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Social Disadvantage and Neglectful Parenting as Precursors to the Development of Antisocial and Aggressive Child Behavior: Testing a Theoretical Model

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The present study tested a theoretical model advanced to understand the direct and mediated effects of social disadvantage, neglectful parenting, and punitive parenting in the developmental trajectory of aggressive and antisocial behavior in young school-aged children. To test the model, families of 310 first grade children and 361 fifth grade children, participating in a universal prevention trial in high-risk areas of a medium-sized metropolitan area, provided data. Multi-method and multi-source indices of the four predictive constructs (Social Disadvantage, Denial of Care Neglect, Supervisory Neglect, and Punitive Discipline) were obtained at the time of enrollment. Multi-method and multi-source indices of the criterion construct (Aggression and Antisocial Behavior) were obtained at the time of enrollment and at a five year follow-up. Based on structural equation modeling, the results established care neglect as a mediator of social disadvantage, and the importance of care neglect to both punitive discipline and antisocial outcomes in the first- and fifth-grade cohorts. Supervisory neglect, however, was important in the antisocial outcome of the fifth-grade cohort only. Overall, the results established the importance of distinguishing between two subtypes of neglect and the need to consider the role of discipline in concert with neglect when attempting to understand the impact of parenting on the development of antisocial behavior. Aggr. Behav. 30:187–205, 2004. © 2004 Wiley-Liss, Inc.

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Three National Incidence Studies (NIS; NIS–2; NIS–3) of child maltreatment in the U.S. have provided unequivocal evidence that child neglect is the most prevalent form of child maltreatment [Office of Human Development Services, 1981, 1988; Sedlak and Broadhurst, 1996]. Indeed, a decade of reports from the National Child Abuse and Neglect Data System [NCANDS; U.S. Department of Health and Human Services, Administration on Children,

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Youth, and Families, 2001] documents that more than half of the maltreated children in child protective services (CPS) caseloads are characterized as neglected. Although these data underscore the problem that neglect occasions for the physical and psychological well-being of large numbers of children in the U.S., the NIS data and the NCANDS data do not provide a clear indication of the precise relation between neglectful childhood experiences and putative sequelae, such as aggression and antisocial behavior.

To some extent, this state of affairs is a reflection of the diverse ways neglect has been operationalized in the research literature. As recent comprehensive reviews of child maltreatment research have shown [cf. Knutson and Schartz, 1997; National Research Council, 1993], empirical investigations into child neglect have been shaped and constrained by the public policy context in which they occur. In particular, neglect research has suffered from the vagueness with which neglect has been defined in law [see Zuravin, 1999] and the variability in neglect definitions across jurisdictions [c.f. Flango, 1988]. The lack of a standard, specific definition of neglect on the statutory level has resulted in research definitions of neglect which are often overly broad, and which make comparisons among studies difficult. More importantly, the classification of a subject as "neglected" does not necessarily provide information about the specific experiences of that subject. Thus, much of the empirical literature on neglect lacks the specificity necessary to test hypotheses regarding the consequences of child neglect.

Neglect has usually been defined in terms of parental acts of omission or indirectly harmful behavior that exposes children to pernicious influences, rather than parental acts of commission. Most typically, neglect is operationalized as a circumstance in which deliberate inaction or extraordinary inattentiveness by a parent results in harm to a child, or a circumstance in which essential requirements for physical, intellectual, or emotional development are not provided [e.g., Polansky et al., 1975]. While some operational definitions of neglect have required documented harm (e.g., First National Incidence Study [NIS–1]), others classified acts as neglectful if they endanger the child [e.g., Second National Incidence Study [NIS–2], Office of Human Development Services, 1988; Third National Incidence Study [NIS–3], Sedlak and Broadhurst, 1996].

Rather than treating neglect as a unitary construct, some researchers have advocated taxonomies of deficient parenting [e.g., Giovannoni, 1985; Hegar and Yungman, 1989]. For example, Trocmé [1996] distinguished among failure to provide supervision, physical care, and health care, while NIS–3 [Sedlak and Broadhurst, 1996] distinguished among physical neglect, educational neglect, and emotional neglect, under both harm and endangerment standards. Physical neglect included 1) health care refusal; 2) delay in seeking health care; 3) abandonment; 4) expulsion; 5) other custody issues; 6) inadequate supervision; 7) other physical neglect. While educational neglect could have both academic and attendance components, it is primarily operationalized as a criterion number of consecutive unexcused absences in a finite period of time. Emotional neglect subsumed 1) inadequate nurturance or affection; 2) chronic or extreme violence in the child's environment; 3) permitting drug or alcohol abuse; 4) permitting maladaptive behavior; 5) refusal of psychological care; 6) delay in obtaining psychological care; 7) other inattention to developmental needs. These taxonomic categories underscore the degree to which "neglect" subsumes a wide variety of deficiencies of parenting, and it is not surprising that *neglect* has not been associated with specific outcomes.

Another factor that has limited a determination of specific outcomes of neglect is the fact that the data usually do not specify how macro-social contexts, such as poverty, may operate as environmental precursors related both to neglect and any attendant child problems. According to NIS–3 findings [Sedlak and Broadhurst, 1996], compared to children whose families had annual incomes of $30K or more, children from families with incomes under $15K per year were 44 times as likely to be considered neglected when either the harm or the endangerment standard was used. When the maltreatment data are considered in the context of evidence that children from socio-economically deprived backgrounds display lower levels of physical development, academic achievement, and more behavior problems [Duncan et al., 1994; McLoyd, 1998], often lasting throughout young adulthood [Hanson et al., 1997; McLanahan and Sandefur, 1994], the effects of neglect could reflect the role of the economic disadvantage in which much maltreatment is embedded, as well as the interaction of poverty with maltreatment in determining the child outcome [cf. Bolger et al., 1995; Dodge et al., 1994; Sampson and Laub, 1994]. Such findings suggest that studies of outcomes of neglect must take into account the role of economic disadvantage in those outcomes. Conversely, since studies examining social disadvantage and child adjustment have rarely examined the role of neglectful parenting, the need to consider neglect in the context of understanding disadvantage is equally compelling.

Another complexity in determining the consequences of neglect is the fact that there is relatively little "pure" neglect. In recent studies examining the association between maltreatment and disabilities, Sullivan and Knutson [1998, 2000a, b] noted that two thirds of the neglected children had also experienced other forms of maltreatment, with physical abuse being the most common co-occurring form of maltreatment. The NCANDS reports also indicate that more than one-third of maltreated children experience multiple forms of maltreatement. Although some recent studies [e.g., Bolger et al., 1998; Macfie et al., 1999; Manly et al., 2001; Ney et al., 1994] have considered comorbidity among types of maltreatment, most research has not clearly indicated the extent to which samples experienced multiple forms of maltreatment. Recently, Herrenkohl et al. [1995] used findings from a long-term longitudinal study of maltreated children to issue a call for studies clarifying the *relative* importance of abuse and neglect in the developmental outcomes of maltreated children. Consistent with that call, Manly et al. [1994], and Smetana et al. [1999] provided some evidence of specificity in the influence of physical abuse and neglect. In concert, such studies clearly indicate that it is critically important to consider co-occurring physical abuse in research designed to establish a link between neglect and children's antisocial behavior.

Importantly, according to NIS–3, physical abuse was also associated with economic disadvantage. Children from households with annual incomes less than $15K were almost 16 times as likely to be considered physically abused when the harm standard was used and 12 times more likely to be considered physically abused when the endangerment standard was used, than those from households with incomes greater than $30K. Thus, some consideration of economic disadvantage is also critical in studies of the role of physical abuse in child outcomes.

Based on a comprehensive review of two decades of research on neglect and physical abuse through 1992, Knutson and Schartz [1997] concluded that aggression and antisocial behavior were the most commonly reported outcomes for both physically abused and neglected children [e.g., Knutson and Schartz, 1997]. In light of the co-occurrence of physical abuse and neglect and the available evidence linking coercive parenting to children's aggression [e.g., Patterson et al., 1992], Knutson and Schartz [1997] hypothesized that physically punitive discipline might be the link connecting both physical abuse and neglect to children's aggression. However, newer studies have implicated neglect as the important factor in the development of aggressive and antisocial behavior. For example, Steinberg et al. [1994] provided evidence of the role of neglect in adolescent delinquency, poor academic performance, and reduced orientation to school. Manly et al. [1994] indicated that neglect accounted for variance in child behavior problems beyond that which is accounted for by indices of physical abuse. Similarly, neglect combined with physical abuse, as well as neglect alone, has been shown to be an important contributor to school disciplinary difficulties, especially in the junior high school years [e.g., Eckenrode et al., 1993; Kendall-Tackett and Eckenrode, 1996]. Established associations among school-related problem behaviors, victimization, aggression, and family circumstances [e.g., DeRosier et al., 1994; Kupersmidt et al., 1995] add support to the possible link between neglectful parenting and children's aggression during early school years. Deficient or neglectful parenting has also been linked to adolescent antisocial behavior in longitudinal studies of childhood temperament, parenting, and adolescent crime [e.g., Henry et al., 1996], and to the development of violent [Widom, 1998] or criminal behavior [Viermö, 1996] in adolescence and adulthood. Although there is empirical support for a hypothesized link between neglect and children's antisocial behavior, the lack of specificity in the operational definitions of neglect, and the fact that neglect can subsume so many disparate patterns of parenting, it is impossible to establish an empirical link between specific components of neglect and childhood outcome.

In the context of understanding the role of neglect in the development of antisocial behavior, the distinction between physical neglect and failure to supervise may be critically important. Many taxonomies of neglect subsume supervisory neglect under physical neglect [cf. Barnett et al., 1993; Sedlak and Broadhurst, 1996], and several studies have implicated poor supervision and monitoring in the development of aggression, antisocial behavior, and affiliations with deviant peers [e.g., Bank and Burraston, 2001; Dishion et al., 1994, 1996; Pettit et al., 1999]. Therefore it is possible that poor supervision is the component of neglect that is most important in the development of antisocial behavior in childhood. Although limited by the nonspecific definitions of neglect, the existing literature strongly suggests that children's aggression and other antisocial acts could be the result of two components included in many definitions of physical neglect, namely denial of care and failure to supervise. Importantly, however, the literature also implicates co-occurring punitive parenting as a factor in the development of aggression among maltreated children, and the existing literature underscores the importance of considering economic disadvantage in tests of hypothesized relations between parenting and child outcomes.

The present study provided a test of a model postulating how social disadvantage and deficient parenting are associated with the development of antisocial behavior over time. The model extends prior research by expanding the specificity of measurement for deficient parenting, using a multiple method assessment in a population-based sample of at-risk boys and girls measured across development. The theoretical model is presented in Figure 1. Based on the literature reviewed above, the model offers hypotheses as to how disadvantaged social contexts are linked to the development of antisocial behaviors across the life course, through the influence of deficient parenting. Developmentally, we believe that early environmental deficiencies for families compromise parenting and are related to the development of problem behaviors for children. Antisocial behaviors at home and adjustment problems such as aggression and peer rejection in the school setting will lead to long-term adjustment problems including the increased likelihood of delinquency. The model theoretically specifies deficient parenting, specifically comprising care neglect, poor supervision, and punitive parenting as

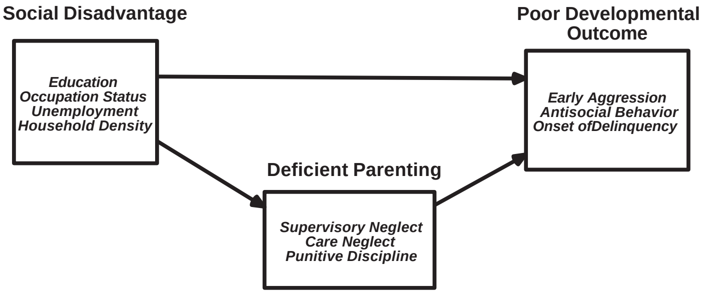

Fig. 1. Theoretically specified model for the effects of social disadvantage and neglectful parenting on change in antisocial behavior across the life course.

the mechanism linking social disadvantage to the development of antisocial behavior. That is, lack of personal and structural resources such as inadequate education, limited occupational success, and low income are environmental risk factors promoting inept, inadequate, and neglectful parenting. Over time, the lack of skillful parenting is likely to progress from low levels of neglectful parenting to more punitive hostile and abusive parenting. Poor parenting practices, and in particular, neglectful parenting are the proximal mechanisms hypothesized to promote initial status and later increases in antisocial behaviors. Thus, the present study was designed to determine whether indices of two forms of neglect (denial of care; failure to supervise) and punitive discipline during the early elementary school years would be associated with increased antisocial behavior and aggression in a high-risk population-based sample. Moreover, the study was designed to control for family economic disadvantage in predicting children's aggression from neglectful and punitive parenting. Specifically, using Structural Equation Modeling and derived multimethod/multisource indices of care neglect, supervisory neglect, punitive parenting, and economic disadvantage, were related to multisource/multimethod indices of children's aggression measured concurrently with the indices of parenting and 5 years following the measurement of parenting.

METHOD

To test the hypothesized model linking deficient parenting to children's antisocial behavior, data from an on-going population-based randomized intervention trial sponsored by the National Institute of Mental Health Center for the Prevention of Conduct Disorders [Reid, 1993] was used. The Linking Interests of Families and Teachers (LIFT) sample was developed from the entire population of families of first and fifth grade children enrolled in 12 eligible schools, with school eligibility based on being located in at-risk neighborhoods characterized by high rates of juvenile delinquency. Of 762 families with children enrolled in these schools, 12% declined to participate, resulting in 671 first and fifth graders (51% were girls). Details on the randomized intervention design, eligibility, and recruitment are described in full elsewhere [Reid et al., 1999]. The two grade-based cohorts consisted of 310 boys and girls in the first grade and their parents, and 361 boys and girls in the fifth grade and their parents. Approximately 25% of the families received some type of financial assistance. At baseline, 57% of the LIFT children were from two-biological-parent families, 22% were from single-parent families, and 20% were from stepfamilies. There were no differences in family structure by randomized group condition.

To test the hypothesized model, indicator variables for each of the constructs in the model were selected a priori before any data reduction took place. All of the predictor variables in the mediational model that is the focus of the present paper were assessed at baseline prior to the preventive intervention. The prevention of conduct problem behaviors is not addressed here because the current focus is on a process model of parenting to account for change in aggression and antisocial behavior while controlling for grade, gender, and intervention differences. The evaluation and impact of the LIFT program is provided in Reid et al. [1999]. Importantly, the structure and outcome of the LIFT program does not compromise the model testing conducted in the current paper.

Measures

For the current report, measures to develop the five theoretical constructs were obtained from several sources. These included interviews and questionnaires with parents; ratings provided by staff on the basis of direct contact with parents in interviews in their homes and in the laboratory; ratings provided by teachers; observations of child behavior on school playgrounds; and observations of parent-child interactions conducted in the laboratory. The five theoretical constructs contributing to the model analysis included Social Disadvantage, Children's Antisocial Behavior, Denial of Care Neglect, Supervisory Neglect, and Punitive Discipline.

Social Disadvantage

The Social Disadvantage latent factor was measured by four indicators. *Parental Unemployment* was the average of mother and fathers' employment status. Employment was coded "1 – working full-time, 2 – working part-time, and 3 – unemployed." *Parental SES* was measured by the Hollingshead [1975] Four Factor Index of Social Status combining education and occupation. Educational attainment was measured with categories ranging from 1 to 12 indicating the number of school years completed. Occupational status was measured with categories ranging from 1 to 9. *Household income* was based on the total annual household income reported by the parents categorized into scores ranging from 1 (less than $5,000) to 9 (more than $50,001). *Household Density* was the ratio of the number of rooms in the household divided by the number persons living in the household.

Antisocial Behavior and Aggression

Indicators of the Antisocial Construct were measured at baseline (T1) and at a five-year follow-up (T2). At baseline, four indicators were used: playground aggression, peer nominations, teacher report, and parent report. At T2, the construct was measured by teacher report, parent report, and official arrest records.

Playground aggression was measured at baseline with repeated live observations conducted on the playground by professional observers. The focal child was observed during the normal recess period for 10 min on three separate days over a period of about three weeks. The Interpersonal Process Code [IPC; Rusby et al., 1991] was used to code child physical aggression, which was the average of two rate-per-minute microsocial scores, engagement in any aversive behaviors, and any negative physical contact directed at another child or adult. Aversive engagement included swearing, criticism, name calling, threats, derogation, specific humiliation, and swearing. Negative physical contact included hitting with hand, hitting with an object, pinching, ear flicking, kicking, grabbing, restraining, spitting, or shoving. Interobserver reliabilities for the IPC system were assessed by randomly selecting 10% of the observations to be coded independently by two randomly selected observers. The correlation of the rate per minute of aversive engagement was .90 ($p = .001$), and was .91 for physical aggression across grades ($p < .001$). The final aggression indicator was log transformed for inclusion in the SEM models.

Peer Nominations of aggression was a sociometric measure assessed from peers in the classroom at baseline adapted from procedures for the Pupil Evaluation Inventory [Pekarik et al., 1976]. For First Grade children, each child in the class was individually interviewed and shown a photo of each child in the class. Children were then asked to nominate children from the photos in response to each item. For Fifth Grade children, lists with names of each child were distributed to the entire class and responses were collected at the same time. For the aggression scales, three items comprised the peer nomination aggression score for each focal child ("starts fights," "gets into trouble a lot," and "bullies"). The raw count of nominations for each focal child in the study was divided by class size before standardizing by grade. The three standardized scores for each item were then averaged to form the aggression scale. The final peer nomination score for aggression was log transformed, because of kurtosis, for structural equation modeling. Cronbach's alpha coefficients were .93 for First Grade and .94 for Fifth Grade.

Teacher Report of aggression was measured with a scale score consisting of 18 items from the Child Behavior Checklist - Teacher Report Form [TRF: Achenbach, 1991]. Cronbach's alphas across grades were .92 and .90 for baseline and the five-year follow-up (sample items included: gets into fights, explosive behavior, threatens others, destroys others property).

Parent Report of aggression was measured with a construct score of summative indices averaged first within parents and then across parents. For each indicator, Mother and Father scores were correlated ($p < .05$) at each time point. Items were selected a priori that reflected DSMIV diagnostic criteria for Conduct Disorder. Summative scores were used at the indicator level because many items had low base rate occurrence (e.g., setting fires, using weapons, and engaging in forced sexual activity). Indices were rescaled to provide comparable ranges for averaging. Although items were summed, psychometric indices are provided below, where appropriate behaviors, Alphas for summative indices can be attenuated because extreme aggressive behaviors are being indexed with less aggressive behaviors, and because not all behaviors are expected to co-occur with all others.

Scale indicators included: (a) Fourteen items from the parent version of the Child Behavior Checklist [Achenbach, 1992] (e.g., cruel to animals, physically attacks people, destroys things). Cronbach's alphas for mothers' report were .75 and .84 for First and Fifth grade samples, respectively; alphas were .74 and .77 for fathers' report for First and Fifth grade samples. For the five-year follow-up, alphas were .78 and .85 for mothers and .78 and .86 for fathers for the two samples; (b) Fifteen items from the Overt/Covert Antisocial questionnaire [Patterson and Yoerger, 1999] (e.g., gets into physical fights, hits brothers or sisters, purposely breaks things, hurts animals). Cronbach's alphas for mothers' baseline report were .65 and .70 for First and Fifth grade samples, respectively; baseline alphas were .68 and .65 for fathers' report for the two samples. For the five-year follow-up, sample alphas were .71 and .77 for mothers and .62 and .76 for fathers. (c) Two items, fighting with siblings and lying, were obtained from the Parent-Child Issues Checklist [adapted from Prinz et al., 1979]; (d) Twelve items from the parent face to face interview in reference to the last six months (e.g., been cruel to animals, been cruel to people, initiated physical fights, used weapons) were administered to parents of Fifth grade subjects at baseline and to both samples at the five-year follow-up. Cronbach's alpha for the interview report at baseline was .62 for mothers and .52 for fathers. At followup mother interview report alphas were .52 and .67 for First and Fifth grade samples respectively; alphas were .57 and .39 for fathers'follow-up interview report.

Total Offenses was the number of official police arrests for personal and property offenses from court records accumulated by T2.

Denial of Care Neglect

The Neglectful Parenting construct was a multisource neglect index score comprising 6 dichotomous variables indicating probable lack of care. Two items were from the home visitor observations, one of which indicated that basic hygiene was not observed or the house was uncomfortably dirty. The second indicated the trained observer felt the child appeared to be neglected. Three teacher items reported the child was unclean, overtired, and sleeps in class. The one parent report item assessed whether child was perceived as being over-tired. Although medical neglect is often included in physical care neglect, information on medical neglect was not available to the project. Epidemiological data [e.g., U.S. Department of Health and Human Services, Administration on Children, Youth, and Families, 2001, 2002] suggest, however, that less than 5% of neglect cases are based on medical neglect. Thus, the lack of information on medical neglect should not compromise the care neglect construct.

Supervisory Neglect

The Supervision construct was measured by three indicators: inadequate supervision of the child, parental involvement in activities with the child, and parental involvement with the child's school. Each of the indicator items was scored from several sources of data; the items were rescaled to dichotomous outcomes to create risk indices. *Inadequate supervision* ranged from 0 to 12 and was a summative index of ratings by the parent interviewer, parent-reported items from the parent interview and a house-rules questionnaire, and items from telephone interviews with the parent (e.g., "did parent supervise child carefully, how often child goes out with friends without adult supervision, how often parent is aware of what child is doing outside the home, how often parent checks to see if friend's parents are at home, daily reports of hours spent without adult supervision). *Parental Involvement* ranged from 0 to 10 and was a sum of items reflecting involvement in children's activities from the parent interview and parent and child reports on an activities questionnaire (e.g., play indoor games, bake or cook meals together, participate in outdoor activities, talk with child about his activities for at least 10 min., frequency of talking about activities with other children). *Parental School Involvement* ranged from 0 to 24 and was a sum of parent-reported items scored to reflect parents' involvement in their children's schooling. Items were from the parent interview, an activities questionnaire, and the parent telephone interviews (e.g., how often parents helped with class activities, attended parent-school meetings, how often they talked with child's teacher, number of days they were not aware of children's school problems). Although these items bear an apparent link to "educational neglect," educational neglect is typically operationalized as truancy [e.g., Sedlak and Broadhurst, 1996]. Additionally, although educational neglect is included in the child protection statutes of most states in the U.S., educational neglect is rarely the basis for either a referral to CPS or the focus of a CPS intervention. For example, although Sullivan and Knutson [2000a] established the link between poor academic performance and CPS records of neglect in a population-based study of an urban school district, and although education neglect in the form of extended absences were manifested in the school records, none of the maltreated children were referred to CPS because of educational neglect. Thus, to be consistent with the existing research and policy-based practice, in the present study parental involvement with the child's school was conceptualized as a component of the supervision of the child.

Punitive Discipline

Based on the work of Greenwald et al. [1997], physical abuse can be conceptualized as the endpoint of inappropriate, and excessively coercive, discipline that is a continuous variable rather than a categorical one. In a community based sample, with relatively few families identified for actual physical abuse, many families should evidence a range of disciplinary tactics consistent with the Greenwald et al. [1997] work. For that reason, the punitive discipline construct consisted of an aggregation of three indicators. *Inappropriate Discipline* was a summed score of inappropriately punitive disciplinary reactions reported by parents in response to a series of questions with the stem "What would you do if....?" Scenarios included child argued or talked back, hit another child, argued with another child, lied about breaking a rule, or stole something from a store. Summed inappropriate reactions included raising voice, scold, yell, slap or hit, and spank. *Inconsistent Discipline* was a scale score of 11 items indicating a pattern of inconsistent or erratic discipline reported by parents. Sample items included "get angry when punishing child, how often parent does not follow through on punishment, threaten punishment to a child to get the child to do something. Cronbach's alpha was .77 for mothers and .71 for fathers. *Hostile parenting* was a scale score of three items rated from 1 to 5 by observers when the parents and child participated in a structured 45–minute laboratory task in which the parent and the child engage in five specific tasks. In the Communication Task, the child is asked to describe to the parent an unfamiliar game that was just played in the laboratory. The parent is asked to gather as much information as possible from the child. The Social Teaching Task involves a situation where a parent directs a discussion with the child of a hypothetical and potentially problematic situation. The Parent-Child Problem Solving Task asks the parent and child to attempt to resolve a specific child behavior problem that the parent had identified as important and stressful. Those tasks are followed by approximately 20 minutes of Free Play and then a Clean-Up Task. The hostile parenting items were rated across all five interaction tasks and included how often the parent was observed to be "hostile or threatening, angry and irritable, or negative and critical." Cronbach's alpha was .79 and .74 for mothers and fathers respectively.

Control Variables

Three control variables were included in each analysis. *Single parent* status was a dichotomous variable coded "1" for single mother or father and "0" for two parent families. *Gender* was scored "1" for boy and "2" for girl, and finally, *prevention group* assignment was scored "1" for intervention condition and "2" for the control condition. These variables were included for important theoretical reasons. Children from single parent families are at higher risk for socioeconomic disadvantage, disrupted parenting practices, and for the development of problem behaviors [Capaldi and Patterson, 1991; Forgatch and DeGarmo, 1999; Hetherington et al., 1998; Simmons and Associates, 1996]. Single parents are also at higher risk for abusive parenting [Gelles, 1989]. Developmentally, boys exhibit higher levels of aggressive and antisocial behaviors than girls [Maccoby, 1998; Smith and Boulton, 1990]. Although each theoretical family process construct was measured at baseline prior to any preventive intervention with the families, children's aggressive and antisocial behaviors were measured at baseline and at a five-year follow-up. Therefore the Prevention Group membership was controlled for any potential outcome bias when evaluating the theoretical model. None of the hypothesized family and environmental precursors were measured post-intervention.

Analytic Strategy

The theoretical model was tested using structural equation modeling (SEM) employing the AMOS software program [Arbuckle, 1997]. An advantage of AMOS is the use of Full Information Maximum Likelihood [FIML: Arbuckle, 1996]. As employed in the current paper, FIML is an iterative model-based process that can deal with missing data under an assumption of multivariate normality to maximize the likelihood of the model given the observed data in the covariance matrix. In contrast to analyses that incorporate listwise deletion in the covariance matrices, FIML uses all of the available information of the observed data, including derived information about the mean and variance of missing portions of a variable based on the observed portions of other variables, in the covariance matrix. Wothke [2000] has demonstrated that the FIML approach to SEM has greater statistical efficiency for longitudinal data when computing standard errors from the available data compared to SEM using mean-imputation, list-wise, or pair-wise deletion methods. In a five-year population-based study, it is obviously important to be able to maximize the use of all available data.

For the analyses of change in the dependent construct antisocial behavior, the Time 2 latent factor was auto-regressed on the Time 1 latent factor. Therefore, the direct path from Time 1 to Time 2 is interpreted as the stability coefficient rather than the effect of initial status on change. All other paths predicting the Time 2 factor, or residual variance, are interpreted as predictors of unique change, or predictors of variance in antisocial behavior partialling out Time 1 antisocial behavior.

Before conducting the planned analyses, families with complete data and families with partial data were compared. There were no significant differences between partial-data families and complete-data families on any of the family process variables or the dependent child antisocial variables. For the social disadvantage indicators, however, partial-data families scored higher on parental unemployment and lower on household income. This is consistent with other longitudinal studies using multi-method assessment that show families with missing data tend to be more socially disadvantaged [Patterson and Chamberlain, 1994]. For unemployment, $M = 1.59$, $SD = .54$ for complete data families and $M = 1.94$, $SD = .72$ for partial data families ($t = 4.78$, $p < .000$). For income, $M = 5.98$, $SD = 2.26$ for complete data families and $M = 5.24$, $SD = 2.51$ for partial data families ($t = 2.76$, $p < .05$). These differences between partial-data and complete-data families on the control variable of social disadvantage do not, however, compromise the utility of the FIML approach.

RESULTS

Means, standard deviations, and two-tailed mean comparisons are displayed in Table I by grade cohort for the main study variables. In general, there was greater social disadvantage

Table I. Means, Standard Deviations and Mean Comparisons by Grade Cohort for Study Variables

	First Grade		Fifth Grade			significant
	M	(SD)	M	(SD)	t	contrast
Unemployment	1.77	(0.67)	1.69	(0.62)	1.44	
Socioeconomic Status	33.24	(11.65)	35.43	(10.47)	−2.48	5th > 1st
Income	5.26	(2.42)	6.04	(2.28)	−4.25	5th > 1st
Household Density	0.67	(0.26)	0.58	(0.18)	4.86	1st > 5th
Poor Supervision	0.32	(0.67)	0.89	(1.17)	−7.78	5th > I51
Low School Involvement	0.26	(0.54)	0.41	(0.72)	−2.96	5th > 1st
Low Parent Involvement	0.31	(0.57)	0.28	(0.59)	0.45	
Neglect Index	0.73	(0.89)	0.63	(0.82)	1.47	
Inconsistent Discipline	2.11	(0.46)	2.18	(0.56)	−1.83	
Inappropriate Discipline	3.14	(0.97)	2.95	(1.07)	2.37	1St > 5th
Hostility	1.17	(0,32)	1.34	(0.39)	−6.17	5th > 1st
Playground Aggression T1	−1.67	(0.67)	−1.72	(0.70)	0.87	
Antisocial‘Parent Report T1	1.35	(0.33)	0.99	(0.35)	13.25	1st >5th
Log Antisocial-Teacher Report T1	0.25	(1.19)	0.08	(1.11)	1.90	
Log Aggression-Peer Report T1	−0.29	(0.71)	−0.25	(0.62)	−0.82	
Antisocial-Parent Report T2	0.94	(0.32)	0.87	(0.35)	2.35	1st > 5th
Log Antisocial-Teacher Report T2	0.10	(1.11)	0.11	(1.12)	−0.03	
Log Total Offenses T2	−0.61	(0.29)	−0.30	(0.80)	−6.57	5th > 1st

for the younger cohort and higher levels of inadequate supervision. There were no significant differences between the grade groups on the neglect index. Consistent with developmental expectations, there was more inadequate supervision for the Fifth Grade families on the measures of poor supervision and low school involvement. First Grade families scored higher on inappropriate discipline and Fifth Grade families scored higher on hostile parenting observed in the laboratory. For the antisocial behavior measures, parents reported higher levels of antisocial behavior at both time points for the First Grade cohort, and also consistent with developmental theory there were a greater number of arrests for the Fifth Grade children at their five year, Grade 10, follow-up. Finally, there was a significant trend among the indicators of social disadvantage with the Fifth Grade families having higher levels of SES and income and lower household density compared to First Grade parents.

Models were tested separately for the First and Fifth Grade cohorts in the LIFT sample. Standardized path coefficients for the First Grade cohort are presented in Figure 2. For clarity, none of the error variances for the indicators were displayed. In addition, one of the a priori indicators of supervision was trimmed because it did not load higher than .10 in the overall measurement model for first graders. In general, the hypotheses were supported for the younger cohort of children in the LIFT study. Starting with social disadvantage, the greater the social and economic deprivation the greater the use of punitive discipline ($\beta = .23$, $p < .05$), the greater the neglect of care ($\beta = .27$, $p < .001$), and there was marginal evidence for greater increase in antisocial behavior over 5 years ($\beta = .15$, $p < .10$). Although social disadvantage was associated with neglect of care it was not associated with supervisory neglect.

Among the parenting constructs, inadequate supervision was not predictive for the First Grade cohort. However, as expected, both care neglect and punitive discipline showed unique prediction of antisocial behavior. Neglect was associated with initial antisocial status ($\beta = .23$, $p < .01$) and increases in antisocial behaviors from first grade to fifth grade ($\beta = .17$,

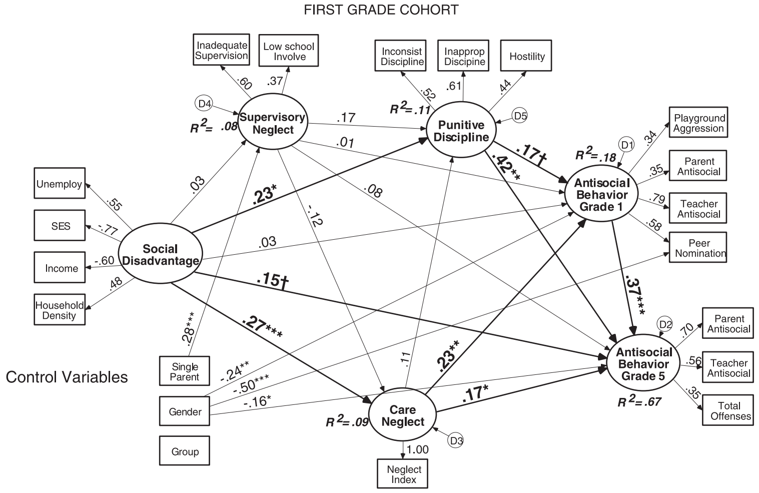
FIRST GRADE COHORT
Inadequate Supervision
Low school Involve
.60
.37
D4
R^2= .08
Supervisory Neglect
.17
.01
Inconsist Discipline
Inapprop Discipine
Hostility
.52
.61
.44
R^2=.11
Punitive Discipline
D5
.17†
.42**
R^2=.18
D1
Playground Aggression
Parent Antisocial
Teacher Antisocial
Peer Nomination
.34
.35
.79
.58
Antisocial Behavior Grade 1
Unemploy
SES
Income
Household Density
.55
-.77
-.60
.48
Social Disadvantage
.03
.23*
.08
-.12
.03
.15†
.27***
.28***
.37***
D2
Parent Antisocial
Teacher Antisocial
Total Offenses
.70
.56
.35
Antisocial Behavior Grade 5
R^2=.67
Control Variables
Single Parent
Gender
Group
-.24**
-.50***
-.16*
.11
.23**
.17*
R^2=.09
Care Neglect
D3
1.00
Neglect Index

Fig. 2. Path model with standardized coefficients for First Grade LIFT Cohort specifying effects of social disadvantage and neglectful parenting on change in antisocial behavior across 5 years [$n = 310$, χ^2 (137) = 278.0, $p < .001$, CFI = .99, χ^2 ratio = 2.0]. Note, non-significant paths for control variables are not displayed.

$p < .01$). Punitive discipline was marginally associated with baseline antisocial behavior ($\beta = .17$, $p < .10$) but it significantly predicted increases on follow-up ($\beta = .42$, $p < .01$). In a test of a model (not shown) in which the intervening parenting mechanisms were excluded, social disadvantage evidenced direct effects on baseline antisocial behavior ($\beta = .14$, $p = .06$) and change in antisocial behavior ($\beta = .27$, $p < .01$). Therefore, as hypothesized, the process of neglectful parenting mediated the effects of social disadvantage on the initial antisocial status and partially mediated the impact of social disadvantage on long-term increases in antisocial behavior. Among the control variables, with only significant paths displayed in the figure, single parent status was associated with higher levels of inadequate supervision but it was not associated with either more punitive discipline or neglect; consistent with prior studies, boys were higher on antisocial behavior.

The overall model showed adequate fit to the data [χ^2 (137) = 278.0, $p < .001$, CFI = .99]. Although the chi-square minimization p-value was not greater than .05, the tested theoretical model can be considered acceptable because the comparative fit index, .99, was high and close to 1.0 and the chi-square ratio ([χ^2 /df) was 2.02. According to Byrne [1989] a chi-square ratio less than 2.0 indicates acceptable fit and Arbuckle [1997] concluded that a chi-square ratio less than 2 is conservative and that ranges from 1 to 3 are acceptable.

Findings for the Fifth Grade cohort are presented in Figure 3 in the form of standardized path coefficients. In general, the hypothesized model showed adequate fit to the data [[χ^2 (153) = 332.2, $p < .001$, CFI = .99, [χ^2 ratio = 2.17] and replicated the model tested with the cohort enrolled in first grade, with a few notable exceptions related to the neglectful parenting process. Consistent with findings detailed in Figure 2, for the fifth grade cohort, social disadvantage was associated with greater punitive discipline ($\beta = .44$, $p < .05$), greater neglect ($\beta = .21$, $p < .001$), and a greater increase in antisocial behavior over 5 years ($\beta = .15$, $p < .05$). Also consistent with the First Grade Cohort, care neglect was associated with higher levels of initial antisocial behaviors ($\beta = .18$, $p < .001$) and marginally associated with increases in antisocial behavior over time ($\beta = .11$, $p < .10$) controlling for social disadvantage, punitive discipline, and inadequate supervision.

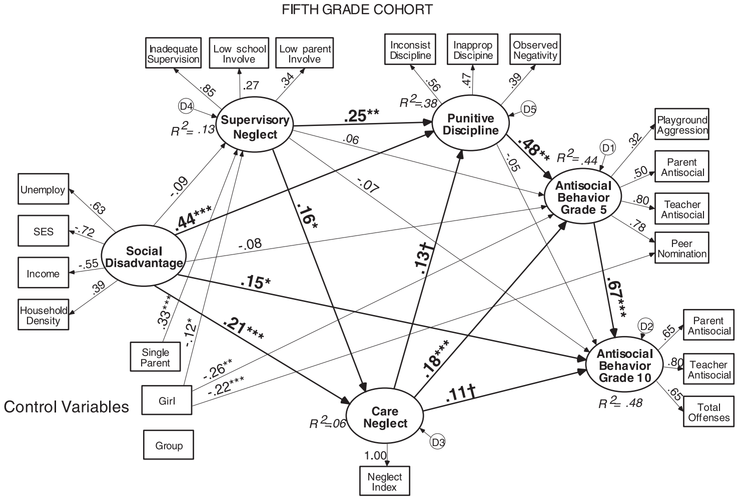
FIFTH GRADE COHORT
Inadequate Supervision
Low school Involve
Low parent Involve
.85
.27
.34
D4
R^2= .13
Supervisory Neglect
.25**
.06
Inconsist Discipline
Inapprop Discipine
Observed Negativity
.56
.47
.39
R^2=.38
Punitive Discipline
D5
.48**
-.05
R^2=.44
D1
Playground Aggression
Parent Antisocial
Teacher Antisocial
Peer Nomination
.32
.50
.80
.78
Antisocial Behavior Grade 5
Unemploy
SES
Income
Household Density
.63
-.72
-.55
.39
Social Disadvantage
-.09
.44***
-.07
.16*
-.08
.13†
.15*
.67***
.33***
-.12*
.21***
.18***
D2
Parent Antisocial
Teacher Antisocial
Total Offenses
.65
.80
.65
Antisocial Behavior Grade 10
R^2= .48
Single Parent
Girl
Group
Control Variables
-.26**
-.22***
.11†
R^2=.06
Care Neglect
D3
1.00
Neglect Index

Fig. 3. Path model with standardized coefficients for Fifth Grade LIFT Cohort specifying effects of social disadvantage and neglectful parenting on change in antisocial behavior across 5 years [n = 361, χ^2 (153) = 332.2, p < .001, CFI = .99, χ^2 ratio = 2.1]. Note, non-significant paths for control variables are not displayed.

The most notable difference between the First and Fifth Grade cohort is the effect of inadequate supervision on care neglect (β = .16, p < .05) and on punitive discipline (β = .25, p < .01). The second notable difference was the effect of neglect on punitive discipline (β = .13, p < .10). Finally, and importantly, there were key differences for the effect of punitive discipline on initial antisocial status and change in antisocial behavior. Grade Five punitive discipline was important in predicting antisocial status at Grade 5 (β = .44, p < .001), but less important as a predictor of change in antisocial behavior from grades 5 to 10 when compared to the predictive effect from grades 1 to 5 (See Fig. 2). When the two tested models are considered in concert, there is an indication that, developmentally, the punitive discipline construct was most predictive of antisocial behavior changing to, and starting at, Grade 5. These paths were also similar with respect to standardized magnitudes.

Concerning stability, because the auto-regressed coefficient was smaller for the first graders, there was evidence of more change in the early years than there was in the later years for the fifth graders. In comparison, even with lower stability, the models predicted greater change variance in antisocial behavior for first graders compared to fifth (.67 and .48). It would appear from these data that although the theoretical model was supported across both cohorts, the developmental impact of neglectful parenting and punitive discipline was more salient in the younger cohort. The effect of the control variables in the Fifth Grade cohort was largely consistent with that of the First Grade cohort. In the Fifth Grade cohort, however, boys were exposed to higher levels of inadequate supervision reflecting changes in parental supervision as developmentally older children spend more time away from parents as evidenced in Table I.

DISCUSSION

Using structural modeling with two age-based cohorts from a high-risk community, the tested theoretical model clearly established the role of specific facets of deficient parenting in the development of children's antisocial behavior. That is, in both cohorts, denial of care neglect was importantly related to both antisocial behavior at baseline and change in antisocial behavior five years later. Moreover, the contribution of neglect to the prediction of current and future antisocial behavior went beyond contributions of social disadvantage and punitive discipline to that antisocial behavior. Thus, as hypothesized, and congruent with recent work [e.g., Eckenrode et al., 1993; Kendall-Tackett and Eckenrode, 1996; Manly et al., 1994; Steinberg et al., 1994], the tested models document a specific role for care neglect in the development of children's antisocial behavior.

Another important finding was the strong indication that neglect *and* punitive discipline may be critical factors in determining the consequences of disadvantage in the development of antisocial behavior. Disadvantage as an important risk factor in the ontogeny of developmental problems is well established [e.g., McLoyd, 1998]. In fact, although there were mean level differences between the cohorts in the current sample, the effects of social disadvantage were remarkably similar in the deficient parenting process across cohorts. Other life course data from the Oregon Youth Study have shown that socioeconomic status in Grade 4 was predictive of adult arrest some 12 years later, even when controlling for the presence of early overt antisocial behavior and growth in covert antisocial behaviors [Patterson and Yoerger, 1999]. Yet, the vast majority of disadvantaged youth do not follow an antisocial trajectory. In the present study, in both age cohorts, denial of care neglect and punitive discipline mediated the effects of social disadvantage on initial levels of antisocial and aggressive behaviors as well as partially mediated the effects on the development of those behaviors five years later. Thus, neglect and punitive discipline seem to play an important *process* role that determines at least some of the measured impact of disadvantage on antisocial status as well as the development of antisocial behavior in childhood.

In terms of the development of antisocial behavior, the present findings not only underscore the importance of deficient parenting as a predictor of future antisocial behavior, but also how social disadvantage can have a long-term impact on the patterns of change that have been identified in other work. That is, the measured constructs of antisocial behavior indicated that changes were occurring over five years (stabilities were .37 and .67 respectively for first and fifth grade cohorts). Although antisocial behaviors are well established by first grade and have been shown to be highly stable in the early developmental years [Patterson and Yoerger, 1999], and although studies using multiple indicator constructs of antisocial behavior have demonstrated stability coefficients as high as .85 [Fergusson et al., 1995; Patterson, 1993], differentiation in forms of deviancy or shifts in types of growth in deviancy (e.g., chronic, early, and late start delinquency) tend to occur around the ages of nine and 10 [Patterson, 1993]. That time of change corresponds to the end years of one cohort and the beginning years of the other cohort in the present study. The present analyses suggest that the pattern of growth, differentiation, and ultimate outcome, could be importantly related to the discipline and neglectful parenting occurring at that developmental locus. Further research examining deficient parenting, antisocial behavior, and a broader range of development is needed to verify if there is a unique developmental locus for those influences of parenting.

Although the tested models in the two cohorts evidenced important consistencies, there were some differences in the SEM findings between cohorts that are notable. The first important difference between the two cohorts was in the role of punitive discipline in determining both antisocial status and change in antisocial behavior. For the younger children, punitive discipline in first grade had links to both concurrent antisocial behavior and positive change in antisocial behavior five years later, accounting for significant variance in antisocial change beyond the stability coefficient. For the older sample, although punitive discipline is linked to concurrent antisocial behavior, it does not predict positive change in antisocial behavior beyond the stability coefficient. Taken together, these two model tests strongly implicate punitive discipline as a factor in the development of young children's aggression, with the role of punitive discipline being minimized when the children reach a stage when they may be outside the reach of that discipline. In that sense, the findings might be considered to be congruent with the age-related patterns of physical abuse detailed in the NIS studies [Office of Human Development Services, 1981, 1988; Sedlak and Broadhurst, 1996], as well as being consistent with existing data on the stability of aggression and antisocial behavior across development [e.g., Huesmann and Morse, 1998]. Most importantly, and consistent with the recent work by Manly et al. [2001], it seems probable that the impact of punitive discipline and neglect measured with a common set of indicators could have differential effects as a function of the developmental status of the child. Another important difference between cohorts was with respect to the role of supervisory neglect. Supervisory neglect was not shown to be important in the first grade cohort, but it did evidence important links to both care neglect and punitive discipline in the Fifth Grade cohort. Although there were mean differences between the cohorts in supervision, it seems unlikely that those mean differences per se would account for the differences between cohorts in the SEM tests. Rather, it seems more probable that the importance of supervisory neglect in the development of antisocial behavior is mediated by both punitive discipline and neglectful parenting, and that the impact is conditional on the developmental status of the child. Indeed the effect of supervisory neglect on baseline antisocial behavior for the fifth graders was statistically mediated by care neglect and punitive discipline. In tests, the direct path was .22 ($p < .01$) and shown to be mediated by both discipline and care neglect, as reflected in the final models. Importantly, because some of the stronger evidence for the role of supervisory neglect in the development of antisocial behavior comes from samples of preadolescent and adolescent youth [e.g., Bank and Burraston, 2001; Dishion et al., 1994, 1996; Pettit et al., 1999], there is independent evidence to suggest that the developmental context of supervision in the present study is not an anomaly nor due to mean differences in the cohorts. In that same vein, the fact that gender was related to supervision in the older cohort is consistent with recent work documenting growth in unsupervised wandering and deviant peer association for preadolescent and adolescent boys [Stoolmiller, 1994].

Although the present findings indicate that deficient parenting involving neglect contributes to the development of antisocial or delinquent behavior, exactly how that deficient parenting results in antisocial behavior cannot be determined in the present study. It seems probable that the impact of neglectful parenting on the development of antisocial behavior is due, in part, to hampering the development of social competence and positive peer relations in childhood. Although the present study did not permit a test of peer influences in determining antisocial behavior, several lines of evidence indicate that neglectful or deficient parenting can have a negative impact on peer relations. Fagot's [1997] research on parenting and attachment supports the hypothesis that children of neglectful parents engage in fewer positive exchanges, and as toddlers, less reciprocity with their peers. Related research by MacKinnon-Lewis et al. [1999] indicates that negative mother-son interactions are importantly related to poor social acceptance and aggression in seven to nine year-old boys. Furthermore, using child protective service records to classify maltreated children into subtypes of maltreatment, Bolger et al. [1998] and Manly et al. [2001] provided evidence that neglect (failure to provide or failure to supervise) was associated with poor peer relations.

Fantuzzo et al. [1998] also provided evidence of impaired peer relations among maltreated children. More generally, effective authoritative parenting has been associated with greater affiliation to positive peer groups, and less effective parenting has been associated with greater affiliation to deviant peers [e.g., Brown et al., 1993]. Interestingly, the competence and effectiveness of children's friends' parents also influences their levels of delinquency and misconduct [e.g., Fletcher et al., 1995]. Thus, there is strong evidence of the role of neglectful parenting in the quality of children's peer relations.

When such research is placed in the context of peer influences on antisocial behavior [e.g., Dishion et al., 1994], there is considerable evidence to suggest that the parental neglect and poor supervision measured in the present study could compromise the social competence of the children, impairing their ability to develop positive friendships with well-socialized peers. These socially rejected children would then be likely to develop deviant peer affiliations, which encourage and model antisocial behavior [e.g., Dishion et al., 1996; Vitaro et al., 1997]. The impact of deviant peers on the development of antisocial or delinquent behavior is further strengthened when parents fail to exercise proper supervision of their children – a pattern that would not be inconsistent with the findings of the older cohort in the present study. Similarly, inadequate parental monitoring has been established as a moderating variable in the externalizing behavior of adolescents from high risk neighborhoods, and has been found to compound the effects of deviant peer group affiliation on the development of antisocial behavior [e.g., Pettit et al., 1999]. Recent research by Bank and Burraston [2001] establishing a link between neglectful supervision and poor discipline with sibling conflict and deviant peer association adds further support for the notion that deficient parenting contributes to the development antisocial behavior, because the neglected children associate with more deviant peers. The current findings, in concert with the data on peer affliliations, strongly suggest that an expanded test of the model that includes indicators of peer relationships should be undertaken, especially within the age range of the older cohort.

There are some limitations of the present study that need to be considered in the context of interpreting the findings. Perhaps most importantly, although the sample was a "high risk" sample it was not characterized by high rates of the more severe forms of maltreatment, both neglect and physical abuse. Thus, it is conceivable that the limitations that come with that sample resulted in the more limited impact of supervisory neglect in the younger cohort. Moreover, it is also possible that the common set of indicators that were used to establish a supervisory neglect construct were too limited to fully develop the construct at that younger age. That would, of course, account for the mean difference between cohorts as well. In short, although the findings suggest the tested theoretical model has considerable validity, additional tests of the model are in order. Thus, rather than reaching a definitive conclusion, the present findings underscore the need to study the role of care neglect, supervisory neglect, and punitive discipline in children at various developmental stages and with samples that reflect a higher baserate of more severe maltreatment. The findings do, however, greatly extend research that aggregates type of maltreatment in the prediction of behavior problems [e.g., Stouthamer-Loeber et al., 2001; Thornberry et al., 2001]. Thus, the present findings argue for investigators to distinguish among types of maltreatment, as well as the timing of those forms of maltreatment, in efforts to understand the contribution of maltreatment to childhood and adolescent adjustment problems. Additionally, the findings have implication for the development or modification of both interventions and prevention strategies. That is, in efforts to reduce antisocial behavior in delinquent samples, or to prevent antisocial behavior in high risk samples, it would seem to be appropriate to focus on care neglect and supervisory neglect among economically disadvantaged target samples. That consistency in findings in two cohorts that differed both in age and with respect to some variables central to the model (e.g., socioeconomic disadvantage) underscores the generality of that model. When the results are similar, we gain confidence in our ability to generalize about the underlying mechanisms to be targeted for preventive interventions.

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REFERENCES

Achenbach TM. 1991. Manual for the teacher's report form and 1991 profile. Burlington, VT: Department of Psychology.

Achenbach TM. 1992. Revised child behavior checklist. Burlington: University of Vermont.

Arbuckle JL. 1996. Full information estimation in the presence of incomplete data. In: Marcoulides GA, Schumaker RE, editors. Advanced structural equation modeling: Issues and techniques). Mahwah, NJ: Earlbaum. p 243–278.

Arbuckle JL. 1997. Amos user's guide Version 3.6. Chicago, IL: SmallWaters.

Bank L, Burraston B. 2001. Abusive home environments as predictors of poor adjustment during adolescence and early adulthood. J Community Psychol 29: 195–217.

Barnett D, Manly JT, Cicchetti D. 1993. Defining child maltreatment: The interface between policy and research. In: Cicchetti D, Toth SL, editors. Child abuse, child development, and social policy Norwood, NJ: Ablex. p 7–73.

Bolger KE, Patterson CJ, Kupersmidt JB. 1998. Peer relationships and self-esteem among children who have been maltreated. Child Dev 69:1171–1197.

Bolger KE, Patterson CJ, Thompson WW, Kupersmidt JB. 1995. Psychosocial adjustment among children experiencing persistent and intermittent family economic hardship. Child Dev 66:1107–1129.

Brown BB, Mounts N, Lamborn SD, Steinberg L. 1993. Parenting practices and peer group affiliation in adolescence. Child Dev 64:467–482.

Byrne BM. 1989. A primer for LISREL: Basic applications and programming for confirmatory factor analytic models. New York: Springer Verlag.

Capaldi DM, Patterson GR. 1991. Relation of parental transitions to boys' adjustment problems: I. A linear Hypothesis. II. Mothers at risk for transitions and unskilled parenting. Dev Psychol 27:489–304.

DeRosier ME, Kupersmidt JB, Patterson CJ. 1994. Children's academic and behavioral adjustment as a function of the chronicity and proximity of peer rejection. Child Dev 65:1799–1813.

Dishion TJ, Patterson GR, Greisler PC. 1994. Peer adaptation in the development of antisocial behavior. In: Huesmann LR, editors. Aggressive Behavior: Current perspectives. New York: Plenum. p 61–95.

Dishion TJ, Spracklen KM, Andrews DW, Patterson GR. 1996. Deviancy training in male adolescent friendships Behav Ther 27:373–390.

Dodge KA Pettit GS, Bates JE. 1994. Socialization mediators of the relation between socioeconomic status and child conduct problems. Child Dev 65: 649–665.

Dubowitz H, Papas MA, Black MM, Starr RH. 2002. Child Neglect Outcomes in High Risk Urban Preschoolers. Pediatrics 109:1100–1106.

Duncan GJ, Brooks-Gunn J, Klebanov PK. 1994. Economic deprivation and early childhood development. Child Dev 65:296–319.

Eckenrode J, Laird M, Doris J. 1993. School performance and disciplinary problems among abused and neglected children. Dev Psychol 29:53–62.

Fagot BI. 1997. Attachment, parenting, and peer interactions of toddler children. Dev Psychol 33: 489–499.

Fantuzzo JW, DelGaudio Weiss AD, Atkins M, Meyers R, Noone M. 1998. A contextually relevant assessment of the impact of child maltreatment on the social competencies of low-income urban children. J Am Acad Child Adolesc Psychiatry 37:1201–1208.

Fergusson DM, Horwood LJ, Lynskey MT. 1995. The stability of disruptive childhood behaviors. J Abnorm Child Psychol 23:379–396.

Flango CR. 1988. State courts' jurisdiction and terminology for child abuse and neglect cases. Williamsburg, VA: National Center for State Courts.

Fletcher AC, Darling NE, Dornbusch SM, Steinberg L. 1995. The company they keep: Relation of adolescents'adjustment and behavior to their friends' perceptions of authoritative parenting in the social network. Dev Psychol 31:300–310.

Forgatch MS, DeGarmo DS. 1999. Parenting through change: An effective prevention program for single mothers. J Consult Clin Psychol 67:711–724.

Gelles R. 1989. Child abuse and violence in single-parent families: Parent absense and economic deprivation. Am J Orthopyschiatry 59:492–501.

Giovannoni J. 1985. Overview of issues on child neglect, in Child Neglect Monograph: Proceedings from a Symposium, November 10, 1985. Washington, DC, Clearinghouse on Child Abuse and Neglect Information (Department of Health and Human Services). p 1–6.

Greenwald RL, Bank L, Reid JB, Knutson JF. 1997. A discipline-mediated model of excessively punitive parenting. Aggr Behav 23:259–280.

Hanson TL, McLanahan S, Thomson E. 1997. Economic resources, parental practices, and children's well-being. In: Duncan GJ, Brooks-Gunn J, editors. Consequences of growing up poor. New York: Russell Sage Foundation. p 190–238.

Hegar RL, Yungman JJ. 1989. Toward a causal typology of child neglect. Child Youth Serv Rev 11:203–220.

Henry B, Caspi A, Moffitt TE, Silva PA. 1996. Temperamental and familial predictors of violent and nonviolent criminal convictions: Age 3 to Age 18. Dev Psychol 32:614–623.

Herrenkohl EC, Herrenkohl RC, Rupert LJ, Egolf BP, Lutz JG. 1995. Risk factors for behavioral dysfunction: The relative impact of maltreatment, SES, physical health problems, cognitive ability, and quality of parent-child interaction. Child Abuse Negl 19:191–203.

Hetherington EM, Bridges M, Insabella GM. 1998. What matters? What does not? Five perspectives on the association between marital transitions and children's adjustment. Am Psychol 53:167–184.

Hollingshead AB. 1975. Four factor index of social status. Yale University: Unpublished Manuscript.

Huesmann LR, Moise JF. 1998. The stability and continuity of aggression from early childhood to young adulthood. In: Flannery DJ, Huff CF, editors. Youth violence: Prevention, intervention, and social policy. Washington, DC: American Psychiatric Press. p 73–95.

Kendall-Tackett KA, Eckenrode J. 1996. The effects of neglect on academic achievement and disciplinary problems: A developmental perspective. Child Abuse Negl 20:161–169.

Knutson JF, Schartz HA. 1997. Physical abuse and neglect of children. In: Widiger TA, Frances AJ, Pincus HA, Ross R, First MB, Davis W, editors. DSM-IV Sourcebook Volume 3, Washington, D. C.: American Psychiatric Association Press. p 713–804.

Kupersmidt JB, Griesler PC, DeRosier ME, Patterson CJ, Davis PW. 1995. Childhood aggression and peer relations in the context of family and neighborhood factors. Child Dev 66:360–375.

Larzelere RE, Patterson GR. 1990. Parental management: Mediator of the effect of socioeconomic status on early delinquency. Criminology 28:301–323.

Maccoby EE. 1998. The two sexes: Growing up apart, coming together. Cambridge, MA: Belknap Press.

Macfie J, Toth SL, Rogosch FA, Robinson J, Emde RN, Cicchetti D. 1999 Effect of maltreatment on preschoolers' narrative representations of response to relieve distress and of role reversal. Dev Psychol 35:460–465.

MacKinnon-Lewis C, Rabiner D, Starnes R. 1999 Predicting boys' social acceptance and aggression: The role of mother-child interactions and boys' beliefs about peers. Dev Psychol 35:632–639.

Manly JT, Cicchetti D, Barnett D. 1994. The impact of subtype, frequency, choronicity, and severity of child maltreatment on social competence and behavior problems. Dev Psychopathol 6:121–143.

Manly JT, Kim JE, Rogosch FA, Cicchetti D. 2001. Dimensions of child maltreatment and children's adjustment: Contributions of developmental timing and subtype. Dev Psychopathol 13:759–782.

McLanahan SS, Sandefur G. 1994. Growing up with a single parent. Cambridge, MA: Harvard University Press.

McLoyd V. 1998. Socioeconomic disadvantage and child development. Am Psychol 53:185–204.

National Research Council. 1993. Understanding child abuse and neglect. Washington, DC.: National Academy Press

Ney PG, Fung T, Wickett AR. 1994. The worst combinations of child abuse and neglect. Child Abuse Negl 18:705–714.

Office of Human Development Services. 1981. National Study of the Incidence and Severity of Child Abuse and Neglect. Washington, D.C.: U.S. Department of Health and Human Services.

Office of Human Development Services. 1988. Study findings: Study of national incidence and prevalence of child abuse and neglect: 1988. Washington, D. C.: U.S. Department of Health and Human Services.

Patterson GR. 1993. Orderly change in a stable world: The antisocial trait as a chimera. J Consult Clin Psychol 61:911–919.

Patterson GR, Reid JB, Dishion TJ. 1992 Antisocial boys. Eugene, OR: Castalia.

Patterson GR, Chamberlain P. 1994. A functional analysis of resistance during parent training therapy. Clinical Psychology: Science and Practice. 1:53–70.

Patterson GR, Yoerger K. 1999. Intraindividual growth in covert antisocial behavior: A necessary precursor to chronic and adult arrests? Crim Behav Ment Health 9:24–38.

Pekarik EG, Prinz RJ, Liebert DE, Weintraub S, Neale JM. 1976. The pupil evaluation inventory: A sociometric technique for assessing children's social behavior. J Abnorm Child Psychol 4:83–97.

Pettit GS, Bates JE, Dodge KA, Meece DW. 1999 The impact of after-school peer contact on early adolescent externalizing problems is moderated by parental monitoring, perceived neighborhood safety, and prior adjustment. Child Dev 70:768–778.

Polansky NA, Hally C, Polansky NF. 1975. Profile of neglect: A survey of the state of knowledge of child neglect. Washington, DC.: Community Services Administration, Department of Health, Education, and Welfare.

Prinz RJ, Foster S, Kent RN, O'Leary KD. 1979. Multivariate assessment of conflict in distressed and nondistressed mother-adolescent dyads. J Appl Behav Anal 12:691–700.

Reid JB. 1993. Prevention of conduct disorder before and after school entry: Relating interventions to devlepmental findings. J Dev Psychopathol 5:243–262.

Reid JB, Eddy JM, Fetrow RA, Stoolmiller M. 1999. Description and immediate impacts of a preventive intervention for conduct problems. Am J Comm Psychol 27:483–517.

Rusby JC, Estes A, Dishion T. 1991. The Interpersonal Process Code (IPC): Oregon Social Learning Center.

Sampson RJ, Laub JH. 1994. Urban poverty and the family context of delinquency: A new look at structure and process in a classic study. Child Dev 65:523–540.

Sedlak AJ, Broadhurst DD. 1996. Third national incidence study of child abuse and neglect: Final report. Washington, D. C.: U.S. Department of Health and Human Services, Administration for Children and Families, Administration on Children, Youth, and Families, National Center on Child Abuse and Neglect.

Smetana JG, Toth SL, Cicchetti D, Bruce J, Kane P, Daddis C. 1999. Maltreated and nonmaltreated preschoolers' conceptions of hypothetical and actual moral transgressions. Dev Psychol 35:269–281.

Smith PK, Boulton M. 1990. Rough and tumble play, aggression, and dominance: Perception and behavior in children's encounters. Hum Dev 33:271–282.

Steinberg L, Lamborn SD, Darling N, Mounts NS, Dornbusch SM. 1994. Over-time changes in adjustment and competence among adolescents from authoritative, authoritarian, indulgent, and neglectful families. Child Dev 65:754–770.

Stoolmiller M. 1994. Antisocial behavior, delinquent peer association, and unsupervised wandering for boys: Growth and change from childhood to early adolescence. Multivariate Behav Res 29:263–288.

Stouthamer-Loeber M, Loeber R, Homish DL, Wei E. 2001 Maltreatment of boys and the development of disruptive and delinquent behavior. Dev Psychopathol 13:941–955.

Sullivan PM, Knutson JF. 1998. The association between child maltreatment and disabilities in a hospital-based pediatric sample. Child Abuse Negl 22:271–288.

Sullivan PM, Knutson JF. 2000a. Maltreatment and disabilities: A population-based epidemiological study. Child Abuse Negl 24:1257–1274.

Sullivan PM, Knutson JF. 2000b. The prevalence of disabilities and maltreatment among runaway youth. Child Abuse Negl 24:1275–1288.

Thornberry TP, Ireland TO, Smith CA. 2001. The importance of timing: The varying impact of childhood and adolescent maltreatment on multiple problem outcomes. Dev Psychopathol 13: 957–979.

Trocmé N. 1996. Development and preliminary evaluation of the Ontario Child Neglect Index. Child Maltreat 1:145–155.

U.S. Department of Health and Human Services, Administration on Children Youth and Families. 2001. Child Maltreatment 1999. Washington DC: U.S. Government Printing Office.

U.S. Department of Health and Human Services, Administration on Children Youth and Families. 2002. Child Maltreatment 2000. Washington DC: U.S. Government Printing Office.

Viermö V. 1996. Factors in childhood that predict later criminal behavior. Aggr Behav 22:87–97.

Vitaro F, Tremblay RE, Kerr M, Pagani L, Bukowski WM. 1997. Disruptiveness, friends' characteristics, and delinquency in early adolescence: A test of two competing models of development. Child Dev 68: 676–689.

Widom CS. 1998. Child victims: Searching for opportunities to break the cycle of violence. Appl Prev Psychol 7:225–234.

Wothke W. 2000. Longitudinal and multi-group modeling with missing data. In: Little TD, Schnabel KU, Baumert J, editors. Modeling longitudinal and multiple group data: Practical issues, applied approaches and specific examples. Mahwah, NJ: Erlbaum. p 219–240, 269–281.

Zuravin SJ. 1999. Child neglect: A review of definitions and measurement research. In: Dubowitz H, editor. Neglected children: Research, practice, and policy. Thousand Oaks, CA: Sage Publications. p 24–46.

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