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Family Social Capital through Childhood: a Sibling Model of Behavior Problems

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A SIBLING MODEL OF BEHAVIOR PROBLEMS*

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Abstract

This article uses the concept of family social capital to conceptualize mothers' life course changes and parent-child interactions in models of children's behavior problems. To investigate structural relations generating social resources, we examine families' internal closure and embeddedness in society. We take a life course view and focus on the timing and duration of mothers' poverty, single motherhood, welfare, employment, and kin coresidence through early and middle childhood. Drawing on the child psychology and social capital literatures, we specify a model of parent-child interactions as a reciprocal outcome between parenting and children's behavior. To control for unobserved family heterogeneity and reciprocal causation, we estimate fixed-effects sibling models with lagged endogenous predictors and instrumental variables. Using data on mothers and children from the NLSY, we find that child behavior problems are shaped by poverty in early and middle childhood, as well as parents' use of physical punishment.

FAMILY SOCIAL CAPITAL THROUGH CHILDHOOD:
A SIBLING MODEL OF CHILD BEHAVIOR PROBLEMS

Sociologists have become increasingly concerned with the ways in which families shape children's

development and overall well-being. This growth of interest has been fueled by rapid

transformations in family structure, deepening poverty among children, and the deteriorating

well-being of disadvantaged children. Children's behavior problems, in particular, are an

important aspect of child development, and may be implicated in later adult outcomes. For

example, life course research finds that early child temper tantrums may lead to later problems in

life, such as downward occupational mobility, erratic work lives, and divorce and separation

(Caspi, Elder, and Bem 1987). Child development research finds continuity between early

behavior problems and later antisocial behavior (Olweus 1979; Loeber 1982), while

criminological research finds continuity between behavior problems and later delinquency and

crime (Farrington 1986; White et al. 1990). Such offenders in turn are more likely to suffer adult

problems like joblessness, poverty, violence, and imprisonment (Farrington 1989; Hagan 1991).

The significance of families in the genesis of children's behavior problems is

well-documented. Both the internal dynamics of parent-child interactions and structural

relationships involving families are implicated in the development of children. Research in child

psychology has emphasized the importance of parenting styles on the well-being and control of

children. Coercive or authoritarian control based on force, threat, or physical punishment of

children tends to be ineffective in controlling and shaping children. In contrast, inductive or

authoritative control based on reasoning, explaining, and understanding tends to be effective in

shaping the lives of children (Baumrind 1978; Boronfenbrenner 1979). Such differences in

parenting styles can have a direct effect on child behavior problems and juvenile delinquency

(Baumrind 1978; Patterson, Reid, and Dishion 1992).

Both child development and parent-child interactions are conditioned by social structure. This includes both the family's internal closure as well as the family's embeddedness in society. The lack of internal closure, reflected in single-motherhood, isolation from extended kin, and parents working outside the home may impede parent-child interactions and increases problem behavior (Sampson 1987; Matsueda and Heimer 1987; Parcel and Mengahan 1994; Hao 1995). In addition, teenage motherhood may increase the likelihood of developmentally disadvantaged children (Nagin, Pogarsky, and Farrington 1997). Families that are embedded in society have greater resources to invest in children, resulting in quality interactions and nonproblematic behavior. Conversely families that are isolated from the labor market, impoverished, and stigmatized by welfare will have fewer social resources to invest in their children (Hao 1995). The result will be weaker parent-child bonds and greater behavior problems exhibited by the children.

We use the concept of family social capital to conceptualize parent-child interactions, family structures, and family social context. Thus, we focus on the structural relations that give rise to social resources available for parents to invest in their children, and the different ways in which parents invest those resources (Coleman 1988). Here we emphasize the building of trust, the exchange of information, and the mutual obligations that develop between parents and their children. Each of these processes inheres in structural relations. Families with both biological parents present, with strong kinship networks, and with parents embedded in the community (through jobs, voluntary associations, and the like) have structures that are conducive to building reciprocal trust, stable expectations, and strong normative controls. Family social capital invested in children is manifested in parenting practices, or parent-child interactions. Parents invest in their children by developing warm emotional bonds, building strong norms with consistent, positive

sanctions, and providing support. These investments can dissuade children from problem behavior.

But families influence children's social development through a dynamic process, which unfolds over the life course of the child. Therefore, we follow recent theorizing in criminology and adopt a life course framework for examining family social capital and child behavior problems (e.g., Sampson and Laub 1993; Hagan, MacMillan, and Wheaton 1996; Matsueda and Heimer 1997). We conceptualize parents' life course transitions as structural relations both within the family and between the family and other institutions (Hao and Bondstead-Bruns 1998). Parental role transitions, such as movements into and out of states such as poverty, welfare, employment, single-parenthood, and coresidence with extended kin, represent major shifts in internal closure within the family and the embeddedness of the family in society. Moreover, not only is the transition itself important, but the *timing* of that transition and the *duration* of the state is significant for the child (Hogan 1978; Elder 1985). For example, chronic poverty may deplete social resources (e.g., information about ways to dissuade children from problem behavior) and thereby impair the control of children. Or early childhood poverty could have lasting effects on children by undermining the formation of parent-child bonds at a critical life stage.

This paper uses an integrated framework drawn from social capital theory, life course perspectives, and child development research to examine relationships between parental life course transitions, parent-child interactions, and children's behavior problems. We use the concept of family social capital to integrate these aspects of family processes and child development.

FAMILY SOCIAL CAPITAL AND CHILDREN'S BEHAVIOR PROBLEMS

In developing social capital theory, Coleman (1988) tried to integrate a sociological framework, which views "actors as socialized and action as governed by social norms, rules, and obligations," into a rational choice perspective that emphasizes human capital investments. Applied to the family, human capital approaches specify a household production function, in which the utility of parents depends not only on their own consumption, but also on the utility of their children (Becker 1991). Parents invest time, energy, and material resources in their children to increase their children's well-being. In return, children refrain from undesirable behavior, acquire greater human capital, land more prestigious jobs, and accumulate greater wealth. Thus, descendants in all generations are linked by a dynastic utility function relating parents' utility to that of their children (Becker 1991).

Social capital theories build on an individual decision-making model, but explicitly consider social relationships in the context of social structure and organization. For Coleman (1988, 1990), the concept of social capital captures the process by which individuals develop social relations, which, in turn, generate resources facilitating action. Social capital inheres in social relations and takes on three forms: (1) reciprocal obligations, expectations, and trust; (2) information that provides the basis for rational action; and (3) norms and effective sanctions that govern behavior and, in particular, induce action in the interest of a collectivity, like the family.

But is social capital really capital? Coleman (1988) argues that social capital is less tangible than human capital, which is less tangible than physical capital. What makes social capital a form of capital is its function in facilitating action, which parallels other forms of capital. Physical capital arises when people transform materials into tools, for the purpose of producing other goods. Human capital arises when persons invest in skills and abilities for the purpose of

increasing productivity. Social capital arises from structural relations among persons—giving rise to trust, obligation, norms, and information—which facilitates actions. Whether social capital is really capital rests on two assumptions. First, are people following a rational actor model and investing in social capital to facilitate actions? With respect to families, it seems reasonable to assume that parents are intentionally investing social resources in their children in anticipation of a future return. The returns can range from expecting financial and emotional support from their children in old age to simply observing their children's future well-being. Theoretically, social capital should facilitate children's well-being and achievement, but whether it in fact does must be tested empirically. Our analyses should shed some light on this question.

Applied to families, the concept of social capital features three major components—internal closure within the family, embeddedness of the family in the broader society, and interactions between parents and children, which we call "family social capital." Here social resources are generated from relations situated in social structures. Moreover, human capital, financial capital, and teenage childbearing constitute initial conditions under which family social capital develops over a child's life course.

Family Background

Human capital, reflected in parents' years of education, and financial capital, reflected in parent's income, are resources available for parents to invest in their children's well-being. Educated parents have greater knowledge and expertise to build a supportive cognitive and emotional environment for the child to develop. Wealthy parents invest in quality homes, safe neighborhoods, and stimulating environments to increase their children's achievements and decrease their problems. Conversely, teenage mothers may have fewer personal resources to invest in their

children. Conventional wisdom suggests that teenage mothers may be emotionally unprepared for parenthood, have fewer parenting skills, and lack resources compared to adult mothers (Furstenberg, Brooks-Gunn, and Chase-Lansdale 1989). Others argue that observed developmental disadvantages exhibited by children of teenage mothers are not due to mother's age per se, but instead to socioeconomic disadvantages of families with teenage mothers (Geronimus and Korenman 1992; Geronimus et al. 1994; Rosenzweig and Wolpin 1995).

Internal Closure within Families

Coleman (1988) argues that social capital is facilitated by closure in the structure of social relations. Family social capital inheres within the structure of the family, as well as between families and broader social structures. Within families, closure is achieved when family members retain reciprocal social relations with each other. This enables parents to build trust and obligations with each other, and impose their expectations on each other. Thus, the physical absence of adults is a "structural deficiency in social capital" (Coleman 1988, p. 111). In contemporary society, structural deficiency is seen in single-parent families, or nuclear families with both parents working, without compensating extended kin near the household.

In single-mother families, the absence of the father reduces social capital by reducing father-child interactions, and at times constraining the time a mother has to spend with her children. This could be an additive effect, if the absent parent subtracts a fixed amount of social capital. But it could also be multiplicative if parents in closed structures have close and trusting relationships, and thereby reinforce each other's expectations and information with respect to the child.

Other family structures introduce further complications. For example, in families with stepparents, expectations for children between biological parents and stepparents differ

substantially (Cherlin 1978), making social capital accumulation difficult. Weak or incomplete nuclear family structures can be partly compensated by the presence of kin. For example, the absence of fathers can be compensated by the presence of grandparents who help rear the child (Hao and Brinton 1997; Hogan, Hao and Parish 1990). Finally, the number of siblings in the home can be viewed as an indication of social capital. More siblings dilute the amount of time parents can spend with their children, thus, undermining social capital investments (Coleman 1988, p. S113).

Families' Embeddedness in Society

Families derive greater social and material resources when they are embedded in other social institutions. Social capital, in particular, inheres not only in social relations within the family, but also in "parents' relationships with the institutions of the community," including neighborhoods, labor markets, educational institutions, and local governments (Coleman 1988, p. S113). Embeddedness with respect to these broader structures is achieved through stability over time. For example, poverty and joblessness will increase isolation from conventional institutions and increase the likelihood of residence in disorganized, crime-ridden neighborhoods. Similarly, welfare dependency may reinforce social isolation by stigmatizing parents and families. In general, structural disadvantages undermine relations between parents and their neighbors, co-workers, and community organizations, thereby reducing social resources available to the family. Such disadvantages may ultimately interfere with parent-child relations by undermining parental supervision and control. The result may be an increased risk of problem behavior among children.

In some instances, structural conditions can have disparate effects on social capital. For example, parents' stable employment will foster social integration into local communities, thereby

increasing social capital inherent in those relations. Counterbalancing this effect, mother's employment outside the home early in the child's life can reduce social capital by impeding closure in the family's structure, thereby restricting the mother-child interactions. This example also illustrates the distinction between strength of ties and richness or content of information transmitted. A mother's stable employment may produce ties to local communities that are weak but generate important information for the family's well-being. Conversely, stable employment may undermine family ties that are stronger but not as rich. Whether one form of social capital or the other is more consequential is ultimately an empirical question.

Investing in Children: Parent-Child Relations

Parents' investments in their children, derived from resources inherent in structural relations, take the form of parenting, or more precisely, parent-child interactions. In his example of social capital predicting high school dropout, Coleman (1988) operationalized family social capital as mother's expectations of the child's education and her discussions of personal matters with the child. These are ways in which parents invest in their children, which translates their own human and financial capital into that of their children. In applying the concept of social capital to the study of delinquency and crime, Sampson and Laub (1993) have drawn parallels between the concept of social capital and the concepts of attachments and informal ties between parents and children. Parents who pay attention to their children, supervise them closely, and expect them to succeed are investing in their children's social capital, which reduces antisocial behavior. From the standpoint of the child, the mechanism is consistent with a rational actor model: children closely supervised and attached to parents refrain from delinquent behavior because they consider their parents' disapproval of the behavior (Hirschi 1969). Conversely, merely using coercive measures, such as

physical punishment, to control children in the short-run, may reflect a lack of investment in the long-term well-being of children.

MOTHERS' LIFE COURSE TRANSITIONS THROUGH CHILDHOOD

As noted above, family social capital is increased by closure within the family and embeddeness of the family in society. Coleman stated these relations as static entities. In reality, however, social relations are dynamic and evolving, which opens new puzzles for the analysis of social capital. We draw from the literature on life course and child development to conceptualize the timing of parents' life course transitions through the stages of childhood. We focus on the life course changes of mothers, the primary caretakers in most families.

Life course perspectives emphasize the interdependence of lives linked through time, stress that both children and parents actively shape interaction rather than passively responding to structural constraints, and focus on the timing and sequencing of events (Amato and Booth 1997; Elder 1985). The important events include structural transitions most relevant to child problems, including family structure, welfare, poverty, unemployment, and kinship co-residence. This emphasis echoes family demographers' recent concerns about the unfolding dynamics of childhood experiences and subsequent child outcomes. Much of this work focuses on the timing of childhood experiences of poverty. It distinguishes permanent, chronic, persistent, recurrent, occasional, and transient forms of poverty (Ashworth et al. 1994) and differentiates effects of childhood patterns of poverty on child outcomes (Corcoran 1995; Duncan et al. 1994; McLeod and Shanahan 1993; Hao 1995). Similar work has examined histories of family structure, distinguishing current, early, and unstable family structures, and their effects on child outcomes (Menaghan et al. 1997; Corcoran 1995; Lichter 1997; Wu and Martinson 1993; Hao 1995).

Wu and Martinson (1993), in particular, have lent some conceptual clarity to this literature by specifying three specific hypotheses to the timing of family structure and premarital births. *Early* family structure corresponds to a child socialization hypothesis, in which early socialization produces trajectories that persist through adolescence. *Current* family structure corresponds to a social control hypothesis, in which close supervision dissuades adolescents from deviance. *Unstable* family structure corresponds to a family change hypothesis, in which frequent changes in family structure, and the attendant stress produced, undermines adolescent development (Wu and Martinson 1993). Following this approach, we draw on life course and child development literatures to conceptualize the process by which the timing of family social capital influences child outcomes.

Socialization in Early Childhood

Child development researchers emphasize socialization early in a child's life, which spawns life course trajectories. In the transition from infancy to early childhood, parents shift from a caretaker role to a role of directing, shaping, and reinforcing children's behavior (e.g., Baumrind 1978). Children acquire language, develop cognitively, and participate in symbolic interaction with parents, which facilitates critical early learning. Parenting consists of modeling, reinforcing, and punishing behavior. According to this view, divorce, dependence, and joblessness may have particularly harmful effects during early childhood, generally defined as infancy through the first five years of life (Hetherington, Cox, and Cox 1978; Wallerstein and Kelly 1980; Rutter and Quinton 1984).

From the standpoint of social capital theory, we would expect that some forms of family social capital cumulate over time, making early child experiences critical. For example, not only

are the building of trust and the internalization of norms cumulative, but the very ability to trust and internalize norms are likely to be acquired early in life. Therefore, structural changes in the family that disrupt closed social relations may be particularly consequential for a child's well-being when they occur in the first five years of life. For example, Amato and Booth (1997) found that divorces occurring early in the child's life had persistent negative effects on child well-being, particularly for families experiencing marital discord, and these effects were due to a lessening of parental support. Net of their effects on financial capital, poverty and AFDC recipiency can impede early parent-child bonds by stigmatizing the family, widening the gap between the family and the mainstream society, and ultimately draining the family of social resources upon which to build social capital.

Social Control in Middle Childhood

During middle childhood, children begin to reason, empathize, and take the role of the other. Effective parenting is not longer restricted to direct reinforcement and modeling, but also capitalizes on reasoning and role-taking by emphasizing systems of social relations. Parents use social approval, social disapproval, and inductive reasoning to teach the child how to infer others' reactions to their behavior, and how to engage in role taking (Baumrind 1978). Moreover, as children gain a sense of self and independence, parental supervision and involvement becomes increasingly important for social control. Structural changes, such as divorce, welfare, and unemployment, may affect children's social development by impeding parents' ability to supervise and control their children (Matsueda and Heimer 1987). Parents act as capable guardians in reducing the likelihood of antisocial behavior (Cohen and Felson 1979).

From this view, structural changes in the closure of family relations and the family's

embeddedness in society will undermine normative controls and effective sanctions and increase child behavior problems. This effect may vary by the form of problem behavior. Social control by parents may be more effective in curtailing externalizing behaviors, such as aggressive and temperamental acts, which are easily observed and corrected, than internalizing behaviors, such as depressive and unsociable behavior, which are more nebulous, covert, and difficult to correct.

Family Change and Unstable Social Capital

In his discussions of the sources of social capital, Coleman (1988) emphasized the stability of social relations. This point is evident in his example of frequent family moves undermining social capital inhering in a family's ties to community. Coleman, however, did not specify precisely whether social capital is undermined more by having few social relations or experiencing frequent changes in social relations. In the life course literature, some argue that the precise timing of life-course transitions is less important than the total number of transitions (Wu and Martinson 1993). The argument here is that more changes in structural arrangement leads to greater stress on the family, which has negative effects on child development. Some research finds that family disruption leads to aggression, impulsivity, and unhappiness (Heatherington 1987; Wallerstein and Kelly 1980), and repeated stressful events are associated with negative child outcomes (Rutter 1983). In particular, Amato and Booth (1997) found that frequent changes in marital status had negative effects on children's later psychological well-being by undermining parental support. We suggest that frequent changes in family structure, employment, poverty, welfare, and kin coresidence represent unstable family social capital, thereby damaging parent-child relations and increasing child behavior problems.

PARENT-CHILD INTERACTIONS

In developing social capital theory, Coleman (1988) conceptualized parenting as a way of investing in the futures of children. Thus, parents build up mutual trust and obligations with their children, provide them with useful information for their futures, and socialize their children to abide by conventional norms. This conceptualization takes the viewpoint of the parent, relegating the child to an uninteresting or passive actor that does not contribute to his or her own socialization. Much research, however, suggests that children are active contributors to interactions with their parents, and an exclusive focus on parents provides an incomplete and biased picture.

Research from life course and child development perspectives assume that children are active agents who contribute to their socialization. Thus, parenting is conceptualized as a joint accomplishment between parents and their children. Of course, parents have the power to force compliance in children, but differences in children's behavior can lead to differences in parental responses (e.g., Bell 1968; Bell and Harper 1977; Patterson and Yoerger 1997). For example, children who are difficult and temperamental may elicit more punitive responses from parents. Such interactions can escalate into episodes of physical punishment of the child. In contrast, responsive and sociable children may facilitate attachments to parents and more authoritarian parenting behaviors. The result can be a spiraling process of increasingly positive or negative interactions, causing parent-child dyads to diverge in parenting styles and children's behaviors.

We will examine the effects of parent-child interactions on children's behavior problems while controlling for possible effects of children's behavior on parenting. For example, we hypothesize that positive parenting—praising a child, showing physical affection, and saying positive things—will reduce problem behaviors by teaching children the boundaries of behavior in a non-threatening way (Patterson et al. 1992; Baumrind 1978). In contrast, the use of physical

punishment may increase aggression by legitimizing the use of violent and aggressive behavior to solve problems (Olweus 1980; Larzelere 1986; Straus 1991). Fathers who spend time with their children are investing in the well-being of their children. Moreover, it may be that the kinds of activities that parents share with their children —taking them to museums and other cultural events—are important for children's adjustment.

DATA AND MEASURES

The National Longitudinal Survey of Youth

We use data from the main file of the National Longitudinal Survey of Youth (NLSY) and its matched mother-child file. The NLSY is based on a national probability sample of 12,686 American youths who were aged 14-21 in January 1979, and who have been reinterviewed annually through 1994. Of the 6,283 females sampled, 456 were originally in the military and dropped after 1985, and 901 were poor whites and dropped after 1991. In 1994, 77 percent of the 4,480 female respondents interviewed were mothers of at least one child.

In 1986, the NLSY began adding to the survey all children born to the NLSY females. Every other year, the NLSY assesses the children's development, including their behavior problems and home environments. By 1994, five waves of assessments had been completed with the 7,089 NLSY children and 16 waves of interviews had been completed with the 4,480 NLSY mothers. We take advantage of this survey design to estimate sibling models that examine relationships between child behavior problems and childhood experiences of poverty, single motherhood, AFDC receipt, kin support, maternal employment and parenting practices.

We confine our analysis of behavior problems to children aged 8-14 in the years of 1990, 1992, and 1994. We exclude four categories of youth for substantive reasons. First, we exclude

non-school age children because our assessments included activities both at home and in school. Second, we exclude older teenagers because they have advanced into a different developmental stage, one in which, for example, adolescent delinquency has replaced child behavior problems. Third, we exclude children born prior to the beginning of the NLSY longitudinal survey (1979), because retrospective data on mothers are incomplete. Fourth, because family processes may operate differently in large families (and the NLSY had too few cases to run separately), we excluded families with more than three children.

Our sibling model with lagged endogenous predictors places two additional requirements on our sample. First, our fixed-effects sibling model requires data on at least two siblings in a family; therefore, we exclude families with only one child observed. Second, our model specifying behavior problems as a function of previous behavior problems lagged one period requires using behavior problems lagged two periods as an instrumental variable. This implies the need for at least three consecutive waves of observations per child. For children with more than three waves of observations, we select one set of three observations (detailed below). The resulting sample of children with valid behavior problem assessments includes 1,745 children born to 795 mothers. Among the 795 mothers, 644 had two children included in our sample, and 151 had three children included in our sample.

The NLSY administered the behavior problem assessment every two years to children four years of age and older. Therefore, children could be assessed in multiple years. We select the set of three consecutive assessments per child that maximizes the difference in mothers' age at child assessment between siblings. This strategy yields greater within-family variance for variables describing childhood experiences of mothers' life-course transitions, which is important for

obtaining stable estimates of sibling models.[1]

Measurement

Behavior Problems. Since 1986, the NLSY has administered to mothers a checklist of their

children's behavior problems derived from the Achenbach Behavior Problems Checklist

(Achenbach and Edelbrock 1981). We specified three confirmatory factor models, one with a

single latent construct, one with two latent constructs—externalizing and internalizing

symptoms—and a third with five latent constructs—aggression, temperamental, hyperactive,

depression, and unsociable (see Appendix Table 1 for items of each factor).[2] These specifications

were derived from Achenbach and Edelbrock's (1981) original analysis, as well as the analyses of

Zill (1985) using the National Health Interview Survey, Parcel and Menaghan (1988) and McLeod

and Shanahan (1993) using the 1986 assessment of the NLSY children, and Lizotte et al. (1992)

using data from the Pittsburgh and Rochester Youth Surveys. Both two-factor and five-factor

structures appear consistent with earlier research, theoretical considerations, and psychological

diagnostic classifications. Each of the models provide a reasonable fit to the data and exhibit

reasonable factor loadings. The discriminant validity of the factors, as revealed by the inter-factor

correlations, is less apparent. In our two-factor model, internalizing and externalizing factors are

correlated .84 (.70 after computing factor scores). In our five-factor model, correlations range

from .69 (between depression and hyperactivity) to .91 (between temperamental and aggression) (a

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[1]We also estimated models in which we randomly selected the measure of child behavior problems at one wave. This sampling method drops the within-family variance. Sensitivity analyses find that this way of sampling yields estimates that are identical in sign, but smaller in magnitude and statistical significance.

[2] The behavior problem checklist for 1986 has four fewer items. Therefore, we estimated separate confirmatory factor models for the 1986 data, and computed separate factor scores for 1986. These scores make up two-period lagged dependent variables for 442 of our children.

range of .51 to .65 after computing factor scores). Although discriminant validity is not strong, we follow research in child psychology and report the full results for (1) the single factor, (2) internalizing vs. externalizing, and (3) the selected coefficients that differ significantly among the five factors, depression, unsociable, aggression, temperamental, and hyperactive. Our composites are factor scores using weights from our confirmatory factor models, which give more weight to indicators that have greater reliability.[3]

At-Birth Conditions. We measure several variables at the time of birth of a given child. Teenage motherhood refers to a woman who gave birth to her first child while she was a teenager. It is invariant across siblings. We distinguish two forms of teenage childbearing (maternal age at birth): births occurring before age 18 of the mother (young teenage childbearing) and those occurring between age 18-19 (old teenage childbearing). The reference group includes those born when the mother was 20 or older.

Other variables measured at birth of the child are static measures that vary between siblings. These include mother's educational level and family income at birth, indicating the human and financial capital available in the family when the child was born. Mothers' smoking and drinking during pregnancy captures pre-natal health conditions that may affect fetal development. Some psychological research suggests that prenatal substance use can lead to child behavior problems. An alternative argument, however, suggests that rather than the substances per se, it is a mother's propensity of risk-taking and self-destruction (reflected in drinking and smoking during pregnancy) that influences a child's behavior problems. Our sibling model controls for mother-specific heterogeneity (including her propensity for risk-taking and self-destruction), and therefore, can test

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[3]Detailed results from the confirmatory factor analysis are available from the authors upon request.

these competing hypotheses.

Childhood Experiences of Mother's Life-course Transitions. During a child's life course, parents' demographic and socioeconomic status changes, which changes their potential for developing social capital with their children. We measure childhood experiences of mother's life-course transitions using five dimension—poverty, single motherhood, AFDC participation, grandparent co-residence, and employment. Because different siblings grow up in different life stages of their parents, their experiences of parental life-course transitions may also differ. Thus, we want to examine hypotheses corresponding to the timing of parental life-course transitions with respect to each child. We modify the approach of Wu and Martinson (1993) to arrive at three conceptualizations of the life-course timing and duration of poverty, single-motherhood, AFDC, grandparent coresidence, and employment. To illustrate the three conceptualizations, we use the example of single motherhood.

The first conceptualization of the timing of single motherhood captures *early childhood exposure* (0-5 years) with the proportion of the five years the child spent in a single-mother family (see Wu and Martinson 1993, p. 216). The second conceptualization captures *recent duration* in single motherhood during *middle childhood* (6-14).[4] We are extending Wu and Martinson (1993), who found no support for a snapshot of current family structure. We hypothesize that it is not merely a *snapshot* of current family status, but rather *duration* in current family status that will affect child behavior problems from a social control view.[5] The third conceptualization captures *instability* through the child's life, and is measured by the number of changes across childhood

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[4]Preliminary analyses found empirical support for this specification. Models that interacted current life-course status with duration in that status provided a better fit to the data than models that used only current status.

[5]To measure duration in current family status, such as poverty, we consider the proportion of time the child was in the current poverty spell during middle childhood.

(from birth up to the year of assessment) in family structure. For instance, if a mother divorced but later remarried after the birth of a child, the entry into and exit from single motherhood would account for two changes in family structure. The greater the number of changes, the greater the instability in the child's family situation.

Parenting Practices. We use parenting practices as measures of parents' social capital investment in children. The NLSY administered a short form of the Home Observation Measurement of the Environment (HOME). We draw upon the theoretical concept of social capital, previous operationalizations of family social capital (e.g., Coleman 1988), and the substantive meanings of the HOME items to specify four major dimensions of parenting. The dimensions are mother's positive parenting, physical punishment (spanking), taking the child to cultural activities, and father's time spent with the child. We estimated a confirmatory factor model, tested its goodness of fit, and then computed factor scores for each construct. Positive parenting is measured with a composite of three items, including the number of times a parent praised a child, showed physical affection, and said positive things. The spanking item is measured on an interval scale, which we truncated at eight to reduce the potential influence of outliers (0.6% of children experienced spanking greater than 8 times in a week). Cultural activities include taking children to museums and performance. Time the father spent with the child is based on spending time and having meals and outdoor activities with the child.

SPECIFICATION OF THE MODELS

An empirical examination of parental life course transitions, parent-child interactions, and child outcomes raises two important methodological issues. First, life course transitions and parent-child interactions are not exogenous treatments but instead are determined by an

endogenous family process. Therefore, there could be unobserved family factors that affect both life course transitions, parenting, and child behavior problems that could bias estimates of the effects of transitions on parenting. Such unobserved family heterogeneity include unmeasured stable parent characteristics or family structures, parents' own socialization in their family of origin, and parent's child rearing strategies that are common for siblings in the family of procreation. To overcome potential bias, we use fixed-effects models for sibling data to control for unobserved family heterogeneity (e.g., Hsiao 1986; Greene 1993). Fixed-effects models also control for persistent measurement errors in mothers' reports on child behavior problems—such persistent errors are absorbed in our unobserved family heterogeneity component.

Second, we noted above that child development researchers suggest that children's behavior may contribute to parent-child interactions. Therefore, any examination of parenting on child behavior problems must control for possible reciprocal causation. We address this issue by using lagged parenting practices to predict current child behavior problems, controlling for lagged behavior problems. To correct for possible biases resulting from endogenous predictors and disturbances being correlated, due for example to serial correlation in the presence of a lagged dependent variable, we use an instrumental variables estimator, using the second-order lagged behavior problems as an instrument of the first-order lagged predictor (Hsiao 1986). The resulting models specify a clear temporal ordering between parenting and behavior problems and explicitly model change in behavior problems.

We estimate our fixed-effects sibling models with lagged endogenous predictors separately for each of eight measures of child behavior problems (the overall behavior problems, internalizing vs. externalizing, as well as separate scales of aggression, temperamental, hyperactive, depression, and unsociable). Let y_{ijt} be one of the eight measures (scalers) of behavior problems for child j in

family i, assessed at time t. $\mathbf{X}_{ijt}$ is a vector of the child's characteristics as controls (age, gender, birth order, health condition, age of the youngest child, and the number of siblings at home at the time of assessment). The vector $\mathbf{B}_{ij}$ denotes at-birth conditions, including the ith mother's age at birth of the child (young teen, old teen vs. adulthood) and financial, human, and health resources at birth of the jth child. We use $\mathbf{C}_{ijt}$ to denote a vector of variables describing childhood exposure to parents' life course transitions up to time t, the year of assessment. Parenting practices in the immediate past period is expressed in the vector of $\mathbf{P}_{ij,t-1}$. To predict change in behavior problems from the last period to the current period, we include a one-period lagged dependent variable, $y_{ij,\,t-1}$, on the right-hand side of the equation. Our instrumental variable for the one-period lagged dependent variable is the two-period lagged dependent variable, $y_{ij,\,t-2}$, which is assumed orthogonal to the disturbance. The predicted variable, purged of correlation with the disturbance is denoted $\hat{y}_{ij,t-1}$. Thus, our sibling model with fixed effects and with lagged variables is expressed below.[6]

$$y_{ijt} = \beta_1' X_{ijt} + \beta_2' B_{ij} + \beta_3' C_{ijt} + \beta_4' P_{ij,\,t-1} + \gamma \, \hat{y}_{ij,t-1} + \alpha_i + u_{ijt}\,.$$

Our fixed-effects specification relaxes the assumption that unobserved family heterogeneity (α_i) is orthogonal to other regressors. If α_i is correlated with other regressors, OLS and GLS estimators are biased and inconsistent. It seems reasonable to relax such an assumption. Unobserved family heterogeneity includes all variation across families in child behavior problems, once our measured time-varying regressors are partialled out. This includes parent-child interactions we have not captured with our measures, inherited characteristics, and unmeasured structural effects. These omitted effects are likely to be correlated with those aspects of family

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[6] We use the subscript t to indicate that siblings were assessed in different years as well as to indicate the lagged

process and structure that we do measure. To estimate the model, we use a fixed-effects estimator, which essentially differences out the effects of both observed and unobserved family heterogeneity:

$$y_{ijt} - \bar{y}_i = \beta_1{}'(X_{ijt} - \bar{X}_i) + \beta_2{}'(B_{ij} - \bar{B}_i) + \beta_3{}'(C_{ijt} - \bar{C}_i) + \beta_4{}'(P_{ij,t-1} - \bar{P}_{i,t-1}) + \gamma(\hat{y}_{ij,t-1} - \bar{\hat{y}}_{i,t-1}) + u_{ijt} - \bar{u}_i \ .$$

Note that the subscript t disappears in the family means since the family means are the average across siblings who could be assessed at different times. A consistent fixed-effects estimator applies least squares to this equation (Hsiao 1986; Greene 1993). Here, all between-family variation (which could be correlated with our included regressors) has been differenced out. This includes three components: (1) observed family fixed variables, including mother's characteristics; (2) the between-family portion of observed variables that can vary between and within families; (3) unobserved family-specific heterogeneity in the family of origin and procreation common to a sibship, α_i. Note that our fixed-effects model deviates each child from its family-specific mean, and therefore, eliminates rather than estimates between-family effects.[7]

RESULTS

Table 1 describes the distribution of variables used in the analysis. All measures of behavior problems and their predicted lagged counterparts ($\hat{y}_{ij,t-1}$) are standardized. The age of children ranged between 8-14 years of age, with a mean of 10. About half the children are boys, two-fifths are first-born, and 3% have had serious health problems. The average size of a sibship is just under

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variables. The data structure used for analysis is one record per child, which includes the lagged variables.

[7]Because the estimates of our fixed-effects model are conditional on the sample in that α_i are treated as fixed (and estimable) rather than random and drawn from a probability distribution, we are limited in our ability to make out-of-sample predictions beyond the sample values of α_i (Chamberlain 1985).

three children, with the age of the youngest child a little over six years of age.

(Table 1 about here)

Although 21% of the children had mothers who had given birth to at least one child before age 18 (teenage motherhood, not shown in the table), only 6% of the children themselves had been born to a mother under 18, and 16% to a mother 18-19. The mothers in our sample are relatively disadvantaged: their average family income (at the time of birth of the child) was about $15,700 and their average educational level was less than 12 years. Seventeen percent of the mothers drank during pregnancy and 7% smoked during pregnancy. Thus, at the time of birth, children faced relatively disadvantaged home environments. These disadvantages persisted through childhood. For example, on average, children spent aver one-third of their first five years in single-mother families and in poverty. About one-quarter of the middle childhood period (between age 6 and 14) was spent in single motherhood and in poverty.

The use of sibling data to control for unobserved family heterogeneity requires that variables used in the analysis exhibit sufficient variation within families. Greater percentages of variance within families allow more precise estimates of the fixed-effects model. We take caution in interpreting results for variables with low percentages of within-family variation because coefficients may be estimated with large sampling variability. The last column of Table 1 presents within-family variance of each variable as a percentage of total variance. The percentage of within-family variance for internalizing and externalizing symptoms is more than 35%; the percentage for the five detailed dimensions is slightly higher. The percentage of within-family variance for the right-hand-side variables ranges from 4.1% for mother's education at birth to 83.2% for the first-born. Variables with substantial within-family variance (30% and above) include the lagged dependent variables, most of the child characteristics, and the conditions

at-birth. Childhood exposure to parents' life course transitions varies moderately (8.5-34%) within families and parenting varies between 20-40%.

Before turning to our multivariate models, we present summary statistics of relationships between family social capital and child behavior problems. Table 2 presents average behavior problems by family social capital.[8] Children's behavior problems tend to increase from two-parent families throughout childhood to single-mother families throughout childhood. This difference is greater for externalizing problems than for internalizing problems. For kin coresidence, the category, early-childhood exposure-only shows a high relative level of behavior problems. Among the remaining three life events, the effect of AFDC appears greater than that of poverty, and the effect of maternal employment appears smallest. A uniform pattern emerges for social capital investments: child behavior problems decline as the investments increase. Time with fathers leads to a greater difference in behavior problems than cultural activities and positive parenting. The biggest difference is produced by spanking. For externalizing problems, the difference between not spanking at all and spanking two or more times a week is .78.

(Table 2 about here)

Turning to our multivariate substantive models, Table 3 presents the estimates of the fixed-effects estimator. The dependent variables are standardized, so we can compare the relative magnitudes of effects across equations. The R^2s of fixed-effects models refer to percentage of variation within the family explained by the model. Overall, the R^2s of our models are moderate in size (.08-.15), although somewhat larger than previous research using these data on individuals

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[8]To make the presentation manageable, we collapse our measures of family structure, kin coresidence, AFDC recipience, poverty, and maternal employment) into four categories: not living in the state throughout childhood, living in the state during middle childhood only, living in the state during early childhood only, and living in the state throughout childhood. We use three levels for punitive parenting and two levels for other parenting variables.

(e.g., Parcel and Menaghan 1993, 1994).

(Table 3 about here)

Child Characteristics and Conditions at Birth

We first examine the effects of child characteristics and conditions measured at the time of the child's birth. We find that, as expected, sex is an important predictor of changes in behavior problems: boys are particularly prone to externalizing behaviors. Children with greater health problems tend to have greater behavior problems, but this effect is more pronounced for internalizing symptoms. The older the youngest sibling, the lower the levels of behavior problems. This is true for both internalizing and externalizing symptoms.

Most of our variables measured at birth do not have long-lasting effects on changes in behavior problems, including teenage childbearing, family income, and education. In particular, net of our other covariates, teenage childbearing does not show significant negative effects on child behavior problems, which is consistent with Geronimous et al. 1994, but inconsistent with Nagin et al. 1997. Mother's smoking during pregnancy, however, is significantly associated with more behavior problems. This effect is most pronounced for internalizing symptoms. This long-lasting effect of smoking is net of the mother's stable personality, such as propensity for self-destruction, which is absorbed by our between-family fixed effects. Thus this finding supports the hypothesis about the long-term medical effects of smoking during pregnancy, and suggests an absence of investing in the health and well-being of children.

Mothers' Life-Course Transitions: Closure and Embeddedness

Childhood experiences of mothers' life-course transitions reflect the family's internal closure (family structure, grandparent coresidence, employment) and the family's external embeddedness

in broader social structures (poverty, AFDC and employment), and thus, provide structural conditions for social capital. Note that our models should pick up the structural effects of these variables, since they control for financial and human capital of the mother.

Our early-childhood hypothesis suggests that absence of closure and weak embeddedness occurring in early childhood can have long term effects on parent-child bonds and well-being. Of these, poverty shows a significant, long-term effect on changes in behavior problems. The effect of early childhood poverty is sizable and similar for internalizing and externalizing symptoms. Specifically, the difference in internalizing and externalizing behavior problems between children who spent no time in poverty in the first five years, versus children who spent their entire first five years in poverty is about 40% of one standard deviation. This difference is about twice the difference between boys and girls and is among the strongest (standardized) effects in our models. The effect of poverty duration in early childhood is net of family income at the birth of the child, and therefore, is capturing the embeddedness of the family within the larger society. However, we find negligible effects on behavior problems of early childhood exposure to single motherhood, mother's employment outside the home, welfare, and grandparent's co-residence.

Mother's life-course status in *middle childhood* tests the hypothesis that the duration of recent closure and embeddedness facilitates social control over children. Again, we find some support for the effect of poverty. Net of middle childhood experiences with working mothers, single-mother households, living with grandparents, and receiving welfare, impoverished children with greater duration of poverty (measured by percentage of time spent in poverty) in middle childhood exhibit greater externalizing behavior problems. The effect on externalizing behavior problems is nearly as large as the corresponding effect of poverty in early childhood. Thus, we find that poverty exerts a two-fold negative effect on behavior problems. Exposure to poverty in early

childhood has a long-term effect on behavior problems even net of recent duration of exposure to poverty. More recent exposure to poverty in middle childhood also exerts an immediate effect on externalizing behavior symptoms even net of early childhood poverty. Single-mother family in middle childhood exerts a small effect that is opposite in direction as predicted.

We also examined the *number of changes* in mothers' life course events throughout childhood to examine the hypothesis of unstable social capital. Overall, the family-change variables are less-important for explaining behavior problems. We find that the number of changes in working mothers, single-mother households, living with grandparents, and poverty do not significantly affect children's behavior problems when controlling for the corresponding states in early- and middle-childhood. AFDC exerts a nontrivial effect, but in the opposite direction than predicted.

Parent-Child Interactions

We conceptualize parent-child interactions as a form of investing family social capital in child development. We hypothesize that parents who invest in their children by refraining from physical punishment, taking an active interest in their lives, and praising them for positive behavior will have children with fewer behavior problems. We find that physical punishment retains a robust and significant effect on each of our three measures of behavior problems. As predicted, physical punishment has a particularly strong effect on externalizing behaviors (aggression, temperamental, hyperactive), which is over twice the size of the corresponding effect on internalizing behaviors. Children who are spanked an average of eight times a week exhibit two-thirds of a standard deviation more behavior problems (in the next two-year period) than those who are not spanked. Thus, it appears that physical punishment has a general deleterious effect on child development,

and specifically tends to legitimize aggression (Strauss 1991). This finding is remarkably robust, present in all of the models we have estimated, and again, rules out the possibility of reverse causation—that aggressive, temperamental, and hyperactive behaviors elicit physical punishment. In contrast, net of our other covariates, unobserved family heterogeneity, and prior behavior problems, our other parenting variables, including cultural activities, father's time with the child, and positive parenting, do not show significant effects on children's behavior problems.

Continuity and Change in Child Behavior Problems

Finally, our model includes a lagged dependent variable (predicted from the two-period lag to eliminate the correlation between lagged dependent variable and disturbance) on the right-hand side of the equation for child behavior problems, which allows us to examine change in behavior problems. Our behavior problems measures—lagged and unlagged—are standardized to unit variances, making our stability coefficients standardized. We find significant within-family continuity in behavior problems net of our covariates, particularly for externalizing (.25), but also for internalizing (.12). Another way of examining the issue of continuity and change is to note that in bivariate fixed-effects models (not shown) we find that the predicted lagged dependent variable explains 1 percent of the variance of internalizing and 7 percent of externalizing. Thus, there is substantial within-family change in behavior problems over a two-year period. Note that these coefficients are restricted to *within-family stability*. If we examine overall stability, which is a weighted average of within- and between-family stability, we find bivariate stability coefficients (correlations) similar to previous research on children's behavior problems (e.g., Olweus 1979). The correlation is .39 for internalizing and .50 for externalizing.

Finally, it is noteworthy to compare our within-family stability coefficients with the

within-family standardized coefficients for poverty and physical punishment. In predicting internalizing symptoms, early childhood poverty has the largest standardized effect (.15) followed by continuity (.12), and then physical punishment (.03). In predicting externalizing symptoms, we find greater continuity (.25) than the effects of early-childhood poverty (.13), middle-childhood poverty (.12), and physical punishment (.05). Thus, even controlling for unobserved family heterogeneity, lagged dependent variables, and serially correlated errors, we find that poverty in early and middle childhood (reflecting the absence of embeddedness of the family in society) and physical punishment (reflecting a lack of social capital investment) exert nontrivial effects on children's behavior problems.

The final step of our analysis is to investigate whether there are significant differences in parameters across dimensions of child behavior problems. Table 4 presents the results for three sets of comparisons: (1) between internalizing and externalizing; (2) between depression and unsociable; and (3) between aggression, temperamental, and hyperactive. Parameters for the effects of a variable of social capital (physical punishment) and lagged dependent variables have stronger effects on externalizing problems than internalizing symptoms. A few parameters differ across finer dimensions, but most of these involve our background variables. The one notable exception is that physical punishment has a significantly stronger effect on unsociable than depression.

(Table 4 about here)

CONCLUSIONS

This article has examined a model of children's behavior problems that draws upon social capital theory, life course perspective and child development research. Our findings suggest three

important conclusions. First, we find that, among out measures of family closure and

embeddedness—including poverty, single mothers, mother's employment, welfare, and kin

coresidence—only exposure to poverty in early and middle childhood significantly affects child

behavior problems. This is consistent with other research emphasizing the role of poverty (e.g.,

Duncan et al. 1994), and suggests that policies designed to ameliorate poverty may be more

effective in improving child development. We argued that poverty reflects a family's lack of

embeddedness in broader social structures, including neighborhoods and communities. But it also

reflects the absence of financial capital available to the family. Our models partial out financial

capital at birth of the child, and therefore, the effects of poverty in early childhood capture

primarily social capital, whereas poverty in middle childhood captures social capital and certain

changes in financial capital in middle childhood.

Second, among our parenting variables, physical punishment exerts a strong and significant

effect on behavior problems. This finding is consistent with previous research examining negative

effects of physical punishment (e.g., Straus 1991), but provides much stronger support given that

our models have controlled for unobserved family heterogeneity, reverse causality, and

endogeneity. More generally, this finding illustrates the complexity of theorizing about social

capital investments. Parents' spanking of their children may put an end to immediate behavior

difficulties—such as crying or acting out—but have a long-term negative effect on other more

important behavior problems. Consistent with research on child development, the alternative of

reasoning with the child may be more effective for social control.

Third, using a sibling model to control for unobserved family heterogeneity, we fail to find

support for the hypothesis that children born to teenage mothers are developmentally

disadvantaged. This is consistent with Geronimous et al.'s finding using cousin models, but

inconsistent with individual-level analyses of Nagin et al. (1997). Thus, the observed association between teenage motherhood and child development appears to result from teenage mothers being disproportionately drawn from disadvantaged backgrounds.

Our empirical results did not provide evidence to support the predicted effects of other indicators of family social capital. The include structural conditions of family social capital described by family structure, kin coresidence, AFDC participation, and employment, as well as parents' social capital investments described by positive parenting. This is due in part because of the strength of our statistical models, which control for unobserved family heterogeneity with fixed effects, reciprocal causation with lagged effects, and endogeneity with instrumental variables, and thereby come closer to approximating a controlled experiment than previous studies.

But perhaps more importantly, our measures of family social capital, although they follow closely from the logic and illustrative empirical work of Coleman (1988), nevertheless use relatively standard measures of family processes. Additional theoretical and empirical work is needed to specify the precise social capital that is relevant to child development. Theoretically, we need to specify more precisely the mechanisms by which structural relations translate into family social capital. For example, are weak ties with important information more important than strong ties with weak information? How does this trade-off vary by outcomes—that is, by specific return? Empirically, we need to identify stronger measures of family social capital. For example, measures of social relations should take into account the composition of networks, the characteristics of network members, and the actual interactions between network members. Moreover, the precise nature of important information transmitted needs to be specified.

Future research can extend these analyses to examine issues we have been unable to address fully. First, longitudinal data on children's behavior problems will allow us to examine the

dynamics of children's behavior problems within the developmental course of the child. Such data would also allow one to control for unobserved heterogeneity both between families and between individual children. Second, covariance structure models would allow one to model dynamic processes in which parents make decisions about investment in children. Here one could develop a model in which the behavior problems of the first-born would influence parents' decision concerning social capital investment in subsequent children. In this way, between-children outcomes would be dynamically interrelated (e.g., Becker 1991; Rosenzweig and Wolpin 1995).

Viewed more broadly, our results provide general support for a view of child behavior problems developing out of a process in which family social capital is drawn from internal closure and external embeddedness and parents' actual investment of social capital in children. Future research can build upon this result by examining the embeddedness of families in a more tangible social context, such as neighborhoods and schools, and exploring the role that norms and information specific to problem behavior foster delinquent trajectories or serve as turning points away from a life of crime. Here, peer groups probably serve as the key locus of social control. Important research would examine how children with behavior problems sort into peer groups, how some peer groups facilitate delinquent behavior, and how information is transmitted within and between groups (Matsueda and Heimer 1997). Such processes would also be determined by the embeddedness of peer groups in neighborhoods, communities, and schools (see Brooks-Gunn et al. 1993; Sampson and Wilson 1994). Such research would help provide closure to a view of child behavior problems as developing out of a dynamic family process, in which parental life course transitions provide resources for investments in family social capital.

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Appendix Table 1. Measurement Model for Dimensions of Child Behavior Problems

	Two-Factor Model		Five-Factor Model				
	Externalizing	Internalizing	Aggression	Temperamental	Hyperactive	Dependent	Unsociable

Items

Bullies	0.729	--	0.744	--	--	--	--
Cheats	0.635	--	0.662	--	--	--	--
Breaks	0.709	--	0.739	--	--	--	--
Disobedient	0.661	--	0.689	--	--	--	--
Argues	0.665	--	0.693	--	--	--	--
Not sorry for mischievous acts	0.550	--	0.574	--	--	--	--
Hangs with troublemakers	0.613	--	0.637	--	--	--	--
Stubborn	0.742	--	--	0.771	--	--	--
Strong temper	0.730	--	--	0.759	--	--	--
High strung	0.697	--	--	0.725	--	--	--
Not concentrate	0.646	--	--	--	0.751	--	--
Confused	0.647	--	--	--	0.760	--	--
Restless	0.622	--	--	--	0.689	--	--
Impulsive	0.710	--	--	--	0.785	--	--
Fearful	--	0.633	--	--	--	0.661	--
Depressed	--	0.755	--	--	--	0.788	--
Worthless	--	0.758	--	--	--	0.792	--
Not loved	--	0.606	--	--	--	0.633	--
Obsessive	--	0.680	--	--	--	0.709	--
Paranoid	--	0.754	--	--	--	0.786	--
Worries	--	0.534	--	--	--	0.561	--
Trouble getting along	--	0.754	--	--	--	--	0.741
Not liked	--	0.652	--	--	--	--	0.654
Withdrawn	--	0.630	--	--	--	--	0.631
Secrets	--	0.563	--	--	--	--	0.565
Demands attention	--	0.566	--	--	--	--	0.568
Depends	--	0.588	--	--	--	--	0.590

	0.0467	0.0437

Goodness of Fit (RMSEA)

Factor Correlation

Externalizing	1.000	*0.700*				
Internalizing	0.838					
Aggression			1.000	*0.652*	*0.588*	*0.536*	*0.613*
Temperamental			0.9063	1.000	*0.557*	*0.556*	*0.551*
Hyperactive			0.7967	0.792	1.000	*0.507*	*0.541*
Depression			0.7232	0.793	0.689	1.000	*0.637*
Unsociable			0.8285	0.817	0.779	0.904	1.000

Note: Estimated using diagonally weighted least-squares estimator, based on polychoric correlation matrix of valid data from all children of NLSY (N=7,028). Both 2-factor and 5-factor models fit the data well. The likelihood ratio test shows that the 5-factor model improves over the 2-factor model significantly. Correlation among the underlying factors obtained in the confirmatory factor analysis is displayed below the diagonal; correlation among the constructed composites is displayed above the diagonal (in italic).

Table 1. Descriptive Statistics of Variables Used in the Analysis

Variable	Mean	S.D.	% Within Variance
Child Behavior Problems			
Aggression	0.00	1.00	38.1
Temperamental	0.00	1.00	41.7
Hyperactive	0.00	1.00	43.7
Depression	0.00	1.00	37.5
Unsociable	0.00	1.00	37.5
Internalizing	0.00	1.00	35.6
Externalizing	0.00	1.00	37.3
Overall	0.00	1.00	35.2
Predicted Lagged Child Behavior Problems			
Aggression	0.00	1.00	38.0
Temperamental	0.00	1.00	42.2
Hyperactive	0.00	1.00	38.4
Depression	0.00	1.00	35.7
Unsociable	0.00	1.00	36.6
Internalizing	0.00	1.00	32.7
Externalizing	0.00	1.00	35.6
Overall	0.00	1.00	34.0
Child Characteristics			
Age	10.14	1.51	44.0
Age squared	105.16	32.02	44.7
Male	0.51	0.50	54.3
First born	0.38	0.49	83.2
Serious health problems of child	0.03	0.07	46.1
Number of siblings at home	2.92	0.98	7.2
Age of youngest sibling	6.14	2.84	27.4
Family Conditions at Childbirth			
Teenage childbirth: mother was <17 at birth	0.06	0.24	52.2
Teenage childbirth: mother was 18-19 at birth	0.16	0.37	56.9
Family income at birth (in $1,000)	15.71	12.63	34.4
Missing family income at birth	0.21	0.40	49.6
Mother's education at birth	11.49	1.97	4.1
Mother drank during pregnancy	0.17	0.38	31.4
Mother smoked during pregnancy	0.07	0.26	23.9
Structural Conditions: Early Childhood (0-5)			
Proportion mother worked	0.37	0.35	18.4
Proportion in single-mother family	0.31	0.41	9.6
Proportion living in grandparents' home	0.16	0.26	26.3
Proportion receiving AFDC	0.23	0.33	20.2
Proportion living in poverty	0.37	0.38	14.8
Structural Conditions: Middle Childhood (6-14)			

Variable	Mean	S.D.	% Within Variance
Proportion mother worked	0.44	0.44	31.1
Proportion in single-mother family	0.27	0.43	34.0
Proportion living in grandparents' home	0.04	0.18	24.2
Proportion receiving AFDC	0.14	0.32	22.6
Proportion living in poverty	0.23	0.39	27.3

(continued)

(table 1 continued)

Variable	Mean	S.D.	% Within Variance
Structural Conditions: Changes Through Childhood			
Number of changes in mother working	1.95	1.64	12.6
Number of changes in single-mother family	0.45	0.75	12.1
Number of changes in living in grandparents' home	0.85	1.26	11.8
Number of changes in receiving AFDC	1.02	1.44	8.5
Number of changes in poverty	1.65	1.74	9.9
Lagged Parenting Practices			
Physical punishment	1.69	0.72	38.4
Positive parenting	4.03	1.31	23.7
Father's time with the child	4.99	4.19	21.4
Cultural activities	0.79	1.39	28.9
Number of Children	1,745		
Number of Families	795		

Data source: National Longitudinal Survey of Youth, youths 1979-1994, children 1986-1994.
Note: Means, standard deviations and percentages of variance within families are unweighted.

Table 2. Means of Child Behavior Problems by Family Social Capital

Family Social Capital	Internalizing	Externalizing
Structural Conditions		
Family Structure		
1. Two-parent throughout	-0.06	-0.08
2. Two-parent early childhood, single-mother middle childhood	0.28	0.06
3. Single-mother early childhood, two-parent middle childhood	-0.02	0.04
4. Single-mother throughout	0.09	0.23
Kin Coresidence		
1. Coresidence throughout	-0.03	-0.03
2. Coresidence early childhood, no coresidence middle childhood	0.17	0.21
3. No coresidence early childhood, coresidence middle childhood	-0.32	-0.53
4. No coresidence throughout	-0.12	-0.01
AFDC Recipience		
1. No AFDC throughout	-0.10	-0.13
2. No AFDC early childhood, AFDC middle childhood	0.24	0.18
3. AFDC early childhood, no AFDC middle childhood	-0.16	-0.14
4. AFDC throughout	0.13	0.53
Poverty		
1. Not in poverty Throughout	-0.15	-0.19
2. Not in poverty early childhood, poverty middle childhood	-0.25	-0.20
3. Poverty early childhood, not in poverty middle childhood	0.03	0.15
4. Poverty throughout	0.19	0.26
Maternal Employment		
1. Employed throughout	0.15	0.14
2. Employed early childhood, not employed middle childhood	-0.19	-0.10
3. Not employed early childhood, employed middle	0.17	0.01

childhood
4. Not employed throughout   -0.13   -0.20

Social Capital Investment

Cultural Activities

High	-0.03	-0.06
Low	0.02	0.04

Time with Father

High	-0.04	-0.04
Low	0.07	0.07

Positive Parenting

High	-0.03	-0.04
Low	0.01	0.02

Spanking

0	-0.09	-0.16
1	0.01	0.05
2 or more	0.39	0.62

Data source: National Longitudinal Survey of Youth, youths 1979-1994, children 1986-1994.
Note: Means are unweighted.

Table 3. Sibling Models of Family Social Capital and Child Internalizing and Externalizing Problems

Variable	Internalizing		Externalizing		Overall	
Child Characteristics						
Age	0.223		0.073		0.116	
	(0.20)		(0.21)		(0.20)	
Age squared	-0.010		-0.002		-0.004	
	(0.01)		(0.01)		(0.01)	
Male	0.055		0.249	**	0.186	**
	(0.05)		(0.05)	*	(0.05)	*
First born	-0.006		-0.114	*	-0.095	
	(0.07)		(0.07)		(0.07)	
Serious health problems of child	0.924	**	0.658		0.914	**
	(0.43)		(0.43)		(0.42)	
Number of siblings at home	-0.037		-0.086		-0.053	
	(0.07)		(0.07)		(0.07)	
Age of youngest sibling	-0.059	**	-0.075	**	-0.052	**
	(0.02)	*	(0.02)	*	(0.02)	
Family Conditions at Childbirth						
Teenage childbirth: mother was <17 at birth	-0.122		-0.148		-0.192	
	(0.15)		(0.15)		(0.14)	
Teenage childbirth: mother was 18-19 at birth	-0.010		-0.039		-0.050	
	(0.08)		(0.09)		(0.08)	
Family income at birth (in $1,000)	-0.002		0.002		0.001	
	(0.00)		(0.00)		(0.00)	
Missing family income at birth	-0.018		0.081		0.051	
	(0.08)		(0.08)		(0.08)	
Mother's education at birth	-0.025		-0.005		-0.019	
	(0.06)		(0.06)		(0.05)	
Mother drank during pregnancy	0.078		0.078		0.081	
	(0.09)		(0.09)		(0.09)	
Mother smoked during pregnancy	0.505	**	0.180		0.334	**
	(0.15)	*	(0.15)		(0.15)	
Structural Conditions: Early Childhood (0-5)						
Proportion mother worked	-0.197		0.070		-0.010	
	(0.19)		(0.19)		(0.18)	
Proportion in single-mother family	0.025		0.100		0.059	
	(0.20)		(0.20)		(0.19)	
Proportion living in grandparents' home	-0.086		0.214		0.062	
	(0.23)		(0.23)		(0.23)	
Proportion receiving AFDC	-0.213		-0.052		-0.087	
	(0.25)		(0.25)		(0.25)	
Proportion living in poverty	0.406	**	0.342	*	0.408	**
	(0.20)		(0.20)		(0.20)	

Structural Conditions: Middle Childhood (6-14)

Proportion mother worked	0.148	0.084	0.125
	(0.12)	(0.12)	(0.12)
Proportion in single-mother family	-0.307 *	-0.155	-0.225
	(0.18)	(0.18)	(0.18)
Proportion living in grandparents' home	-0.399	-0.259	-0.327
	(0.31)	(0.31)	(0.30)
Proportion receiving AFDC	-0.095	0.018	-0.023
	(0.16)	(0.16)	(0.16)
Proportion living in poverty	0.147	0.306 **	0.264 **
	(0.14)	(0.14)	(0.13)

(continued)

(table 3 continued)

Variable	Internalizing	Externalizing	Overall
Structural Conditions: Number of Changes			
Number of changes in mother working	0.002	-0.009	-0.003
	(0.04)	(0.04)	(0.04)
Number of changes in single-mother family	-0.039	-0.087	-0.078
	(0.08)	(0.08)	(0.08)
Number of changes in living in grandparents' Home	-0.006	-0.056	-0.047
	(0.05)	(0.05)	(0.05)
Number of changes in receiving AFDC	-0.091 *	-0.046	-0.067
	(0.05)	(0.05)	(0.05)
Number of changes in poverty	0.017	0.027	0.025
	(0.04)	(0.04)	(0.04)
Lagged Parenting Practices			
Cultural activities	-0.033	-0.031	-0.043
	(0.05)	(0.05)	(0.05)
Father's time with the child	0.020	0.008	0.012
	(0.03)	(0.03)	(0.03)
Positive parenting	-0.011	-0.002	-0.007
	(0.01)	(0.01)	(0.01)
Physical punishment	0.039 *	0.083 **	0.075 **
	(0.02)	(0.02) *	(0.02) *
	0.115 **	0.247 **	0.187 **
Predicted lagged dependent variable	(0.03) *	(0.03) *	(0.03) *
	.0763	.1471	.1147
Within R-Squared			

Data source: National Longitudinal Survey of Youth, youths 1979-1994, children 1988-1994.
Note: Fixed-effects estimates are presented. The dependent variables and lagged dependent variables are standardized. Standard errors are in parentheses. We use R-squares within for these

fixed-effects models.
* p<.05 ** p<.01 *** p<.001 (one-sided test)

Table 4. Parameters Significantly Different across Dimensions of Child Behavior Problems

Variable	Internalizing	Externalizing	F-Statistic	Internalizing		F-Statistic	Externalizing			F-Statistic
				Depression	Unsociable		Aggression	Temperamental	Hyperactive	
Child Characteristics										
Male	0.055 (0.05)	0.249 (0.05)	27.09***	--	--	--	0.253 (0.05)	0.145 (0.06)	0.249 (0.06)	3.75**
Serious health problems of child	--	--	--	0.614 (0.44)	1.228 (0.43)	3.18*	0.206 (0.44)	0.369 (0.47)	1.490 (0.46)	5.75***
Number of siblings at home	--	--	--	--	--	--	-0.150 (0.08)	-0.073 (0.08)	0.007 (0.08)	2.73*
Family Conditions at Childbirth										
Mother's education at birth	--	--	--	--	--	--	0.026 (0.06)	0.033 (0.06)	-0.103 (0.06)	3.89**
Mother smoked during Pregnancy of the child	0.505 (0.15)	0.180 (0.15)	9.91***	--	--	--	--	--	--	--
Lagged Parenting Practices										
Physical punishment	0.039 (0.02)	0.083 (0.02)	6.94***	0.024 (0.02)	0.056 (0.02)	3.01*	--	--	--	--
Predicted lagged dependent Variable	0.115 (0.03)	0.247 (0.03)	9.06***	--	--		--	--	--	--
Degree of freedom	1			1			2			

Degree of freedom 2	1,832	1,832	2,748

Data source: National Longitudinal Survey of Youth, youths 1979-1994, children 1988-1994.

Note: The F-tests presented are joint tests for fixed-effects estimates that differed significantly across dimensions. To obtain the test statistics, we first transformed the data into deviations from the family means, then estimated our equations jointly to allow testing equal parameters across equations. We adjusted the F-statistics and degrees of freedom because of the transformed data. Standard errors of point estimates are presented in parentheses.
* $p<.10$ ** $p<.05$ *** $p<.01$ (two-sided test for the equality of parameters across dimensions)