamental risk in the direct model (5% vs. 10% in the mediated model).

Finally, a model was tested that included *both* the direct path from G1's poor parenting to G2's poor parenting and the mediated paths via antisocial behavior (Model 3, Table V and Fig. 2). The direct path from G1's to G2's parenting and the path from G2's antisocial behavior to G2's poor parenting of G3 were now both marginally significant ( $p < .10$ ). Rather more variance in G2's poor parenting was explained in the full model (18%). The direct and mediated models were compared to Model 3 using a chi-square comparison test. In both cases, the increase in chi-square approached but did not reach significance (Model 1, mediated, chi-square (1) = 2.734,  $p = .098$ ; Model 2, direct, chi-square (1) = 3.475,  $p = .062$ ). Therefore, neither the direct nor mediated models showed significantly poorer fit than did Model 3, which contained both direct and mediated pathways, and, by inference, there appears to be little difference in fit between the mediated and direct models.

In summary, both the direct and mediated paths were significant when alone in the model, but each was marginally

significant in the full model, when competing for variance in G2's poor parenting of G3. These findings seemed to indicate some evidence for both a direct association across generations in parenting and an association mediated by the son's development of antisocial behavior in adolescence.

Because the model tests that included all children in the sample, as conducted, did not account for the fact that children are nested within families and, therefore, did not account for nonindependence within the model, model tests were repeated including only the first-born child in each family ( $N = 68$ ). In the measurement model (not shown) the loading of mother report of G3's activity level on the temperamental risk construct was nonsignificant. The pattern of significance for the pathways was essentially similar for the direct and mediated models as in the models with all children, although the associations were somewhat stronger. In the model with direct and mediated paths (similar to Model 3 in Table V), both mediated paths were significant. The direct path was marginally significant.



**Fig. 2.** Model 3 (both direct and mediated effects).

## DISCUSSION

The findings of the current study indicated a significant association between the poor parenting practices of parents and those of their sons approximately 12 years later. This study is one of the first that we are aware of to report such a finding using relatively comprehensive measures in a prospective design. The findings indicated that the intergenerational transmission of parenting likely involves a direct effect; presumably, the child learns parenting techniques in the family of origin and then practices them years later in the family of procreation. There also appears to be a mediated effect whereby poor parenting practices in the family of origin place a child at risk for the development of antisocial behavior, and the development of antisocial behavior then makes it more likely that, as an adult, the offspring will display poor parenting practices.

The model was tested for approximately the first one third of men in the OYS to become fathers. These young men showed higher levels of risk characteristics than the remaining men, including higher levels of antisocial behavior. The associations found may thus have been partially attenuated due to restriction of range on the measures. This appears to have affected the findings to some degree as the correlations reported in Table II showed no significant association between parental monitoring by G1 and antisocial/delinquent behavior by G2. However, for the full sample, these associations were significant.

As predicted, G2's antisocial behavior showed a significant association with G3's temperamental risk for externalizing. This was true even after the G2 father's parenting practices, as assessed by discipline and pleasure in parenting, were included in the model. It is likely that this association is at least partially due to unmeasured genetic factors. In addition, the association between the G2 father's poor parenting and the G3 child's temperamental risk was surprisingly high. Again, this could be partly due to genetic factors, and poor parenting may be partially another expression of antisocial behavior. Consistent with these possibilities, four studies using adoption designs have found significant genetic as well as environmental contributions to aggression (Bohman, 1996; Brennan, Mednick, & Jacobsen, 1996; Cadoret, Leve, & Devor, 1997; Ge et al., 1996). It is also possible that several other factors not accounted for in the current study could contribute to these associations. First, the parenting practices of the G2 mother were not included in the model because the focus of the current study was on a prospective test of cross-generational transmission of parenting, and no such prospective measures were available for the women partners of the OYS men. Second, environmental factors could have affected the G3 child's activity

level and expression of anger, such as factors affecting the physical environment in utero (e.g., substance use, maternal nutrition) or physical factors affecting the child in the first 22 months of life (e.g., injuries, illness), which were not included in the model. Finally, responsiveness of parenting and harsh treatment experienced prior to age 22 months, and related to the parents' antisocial behavior, already could have affected the child's behavior. The concurrent association between the G2 father's parenting and the temperamental risk of the G3 child at age 22 months suggests that parenting may already have had an effect on the child's behavior, and that, in turn, the child's difficult behavior may have affected the father's pleasure in parenting and discipline practices.

A further factor associated with risk to G3 is assortative mating by antisocial behavior (Rutter, 1998). Assortative partnering by antisocial behavior has been found for OYS as well as other studies (Capaldi & Crosby, 1997; Farrington, Barnes, & Lambert, 1996; Krueger, Moffitt, Caspi, Bleske, & Silva, 1998; Merikangas, 1982). Thus, if a child has one parent who is higher in antisocial behavior, they are likely also to have a second parent who is higher in antisocial behavior, and both parents may show higher risk behaviors and adjustment failures, as well as poorer parenting skills. They may also be more likely to produce offspring that are temperamentally at risk for the development of antisocial behavior. In the current study, we focused only on G2 father and G3 child behavior, but assortative mating by antisocial behavior is considered an important part of the process of intergenerational transmission of risk for antisocial or externalizing behaviors. In future work, we will examine the contribution of both G2 parents to the development of externalizing in their G3 child.

Parenting practices of the G2 fathers were not fully explained by the predictors in the current study. This could have been partially due to assessment and measurement limitations. In addition, other mediators that were not examined in the current models, including such factors as contextual risk (e.g., socioeconomic status, income) and depressive symptoms, may be related to continuity in parenting. Continuity of contextual risk into adulthood, partially due to the adjustment failures associated with the development of antisocial behavior by adolescence (Capaldi & Shortt, *in press*), is viewed as an important factor in intergenerational associations in parenting and child behavior. The role of contextual risk as a mediator of cross-generational continuity in parenting will be tested in future work as the sample grows larger.

We would also expect that several factors may interrupt the stability of cross-generational associations (Rutter, 1998), resulting in discontinuity in parenting practices.

First, as implied by the mediational model tested in this study, if the G2 boy does not develop antisocial behavior, he is at less risk of later poor parenting. Second, as already noted, the G2 father may have learned some parenting skills or practices from sources other than his parents (e.g., from grandparents). A major influence may be the parenting practices of his partner, the G2 mother. These may be different from that of the father and influence his parenting, either because he copies her approaches or because she actively tries to influence the parenting approaches that he uses. In addition, the mother's parenting will affect both the child's behavior and expectations of parental behavior. An interactional model of parenting posits that the child's behavior influences parenting.

It should be cautioned that the sample size in the current study was relatively low. Replication with a larger sample, both when more of the OYS men have children and comparisons with findings in other studies, is needed. Furthermore, some implications of the design of the current study should be taken into consideration when evaluating the findings. First, temperamental risk for externalizing was assessed, rather than a full range of externalizing behaviors. The association with externalizing behaviors will be assessed when data are available for G3 at ages 3 and 5 years. Second, the OYS measures of G1's discipline of G2 were strongly observationally based due to some limitations of parental self-report, whereas the measures of G2's discipline of G3 involved the young fathers' and mothers' reports of the fathers' disciplinary practices. This is partially an advantage in that the association of parenting across generations should not, therefore, be due to method variance (i.e., using the same assessment of discipline in each generation). However, it remains to be seen whether there will be a cross-generation association for observed discipline, and replication of this finding when observational data are available at later ages will be undertaken. Parenting practices for G1 and G2 were assessed when their offspring were different ages (ages 9–12 years for G1 and age 22 months for G2). This may well have affected the magnitude of the association in parenting found across generations. The fact that an association was found despite this may indicate that the cross-generational association in parenting practices is quite robust. A further caveat is that the current sample size precluded examination of possible gender differences in the models, which will be examined in future work. Finally, as previously noted, findings may have been affected due to the current study including only the younger fathers in the OYS cohort rather than a full cohort of G2 fathers.

The findings of the current study indicated that parenting practices of young fathers with their toddlers were predicted by the parenting practices that they had experi-

enced an average of 12 years earlier. The association of poor parenting in the two generations was partially mediated by the G2 father's development of antisocial behavior by adolescence. These findings suggest that intergenerational cycles of antisocial behaviors may be interrupted both by interventions that prevent the development of antisocial behavior in childhood and adolescence and by interventions that improve parenting skills for at-risk young men.

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