Research on child and adolescent conduct problems has proliferated over the past 15 years, resulting in an extensive array of risk factors, processes, and targets for intervention. To capitalize fully on this extensive research base and contribute effectively to public mental health, the field now needs to take stock of what is known about child and youth conduct problems. In 1998, The National Institute of Mental Health (NIMH) began a process known as "Taking Stock of Risk Factors for Child/Youth Externalizing Behavior Problems." "Externalizing behavior problems" refers to a range of rule-breaking behaviors and conduct problems, including physical and verbal aggression, defiance, lying, stealing, truancy, delinquency, physical cruelty, and criminal acts. The "taking stock" process involves three key objectives: (1) to identify and describe what is known about risk factors and processes that contribute to externalizing behavior problems; (2) to identify gaps in our knowledge about risk factors and processes; and (3) to describe the kinds of research and research methodologies needed to advance the field. This report provides a summary of the first of these objectives—describing what is currently known about existing risk factors and processes that contribute to externalizing behavior problems. This report provides a summary of expert consensus and evaluation of what is currently known about the factors and processes that contribute to the initiation, enhancement, prevention, and termination of conduct problems in children and youth. Specific information about the research studies that document these findings can be found in the accompanying tables. (Contains 285 references and 4 tables.) (GCP)
Taking Stock
of Risk Factors for Child/Youth
Externalizing Behavior Problems
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of Risk Factors for Child/Youth Externalizing Behavior Problems

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Introduction

Research on child and adolescent conduct problems has proliferated over the past 15 years, resulting in an extensive array of risk factors, processes, and targets for intervention. To capitalize fully on this extensive research base and contribute effectively to public mental health, the field now needs to take stock of what is known about child and youth conduct problems. In 1998, The National Institute of Mental Health (NIMH) began a process known as "Taking Stock of Risk Factors for Child/Youth Externalizing Behavior Problems." "Externalizing behavior problems" refers to a range of rule-breaking behaviors and conduct problems, including physical and verbal aggression, defiance, lying, stealing, truancy, delinquency, physical cruelty, and criminal acts. A diagnosis of conduct disorder can be made when these conduct problems become repetitive and persistent and occur in a variety of settings, such as home, school, or community (American Psychiatric Association, 1994). The "taking stock" process involves three key objectives: (1) to identify and describe what is known about risk factors and processes that contribute to externalizing behavior problems; (2) to identify gaps in our knowledge about risk factors and processes; and (3) to describe the kinds of research and research methodologies needed to advance the field.

Within each domain, leading experts were convened in small groups (typically six to eight experts) to summarize the risk factors and processes. (A list of experts involved in these groups is included at the beginning.) Each group met for a day and a half to discuss which factors were most well-documented and "known" by the field. Through a consensus process, each small group "took stock" and identified the most well-established risk factors and processes in a given domain. To document these factors, each expert was asked to identify, evaluate, and summarize a minimum of three key references for each factor. All evaluations used a framework developed by Kraemer et al. (1997) to describe three types of risk factors. At the most basic level, factors can be correlates when shown to occur concurrently with externalizing behavior problems. Next, factors that are found to reliably precede behavior problems can be described as predictive risk factors. Finally, factors that can be manipulated through experimentation or intervention and shown to lead to changes in behavior problems can be described as causal risk factors. It is important to note that this framework also implies a "developmental course" to risk factor research. Once factors are found to be correlated with outcomes, further research should document the potential for prediction and, ultimately, the potential for causation. Causal risk factors then become the empirical foundation for building effective interventions.

This report provides a summary of expert consensus and evaluation of what is currently known about the factors and processes that contribute to the initiation, enhancement,
prevention, and termination of conduct problems in children and youth. Specific information about the research studies that document these findings can be found in the accompanying tables. Although in some cases more than or fewer than three references were evaluated, in general, the tables were limited to three entries per factor.

It is important to note that this summary is not intended to be a complete literature review of all factors related to externalizing behavior problems and conduct disorder. Instead, the summary provides an integrated overview of what experts in the field regard as the most well-studied factors and processes and further evaluates these factors in terms of their status as correlates, predictive risk factors, or causal risk factors. The objective of the summary is to document what is known about externalizing behavior problems and conduct disorder in order to highlight what causal risk factors are already known and can be used in interventions, as well as which factors need further research to document their potential for prediction and causation. The expert consensus and evaluation process used to develop this summary was considered a richer and more expeditious route to accomplishing this objective than a comprehensive literature review. In addition, this summary is limited to research on child and adolescent externalizing behavior problems and conduct disorder. Although there is some overlap between externalizing behavior problems and violence, the current summary is not intended as a complete review of all forms of youth aggression, violence, and antisocial behavior. Readers interested in this broader field of research are referred to recent reviews and edited volumes (Coie & Dodge, 1997; Loeber & Farrington, 1998; Stoff, Breiling, & Maser, 1997; U.S. Department of Health and Human Services, 2001).

Development of Externalizing Behavior Problems

Before reviewing the status of risk factors, it is important to consider how externalizing behavior problems change over development. In the past 20 years, several longitudinal studies have provided a picture of the changing forms of aggression and conduct problems from early childhood through adolescence (Cairns & Cairns, 1994; Loeber, Farrington, Stouthamer-Loeber, Moffitt, & Caspi, 1998; Patterson, Reid, & Dishion, 1992). Their findings converge to suggest that no single child characteristic or situation can account for the development of externalizing behavior problems. Rather, these problems result from interactions between characteristics of the child and situations within the family, peer group, school, and community. Some research suggests that there are two entry points to developing externalizing behavior problems—in early childhood and in early adolescence—with potentially different patterns of risk factors associated with each (Bartusch, Lynam, Moffitt, & Silva, 1997; Hinshaw, Lahey, & Hart, 1993; Moffitt, 1993). Children who exhibit persistently high levels of externalizing behavior problems early in their lives are at high risk for intensifying to lying, bullying, and fighting in middle childhood, and more serious behaviors such as cruelty to animals, vandalism, and aggressive criminal behaviors in adolescence. A significant number of these antisocial youth continue to exhibit correlated problem behaviors (e.g., drug use, precocious sexual activity) throughout adolescence and into adulthood, although the types of difficulties experienced by antisocial boys and girls tend to diverge with development.

In contrast to children with an early onset of externalizing behavior problems, some youth begin to exhibit problem behaviors during early adolescence. Their entry into conduct problems
generally occurs through associations with deviant peers. Initial data on these “late starters” suggest that much of their antisocial behavior tends to be nonaggressive and that they are more likely to desist in problem behaviors as they become older. However, other ongoing research is suggesting that some late starters may be involved in highly aggressive and problematic behaviors. Additional research is needed to fully understand the pathways and outcomes for late starters.

It is important to note that the early starter/late starter model of two developmental pathways for externalizing behavior problems is controversial. Several research groups are actively examining data to detect other potential pathways, as well as distinct developmental patterns related to child gender. However, this two-pathway model is important because it incorporates the notion that behaviors exhibited by children with conduct problems differ with development and changes in the social environment. The basic forms of externalizing behavior problems evident in early childhood, middle childhood, and adolescence are summarized below.

**Early Childhood**

Most children engage in rule-breaking and defiant behaviors during early childhood (ages 2–6); therefore, this is the stage of life at which externalizing behaviors are at their peak. During the early years, the primary manifestations of externalizing behavior problems include noncompliance, oppositional behaviors, and overt physical and verbal aggression. With developing cognitive, language, and social abilities, most children replace their aggressive problem-solving strategies with prosocial ones. A small minority of children continue to engage in high rates of externalizing behavior and exhibit these behaviors (e.g., coercive interactions with parents, hitting young peers) in home and school settings. Children who show early and persistent externalizing behavior problems and who experience additional psychiatric and academic problems (e.g., attention deficit hyperactivity disorder [ADHD]) are at highest risk for developing serious delinquency and engaging in juvenile crime in adolescence. Thus, children who, from an early age, show persistent externalizing behavior problems appear to be developing along the early onset pathway for conduct problems, failing to learn prosocial ways of interacting with others, and laying the foundation for continuing problematic behaviors.

**Middle Childhood**

With the increased cognitive and social sophistication of middle childhood (ages 7–13), children expand their repertoire of conduct problems from those that are evident to observers (i.e., overt, direct) to those that are hidden or secretive (i.e., covert, indirect, relational). Both boys and girls who are aggressive are at risk for being actively rejected and marginalized by their peers. When evaluating their social encounters, these children are often likely to attribute hostile intent to others. Although coercive family interactions may continue and escalate, processes within the peer group gain in importance in continuing the development of externalizing behavior problems.

**Adolescence**

Externalizing behavior problems can intensify during adolescence, when peer influences enhance the diversity of rule-breaking behaviors to include delinquent and antisocial behaviors (e.g., vandalism, theft, assault), substance use, and, in some cases, gang involvement and drug dealing. For many antisocial young men and women, there is a developmental acceleration into precocious
sexual activity and sexual promiscuity. Of these antisocial youth, a small proportion will intensify their aggressive behaviors and commit serious violent offenses.

Given what is known about the developmental course of externalizing behavior problems, it is clear that behaviors targeted for intervention, as well as the immediate expected outcomes from such interventions, will differ depending on the age of the children involved. Also, because externalizing behavior problems have not been found to be attributable to a single source or situation, interventions for changing these behaviors need to focus on multiple risk factors across multiple settings. Similarly, the relative contribution of individual risk factors may change with development, suggesting different targets for interventions at different ages. What are the multiple risk factors and situations that should be targeted in interventions? Are there additional developmental pathways other than the early and late starter pathways? These are questions of tremendous importance to the field, with equally important ramifications for public mental health.

To advance this research, however, it is important to review and take stock of what is known currently about the many risk factors for externalizing behavior problems and to use this information when considering which combinations and interactions of factors hold greatest promise for understanding and decreasing child and adolescent externalizing behavior problems. The sections that follow summarize what is currently known about risk factors in four domains: child characteristics; family factors and processes; peer influences; the broader social environment, communities, and schools.

References


Child Characteristics

A number of child characteristics have been shown to be associated with high levels of externalizing behavior problems. These characteristics span multiple aspects of the individual, including behavioral, emotional, and cognitive functioning; autonomic, neuroendocrine, and neurochemical systems; and prenatal conditions and genetics. The conclusion that emerges is that conduct problems likely involve difficulties in regulation across behavioral, emotional, cognitive, and biological functioning. However, the extent to which problems in regulation of one aspect of functioning (e.g., emotional) affect the ability to regulate another aspect (e.g., biological) or how development of regulation in any one affects other aspects is not known.

Behavioral and Emotional Factors

A number of behavioral and emotional characteristics have been hypothesized to play a role in externalizing behavior problems. One prospective longitudinal study found that the display of empathic, sympathetic, and prosocial behaviors in childhood predicts a lower risk of conduct problems in early adolescence (Tremblay, Pihl, Vitaro, & Dobkin, 1994). This work is supported by research using concurrent designs showing that children and youth with conduct problems perform more poorly on measures of empathy compared with normal children and youth (Cohen & Strayer, 1996; Eisenberg et al., 1996; Miller & Eisenberg, 1988).

Research on child emotionality has focused on two forms of early emotional/behavioral characteristics: difficult-irritable-oppositional and shy-inhibited. Several longitudinal studies have found that a pattern of difficult-irritable-oppositional behavior during early childhood predicts increased risk for later externalizing behavior problems in childhood and adolescence (Bates, Pettit, Dodge, & Ridge, 1998; Caspi, Moffitt, Newman, & Silva, 1996; Guerin, Gottfried, & Thomas, 1997). The strength of these associations typically falls in the moderate range (Cohen, 1988).

In addition, several longitudinal studies have found that a pattern of inhibited behavior during early childhood predicted decreased risk for later antisocial behavior (Raine, Reynolds, Venables, Mednick, & Farrington, 1998; Tremblay et al., 1994). However, other studies have found that behavioral inhibition in early childhood predicted either later aggression or later increased antisocial behavior (Caspi et al., 1996; Goldsmith, 1996). Clearly, more research is needed on the influence of early behavioral inhibition.

Complementing this work on emotionality is newer research examining behavioral and attentional regulation (i.e., a child's ability to maintain calm, purposeful action and attention rather than acting in daring, impulsive, and poorly controlled ways). This research indicates that childhood daring and impulsive behaviors (i.e., lack of regulation) (Farrington & Hawkins, 1991), particularly when combined with irritable emotionality, are predictive risk factors for later adolescent antisocial behavior (Eisenberg et al., 2000). Both behavioral and
attentional regulation contribute to this finding, and the pattern of relations, while low-moderate in predictive strength, has been found in the United States (Lengua, West, & Sandler, 1998) and New Zealand (Henry, Caspi, Moffitt, & Silva, 1996).

Cognitive Factors

Research on ADHD provides further information about the role of attention and other cognitive processes in the development of externalizing behavior problems. A number of studies have documented that boys who meet criteria for ADHD in childhood are at increased risk for conduct disorder and antisocial behavior in adolescence and early adulthood (Mannuzza et al., 1991). However, when comorbid oppositional defiant behavior is measured, some evidence suggests that increased risk for conduct disorder is correlated with early oppositional defiant behavior rather than ADHD (Biederman et al., 1996; Moffitt, 1990). Thus, while the evidence indicates an association between ADHD and conduct problems, it is not clear whether ADHD operates as a predictive risk factor or a moderator.

In trying to clarify the implications of ADHD, researchers are incorporating indices of basic cognitive functioning and development, specifically executive function and inhibitory control processes. Executive function refers to the ability to take in information, formulate plans of action and thinking, and execute behaviors consistent with these plans. Involved in this process is the ability to exert inhibitory control, that is, to inhibit other sources of information and other incompatible behaviors.

There is some debate as to whether executive function and inhibitory control are relevant to conduct disorder or whether they are best thought of as related to ADHD and, therefore, pertinent only in instances of comorbid conduct disorder and ADHD. However, recent studies using improved measures of these cognitive processes and refined sampling techniques have indicated that inhibitory control is correlated with conduct disorder, even in the absence of ADHD (Oosterlaan, Logan, & Sergeant, 1998; Oosterlaan & Sergeant, 1996). Children with more persistent or pervasive conduct problems seem more likely to demonstrate deficits in executive function and inhibitory control. These associations appear to be relatively independent of IQ and other cognitive functions, such as memory (Seguin, Boulere, Harden, Tremblay, & Pihl, 1999). This independence of effect from IQ is particularly important because a large number of studies have found lower IQ and verbal abilities to be predictive risk factors for later antisocial behavior (Fergusson & Horwood, 1995; Stattin & Klackenberg-Larsson, 1993; White, Moffitt, & Silva, 1989). Note, however, that much of the research on executive function is based on concurrent assessments of cognitive functioning and problematic behavior. Additional research is needed to identify the predictive associations and potential causality of these processes for conduct problems.

Related to IQ and verbal abilities is a young person's academic achievement. Research consistently documents low correlations between poor academic performance and externalizing behavior problems (Maguin & Loeber, 1996). Again, it has been difficult to determine if this association holds for children who show conduct problems in the absence of ADHD; several studies show correlations among poor academic achievement, conduct, and attention problems, but weak or no relationships between poor academic achievement and conduct problems alone (Frick et al., 1991). However, children who develop conduct problems in middle childhood are at increased risk of later negative educational outcomes, including early school dropout (Fergusson & Horwood, 1998). Thus, the direction of effects between academic achievement and externalizing behavior
problems may be complex and may change across development.

In contrast to research on basic cognitive functioning and academic achievement, strong evidence exists about the role of social information processing as both a predictive and a causal risk factor for externalizing behavior problems. Findings from prospective longitudinal studies (Dodge, Bates, & Pettit, 1990; Dodge, Pettit, Bates, & Valente, 1995) and intervention studies (Hudley & Graham, 1993) provide clear evidence that biased social information processing—that is, the tendency to attribute hostile intentions to others—predicts and is a causal risk factor for the development and maintenance of physically aggressive behavior patterns. Similarly, initial studies suggest that biased social information processing may be involved in the development of other forms of aggressive behavior (e.g., relational aggression) (Crick, 1995). The work on relational aggression, however, has progressed only to the extent of finding concurrent associations.

Consistent evidence also documents modest correlations between conduct problems and problems in moral reasoning and social problem solving. When faced with interpersonal conflicts or social dilemmas in an experimental situation, aggressive preschool and elementary school-aged children are more likely than their nonaggressive age-mates to recommend using aggressive, manipulative, and/or commanding strategies for resolving problems (Rubin, Bream, & Rose-Krasnor, 1991; Rubin, Moller, & Emptage, 1987). Among older youth and adults, delinquent and antisocial behavior is correlated with poorer and less sophisticated moral reasoning abilities (Gregg, Gibbs, & Basinger, 1994; Nelson, Smith, & Dodd, 1990; Trevethan & Walker, 1989). Additional research is needed to determine whether social problem solving and moral reasoning abilities predict or follow externalizing behavior problems or whether improvements in these abilities can lead to improvements in externalizing behaviors.

### Autonomic Factors

Another aspect of child functioning that has been related to emotional and behavioral regulation is the autonomic system, particularly indices of heart rate. Lowered heart rate and dampened heart rate variability are consistently correlated with disruptive and antisocial behaviors from early childhood through adolescence and adulthood (Mezzacappa et al., 1997). These autonomic measures have been found to predict later aggression in childhood (lower heart rate or vagal tone) (Raine, Venables, & Mednick, 1997), and the ceasing of antisocial behavior in young adulthood (higher heart rate) (Raine, Venables, & Williams, 1995). These data, however, are limited to males, because only a few studies have examined links between heart rate and externalizing behavior problems in girls. Additional research is needed to document whether heart rate regulation indices predict the onset and persistence of diagnosed conduct disorder.

### Neuroendocrine Factors

Hormones produced by the hypothalamic-pituitary-adrenal axis appear to be related to the pathophysiology of externalizing behaviors, based on correlational studies. Basal levels of cortisol tend to correlate negatively with indices of childhood externalizing behavior (McBurnett, Pflüger, Capasso, Lahey, & Loeber, 1997; Moss, Vanyukov, & Martin, 1995). Also, there is evidence that increased cortisol reactivity (changes in level) predicts conduct problems one year later among adolescents (Susman, Dorn, Inoff-Germain, Nottelmann, & Chrousos, 1997). Additional research is needed that employs consistent methods and procedures for collecting basal cortisol and monitoring cortisol reactivity (a likely contributor to inconsistent findings) in long-term longitudinal studies to determine the direction of effects.
The hypothalamic-pituitary-gonadal axis is responsible for producing gonadotropin-releasing hormones (LHRH), the gonadotropins (luteinizing hormone and follicle stimulating hormone), and sex steroids (testosterone, estrogen, and progesterone). The findings for these hormones and sex steroids vary across ages and studies. Specifically, no single study or group of studies establishes the relationship between LHRH and gonadotropins and externalizing behavior problems. There is evidence that higher testosterone correlates with greater aggression and irritability during adolescence (Olweus, Mattsson, Schalling, & Low, 1988). In one randomized double-blind experiment with youth experiencing pubertal delay, boys and girls who were administered mid-level doses of testosterone and estrogen, respectively, showed increased aggressive behavior compared with those receiving placebo (Finkelstein et al., 1997). However, developmental differences were suggested, with stronger patterns of association found between testosterone and externalizing behavior in older adolescents boys than in younger adolescents. Given the small sample size for this study, additional research is needed to clearly understand potential effects. In addition, few studies have included measurement of estrogen and other sex steroids.

Neurochemical Factors

In comparison to many of the other areas of influence discussed in this report, evidence for the influence of regulation of brain neurochemicals on externalizing behaviors is not as clear or abundant. Two neurochemical systems, serotonin and dopamine, have been studied. Serotonin is a regulatory neurotransmitter that can be involved in inhibitory responses to stimuli. Evidence relating the serotonergic system with externalizing behavior is derived from both animal and human studies. There is some indication that enhanced serotonergic activity in early childhood correlates with increased externalizing behavior (Halperin et al., 1997; Kruesi et al., 1992; Fine et al., 1997). This statement, however, is only tentative. Few studies have been done with children and young adolescents. The studies to date have included small and unrepresentative samples. Also, this research is complicated by differences in measurement strategies across studies (cerebrospinal fluid indexes versus peripheral indexes following pharmacological challenge) that make cumulative interpretations difficult.

The empirical evidence to support the role of dopamine in externalizing behavior in humans also is not well developed. Limited studies with children provide unclear findings. Lower levels of homovanillic acid (the metabolite of dopamine) (Limson et al., 1991) and lower levels of dopamine beta-hydroxylase (DBH, the enzyme facilitating conversion of dopamine to norepinephrine) were correlated with externalizing behavior (Galvin, Stilwell, & Shekher, 1997). However, a positive relationship was found between plasma DBH and disinhibition and sensation seeking (Kuperman, Kramer, & Loney, 1988). Overall, the functioning of the dopaminergic and serotonergic systems has not been sufficiently researched to draw conclusions about their contribution to externalizing behavior problems.

Prenatal Conditions and Genetic Factors

Several prenatal conditions associated with adverse reproductive outcomes also have been associated with externalizing behavior problems in offspring. These include young maternal age, smoking, and alcohol and drug use during pregnancy. It is important to note that this area of research is challenged by the extent and complexity of co-occurring factors (e.g., low socioeconomic status [SES], violence in the environment, family
conflict). Sorting out these confounding factors is extremely difficult and requires caution in drawing inferences about causal relationships.

Given these difficulties, there is substantial evidence that offspring of mothers who give birth earlier in life are more likely to have externalizing behavior problems during childhood and adolescence (Christ et al., 1990; Fergusson & Lynskey, 1993; Spieker, Larson, Lewis, White, & Gilchrist, 1997). This predictive association between maternal age and child conduct problems still holds even when maternal and paternal conduct problems, substance use, perinatal factors, demographic factors, parent-child interactions, and related variables have been controlled in regression analyses (Fergusson & Lynskey, 1993; Wakschlag et al., 1997). Although it is not clear how maternal age is related to child behavior problems, at least two kinds of variables can be hypothesized as mediators. First, having a child earlier in life often restricts maternal educational and occupational attainment and related life circumstances, such as neighborhood of residence, that are associated with youth conduct problems and crime (see the Broader Social Environment, Communities, and Schools section). Second, less mature mothers may be more likely to raise their children in ways that may foster conduct problems, such as use of harsh and inconsistent discipline (see Family Factors and Processes section). Also, other as-yet-unknown biological variables, environmental variables, or both may mediate this relationship.

In addition to maternal age, consistent evidence exists that prenatal maternal smoking is a predictive risk factor for later child conduct problems. Evidence from methodologically strong epidemiological and clinical studies in several countries has found maternal cigarette smoking during pregnancy to predict inattention and impulsivity during early childhood and conduct problems and antisocial behavior during middle childhood and adolescence (Brennan, Grekin, & Mednick, 1999; Fergusson, Woodward, & Horwood, 1998; Wakschlag et al., 1997; Weissman, Warner, Winkramaratne, & Kandel, 1999). Even when potential mediators and confounds are considered (e.g., maternal age, drug use, psychopathology, SES, parent-child interactions), the findings suggest linear relationships between the number of cigarettes smoked per day and the increased predictive risk of child and adolescent conduct problems. As in the research on maternal age, the reasons why maternal smoking is related to child conduct problems are not clear. It could be that maternal smoking is a marker for some other set of risk factors (e.g., parental behavior, neighborhood effects [see respective sections on these topics]), or that prenatal exposure to nicotine affects fetal neurodevelopment, which in turn increases the child's vulnerability to conduct problems, or that these biological and social risk factors interact in some way. Indeed, controlled animal studies consistently show that exposure to low levels of nicotine alters fetal neural development (Navarro et al., 1989). Clearly, additional research is needed to help explain why prenatal maternal smoking is a predictive risk factor for later child conduct problems.

Two other classes of prenatal insults that have been related to later child conduct problems are exposure to alcohol and exposure to illegal drugs. Although research on prenatal exposure to alcohol has shown robust effects on cognitive development and neurodevelopment (e.g., attentional and intellectual deficits) during childhood and adolescence (Coles et al., 1991), research on conduct-related behaviors among these children suggests low to modest effects (Brown et al., 1991; Coles et al., 1991; Olson et al., 1997). Similarly, research on prenatal exposure to illegal drugs (e.g., cocaine) has found subtle and modest differences in intellectual behavior and arousal regulation between exposed children and nonexposed comparison children (Eyler, Behnke, Conlon, Woods, & Wobie, 1998; Lester, LaGasse, & Seifer, 1998). A recent study found prenatally exposed
boys to show more problems with undercontrolled behavior compared with nonexposed children from similar environmental backgrounds (Delaney-Black et al., 2000). Much of this work is ongoing and has so far followed children only through middle childhood; thus, the effects on adolescent behavior are not known.

A distinct yet equally challenging area of research concerns the study of genetic contributions to externalizing behavior problems. Generally, studies in this area can be subdivided into two categories: those examining the genetics of conduct disorders and those examining the genetics of behaviors that are relevant to the development of conduct problems. These behaviors are potentially important because they typically emerge earlier than conduct problems and may be developmental precursors.

In studying the genetic influences on conduct disorder, it has become clear that accurate description and subtyping of phenotypic behaviors are essential. Research has shown that levels of genetic and environmental influence appear to differ markedly for different patterns of conduct problems (Edelbrock, Rende, Plomin, & Thompson, 1995; Silberg et al., 1995). In the early starter pattern, adolescent boys with an earlier age of onset tend to be highly oppositional, to exhibit comorbid ADHD, and to engage in physical aggression, property crimes, and truancy. In the late starter pattern, boys with onset during adolescence typically do not have ADHD and restrict their problematic behavior to property crimes and truancy. Initial research examining concordance between twins suggests that early starter conduct disorder may be more strongly influenced by genetic factors than the developmental type of conduct problems that emerges during adolescence (Silberg et al., 1995).

A number of adoption studies, however, provide evidence for more complex relationships among genetic and environmental factors. The likelihood of conduct problems in adopted-away offspring of antisocial parents (i.e., parents with criminal records) is significantly lower if they were raised by well-adjusted adoptive parents (Cadoret, Yates, Troughton, Woodworth, & Stewart, 1995). However, the ability to parent such children also may be affected in that genetically influenced characteristics of the child can evoke parenting behaviors that in turn increase the risk of developing externalizing behavior problems. Several studies of adopted offspring of antisocial parents have shown gene-environment evocative effects; adolescent externalizing behavior problems partially mediate the relationship between biological parent antisocial behavior and adoptive parent harsh/inconsistent discipline (Ge et al., 1996; O'Connor, Deater-Deckard, Fulker, Rutter, & Plomin, 1998). These results are supported by behavioral genetic studies of twins showing that the correlation between harsh parenting behavior and adolescent antisocial behavior problems is partially accounted for by variations in the adolescent's genetic background (Neiderhiser, Reiss, Hetherington, & Plomin, 1999). Thus, parenting and other environmental features appear to interact in complex ways with genetic dispositions in relation to youth conduct problems.

In addition to research on the genetic influences of conduct disorder, there has been research examining genetic influences on behaviors related to conduct disorder. Of the many childhood characteristics considered to be likely developmental precursors to serious conduct problems, two characteristics—ADHD and difficult-irritable-oppositional behavior—have been examined in a number of twin studies. Collectively, these studies indicate substantial genetic influence on attention problems and ADHD (Edelbrock et al., 1995; Gjone, Stevenson, & Sundet, 1996; Levy, Hay, McStephen, Wood, & Waldman, 1997; Sherman, McGue, & Iacono, 1997) and difficult-irritable-oppositional behavior (Cyphers, Phillips, Fulker, & Mrazek, 1990; Goldsmith, Buss, & Lemery, 1997), with heritability estimates generally
above .50. Unfortunately, most twin studies of difficult-irritable-oppositional behavior have confounded its measurement with aggressive behavior. Other child characteristics relevant to conduct disorder include lowered levels of empathy and lowered levels of harm avoidance/behavioral inhibition (Cyphers et al., 1990; Emde et al., 1992; Goldsmith et al., 1997). Twin studies consistently indicate low to moderate heritability of these behaviors, as well.

It is important to note, however, that behavioral genetic studies frequently are limited by their small, nonrepresentative samples and by methodological problems associated with restriction of range. A preponderance of the studies in Table 1 used Caucasian samples, with little attention to description or variations related to SES.

Implications for Malleable Child Risk Factors and Developmental Processes

The term child factors refers to characteristics of children that increase or decrease their risk for externalizing behavior problems. Such factors frequently have not been considered candidates for demonstrating “causal” relationships because they typically are conceptualized more as static traits or “unmalleable” predispositions. Our growing knowledge about development and the tremendous interplay among biology, environment, and behavior, however, challenges this thinking and suggests that many child factors may indeed be malleable, particularly during early development. An example of this social information processing, including hostile attributional bias. Interventions targeting these processes have shown that hostile attributions are malleable and that decreasing those attributes decreases child externalizing behaviors. Additional child factors reviewed here that similarly could serve as experimental targets for preventive interventions are child empathy, moral reasoning, and social problem solving.

Even if child factors are not malleable, greater attention to these factors could be of great value to prevention research by improving the ability to focus interventions on children who are most at risk. A number of child factors reviewed here could be evaluated in terms of their usefulness as selection factors for high-risk studies, including individual differences in executive function, early academic difficulties, and early impulsivity and irritable emotionality, particularly when these characteristics co-occur with environmental risk factors.

In addition to highlighting targets for intervention, the current review indicates that additional research is needed to confirm the potential predictive risk of some child characteristics, particularly individual differences in autonomic activity, neuroendocrine factors, and neurochemical factors. Similarly, there is little to no existing information about the potential interactive effects among different child characteristics. For example, it is not known how individual differences in autonomic regulation relate to differences in cortisol regulation, emotional regulation, or both. Also, no one knows how interactions among such characteristics may vary across age groups or how family, peer, and other social environmental factors may affect these patterns. Research is needed to examine such interactions and investigate how the accumulation and interaction of child risk factors and environmental factors affects the developmental course and severity of conduct problems.

Future research on child characteristics related to conduct problems should consider two important issues. First, many potentially malleable child factors appear early in life, so researchers need to focus on an earlier part of the lifespan. Advancing such research may require collaborations between psychiatrists and developmental researchers with
an understanding of early childhood. Indeed, some findings (on maternal age and maternal smoking during pregnancy) suggest that research may need to focus on pregnancy and the behavior of young women that leads to early birth and child rearing; this research would require an even greater range of expertise and scientific disciplines. Second, it is vital that research testing experimental interventions targeting child factors include both males and females, as well as children from diverse ethnic backgrounds. The ratio of males with conduct problems to females with conduct problems is not as great as previously suspected. It is essential to determine whether risk factors for externalizing behavior problems in girls are the same as or distinct from those for boys and whether these factors are robust across ethnic groups.

Finally, it is important to note that there may be several opportunities for testing the potential causality of some child risk factors by partnering with intervention research on related outcomes. Current intervention trials that target maternal smoking, drug use, and alcohol use and that include long-term followup should be encouraged to examine child externalizing behavior problems. Similarly, intervention trials targeting early IQ, verbal abilities, and academic achievement should be encouraged to include assessment of externalizing behavior problems. This recommendation extends to psychiatric intervention trials focusing on the reduction of oppositional behavior and ADHD in early life. It is important to examine whether successful modification of these behaviors can reduce the incidence of conduct problems in later childhood and adolescence.

References


G. R. Bock (Ed.), *Genetics of criminal and antisocial behavior* (pp. 76–92). New York: John Wiley.


<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Source Specific/Convenience</th>
<th>Size</th>
<th>Age*</th>
<th>% Male</th>
<th>SES**</th>
<th>Ethnicity</th>
<th>Result</th>
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<tbody>
<tr>
<td>Cohen &amp; Strayer</td>
<td>1996</td>
<td>Concurrent group comparisons</td>
<td>Recruited conduct-disordered adolescents in residential treatment &amp; local high school students without conduct problems</td>
<td>62</td>
<td>14-18 yrs</td>
<td>47%</td>
<td>Low-middle</td>
<td>N/R</td>
<td>Conduct-disordered boys &amp; girls scored lower than a comparison group of children without conduct disorder on affective &amp; cognitive measures, including measures of empathetic concern &amp; perspective taking.</td>
</tr>
<tr>
<td>Eisenberg, Fabes, et al.</td>
<td>1996</td>
<td>Conjoint correlational</td>
<td>Recruited suburban grade school children, parents, &amp; teachers</td>
<td>199</td>
<td>K-3rd gr</td>
<td>51%</td>
<td>Middle</td>
<td>4% M/H</td>
<td>Children with low levels of baseline distress &amp; fewer gaze aversions during a distress film had higher mother, father, &amp; teacher ratings of behavior &amp; conduct problems, respectively.</td>
</tr>
<tr>
<td>Miller &amp; Eisenberg</td>
<td>1988</td>
<td>Meta-analysis</td>
<td>6 aggression, picture/story empathy, 9 aggression, questionnaire, &amp; 8 externalizing, questionnaire</td>
<td>N/R</td>
<td>2,065</td>
<td>6 yrs - adult</td>
<td>&gt;70%</td>
<td>N/R</td>
<td>Greater empathy was associated with lower levels of aggression &amp; externalizing negative behaviors when assessed by questionnaire methods. For children school age 5 &amp; older, empathy assessed by the picture/story method was also related to lower levels of aggression.</td>
</tr>
<tr>
<td>Tremblay, Pihl, et al.</td>
<td>1994</td>
<td>Prospective longitudinal</td>
<td>Boys in 53 public schools, low-SES areas, Montreal, Canada; rated by kindergarten teachers, eligible boys had Canadian-born, French-speaking parents with &lt; 15 yrs of education</td>
<td>915</td>
<td>K &gt; 13 yrs</td>
<td>100%</td>
<td>Low</td>
<td>100% Cau. (French Canadian)</td>
<td>Low reward dependence (empathy/prosociality), high novelty seeking, &amp; low harm avoidance/inhibition in kindergarten predicted delinquency at ages 11-13.</td>
</tr>
</tbody>
</table>

Key Statistics
- Empathy: $F(1, 60) = 26.87, p < .0001$  
  $M_5 = 64.20$ comparison
- Aggression: $F(1, 60) = 18.34, p < .0001$  
  $M_5 = 30.75$ comparison
- Perspective Taking: $F(1, 60) = 24.88, p < .0001$  
  $M_5 = 28.31$ comparison

* > indicates that data at first age are used to predict data at second age.

** Unless otherwise indicated, income is reported in yearly amounts.
### Child Characteristics—Behavioral and Emotional Influences

#### Child Emotionality: Shy-inhibited and Irritable-difficult

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<tr>
<td>Bates et al.</td>
<td>1998</td>
<td>Prospective</td>
<td>recruited families with infants from birth records, Bloomington, IN (BLS), &amp; families</td>
<td>90</td>
<td>6 mths &gt; 10 yrs</td>
<td>56% BLS; 49% CDP</td>
<td>Low-upper middle</td>
<td>15% AFA</td>
<td>84% Cau</td>
</tr>
<tr>
<td>Pettit et al.</td>
<td>1998</td>
<td>Longitudinal</td>
<td>convenience: consecutive births, crm births, Bloomington, IN, Knoxville &amp; Nashville, TN, balanced for gender, low-high agression (CDP)</td>
<td>55% BLS</td>
<td>5 &gt; 10 yrs</td>
<td>BLS; M = 40.85 Hollingshead</td>
<td>Low-upper middle</td>
<td>1% Other CDP (BLS N/R)</td>
<td></td>
</tr>
<tr>
<td>Caspi et al.</td>
<td>1996</td>
<td>Prospective</td>
<td>Populatation: consecutive births, crm births, Bloomington, IN, Knoxville &amp; Nashville, TN, balanced for gender, low-high agression (CDP)</td>
<td>961</td>
<td>3 &gt; 21 yrs</td>
<td>50% N/R</td>
<td>&gt;93% Cau</td>
<td>&lt;7% Maori</td>
<td>Undercontrolled children at age 3 were more likely than inhibited or well-adjusted children to be convicted of 2+ crimes or diagnosed with antisocial PD by age 21. Age 3 undercontrolled children &amp; inhibited boys were more likely than well-adjusted children to be convicted of a violent offense by age 21.</td>
</tr>
<tr>
<td>Moffitt et al.</td>
<td>1996</td>
<td>Prospective</td>
<td>Conveniance: consecutive births, crm births, Bloomington, IN, Knoxville &amp; Nashville, TN, balanced for gender, low-high agression (CDP)</td>
<td>49</td>
<td>18 mths &gt; 4 yrs</td>
<td>N/R</td>
<td>85-45% Cau</td>
<td>7% Polyn</td>
<td>Aggression at age 4 was associated with higher activity level, social fearfulness, anger proneness, &amp; less tendency to express pleasure at age 4. None of the temperament measures at age 18 mths predicted aggression at age 4.</td>
</tr>
<tr>
<td>Thomas et al.</td>
<td>1997</td>
<td>Prospective</td>
<td>Convenience: recruited from newspaper birth announcements</td>
<td>104</td>
<td>1.5 &gt; 12 yrs</td>
<td>55% Middle</td>
<td>90% Cau</td>
<td>10% N/R</td>
<td>Difficultness at 1.5 yrs was associated with higher activity level, social fearfulness, &amp; less tendency to express pleasure at ages 4-6, 7-9, &amp; 10-12, &amp; teacher reports of externalizing at ages 6-8. Difficultness was associated with being above the borderline clinical cutoff for hostile-aggressive behavior at 3.5 yrs, aggressive behavior at 4-12 yrs, &amp; externalizing at 4-12 yrs.</td>
</tr>
<tr>
<td>Guerin et al.</td>
<td>1997</td>
<td>Longitudinal</td>
<td>Convenience: nonclincial sample of 1 yr olds &amp; their families</td>
<td>37</td>
<td>4 yrs</td>
<td>N/R</td>
<td>Working-middle</td>
<td>N/R AfA N/R AsnA</td>
<td>Hostile Aggressive Behavior, Preschool</td>
</tr>
</tbody>
</table>

### Key Statistics

- **Resistance to Control & Externalizing**
  - Teacher report
    - $\beta = .27$ lower ctrl, $\beta = .05$ high ctrl BLS
  - Mother report
    - $\beta = .40$ lower ctrl, $\beta = .10$ high ctrl BLS
  - BLS = Bloomington Longitudinal Study
  - CDP = Child Development Project

- **Temperament Age 4, Aggression Age 4**
  - $r (49) = .38$, $p < .05$ activity level
  - $r (49) = .58$, $p < .05$ social fearfulness (beh inhib)
  - $r (49) = .29$, $p < .05$ anger proneness

- **Difficultness, 1.5 Yrs**
  - $r = .39$, $p < .001$ problem behavior 3.25 yrs
  - $r = .57$, $p < .001$ externalizing 3.5 yrs
  - $r = .54$, $p < .001$ externalizing 7-9 yrs
  - $r = .43$, $p < .001$ externalizing 10-12 yrs

- **Hostile Aggressive Behavior, Preschool**
  - $\chi^2 = 21.15$, $p < .001$, 4.6% not, 50% difficult
  - $\chi^2 = 8.23$, $p < .01$, 3.4% not, 29% difficult
  - $\chi^2 = 6.50$, $p < .05$, 4.6% not, 29% difficult

- **Externalizing**
  - $\chi^2 = 6.89$, $p < .05$, 25.3% not, 64% difficult
  - $\chi^2 = 9.08$, $p < .01$, 12.6% not, 50% difficult
### Child Characteristics—Behavioral and Emotional Influences

**Child Emotionality: Shy-inhibited and Irritable-difficult**

**Key Statistics**

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<tr>
<td>Ralne, et al.</td>
<td>1998</td>
<td>Prospective longitudinal</td>
<td>unselected birth cohort, 1969; two towns in Mauritius (island country in the Indian Ocean)</td>
<td>3 &gt; 11 yrs</td>
<td>1,130</td>
<td>51%</td>
<td>N/R</td>
<td></td>
<td>High aggressive children at age 11 scored higher on stimulation seeking (or lower on harm avoidance/behavioral inhibition) at age 3 than children low in aggression in analyses with gender and ethnicity, SES, body size, &amp; fearlessness controlled.</td>
</tr>
<tr>
<td>Reynolds, et al.</td>
<td>1998</td>
<td>Prospective longitudinal</td>
<td>Convenience: recruited suburban grade-school children, parents, &amp; teachers</td>
<td>K-3rd &gt; 2-5th gr</td>
<td>146</td>
<td>50%</td>
<td>Middle</td>
<td>1% AfrA</td>
<td>In the best-fitting model, the path between attentional control (att control) &amp; problem behavior at T1 &amp; T2 was moderated by children's negative emotionality (NE); lower attentional control predicted problem behaviors for children high in NE. Behavioral regulation (beh reg) predicted T1 &amp; T2 behavior problems for high or low NE children.</td>
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<tr>
<td>Farrington, &amp; Hawkins</td>
<td>1991</td>
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<td>Convenience: sampled boys ages 8-9 yrs from 6 state primary &amp; 1 special ed school in working-class area of London, 1961-1962; Cambridge Study in Delinquent Development</td>
<td>8-9 &gt; 18-19 yrs</td>
<td>411</td>
<td>100%</td>
<td>Low</td>
<td>23% &lt; t &lt; 15</td>
<td>High daring (age 8-10), high troublesomeness, a convicted parent, low school attainment, delinquent older siblings, &amp; poor housing predicted convictions between ages 10 &amp; 20, taking into account high nervousness, poor parent child rearing, &amp; low commitment to family.</td>
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<td>Henry, et al.</td>
<td>1996</td>
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<td>Convenience: consecutive births, Spring 1972-1973, Dunedin, New Zealand</td>
<td>3 &gt; 18 yrs</td>
<td>475</td>
<td>100%</td>
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<td>&gt;93% Cauc</td>
<td>Low regulation combined with negative emotionality &amp; negativity (lack of control) at ages 3-5 predicted violent criminal status by age 18.</td>
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<td>Lengua, West, &amp; Sandler</td>
<td>1998</td>
<td>Concurrent correlational</td>
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<td>9-12 yrs</td>
<td>232</td>
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<td>Mother reports of impulsivity &amp; attention focusing (regulation) &amp; negative emotionality were related to mother &amp; child reports of conduct problems. This study attempted to reduce item contamination by eliminating items determined to be overlapping according to confirmatory factor analysis &amp; expert ratings.</td>
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**Combined Regulation & Negative Emotionality**

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<tr>
<td>Eisenberg, Guthrie, &amp; et al.</td>
<td>2000</td>
<td>Prospective longitudinal</td>
<td>Convenience: recruited suburban grade-school children, parents, &amp; teachers</td>
<td>K-3rd &gt; 2-5th gr</td>
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<td>In the best-fitting model, the path between attentional control (att control) &amp; problem behavior at T1 &amp; T2 was moderated by children's negative emotionality (NE); lower attentional control predicted problem behaviors for children high in NE. Behavioral regulation (beh reg) predicted T1 &amp; T2 behavior problems for high or low NE children.</td>
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<td>Low regulation combined with negative emotionality &amp; negativity (lack of control) at ages 3-5 predicted violent criminal status by age 18.</td>
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**Regulation, NE, & Externalizing**

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<tr>
<td>Tremblay et al.</td>
<td>1994</td>
<td>Prospective longitudinal</td>
<td>Convenience: recruited suburban grade-school children, parents, &amp; teachers</td>
<td>K-3rd &gt; 2-5th gr</td>
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## Child Characteristics—Cognitive Influences

### ADHD

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<tbody>
<tr>
<td>Biederman, et al.</td>
<td>1996 Prospective longitudinal 4 yrs</td>
<td>260</td>
<td>6-17 yrs &gt; 10-21 yrs</td>
<td>100%</td>
<td>N/R</td>
<td>100% Cau</td>
<td>Children with ADHD &amp; ODD at baseline were more likely to meet criteria for CD after wave 1 than children without ODD. Children with ADHD at baseline were no more likely to meet criteria for CD after wave 1 than children without ADHD.</td>
</tr>
<tr>
<td>Mannuzza, Klein, et al.</td>
<td>1991 Prospective longitudinal replication 8-14 yrs M = 12 yrs</td>
<td>172</td>
<td>M = 7.3 &gt; 18.5 yrs</td>
<td>100%</td>
<td>Middle Hollingshead</td>
<td>100% Cau</td>
<td>Children diagnosed with ADHD* without a primary or secondary diagnosis of aggression or delinquency were more likely to meet criteria for conduct disorder or antisocial personality disorder during late adolescence/early adulthood than normal controls. *ODD not assessed.</td>
</tr>
<tr>
<td>Moffitt</td>
<td>1990 Prospective longitudinal 15 yrs</td>
<td>435</td>
<td>3 &gt; 15 yrs</td>
<td>100%</td>
<td>N/R</td>
<td>&gt; 93% Cau &lt; 7% Maori &lt; 7% Polyn</td>
<td>Children in the ADD + delinquency group at age 3 had higher levels of antisocial behavior at ages 5, 7, 9, 11 (but not at age 13) than children in the delinquency-only group. The delinquency-only &amp; ADD + delinquency groups had higher levels of antisocial behavior than the ADD-only group &amp; nondisordered controls.</td>
</tr>
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### Executive Functioning and Inhibitory Control

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<tr>
<td>Oosterlaan, Logan, &amp; Sergeant</td>
<td>1998 Meta-analysis 8 studies, group comparisons 1990-1997</td>
<td>456</td>
<td>6-12 yrs</td>
<td>100%</td>
<td>N/R</td>
<td>N/R</td>
<td>Deficits in response inhibition related to slow inhibitory process as determined by the Inhibition Function Slope and the Stop Signal Reaction Time were found for children with externalizing disorders (ADHD, conduct disorder, ADHD + conduct disorder) compared to normal controls.</td>
</tr>
</tbody>
</table>

### Key Statistics

- ODD vs. Non-ODD: $\chi^2 = 4.01, p < .05$
- ADHD vs. Non-ADHD: $\chi^2 = 2.35, p = .11$ (data analyzed by reviewer, percentages not reported)

Prevalence CD or Antisocial PD at Followup: $\chi^2 = 15.11, p < .001$

Group, Followup CD or Antisocial PD, Control for SES: Adjusted OR = 4.9, $p < .01$, 95% CI = 1.4–3.6 (logistic regressions)

Antisocial Behavior & ADD: $F(12, 1202) = 14.92, p < .001$ group x age

F (3, 405) = 57.75, $p < .001$ group (ANOVA, means not reported)

Inhibition Function Slope

- ADHD vs. control (6 studies): $d = .94, Z = 6.36, p < .0001$ weighted $M_s = 10.2$ ADHD, 14.8 control
- Conduct disorder vs. control (3 studies): $d = .36, Z = 2.35, p < .05$ weighted $M_s = 12.6$ CD, 16.0 control

Stop Signal Reaction Time

- ADHD vs. control (7 studies): $d = .64, Z = 4.97, p < .0001$ weighted $M_s = 240.4$ ADHD, 246.4 control
- Conduct disorder vs. control (4 studies): $d = .51, Z = 2.64, p < .01$ weighted $M_s = 265.7$ CD, 248.0 control (meta-analysis, Cohen's $d$)
### Child Characteristics—Cognitive Influences

#### Executive Functioning and Inhibitory Control

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<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oosterlaan &amp; Sergeant</td>
<td>1996</td>
<td>Concurrent group comparisons</td>
<td>Source-specific/ convenience: recruited children with externalizing behaviors from education services &amp; comparison group from regular classrooms</td>
<td>70</td>
<td>6–12 yrs</td>
<td>N/R</td>
<td>N/R</td>
<td>N/R</td>
<td>Children with externalizing disorders, including aggression &amp; ADHD, were characterized by poor inhibitory control as determined by a more variable response execution &amp; deficient inhibitory control.</td>
</tr>
<tr>
<td>Séguin, Boulerice, et al.</td>
<td>1999</td>
<td>Prospective longitudinal 9 yrs</td>
<td>Population: boys in 53 public schools, low-SES areas, Montreal, Canada; rated by Kindergarten teachers; eligible boys had Canadian-born, French-speaking parents with &lt; 15 yrs of education</td>
<td>149</td>
<td>6–15 yrs</td>
<td>100%</td>
<td>Low</td>
<td>100% Cauc (French Canadian)</td>
<td>Conditional association learning was lower for the unstable aggressive group than for the stable or nonaggressive group. Subjective ordering abilities were lower for the stable aggressive group than the unstable or nonaggressive groups. Analyses controlled for ADHD status, IQ, negative emotionality, &amp; general memory.</td>
</tr>
<tr>
<td>Ferguson &amp; Horwood</td>
<td>1995</td>
<td>Prospective longitudinal 7 yrs</td>
<td>Population: birth cohort, mid-1977, Christchurch, New Zealand, urban, high attrition</td>
<td>709</td>
<td>8–15 yrs</td>
<td>N/R</td>
<td>Low-upper</td>
<td>85% Cauc (yr 5)</td>
<td>IQ and disruptive behavior (conduct problems &amp; attention deficit) at age 8 mediated the relationship between scholastic ability at age 13 &amp; delinquency at age 15.</td>
</tr>
</tbody>
</table>

#### Key Statistics

<table>
<thead>
<tr>
<th>Response Execution Process, Latency (MRT)</th>
<th>F (3, 66) = 4.02, p = .011</th>
</tr>
</thead>
<tbody>
<tr>
<td>M's = 428 ADHD, 398 agg, 385 anxious, 352 ctrl</td>
<td></td>
</tr>
<tr>
<td>Response Execution Process, Variability of Response</td>
<td>F (3, 66) = 5.90, p = .001</td>
</tr>
<tr>
<td>M's = 116 ADHD, 110 aggressive, 95 anxious, 81 ctrl (ANOVA, post hoc Tukey)</td>
<td></td>
</tr>
<tr>
<td>Inhibitory Process, Stop Signal Reaction Time</td>
<td>t (33) = 3.77, p = .001 aggressive vs. control</td>
</tr>
<tr>
<td>t (30) = 1.81, p &lt; .04 ADHD vs. control</td>
<td></td>
</tr>
<tr>
<td>t (25) = 2.56 aggressive vs. control</td>
<td></td>
</tr>
<tr>
<td>M's = .163 ADHD, .206 control, .145 aggressive (ANOVA, planned comparisons, one-tailed)</td>
<td></td>
</tr>
<tr>
<td>Inhibitory Process, Probability of Inhibition, Inhibitory Function Slope</td>
<td>t (30) = 1.86, p &lt; .04 ADHD vs. control</td>
</tr>
<tr>
<td>t (33) = 2.52, p &lt; .009 aggressive vs. control</td>
<td></td>
</tr>
<tr>
<td>M's = .163 ADHD, .206 control, .145 aggressive (ANOVA, planned comparisons, one-tailed)</td>
<td></td>
</tr>
</tbody>
</table>

**Scholastic Ability Age 13, Delinquency Age 15**

Log likelihood \( \chi^2(34) = 27.6, p > .60, GFI = .99 \)

\[ \beta = .68, p < .0001 \text{conduct } - \text{delinquency } 15 \]

\[ \beta = .005, p = \text{ns} \text{ school ability} - \text{delinquency} \]

\[ \beta = .78, p < .0001 \text{conduct} - \text{attention deficit} \]

\[ \beta = .27, p < .0001 \text{attention deficit} - \text{school ability} \]

\[ \beta = .38, p < .0001 \text{IQ} - \text{school ability} \]

\[ \beta = .41, p < .0001 \text{IQ} - \text{attention deficit} \]

\[ \beta = .38, p < .0001 \text{IQ} - \text{conduct problems} \]

( structural equation model)
Child Characteristics—Cognitive Influences

Cognitive Ability

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Representativeness</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stattin &amp; Klackenberg-Larsson</td>
<td>1993</td>
<td>Prospective</td>
<td>Convenience: recruited every 4th mother, antenatal clinic, Stockholm, Sweden, 1955-1958; pilot group included</td>
<td>122</td>
<td>3 mths &gt; 30 yrs</td>
<td>100%</td>
<td>N/R</td>
<td>100% Cau</td>
<td>Early language ability (18 &amp; 24 mths, age 3, &amp; age 5) &amp; IQ at age 3 (but not 5, 8, 11, 14, or 17) was negatively associated with criminality by age 30, controlling for SES. Nonoffenders had higher average IQ scores from ages 3 to 17 than did frequent offenders.</td>
</tr>
<tr>
<td>White, Moffitt, &amp; Silva</td>
<td>1989</td>
<td>Prospective</td>
<td>Population: consecutive births, Spring 1972-1973, Dunedin, New Zealand</td>
<td>804</td>
<td>5 &gt; 15 yrs</td>
<td>51%</td>
<td>N/R</td>
<td>&gt; 93% Cau</td>
<td>Delinquency at ages 13–15 was associated with lower average IQ at ages 7, 9, 11, &amp; 13 for high- &amp; low-risk boys and girls.</td>
</tr>
<tr>
<td>Ferguson &amp; Horwood</td>
<td>1998</td>
<td>Prospective</td>
<td>Population: 1977 birth cohort, Christchurch, New Zealand, urban, high attrition</td>
<td>969</td>
<td>8 &gt; 10 yrs</td>
<td>N/R</td>
<td>Low-upper</td>
<td>85% Cau</td>
<td>Conduct problems at age 8 were associated with increased risk of leaving school without qualifications, controlling for IQ &amp; attention problems (8 yrs), maternal age, parental conflict, &amp; living standards (0-8 yrs). Adolescent behavior patterns ages 16–18, delinquent peer affiliations, cannabis use, &amp; school suspensions mediated the relationship between conduct problems in middle childhood &amp; leaving school without qualifications, controlling for the above-mentioned variables.</td>
</tr>
<tr>
<td>Frick, Kamphaus, et al.</td>
<td>1991</td>
<td>Concurrent</td>
<td>Source specific: children referred to 3 university-based clinics for disruptive behavior problems</td>
<td>177</td>
<td>7–12 yrs</td>
<td>100%</td>
<td>Low-upper</td>
<td>at least 12% in each of 5 Hollingshead levels</td>
<td>Academic underachievement was associated with ADHD &amp; conduct disorder (CD) diagnoses. When the co-occurrence of ADHD &amp; CD was taken into account, academic underachievement was associated with ADHD and not CD.</td>
</tr>
</tbody>
</table>

Key Statistics

<table>
<thead>
<tr>
<th>Early Language Ability, IQ, &amp; Criminality by Age 30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partial r = -.16 language ability, 18-24 mths</td>
</tr>
<tr>
<td>Partial r = -.15 language comprehension, 3 yrs</td>
</tr>
<tr>
<td>Partial r = -.18 language comprehension, 5 yrs</td>
</tr>
<tr>
<td>Partial r = -.15 language maturity, 5 yrs</td>
</tr>
<tr>
<td>Partial r = -.16 IQ, age 3</td>
</tr>
<tr>
<td>(p's &lt; .05; p's = ns: IQ at ages 5, 8, 11, 14, 17)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Offender Status &amp; Average IQ, Ages 3–17</th>
</tr>
</thead>
<tbody>
<tr>
<td>F (2, 109) = 4.08, p &lt; .05, p &lt; .01 contrast</td>
</tr>
<tr>
<td>M's = 101.7 nonoffender, 91.4 frequent (partial correlations, SES controlled, ANOVA, contrasts)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total IQ Scores, Risk, &amp; Delinquent Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>F (2, 407) = 4.82, p &lt; .01 boys</td>
</tr>
<tr>
<td>M's = 98.6* high-risk, 102.9* low-risk delinquent</td>
</tr>
<tr>
<td>M's = 105.1* high-risk, 109.1* low-risk nondelinquent</td>
</tr>
<tr>
<td>F (2, 387) = 3.31, p &lt; .05 girls</td>
</tr>
<tr>
<td>M's = 97.9* high-risk, 101.2* low-risk delinquent</td>
</tr>
<tr>
<td>M's = 105.2* high-risk, 107.0* low-risk nondelinquent</td>
</tr>
<tr>
<td>(p's = ns: risk status, risk x delinquency interaction)</td>
</tr>
<tr>
<td>(MANOVA, means with different letters differ p &lt; .05)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>% Leaving School by Extent Conduct Problems</th>
</tr>
</thead>
<tbody>
<tr>
<td>OR = 1.8, p &lt; .05 (95% CI: 1.1–2.6)</td>
</tr>
<tr>
<td>17.0% low (1–50th), 19.9% low-mid (51–75th)</td>
</tr>
<tr>
<td>23.2% mid (76–90th), 26.8% mid-high (91–95th)</td>
</tr>
<tr>
<td>30.7% high (96–100th percentile)</td>
</tr>
<tr>
<td>% Leaving School by Extent Conduct Problems</td>
</tr>
<tr>
<td>p &gt; .90 adjusted for adolescent behavior</td>
</tr>
<tr>
<td>p &lt; .0001 delinquent peer affiliations</td>
</tr>
<tr>
<td>p &lt; .05 cannabis use</td>
</tr>
<tr>
<td>p &lt; .05 suspension from school</td>
</tr>
<tr>
<td>19.5–19% low, low-mid, mid-high, high (covariates: attention problem, age 8 WISC-R, maternal age, living standards, &amp; parent conflict)</td>
</tr>
<tr>
<td>(logistic regression models)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>% of Children Underachieving, by Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>23% ADHD (n = 111), 22% CD (n = 68)</td>
</tr>
<tr>
<td>22% ADHD + HY (n = 97), 7% clinic control (n = 42)</td>
</tr>
<tr>
<td>(p's &lt; .05; group vs. clinic control)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>% of Children Underachieving, Control ADHD, CD Effect = .01, ADHD regression model</th>
</tr>
</thead>
<tbody>
<tr>
<td>18% ADHD (n = 62), 5% CD (n = 19), 29% ADHD + CD (n = 29), 6% clinic control (n = 47)</td>
</tr>
<tr>
<td>(chi-square, 2 x 2 logit model analysis)</td>
</tr>
</tbody>
</table>
### Child Characteristics—Cognitive Influences
#### Academic Performance

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Representativeness</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maguin &amp; Loeber</td>
<td>1996</td>
<td>Meta-analysis</td>
<td>Convenience / population: selected studies with representative samples (national, school, city)</td>
<td>28,552</td>
<td>Under 18</td>
<td>74%</td>
<td>N/R</td>
<td>N/R/ AfA</td>
<td>Lower academic performance was related to delinquency (seriousness, frequency, prevalence), even after controlling for SES. The relationship was stronger for males. Children with low academic performance were twice as likely to be delinquent.</td>
</tr>
</tbody>
</table>

#### Social Information Processing

<table>
<thead>
<tr>
<th>Crick</th>
<th>1995</th>
<th>Concurrent group comparisons</th>
<th>Convenience: recruited from grade school in midsize Midwest city</th>
<th>239</th>
<th>3rd-6th gr</th>
<th>55%</th>
<th>N/R</th>
<th>26.6% AfA</th>
<th>Relationally &amp; relationally + overtly aggressive children held more hostile attributions for relational &amp; instrumental conflict respectively than nonaggressive children.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dodge, Bates, &amp; Pettit</td>
<td>1990</td>
<td>Prospective longitudinal</td>
<td>Convenience: parents recruited during preregistration for kindergarten, Nashville, Knoxville, TN, &amp; Bloomington, IN</td>
<td>309</td>
<td>5 &gt; 5.5 yrs</td>
<td>53%</td>
<td>Middle Mdn = 38.5 (14-66) Hollingshead</td>
<td>16% AfA</td>
<td>Social information processing variables predicted peer, teacher, &amp; observer ratings of aggression 6 mths later. Significant variables included encoding of relevant cues, aggressive responses, low competent responses, hostile attributional bias, low solution generation, &amp; evaluations of aggression as leading to positive outcomes.</td>
</tr>
<tr>
<td>Dodge, Pettit, et al.</td>
<td>1995</td>
<td>Prospective longitudinal</td>
<td>Convenience: parents recruited during preregistration for kindergarten, Nashville, Knoxville, TN, &amp; Bloomington, IN</td>
<td>520</td>
<td>K &gt; 4th gr</td>
<td>52%</td>
<td>N/R</td>
<td>16% AfA</td>
<td>Social information processing (SIP) scores at age 4 accounted for a significant proportion of variance in gr 4 teacher ratings of externalizing. The gr 4 conduct problem group demonstrated greater social information processing problems in the previous 4 yrs than did the nonproblem group. Children with 3 or 4 processing problems were 4 times more likely to develop clinically relevant conduct problems than children without processing problems.</td>
</tr>
</tbody>
</table>

#### Key Statistics

**Academic Performance & Delinquency**
- \( r = .149, OR = 2.07 \) cross-sectional, bivariate
- \( z = 3.2, p < .005 \) ES = -.15 males, -.09 females
- \( r = .139 \) cross-sectional, control SES
- \( r = .127, OR = 1.87 \) longitudinal, bivariate
- \( r = .128 \) longitudinal, control SES

**Intent Attributions & Relational Conflict**
- \( F (2, 227) = 5.9, p < .01; M's = 7.2 \) agg, 5.6 non

**Intent Attributions & Instrumental Conflict**
- \( F (2, 227) = 4.4, p < .01; M's = 6.6 \) agg, 5.2 non

**Social Information Processing (SIP)**
- Teacher ratings: \( r = .24, F (2, 294) = 2.51, p < .02 \)
- Peer ratings: \( r = .25, F (2, 294) = 2.70, p < .01 \)
- Observer ratings: \( r = .29, F (2, 294) = 3.86, p < .001 \)

**SIP & Externalizing Gr 4**
- \( F (2, 430) = 4.66, p < .001 \)

**SIP & Conduct Problems**
- \( F (1, 433) = 12.39, p < .001 \)
- \( M's = .55 \) conduct problem, -.05 no problem
- \( M's = .37 \) conduct problem, -.06 no problem
- \( M's = .32 \) conduct problem, -.04 no problem (multiple regressions)

**SIP & Externalizing**
- \( r = .11, p < .001 \)
- \( \beta = .23, p < .001 \) encoding errors
- \( \beta = .15, p < .05 \) hostile attributions
- \( \beta = .23, p < .001 \) access aggressive responses

---

### Key Statistics

**Academic Performance & Delinquency**
- \( r = .149, OR = 2.07 \) cross-sectional, bivariate
- \( z = 3.2, p < .005 \) ES = -.15 males, -.09 females
- \( r = .139 \) cross-sectional, control SES
- \( r = .127, OR = 1.87 \) longitudinal, bivariate
- \( r = .128 \) longitudinal, control SES

**Intent Attributions & Relational Conflict**
- \( F (2, 227) = 5.9, p < .01; M's = 7.2 \) agg, 5.6 non

**Intent Attributions & Instrumental Conflict**
- \( F (2, 227) = 4.4, p < .01; M's = 6.6 \) agg, 5.2 non

**Social Information Processing (SIP)**
- Teacher ratings: \( r = .24, F (2, 294) = 2.51, p < .02 \)
- Peer ratings: \( r = .25, F (2, 294) = 2.70, p < .01 \)
- Observer ratings: \( r = .29, F (2, 294) = 3.86, p < .001 \)

**SIP & Externalizing Gr 4**
- \( r = .11, p < .001 \)
- \( \beta = .23, p < .001 \) encoding errors
- \( \beta = .15, p < .05 \) hostile attributions
- \( \beta = .23, p < .001 \) access aggressive responses

**SIP & Conduct Problems**
- \( F (2, 430) = 4.66, p < .001 \)

**SIP & Externalizing**
- \( r = .11, p < .001 \)
- \( \beta = .23, p < .001 \) encoding errors
- \( \beta = .15, p < .05 \) hostile attributions
- \( \beta = .23, p < .001 \) access aggressive responses

---

**# of SIP Problems & Risk of Conduct Problems**
- \( \chi^2 (3, N = 442) = 11.76, p < .01 \) 3-4 vs. no problems
- \( \chi^2 (3, N = 442) = 3.85, p < .05 \) any vs. no problems
- 6% no SIP problems, 13% 1 SIP problem
- 16% 2 SIP problems, 27% 3 or 4 SIP problems (structural equation model)
### Child Characteristics—Cognitive Influences

#### Social Information Processing

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Sample Description</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hudley &amp; Graham</td>
<td>1993</td>
<td>Intervention random assignment</td>
<td>1) attribution intervention, 2) attention training, 3) no tx control</td>
<td>66</td>
<td>4th-6th gr.</td>
<td>100%</td>
<td>Low</td>
<td>100% AfrA</td>
<td>Aggressive boys showed improved social information processing &amp; were rated by teachers as less aggressive following an attributional intervention. Specifically, aggressive boys in the attributional treatment group showed reductions in attributions of hostile intent in response to ambiguous, hypothetical peer provocation (questionnaire measure), compared to boys in the attention training or control groups. Observations in a lab setting found that boys in the attributional treatment group were less likely to infer intentionality in peer provocation than boys in the other 2 groups.</td>
</tr>
</tbody>
</table>

#### Key Statistics

**Aggression, Teacher Ratings**

\[ F(2, 63) = 3.48, p < .05 \]

\[ t(19) = 2.63, p < .05 \]

**Aggression, Teacher Ratings & Friendship Test**

\[ r = -.20 \]

**Aggression & Social Goals**

\[ R^2 = .39, F(6, 31) = 2.46, p < .05 \]

**Aggression & Social Strategies**

\[ R^2 = .54, F(11, 28) = 3.00, p < .05 \]

**Hostile-Aggressive, Teacher Ratings & Friendship Test**

\[ r = -.36 \]

**Hostile-Aggressive, Teacher Ratings & Object Test**

\[ r = -.27, p < .01 \]

---

### Moral Reasoning and Social Problem Solving

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Sample Description</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gregg, Gibbs, &amp; Basinger</td>
<td>1994</td>
<td>Concurrent group comparisons</td>
<td>Source specific/ convenience: recruited incarcerated youth &amp; nondelinquent suburban public high school students</td>
<td>323</td>
<td>13-19 yrs</td>
<td>54%</td>
<td>Lower</td>
<td>26% AfrA</td>
<td>Delinquent female &amp; male adolescents had lower moral reasoning scores than delinquents, controlling for delinquency (main effects significant, F values not reported)</td>
</tr>
</tbody>
</table>

---

### Key Statistics

**Moral Reasoning & Delinquent vs. Nondelinquent**

\[ F(6, 317) = 38.48, p < .0001 \]

**Moral Judgment Maturity**

\[ F(2, 64) = 9.85, p < .001 \]

**Moral Reasoning & Delinquent vs. Nondelinquent**

\[ d = .74, 95% CI = .62-.85; d's = .24-.68 \]

**Aggression & Social Goals**

\[ R^2 = .39, F(6, 31) = 2.46, p < .05 \]

**Aggression & Social Strategies**

\[ R^2 = .54, F(11, 28) = 3.00, p < .05 \]

**Hostile-Aggressive, Teacher Ratings & Friendship Test**

\[ r = -.20 \]

**Hostile-Aggressive, Teacher Ratings & Object Test**

\[ r = -.36 \]

---

### Best COPY AVAILABLE
### Child Characteristics—Cognitive Influences

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Source Specific/Convenience</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Delinquency &amp; Psychopathic Involvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trevethan &amp; Walker</td>
<td>1989</td>
<td>Concurrent</td>
<td>Recruited incarcerated youth from facility &amp; matched (age, race, occupation) nonincarcerated high school students</td>
<td>44</td>
<td>15-18 yrs</td>
<td>100%</td>
<td>N/R</td>
<td>100% Cauc</td>
<td>Delinquent &amp; psychopathic incarcerated youth exhibited lower levels of moral reasoning when presented with hypothetical &amp; real-life dilemmas compared to a nonincarcerated comparison group.</td>
</tr>
</tbody>
</table>

### Biological Influences—Autonomic Influences

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Population</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Key Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mezzacappa, Tremblay, et al.</td>
<td>1997</td>
<td>Concurrent</td>
<td>Recruit from larger study (see earlier Tremblay entry); subsample included boys with early onset stable aggression &amp; without aggression</td>
<td>153</td>
<td>10-15 yrs</td>
<td>100% Low; lower 2 of 6 Canadian SES categories</td>
<td>100% Cauc</td>
<td>Increasing levels of antisocial behavior were associated with lower heart rate (HR), respiratory-driven cardiac-altered vagal control (HF HRV), &amp; sympatho-vagal (LF/HF) balance, not accounted for by differences in respiratory drive.</td>
<td></td>
</tr>
<tr>
<td>Raine, Verba, &amp; Mednick</td>
<td>1995</td>
<td>Prospective</td>
<td>Unselected birth cohort, 1969; two towns in Mauritius (island country in the Indian Ocean)</td>
<td>1,130</td>
<td>3 yrs</td>
<td>51%</td>
<td>N/R</td>
<td>&lt;5.6% Asian &amp; 5.6% Cauc; 26% Creole &amp; 69% Indian</td>
<td>&amp; delinquents, Psychopaths, Controls</td>
</tr>
</tbody>
</table>

#### Key Statistics

<table>
<thead>
<tr>
<th>Test</th>
<th>Description</th>
<th>df</th>
<th>p Value</th>
<th>Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>F (2, 41) = 5.60, p &lt; .01</td>
<td>Group x dilemma</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M(2, 41) = 257.5^*</td>
<td>Normal controls</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M(2, 41) = 230.2^+</td>
<td>Delinquents, Psychopaths</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(p &lt; .05 dilemma type, p = ns interaction)</td>
<td>(group x dilemma type ANOVA, Tukey comparsion, M's with different letters differ p &lt; .05)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Antisocial Behavior, Self Report & HR

<table>
<thead>
<tr>
<th>Test</th>
<th>Description</th>
<th>df</th>
<th>p Value</th>
<th>Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>t (32) = 2.9, p &lt; .007</td>
<td>Desistors vs. criminals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>t (29) = 2.9, p &lt; .007</td>
<td>Desistors vs. criminals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>t (28) = 2.7, p &lt; .01</td>
<td>Desistors vs. criminals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M's: 0.00 desistors, 6.3 criminals</td>
<td>MANOVAs, ANOVAs, planned comparisons, 2-tailed t tests</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Ethnicity

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Caucasion</th>
<th>Asian</th>
<th>Creole</th>
<th>Indian</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
<td>0%</td>
<td>&lt;5.6%</td>
<td>26%</td>
<td>69%</td>
</tr>
</tbody>
</table>

#### SES

<table>
<thead>
<tr>
<th>SES</th>
<th>Low-middle</th>
<th>N/R</th>
</tr>
</thead>
<tbody>
<tr>
<td>51</td>
<td>15 &gt; 29 yrs</td>
<td>N/R</td>
</tr>
</tbody>
</table>

#### Delinquency & Psychopathic Involvement

<table>
<thead>
<tr>
<th>Group</th>
<th>Description</th>
<th>M'</th>
<th>(N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delinquents</td>
<td>Resting electrodermal (EDA), &amp; orienting EDA at age 15 predicted absence of criminality at age 29. Delinquent had higher resting HRs, resting EDA, and orientating EDA than noncriminals. delinquent: ASB age 15 -- no adult crime; normal: no ASB age 15 or adult crime, criminals: ASB age 15 &amp; adult crime</td>
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<tr>
<td>Desistors</td>
<td>(MANOVAs, ANOVAs, planned comparisons, 2-tailed t tests)</td>
<td></td>
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</tr>
<tr>
<td>M's: 7.5 desistors, 6.3 criminals</td>
<td>(North England)</td>
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</tr>
</tbody>
</table>
### Child Characteristics—Biological Influences

#### Neuroendocrine Influences—Adrenal Hormones

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Representativeness</th>
<th>Size</th>
<th>Age School age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hidemura et al.</td>
<td>1997</td>
<td>Convergent concurrent</td>
<td>Source specific: all clinic referred for problems with aggression</td>
<td>42</td>
<td>10-12 yrs</td>
<td>100%</td>
<td>N/R</td>
<td>N/R</td>
<td>Lower baseline cortisol was associated with more symptoms of aggressive conduct disorder &amp; more aggressive behavior with peers. Analyses took into account parent psychopathology, parent-child relationships, &amp; SES.</td>
</tr>
<tr>
<td>Moss, Vanyukov, &amp; Martin</td>
<td>1995</td>
<td>Concurrent group comparisons</td>
<td>Source specific: sons of fathers w/ &amp; without hx of psychoactive substance abuse recruited through ads, tv, &amp; community centers</td>
<td>184</td>
<td>10-12 yrs</td>
<td>100%</td>
<td>Low-middle M's = 36-49 Hollingshead</td>
<td>N/R</td>
<td>More aggressive delinquent behavior, higher impulsive behavior, and higher risk for substance abuse were associated with lower cortisol responsivity.</td>
</tr>
<tr>
<td>Susman, Dorn, et al.</td>
<td>1997</td>
<td>Prospective longitudinal 1 yr</td>
<td>Convenience: sample recruited from suburban Washington, DC</td>
<td>36</td>
<td>9-15 yrs</td>
<td>58%</td>
<td>Middle--upper middle</td>
<td>N/R</td>
<td>Increased cortisol reactivity was associated with more nonaggressive behavior problems and overall conduct behavior problems 1 yr later.</td>
</tr>
<tr>
<td>Finkelstein, Susman, et al.</td>
<td>1997</td>
<td>Experiment randomized double-blind, placebo-controlled, crossover design</td>
<td>Source specific: recruited youth referred for pubertal delay to outpatient clinic</td>
<td>49</td>
<td>10-19 yrs</td>
<td>76%</td>
<td>N/R</td>
<td>N/R</td>
<td>Physical aggression &amp; aggressive impulses increased following low &amp; mid-level doses of estrogen for girls &amp; mid-level doses of testosterone for boys.</td>
</tr>
<tr>
<td>Olweus, Mattsson, et al.</td>
<td>1988</td>
<td>Prospective longitudinal 3 yrs</td>
<td>Population: representative sample of male public school 9th graders, suburban Stockholm, Sweden</td>
<td>58</td>
<td>15-17 yrs</td>
<td>100%</td>
<td>100% Cauc (Swedish)</td>
<td></td>
<td>High levels of plasma testosterone were associated with low frustration tolerance (more impatience &amp; irritability) &amp; more provoked aggressive behavior (self-report). Low frustration tolerance mediated the effect of plasma testosterone on unprovoked aggressive behavior. The model included mother’s negativism &amp; passiveness for aggression, parent’s power assertion, &amp; retrospective report of boys’ temperament.</td>
</tr>
</tbody>
</table>

#### Key Statistics

- **Aggressive CD Symptoms & Cortisol**
  \[ R^2 = .466, F(4, 37) = 12.45, p < .001 \]
  \[ \beta = -.37, \text{ partial } R^2 = .13, F(1, 37) = 12.8, p < .001 \]
  \( (p's < .001: \text{ par psychopathology, par-child rel, SES}) \)

- **Peer-Nominated Aggression & Cortisol**
  \[ R^2 = .236, F(4, 37) = 4.24, p < .01 \]
  \[ \beta = -.47, \text{ partial } R^2 = .20, F(1, 37) = 14.5, p < .001 \]
  \( (p's = ns: \text{ par psychopathology, par-child rel, SES}) \)

- **Physical Aggression & Aggressive Impulsivity**
  \( (\text{ANOVA, tx, sequence, sex, visit, sex x tx, Sign test}) \)

- **Physical Aggression & Aggressive Impulsivity**
  \( (\text{ANCOVA, covariate age, M's not reported}) \)

- **Provoked Aggression**
  \[ R^2 = .499, p < .05 \]
  \[ \beta = .34 \text{ testosterone—provoked aggressive beh} \]
  \( (p = ns: \text{ testosterone—impatience & irritability}) \)

- **Unprovoked Aggression**
  \[ R^2 = .499, p < .05 \]
  \[ \beta = .34 \text{ testosterone—impatience & irritability} \]
  \( (p = ns: \text{ testosterone—unprovoked ag beh}) \)

- **Aggressive CD Symptoms & Cortisol**
  \[ R^2 = .466, F(4, 37) = 12.45, p < .001 \]
  \[ \beta = -.37, \text{ partial } R^2 = .13, F(1, 37) = 12.8, p < .001 \]
  \( (p's < .001: \text{ par psychopathology, par-child rel, SES}) \)

#### Sex Steroids

- **Girls, Low-Level Dose Estrogen & Aggression**
  \( 48% (p = .003) \quad ^\uparrow \text{ (increased) aggressive impulse} \)
  \( 28% (p = .02) \quad ^\uparrow \text{ physical aggression to peers} \)

- **Girls, Mid-Level Dose Estrogen & Aggression**
  \( 31% (p = .01) \quad ^\uparrow \text{ aggression toward adults} \)
  \( 28% (p = .02) \quad ^\uparrow \text{ aggression toward peers} \)
  \( 40% (p = .01) \quad ^\uparrow \text{ aggressive impulse} \)

- **Boys, Mid-Level Dose Testosterone & Aggression**
  \( 18% (p = .03) \quad ^\uparrow \text{ aggression toward adults} \)
  \( 17% (p = .02) \quad ^\uparrow \text{ aggression toward peers} \)
  \( 19% (p = .06) \quad ^\uparrow \text{ aggressive impulse} \)

- **Circulating Testosterone & Aggression, Self-Report**
  \( (\text{ANCOVA, covariate age, M's not reported}) \)

### References
- Hidemura, Pfiffer, et al.
- Moss, Vanyukov, & Martin
- Susman, Dorn, et al.
- Finkelstein, Susman, et al.
- Olweus, Mattsson, et al.
## Child Characteristics—Biological Influences

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Representativeness</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Halperin et al.</td>
<td>1997</td>
<td>Concurrent group</td>
<td>all met criteria for ADHD based on</td>
<td>50</td>
<td>7-11 yrs</td>
<td>100%</td>
<td>N/R</td>
<td>N/R</td>
<td>Young aggressive boys had greater prolactin response to FEN challenge</td>
</tr>
<tr>
<td></td>
<td></td>
<td>comparisons replication</td>
<td>parent &amp; teacher ratings</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>than young nonaggressive boys. There were no differences in prolactin</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>response for aggressive or nonaggressive older children over 9.1 yrs</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>old.</td>
</tr>
<tr>
<td>Kruesi et al.</td>
<td>1992</td>
<td>Prospective longitudinal</td>
<td>all diagnosed with disruptive behavior disorder</td>
<td>29</td>
<td>6-17 yrs</td>
<td>93%</td>
<td>N/R</td>
<td>17% AfrA</td>
<td>Lower 5-HIAA at initial assessment predicted severity of physical</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M = 26 mths</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>76% Cauc</td>
<td>aggression at followup for children with disruptive behavior disorders.</td>
</tr>
<tr>
<td>Pine et al.</td>
<td>1997</td>
<td>Prospective longitudinal</td>
<td>all younger siblings of delinquents,</td>
<td>34</td>
<td>3-13 yrs</td>
<td>100%</td>
<td>Low</td>
<td>44% AfrA</td>
<td>Higher aggression and lower</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M = 14-24 mths</td>
<td>NY, NY</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>56% Hisp</td>
<td>encouragement of maturity was associated with greater prolactin (PRL)</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>response to FEN challenge.</td>
</tr>
<tr>
<td>Galvin et al.</td>
<td>1997</td>
<td>Concurrent group</td>
<td>all psychiatric inpatients, majority</td>
<td>17</td>
<td>M = 12.5 yrs</td>
<td>100%</td>
<td>Low-upper</td>
<td>Poorer conscience functioning</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>comparisons</td>
<td>disruptive disorders</td>
<td></td>
<td></td>
<td></td>
<td>yrs</td>
<td>(interference with peer- &amp; authority-derived valuation) was</td>
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<td></td>
<td></td>
<td></td>
<td>associated with lower serum</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>dopamine beta-hydroxylase (DBH).</td>
<td></td>
</tr>
<tr>
<td>Kuperman et al.</td>
<td>1988</td>
<td>Concurrent correlational</td>
<td>referred during childhood to outpatient clinic for overactivity</td>
<td>31</td>
<td>21-23 yrs</td>
<td>100%</td>
<td>Low-upper</td>
<td>Plasma dopamine beta-hydroxylase (DBH) was positively associated with</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>yrs</td>
<td>disinhibition &amp; sensation seeking.</td>
<td></td>
</tr>
<tr>
<td>Limson et al.</td>
<td>1991</td>
<td>Concurrent correlational</td>
<td>chronic alcoholic inpatients, inpatient nonalcoholic controls</td>
<td>65</td>
<td>M = 44 yrs</td>
<td>100%</td>
<td>N/R</td>
<td>Greater lifetime history of</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>impulsivity-aggressivity was associated with lower concentrations of</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CSF dopamine metabolite HVA.</td>
<td></td>
</tr>
</tbody>
</table>

### Key Statistics

- **Prolactin Response to FEN Challenge (5-HT function)**
  - $F(2, 47) = 5.24$, $p < .05$ (age × group)
  - $M = 14.97$ ng/ml young, aggressive
  - $M = 9.32$ ng/ml young, nonaggressive
  - $p = ns$; children over 9.1 yrs old

- **Sensation Seeking & Plasma DOH Activity**
  - $r = .38$, $p < .05$ disinhibition
  - $r = .37$, $p < .05$ sensation seeking, total score

- **Lifetime Aggression & CSF Concentrations of HVA**
  - $r = .37$, $p < .01$ total group
  - $r = -.40$, $p < .01$ alcoholics (during sobriety)

### Dopamine

- **DOH Levels and Conscience Functioning**
  - $t (15) = 2.08$, $p < .03$ (one-tailed)
  - $M (SD) = 25.18$ (18.9) better conscience funct.
  - $M (SD) = 12.74$ (5.92) poorer conscience funct.
  - $r = .38$, $p < .05$ disinhibition
  - $r = .37$, $p < .05$ sensation seeking, total score

- **Lifetime Aggression & CSF Concentrations of HVA**
  - $r = .37$, $p < .01$ total group
  - $r = -.40$, $p < .01$ alcoholics (during sobriety)
### Child Characteristics—Biological Influences

#### Maternal Age

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Representativeness</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Christ, Lahay, et al.</td>
<td>1990</td>
<td>Concurrent correlational</td>
<td>Source specific: children referred to 3 outpatient psychology/psychiatry clinics; eligibles lived with 1+ biological parent, had no mental retardation, psychosis</td>
<td>253</td>
<td>6-13 yrs</td>
<td>100%</td>
<td>Low-high</td>
<td>12.5% Afa</td>
<td>87.5% Cau</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>25.6%</td>
<td></td>
<td>was correlated with total number of child conduct problems. Dramatic models that included SES &amp; maternal &amp; paternal antisocial personality found that the data were best fit by a model indicating a spurious relationship between teenage motherhood &amp; child conduct problems, rather than a mediational or independent effects model.</td>
</tr>
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<td></td>
<td>25.6%</td>
<td></td>
<td>Higher maternal age (&lt; 20, 20-24, 25-29, 30+ yrs old) was related to fewer childhood &amp; early adolescent (ages 8, 10, &amp; 12) behavior problems (mother &amp; teacher reports). This relationship held for age 12 behavior problems (but not age 8 or 10), controlling for measures of maternal background &amp; childhood life history, including maternal ed, SES, family size, avoidance of punishment, &amp; parental discord.</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>33%</td>
<td></td>
<td>Mother and/or teacher reports of externalizing were above the borderline clinical cutoff for more than half of a sample of 6-year-old children who had been born to adolescent mothers.</td>
</tr>
<tr>
<td>Fergusson &amp; Lynskey</td>
<td>1993</td>
<td>Prospective longitudinal</td>
<td></td>
<td>953-1,048</td>
<td>Birth &gt; N/R</td>
<td>85%</td>
<td>Low-upper</td>
<td>85% Cau</td>
<td>Higher maternal age (&lt; 20, 20-24, 25-29, 30+ yrs old) was related to fewer childhood &amp; early adolescent (ages 8, 10, &amp; 12) behavior problems (mother &amp; teacher reports). This relationship held for age 12 behavior problems (but not age 8 or 10), controlling for measures of maternal background &amp; childhood life history, including maternal ed, SES, family size, avoidance of punishment, &amp; parental discord.</td>
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<td>25.6%</td>
<td></td>
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<td></td>
<td>33%</td>
<td></td>
<td>Higher maternal age (&lt; 20, 20-24, 25-29, 30+ yrs old) was related to fewer childhood &amp; early adolescent (ages 8, 10, &amp; 12) behavior problems (mother &amp; teacher reports). This relationship held for age 12 behavior problems (but not age 8 or 10), controlling for measures of maternal background &amp; childhood life history, including maternal ed, SES, family size, avoidance of punishment, &amp; parental discord.</td>
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<td></td>
<td>25.6%</td>
<td></td>
<td>Higher maternal age (&lt; 20, 20-24, 25-29, 30+ yrs old) was related to fewer childhood &amp; early adolescent (ages 8, 10, &amp; 12) behavior problems (mother &amp; teacher reports). This relationship held for age 12 behavior problems (but not age 8 or 10), controlling for measures of maternal background &amp; childhood life history, including maternal ed, SES, family size, avoidance of punishment, &amp; parental discord.</td>
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<td></td>
<td></td>
<td></td>
<td>25.6%</td>
<td></td>
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</tr>
</tbody>
</table>

#### Key Statistics

- **Teenage Motherhood & Conduct Problems**
  - $r = .33, p < .01$ 1st child
  - $r = .23, p < .01$ proband child

- **Best Fit Model**
  - $\beta = .11, p = .ns$ maternal antisocial conduct
  - $\beta = .17, p < .05$ maternal antisocial conduct
  - $\beta = .16, p < .01$ maternal antisocial conduct
  - $\beta = .33, p < .001$ SES conduct
  - $\beta = .15, p < .01$ maternal antisocial teen mother
  - $\beta = .20, p < .001$ maternal antisocial teen mother
  - $\beta = .35, p < .001$ SES teen mother

#### Maternal Age & Conduct Disorder

- $r = -.19, p < .0001$ age 8 ($n = 1,048$)
- $r = -.18, p < .001$ age 10 ($n = 1,022$)
- $r = -.19, p < .0001$ age 12 ($n = 972$)

- **Maternal Age, Conduct Disorder, Maternal Background, & Childhood Life History**
  - $\beta = -.13, p < .001 (n = 953)$
  - M's = 54.5 (< 20), 53.3 (20-24), 52.0 (25-29)
  - (p's < .05: maternal education, SES, family size, avoidance of punishment, parental discord)
  - (p's = ns: parent changes (mother & child), planned pregnancy, unhappy childhood, breastfeeding, maternal emotional responsiveness, family income, preschool education, school changes, life events)
  - (multiple linear regression model)

#### Externalizing, Mother and/or Teacher Reports

- **Boys** ($n = 92$)
  - 45.7% neither, 35.8% either, 18.5% both

- **Girls** ($n = 60$)
  - 43.3% neither, 45.0% either, 11.7% both
  - (proportion above borderline clinical cutoff, T = 60)

---

Wakschlag et al., 1997: see "Maternal Smoking"
Child Characteristics—Biological Influences
Maternal Smoking
Authors: Brennan, Grekin, & Mednick; Fergusson, Woodward, & Horwood; Navarro, Seidler, et al.

**Years and Design:**
- 1999: Prospective longitudinal study, 34 yrs
- 1998: Prospective longitudinal study, 18 yrs
- 1989: Experimental random assignment study

**Size and Age:**
- 3,266-3,728 participants, prenatal: 3-34 yrs
- 953-1,048 participants, birth: >34 yrs

**% Male and SES:**
- 100% male, SES low-upper

**Representativeness:**
- Population: from birth cohort, Copenhagen, Denmark; 9/59-12/61
- Population: from birth cohort, 1977, Christchurch, New Zealand, urban; 81% of original cohort

**Result:**
- Maternal smoking during the 3rd trimester (0, 1-2, 3-10, 10-20, >20 cigarettes daily) predicted nonviolent & violent arrests, & persistent but not adolescent-limited offending.

- Analyses controlled for parental psychiatric hospitalizations, perinatal complications, SES, mother's age, drug use during pregnancy, father's criminal arrest, & maternal rejection.

- Rates of conduct disorder symptoms were related to maternal reports at birth of smoking during pregnancy.

- Adolescents whose mothers reported smoking 20+ cigarettes/day during pregnancy reported over 2 times more conduct disorder symptoms in the past 2 yrs than children of nonsmokers. After adjusting for confounding & selection factors the relationship remained & was stronger for males than females.

- Prenatal nicotine exposure did not affect viability or growth (weight gain or litter size of pregnant rats, body & brain weight of their offspring at gestational day 18 or postnatally). However, postnatal analyses found impaired nervous system development in the nicotine-exposed group versus the control group: small increases in [3H]nicotine binding in midbrain & brainstem, increased omothine decarboxylase (ODC) activity across brain regions, reduced cerebellum DNA content & concentration, & lower kidney norepinephrine levels.

**Key Statistics:**
- Nonviolent Crime & Maternal Smoking
  \( \chi^2 (1, N = 3,728) = 13.28, p < .001 \)
  \( \text{OR} = 1.13 \ (CI = 1.06-1.21), p < .001 \)
  (p's < .05: delivery complications, drug use, SES, mother age, father crime, parent hospitalizations; p's = ns: pregnancy complication, mother rejection)

- Violent Crime & Maternal Smoking
  \( \chi^2 (1, N = 3,266) = 15.74, p < .001 \)
  \( \text{OR} = 1.19 \ (CI = 1.09-1.30), p < .001 \)

- Life-Course Persistent Offending
  \( \chi^2 (1, N = 3,266) = 9.42, p < .01 \)
  \( \text{OR} = 1.15 \ (CI = 1.05-1.26), p < .01 \)

- Adolescent-limited: \( \chi^2 (1, N = 3,151) = 2.70, p = ns \)
  (*see study for additional significant predictors*)

- Maternal Smoking & Conduct Disorder Symptoms
  \( F (1, 1020), p < .001 \) linear trend
  M's = .33, .56, .57 .85

- Adjusted for Confounding & Selection Factors
  \( \beta = .12, p < .001 \)
  M's = .35, .47, .60, 72
  (p's < .05: childhood sexual abuse, parental use of physical punishment, & parental criminal behavior)
  (p's = ns: maternal age & education, planned pregnancy)

- Gender Differences, Adjusted for Confounds/Selection
  \( F (3, 936), p < .001 \)
  M's = .48, .76, 1.04, 1.32 male adolescents
  M's = .20, .26, .28 female adolescents
  (order of M's: 0, 1-9, 10-19, >20 cigarettes/day)
  (ANOVA, multiple linear regression, ANCOVA)

- Prenatal Nicotine Exposure & Brain Development
  Postnatal development of [3H]nicotine binding
  \( F (1, 214) = 4.4 \ pmol/mg protein \ (n = 8-10/group) \)
  M's = 74, 77, 96, 87, 61 control
  M's = 79, 81, 101, 94, 66 nicotine
  (order of M's: postnatal age 2, 4, 7, 10, & 15 days)

  ODC activity*
  \( F (1, 214) = 5.7 \ mg/g concentration \ (n = 10/group) \)
  F (1, 90) = 37.2 mg/g content

  Kidney norepinephrine levels*
  \( F (1, 135) = 4.8 \ ng/g \ (n = 6-10/group) \)
  *Means not reported, in figures
  (see study for figures & nonsignificant results)
  (ANOVA)

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*Brackets indicate significant results.*
### Child Characteristics—Biological Influences

#### Maternal Smoking

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Representativeness</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wakschlag, et al.</td>
<td>1997</td>
<td>Retrospective</td>
<td>source-specific</td>
<td>177</td>
<td>7-12 yrs T1, 12-17 yrs T6</td>
<td>100%</td>
<td>Low-upper</td>
<td>29% AfA</td>
<td>Mothers who smoked more than half a pack of cigarettes a day during pregnancy (based on retrospective reports 7-12 yrs later) were 1.5 times more likely to have a child with conduct disorder (CD) than mothers who smoked less than half a pack per day, controlling for SES &amp; parental antisocial personality disorder (APD). Smoking continued to predict CD in models including parental psychopathologic conditions, pregnancy, family, &amp; parenting risk factors. Maternal age, harsh discipline, &amp; little supervision also predicted CD.</td>
</tr>
<tr>
<td>Lahey, et al.</td>
<td>1997</td>
<td>Retrospective</td>
<td>university psychology &amp; psychiatry outpatient clinics in PA &amp; GA Developmental Trends Study</td>
<td>177</td>
<td>7-12 yrs T1, 12-17 yrs T6</td>
<td>100%</td>
<td>Low-upper</td>
<td>71% Cauc</td>
<td>Maternal Smoking OR = 3.3, CI = 1.3-8.6, p = .01 Final Model Maternal Smoking &amp; Childhood CD [ \chi^2 = 56.1, df = 8, p &lt; .001 ] Maternal smoking OR = 3.3, CI = 1.2-9.0, p = .02 Maternal age OR = 0.90, CI = 0.84-0.97, p = .01 Poor supervision OR = 2.6, CI = 1.1-6.2, p = .03 Harsh discipline OR = 2.1, CI = 0.56-2.2, p = .04 (p's = ns both models: SES, paternal APD, maternal MDD, maternal smoking less than 1/2 pack/day) (logistic regression analyses)</td>
</tr>
<tr>
<td>Weissman, et al.</td>
<td>1999</td>
<td>Prospective</td>
<td>source-specific/ convenience: recruited parents with hrs of depression from clinic &amp; normal controls (matched on age) from community surveys</td>
<td>147</td>
<td>6-23 yrs &gt; 17-36 yrs M's = 16.4 &gt; 27 yrs</td>
<td>48%</td>
<td>Low-upper</td>
<td>100% Cauc</td>
<td>The risk of developing prepubertal onset conduct disorder was 4 times greater for boys of mothers who smoked 10 or more cigarettes daily during pregnancy, than boys of mothers who did not smoke at all. Results were adjusted for maternal major depression disorder (MDD), offspring age, &amp; divorce. The relationship was not explained by parental diagnosis, family risk factors, postnatal smoking, or prenatal/early development history. Girls whose mothers smoked had a 5 times greater risk for adolescent drug abuse/dependence.</td>
</tr>
<tr>
<td>Warner, et al.</td>
<td>1999</td>
<td>Prospective</td>
<td>longituinal</td>
<td>177</td>
<td>6-23 yrs &gt; 17-36 yrs M's = 16.4 &gt; 27 yrs</td>
<td>48%</td>
<td>Low-upper</td>
<td>100% Cauc</td>
<td>Maternal Smoking &amp; Offspring Psychiatric Diagnosis Male, conduct disorder before age 13 Relative risk = 4.1, CI = 1.56-10.78, p &lt; .01 (adjusted for maternal MDD, offspring age, divorce) Female, drug abuse/dependence in adolescence Relative risk = 5.36, CI = 1.43-20.17, p &lt; .05 (adjusted for offspring current smoking, maternal MDD, offspring age) (Cox proportional hazards regression model)</td>
</tr>
<tr>
<td>Brown, et al.</td>
<td>1991</td>
<td>Prospective</td>
<td>longituinal</td>
<td>68</td>
<td>Pre-natal &gt; 5-8 yrs M = 5 yrs, 10 mths</td>
<td>44%</td>
<td>Low M &lt; $10k income/yr</td>
<td>94% AfA 6% N/R</td>
<td>Children whose mothers drank throughout pregnancy had higher teacher ratings of externalizing (including inattentive, destructive, nervous/overactive, &amp; aggressive subscales) &amp; lower ratings of social competence than children of mothers who never drank, or who discontinued drinking in the second trimester after alcohol education, controlling for caretaker's current drinking. Sustained attention &amp; teacher ratings of internalizing did not differ between groups once caretaker's current alcohol use was controlled.</td>
</tr>
<tr>
<td>Coles, et al.</td>
<td>1991</td>
<td>Prospective</td>
<td>longituinal</td>
<td>68</td>
<td>Pre-natal &gt; 5-8 yrs M = 5 yrs, 10 mths</td>
<td>44%</td>
<td>Low M &lt; $10k income/yr</td>
<td>94% AfA 6% N/R</td>
<td>Behavioral Functioning, Social Competence, Teacher F (4, 90) = 4.15, p &lt; .004 MANCOVA Externalizing F = 8.98, p = .001 M's = 52 never, 52 stopped, 64 continued Destructive F = 4.38, p = .02 M's = 52 never, 52 stopped, 66 continued Inattentive F = 6.71, p = .003 M's = 56 never, 58 stopped, 66 continued Nervous/overactive F = 8.28, p = .001 M's = 56 never, 57 stopped, 67 continued Aggressive F = 6.00, p = .005 M's = 57 never, 57 stopped, 65 continued Social competence F = 9.73, p = .0004 M's = 49 never, 46 stopped, 36 continued (covariates: mother's current absolute alcohol, oz/wk) (MANCOVAs, ANOVAs, Neuman-Keuls post hoc)</td>
</tr>
<tr>
<td>Child Characteristics—Biological Influences</td>
<td>Prenatal Exposure to Alcohol</td>
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<tr>
<td><strong>Authors</strong></td>
<td><strong>Year</strong></td>
<td><strong>Design</strong></td>
<td><strong>Representativeness</strong></td>
<td><strong>Size</strong></td>
<td><strong>Age</strong></td>
<td><strong>% Male</strong></td>
<td><strong>SES</strong></td>
<td><strong>Ethnicity</strong></td>
<td><strong>Result</strong></td>
</tr>
<tr>
<td>Coles, Brown, et al.</td>
<td>1991</td>
<td>See previous entry</td>
<td>See previous entry</td>
<td>464</td>
<td>Birth &gt; 14 yrs</td>
<td>54%</td>
<td>Middle</td>
<td>N/R</td>
<td>Cauc</td>
</tr>
<tr>
<td>Olson, Streissguth, et al.</td>
<td>1997</td>
<td>Prospective longitudinal</td>
<td>14 yrs</td>
<td>Population: selected mothers from population-based survey; oversampled for &quot;heavier&quot; social drinkers &amp; infrequent drinkers/abstainers who smoked; Seattle Longitudinal Prospective Study on Alcohol &amp; Pregnancy</td>
<td>471</td>
<td>Prenatal &gt; 6 yrs</td>
<td>50%</td>
<td>Low</td>
<td>$&lt; 12$ yrs</td>
</tr>
<tr>
<td>Delaney-Black, Covington, et al.</td>
<td>2000</td>
<td>Prospective longitudinal</td>
<td>6 yrs</td>
<td>Convenience: women screened at university-based prenatal clinic 8/89–9/91; block sampling design, oversampled for exposure to drugs; non-HIV+, singleton births, no mental retardation at age 6 eligible for study</td>
<td>471</td>
<td>Prenatal &gt; 6 yrs</td>
<td>50%</td>
<td>Low</td>
<td>$&lt; 12$ yrs</td>
</tr>
</tbody>
</table>

**Key Statistics**

- **Cognitive & Academic Functioning, Summary Scores**
  - $F (10, 114) = 7.89, p < .05$ MANCOVA
  - Sequential $F = 3.82, p < .03$
  - $M's = 93$ never, 92 stopped, 84 continued
  - Mental composite (IQ) $F = 3.15, p < .05$
  - $M's = 92$ never, 89 stopped, 84 continued
  - Achievement $F = 6.47, p < .003$
  - $M's = 95$ never, 88 stopped, 86 continued

- **Academic Subtests**
  - $F (5, 118) = 2.35, p < .04$ MANCOVA
  - Math skills $F = 5.64, p < .006$
  - $M's = 97$ never, 87 stopped, 85 continued
  - Reading/decoding $F = 3.98, p < .03$
  - $M's = 102$ never, 92 continued

- **Adaptive Behavior—statistics not reported**
  (covariate: mother's current absolute alcohol, oz/wk)
  (MANCOVAs, ANOVAs, Neuman-Keuls post hoc)

- **Prenatal Alcohol Exposure & Behavior/Learning**
  - $r = .31$
  (correlation between 13 alcohol measures & 186 learning/behavior measures)
  - $r = .20, (n = 319)$
  (partial correlation, 13 alcohol measures & 186 learning/behavior measures, controlling for 78 covariates; no significant interactions)
  (partial least squares analysis)

- **Externalizing-Internalizing Difference, Teacher Report**
  - Model $R = .10, p = .03$
  Individual $M$'s not reported
  (controls: gender, custody change)
  - % Boys Clinically Significant Externalizing Scores
    - Apx. $M = 22.5$ exposed ($n = 94$)
    - Apx. $M = 13.5$ controls ($n = 140$)
  - % Boys Clinically Significant Delinquency Scores
    - Apx. $M's = 17$ exposed, 12 controls
    ($p's < .05$; approximate $M$'s from figure)
    (stepwise multiple regression, two-tailed t tests)
## Child Characteristics—Biological Influences
### Prenatal Exposure to Drugs

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Representative N</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eyler, Behnke, et al.</td>
<td>1998</td>
<td>Prospective longitudinal</td>
<td>screened &gt; 2,500 pregnant women at prenatal clinics &amp; hospitals for cocaine users* &amp; matched controls (race, parity, SES, location of care); eligible: healthy, age 18+, English speakers *use cocaine &amp; marijuana, nicotine, alcohol only</td>
<td>274-285</td>
<td>3-7.5-2 days old</td>
<td>77% lowest</td>
<td>81% AFA</td>
<td>19% N/R</td>
<td>Alert responsiveness, general irritability, regulatory capacity, state regulation, examiner persistence, &amp; reinforcement value of infant's behavior (Braxton subscales) were lower for infants exposed to cocaine prenatally than for nonexposed infants. Controlling for alcohol, tobacco, &amp; marijuana use, alert responsiveness remained lower for infants exposed to cocaine &amp; tobacco.</td>
</tr>
<tr>
<td>Lester, LaGasse, &amp; Seller</td>
<td>1998</td>
<td>Meta-analysis</td>
<td>N/R</td>
<td>8</td>
<td>Prenatal &gt;4-11 yrs</td>
<td>N/R</td>
<td>N/R</td>
<td>N/R</td>
<td>Children prenatally exposed to cocaine had lower IQ scores (3.26 points) than children not exposed. Effect size was small for IQ &amp; medium for receptive &amp; expressive language.</td>
</tr>
<tr>
<td>Edelbrock, Rende, et al.</td>
<td>1995</td>
<td>Concurrent correlational twin study</td>
<td>Convenience: from birth records, same-sex twin pairs; Western Reserve Twin Project</td>
<td>181</td>
<td>7-15 yrs</td>
<td>54%</td>
<td>Middle</td>
<td>N/R</td>
<td>Aggressive behavior, externalizing, &amp; attention showed significant genetic effects. Delinquency showed significant shared environmental effects.</td>
</tr>
<tr>
<td>Silberg, Meyer, et al.</td>
<td>1995</td>
<td>Concurrent correlational twin study</td>
<td>Convenience: unselected sample recruited from Virginia schools</td>
<td>309</td>
<td>11-16 yrs</td>
<td>100%</td>
<td>N/R</td>
<td>100% Cauc</td>
<td>Membership in the hyperactive/ conduct disorder &amp; multisymptom groups was predominately explained by genetic effects. Membership in the pure conduct disorder group was explained by shared environmental factors.</td>
</tr>
</tbody>
</table>

### Genetic Influences on Conduct Disorder

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Representativeness</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cadoret, Yates, et al.</td>
<td>1995</td>
<td>Concurrent correlational adoption study</td>
<td>Convenience: recruited from 4 adoption agencies in Iowa; biological mothers with a history of antisocial personality disorder (APD) or substance abuse &amp; nonsymptomatic matched controls</td>
<td>197</td>
<td>18-47 yrs</td>
<td>48%</td>
<td>N/R</td>
<td>N/R</td>
<td>Conduct disorder showed genetic effects (biological parent APD) environmental effects (adverse adoptive home environment), &amp; genetic-environmental interaction effects (biological parent, antisocial behavior x adverse adoptive home environment). Adolescent aggressivity also showed genetic &amp; genetic x environmental interaction effects.</td>
</tr>
</tbody>
</table>

### Key Statistics

- **Prenatal Cocaine Exposure & Brazelton Qualifiers**
  - Alert responsiveness $p = .003$, M's = 4.7 ctrl, 3.9 coc
  - General irritability $p = .02$, M's = 6.5 ctrl, 5.9 coc
  - Regulatory capacity $p = .02$, M's = 5.4 ctrl, 4.9 coc
  - State regulation $p = .04$, M's = 6.2 ctrl, 5.8 coc
  - Examiner persist $p = .02$, M's = 4.9 ctrl, 4.5 coc
  - Reinforcement value $p = .02$, M's = 6.3 ctrl, 5.9 coc

- **Prenatal Cocaine, Alert Responsiveness, Controlling for Alcohol, Tobacco, & Marijuana Use**
  - $p = .63$, $R^2$, $t$, & M's not reported
  - $p < .05$: cocaine x tobacco, marijuana x tobacco

- **Prenatal Cocaine Exposure, IQ, & Language**
  - IQ effect $= 3.26 (2.01)$ IQ points
  - Receptive language ES $= .33 (1.3)$ SD units
  - Expressive language ES $= .33 (1.3)$ SD units

- **Genetic x Environmental Influences**
  - **Hyperactive-Conduct Disorder**
    - $A = .54$, $D = .34$, $E = .12$
    - **Multisymptomatic Class**
      - $A = .99$, $E = .01$
    - **Pure Conduct Disturbance**
      - $A = .21$, $C = .97$, $E = .02$
    - **Nonsymptomatic Class**
      - $A = .45$, $C = .52$, $E = .03$
  - **Genetic-Environmental Factors & Conduct Disorder**
    - $A^2 = .16$, $p < .0001$
    - $B = .21$, $p = .01$ biological parent APD
    - $B = .44$, $p = .001$ adverse adoptive home environment
    - $B = .23$, $p = .01$ parent APD x adoptive home
  - **Genetic-Environmental Factors & Adol Aggressivity**
    - $A^2 = .19$, $p < .0001$
    - $B = .27$, $p = .0001$ biological parent APD
    - $B = .31$, $p = .0001$ parent APD x adoptive home

- **(Wilcoxin rank sum test, multiple regression)**
### Child Characteristics—Biological Influences

#### Genetic × Environmental Influences

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year Design</th>
<th>Representativeness</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neiderhiser, Reiss, et al.</td>
<td>1999 Prospective longitudinal 3 yrs Population: recruited same-sex sibling pairs from intact families via national marketing survey &amp; random digit dialing; youth live at home 1/2+ time</td>
<td>395 10-18 yrs                  51% Middle M = $23k–$35k income/yr 12% &lt; $20k/yr 32% &gt; $50k/yr 94% Cauc 6% Other</td>
<td>The cross-lagged relationships between parental conflict &amp; negativity at T1 &amp; antisocial behavior 3 yrs later were explained primarily by genetic factors. Analyses were based on composite measures (parent, adolescent, &amp; observation) adjusted for age &amp; gender.</td>
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</tbody>
</table>

### Genetic Influences on Relevant Behaviors—Attention & ADHD

#### Edelbrock et al., 1995; see "Genetic Influences on Conduct Disorder"

| Authors          | Year Design | Population: from birth records, twins | 915 5–15 yrs 48% N/R 100% Cauc | Genetic and nonshared environmental influences were found for attention problems for 5–9 & 12–15-yrs-old males & females. |

#### Key Statistics

- **Simple Evocative Model, Father's Discipline**
  - \( r = .44, p < .01 \) bio disorder—father discipline
  - \( \chi^2 (12, N = 41) = 10.4, p = .53, GFI = .94 \)
  - \( \beta = .16, p = ns \) bio disorder—father discipline
  - \( \beta = .55, p < .05 \) bio disorder—adoptive behavior
  - \( \beta = .76, p < .05 \) father discipline—adoptive behavior

- **Simple Evocative Model, Mother's Discipline**
  - \( r = .47, p < .01 \) bio disorder—mother discipline
  - \( \chi^2 (12, N = 41) = 7.05, p = .16, GFI = .78 \)
  - \( \beta = .06, p = ns \) bio disorder—mother discipline
  - \( \beta = .52, p < .05 \) bio disorder—adoptive behavior
  - \( \beta = .77, p < .05 \) mother discipline—adoptive behavior

#### Genetic & Environmental Influences on Attention

- \( h^2 = .73, e^2 = .27; \chi^2 (4) = 3.62 \) males 5–9 yrs
- \( h^2 = .76, e^2 = .24; \chi^2 (4) = 2.91 \) females 5–9 yrs
- \( h^2 = .75, e^2 = .25; \chi^2 (4) = 2.92 \) females 12–15 yrs
- \( h^2 = .79, e^2 = .21; \chi^2 (3) = 1.89 \) males 12–15 yrs

**Note:** \( h^2 \) heritability, \( e^2 \) nonshared environment (structural equation model)
### Child Characteristics—Biological Influences

#### Genetic Influences on Relevant Behaviors—Attention & ADHD

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Representativeness</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Levy, et al.</td>
<td>1997</td>
<td>Concurrent twin study</td>
<td>Recruited same-sex twin pairs from volunteer Australian twin registry; 1 twin with 5 attention deficit hyperactivity disorder (ADHD) symptoms</td>
<td>583</td>
<td>4-12 yrs</td>
<td>50%</td>
<td>Low-middle</td>
<td>N/R</td>
<td>ADHD had very high heritability when one twin had ADHD symptoms.</td>
</tr>
<tr>
<td>Hay, et al.</td>
<td>1997</td>
<td>Correlational twin study</td>
<td>Recruited same-sex twins from volunteer Australian twin registry; 1 twin with 5 ADHD symptoms</td>
<td>287</td>
<td>11-12 yrs</td>
<td>100%</td>
<td>39% prof.</td>
<td>41% paraprof</td>
<td>Attention deficit hyperactivity disorder (ADHD) (teacher ratings) moderate heritability &amp; shared environment influences. ADHD (mother ratings) had high heritability &amp; low shared environment influences.</td>
</tr>
<tr>
<td>Sherman, McGue, &amp; Lacano</td>
<td>1997</td>
<td>Correlational twin study</td>
<td>Recruited from birth records, Minnesota, 1977-1981</td>
<td>287</td>
<td>11-12 yrs</td>
<td>100%</td>
<td>N/R</td>
<td>N/R</td>
<td>Heritability of ADHD, Teacher Rating: $A = .73, C = 0, E = .27$. $\chi^2 (4, N = 181) = .51, p &lt; .97$</td>
</tr>
</tbody>
</table>

#### Genetic Influences on Other Behaviors—Harm Avoidance/Behavioral Inhibition, Empathy/Prosocial Behavior, & Difficult/Irritable/Oppositional Behavior

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Representativeness</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Heritability of Approach/Withdrawal was moderate, while environmental influences were near zero.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyphers, Phillips, et al.</td>
<td>1990</td>
<td>Concurrent twin study</td>
<td>Recruited from birth records, CO, 1982-1985, 15% of total live twin births</td>
<td>306</td>
<td>1-4 yrs</td>
<td>N/R</td>
<td>Low-middle</td>
<td>91.5% Cauc. 8.5% Other</td>
<td>Heritability of Approach/Withdrawal: $h^2 = .61, SE = .07, p &lt; .01, c^2 = .00$</td>
</tr>
<tr>
<td>Emde, Plomin, et al.</td>
<td>1992</td>
<td>Concurrent twin study</td>
<td>Recruited from CO Dept of Health report of twin births</td>
<td>200</td>
<td>14 mths</td>
<td>47%</td>
<td>Middle M = 14.5 yrs</td>
<td>1% A/F/A</td>
<td>Observation of behavioral inhibition, empathy, &amp; activity, and parent reports of shyness &amp; sociability showed moderate genetic influences.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Representativeness</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Heritability of Disorder, ADHD $h^2 = .91, c^2 = .13, t = 7.58, p &lt; .001$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goldsmith, Buss, et al.</td>
<td>1997</td>
<td>Meta-analysis of 7 studies</td>
<td>Recruited from 5, 135-143 twins</td>
<td>1,200</td>
<td>M’s = 1.75 yrs</td>
<td>N/R</td>
<td>N/R</td>
<td>N/R</td>
<td>Tempeanter &amp; Genetic, Enviromental Influences $ICRs = .59 MZ, .10 DZ sociability$ $ICRs = .57 MZ, .11 DZ emotionality$ $ICRs = .64 MZ, .08 DZ activity$ $ICRs = .66 MZ, .15 DZ impulsivity$ (meta-analysis, weighted intraclass correlations)</td>
</tr>
</tbody>
</table>
Family Factors and Processes

This section focuses on children's immediate social environment, including those who live with and influence them on a regular and personal basis. The primary focus is on qualities of family social interaction that either increase or reduce the risk of developing externalizing behavior problems and conduct disorder. These interaction qualities have been categorized into six domains: engagement/attentiveness versus disengagement/inattentiveness; validation versus invalidation; firm discipline and conflict management versus harsh, inconsistent discipline and escalation of conflict; effective problem solving versus ineffective problem solving; structure versus lack of structure in the learning environment; and modeling of norm-maintaining behavior versus modeling of antisocial behavior.

These domains were developed at a level sufficiently general to characterize interaction across development, spanning infancy, toddlerhood, middle childhood, early adolescence, and late adolescence. In many cases, the specific behaviors that reflect a given domain will look quite different across different periods of development, because it is important to take into account the growing sophistication and contributions of the child in family interactions.

It is also important to note that each domain of family interaction is shaped by and responds to a number of other factors that have received considerable attention, such as characteristics of individual family members (attitudes, presence of psychopathology) and characteristics of the social context (family structure and transitions). These factors can exert powerful effects. For example, research on family structure and transitions has shown that adolescents are at increased risk for conduct problems if they live in single-parent families or have experienced multiple transitions in family composition or residence (Aneshensel & Sucoff, 1996; Henry, Caspi, Moffitt, & Silva, 1996; Patterson, Forgatch, Yoerger, & Stoolmiller, 1998; Smith & Jarjoura, 1988). The reasons for these effects, however, are not clear. Indeed, some studies have shown these effects to be mediated by more immediate and malleable family processes (e.g., engagement, discipline) (Harnish, Dodge, & Valente, 1995). Although such factors help to identify potential target populations for interventions, the focus of the present review will be on family interaction qualities that either have been shown to be or may be malleable risk processes that would serve as targets for interventions.

Another important context for family interaction is that of culture. Indeed, some argue that processes within the family are the primary means by which culture is expressed. However, there is limited research on cultural differences in family processes related to externalizing behavior problems. The most serious gap is in research with Native American and Asian-American populations. Also, very few studies with diverse samples have included young children (ages 0-5). Finally, available research with African-American and
Hispanic populations is almost exclusively based on low-income, inner-city, high-risk samples. Where available, cultural generalizability and distinctions will be mentioned in the following review of family processes.

The first three domains of interaction—engagement, validation, and discipline/conflict—account for the lion’s share of studies to date. Many of the studies measured more than one aspect of parenting, and there is substantial evidence that engagement, validation, and discipline/conflict tend to correlate with each other. This point has not gone unnoticed in intervention work. It is typical for interventions targeting family processes to emphasize more than one process, such as engagement, validation, and discipline. Research in this area has not tested experimentally the effects of interventions aimed at distinct domains of interaction before building comprehensive preventive interventions.

**Engagement/Attentiveness Versus Disengagement/Inattentiveness**

In infancy and toddlerhood, the concept of engagement has been studied in terms of mother-infant responsiveness and infant attachment security (i.e., quality of the affective bond between infant and caregiver). Evidence indicates that the quality of early parental engagement predicts infant attachment security and that both parental engagement and infant attachment predict the development of early onset externalizing problems (Lyons-Ruth, Alpern, & Repacholi, 1993; Shaw, Keenan, & Vondra, 1994; van den Boom, 1994). Maternal unresponsiveness during infancy has been shown to predict later child externalizing behavior problems (Shaw et al., 1994). Also, there is evidence that avoidant and disorganized attachments during infancy predict later parental and teacher reports of externalizing behavior problems in preschool (Erickson, Sroufe, & Egeland, 1985; Shaw, Owens, Vondra, Keenan, & Winslow, 1996). This result also has been demonstrated among higher risk samples (e.g., low income, parental psychopathology) (Lyons-Ruth et al., 1993).

Additional work indicates that the relationship between parental responsiveness and infant attachment security and child behavior problems may be moderated by child gender and negativity. Several studies have found the impact of maternal responsiveness and attachment security to be more pronounced for boys than girls (Shaw et al., 1994). Other work indicates that it is the combination of infant negative emotionality and attachment security that places children at greater risk for externalizing behavior problems rather than attachment security alone (Shaw et al., 1996).

Several early intervention programs with a primary focus on changing mother-infant responsiveness and engagement have provided evidence suggesting that these early family processes are causal risk factors for child conduct problems. Through intervention, early maternal unresponsiveness can be changed, and this change, in some cases, was related to more secure infant attachment (van den Boom, 1994; van Ijzendoorn, Juffer, & Duyvesteyn, 1995; Wendland-Caro, Piccinini, & Millar, 1999). In addition, a well-known early intervention that included changes in early maternal engagement, validation, and problem solving (in addition to other forms of maternal support) showed long-term effects on reducing conduct problems in adolescence (Olds et al., 1998).

Interestingly, the issues of parental responsiveness and engagement have received less attention in preschool-aged children. The limited research suggests that lack of parental supervision and attention during this period of development predicts increased aggression and delinquency in grade school boys (Haapasalo & Tremblay, 1994).
Similarly, interventions that have addressed parental engagement (as well as validation, discipline, and problem solving) during toddlerhood have been successful in decreasing later childhood externalizing behavior problems (Sheeber & Johnson, 1994; Webster-Stratton, 1998; Webster-Stratton, Kolpacoff, & Hollinsworth, 1988). Thus, evidence exists that parental engagement continues to be a causal risk factor during toddlerhood.

In middle childhood and early adolescence, the concept of engagement has been studied in terms of the amount of time spent with the child, the degree of attentiveness, and monitoring of the child’s activities. Consistent evidence indicates that greater involvement, stronger focus of attention, and higher levels of monitoring are related concurrently to lower levels of conduct problems and predict lower risk for developing delinquency or criminal activity (Farrington & Hawkins, 1991; Fridrich & Flannery, 1995). There is some evidence that the lack of parental monitoring may be of particular importance in middle childhood; it was found to be a stronger predictor of early arrests (prior to age 15) than of later arrests (Farrington & Hawkins, 1991; Patterson & Yoerger, 1995). Also, some research indicates possible reciprocal effects between monitoring and delinquency in the period from 13 to 15 years, with weak monitoring promoting delinquency, which, in turn, further erodes monitoring (Jang & Smith, 1997).

Monitoring and involvement continue to show effects on conduct problems into adolescence. During middle and late adolescence, engaged parenting has been related to a reduction in antisocial behavior over time (Aseltine, 1995; Barnes, Farrell, & Banerjee, 1994; Simons, Johnson, Conger, & Elder, 1998). Although the total effect of engagement is low to moderate, the fact that it continues to have a direct impact is important in light of the impact of peer characteristics, personal characteristics, and other environmental factors operating at this period of development. Moreover, even small reductions in rates of serious conduct problems can yield very significant economic, health, and social benefits.

The concurrent and predictive associations of parental engagement during middle childhood and adolescence also are seen in research with African-American and Hispanic families (Forehand, Miller, Dutra, & Chance, 1997; Fridrich & Flannery, 1995). Although the effects range from mild to moderate, the consistency of findings indicates that poor parental engagement is a significant predictive risk factor for youth conduct problems in African-American and Hispanic families. A number of intervention trials have included parental monitoring among the family process variables to target in intervention (Patterson, Chamberlain, & Reid, 1982; Wahler, Cartor, Fleischman, & Lambert, 1993). During middle childhood and adolescence, results of these programs consistently show parental monitoring as a causal risk factor for reducing adolescent conduct problems (Bank, Marlowe, Reid, Patterson, & Weinrott, 1991; Tremblay et al., 1991), with stronger effects found when parents are encouraged to extend their supervision and monitoring to the peer and academic setting (Borduin et al., 1995). Although interventions that include improved parental monitoring also have shown effects for youth already involved in criminal behavior, stronger effects are found in therapeutic foster homes where parental monitoring is enhanced (Chamberlain & Reid, 1998).

Valiation Versus Invalidation

"Validation" refers to behavior likely to comfort children, increase their sense of security, or communicate that they are valued and valuable.

"Invalidation" refers to behavior that is physically painful, increases a sense of insecurity, or communicates to children that they are deficient, defective, or not valuable.
The impact of invalidation has been studied in infants by measuring their response to hostile and rejecting behavior. Evidence consistently shows that such parental behavior is correlated with externalizing behavior problems (Belsky, Hsieh, & Crnic, 1998; Renken, Egeland, Marvinney, Mangelsdorf, & Sroufe, 1989; Shaw et al., 1998). This effect appears to be as robust for girls as for boys, and for middle-SES as well as lower-SES families. It has been found in both European-American and African-American families. In much of the work, parental hostility precedes the onset of externalizing behavior problems. However, some research indicates that parent hostility and rejection may co-occur with child early disruptive behavior and negative emotionality, reflecting a more interactive and mutually escalating parent-child interaction pattern (Shaw et al., 1998).

Parental warmth and hostility continue to show moderate to strong effects during toddlerhood (Campbell, Breaux, Ewing, & Szumowski, 1986; Stocker, 1993) and middle childhood (Metzler, Biglan, Ary, & Li, 1998), and a persistent but lower effect in early adolescence (Conger & Conger, 1994; Conger, Ge, Elder, Lorenz, & Simons, 1994). Parental validation and warmth correlate and predict lower levels of externalizing behavior and delinquency (Feldman & Weinberger, 1994; Scaramella, Conger, & Simons, 1999; Stocker, 1993), while parental hostility, criticism, and rejection correlate with and predict disruptive youth behavior (Campbell et al., 1986; Conger & Conger, 1994). Although the effect sizes tend to be small, parental validation/invalidation has been shown to be a predictive risk factor across African-American, European-American, and Hispanic families (Brody, Stoneman, & Flor, 1996; Harnish et al., 1995; Knight, Virdin, & Roosa, 1994; Lindahl, 1998). Changes in parental warmth that accompany changes in parental engagement, monitoring, and discipline have been shown to lead to reductions in child and adolescent conduct problems (Webster-Stratton, 1998).

As in the case with young children, there is evidence to support interactive effects between parental hostility and middle childhood conduct problems. However, as children move into early adolescence, some evidence suggests that child conduct problems predict reductions in parental warmth but not the converse (Jang & Smith, 1997). Thus, in childhood and adolescence, modest to moderate predictive effects have been documented for parental invalidation and problem behavior. In addition, results of several intervention trials indicate that parental validation, when combined with other family processes, can be modified and serve as a causal risk factor for child and adolescent conduct problems (Borduin et al., 1995; McNeil, Eyberg, Eisenstadt, Newcomb, & Funderbunk, 1991; Patterson et al., 1982; Tremblay et al., 1991; Webster-Stratton, 1998; Webster-Stratton et al., 1988).

**Firm Discipline and Conflict Management Versus Harsh Discipline and Conflict Escalation**

"Firm discipline" refers to parental strategies for managing and controlling child behavior that consistently use rules and set limits, provide reasons for the rules, and offer nonpunitive consequences for rule breaking. "Harsh discipline" refers to nonabusive parental strategies for controlling child behavior that may involve inappropriate or inconsistent use of rules, little reasoning, and punitive or excessively negative reactions to rule breaking. Frequently, these parental strategies are studied within the context of parent-child conflict and the ability to manage calmly and resolve conflicts rather than engaging in coercion and escalating conflict.

As early as age 2, parental use of coercion has been identified as a predictive risk factor for
externalizing behavior problems at school entry (Crockenberg & Lourie, 1996; Fagot & Leve, 1998). Similarly, evidence indicates that negative parental control and harsh parental discipline during toddlerhood predict increased risk for child aggression and externalizing behavior problems one, two, and five years later (Campbell, 1994; Campbell, March, Pierce, Ewing, & Szumowski, 1991; Campbell, Pierce, Moore, Marakovitz, & Newby, 1996). Some of this work has examined the role of early child negative emotionality and finds that both child negativity and parental coercion predict child behavior problems (Kingston & Prior, 1995; Schwartz, Dodge, Pettit, & Bates, 1997).

In middle childhood, and in early and later adolescence, consistent relationships between highly conflictual, inconsistent, harsh, and restrictive parenting and child externalizing, delinquent, and antisocial behavior have been found in research using concurrent correlational designs (Knight et al., 1994; Sampson & Laub, 1994; Shumow, Vandell, & Posner, 1998). Predictive longitudinal studies also indicate that harsh and inconsistent parenting predicts later youth conduct problems (Patterson et al., 1998; Wasserman, Miller, Pinner, & Jaramillo, 1996). However, the direction of this influence may change over time, with a reciprocal relationship between disciplinary style and antisocial behavior in early and middle childhood, but fading reciprocity as the child moves into adolescence (with parental behavior predicting child behavior) (Cohen & Brook, 1995). Also, there is some evidence that the experience of parental punitive discipline may more strongly predict early childhood behavior problems than it does adolescent conduct problems (Feehan, McGee, Stanton, & Silva, 1991). It is important to note, however, that modest to moderate effects of parental discipline and parent-child conflict with externalizing behavior problems still are detected in adolescence (Neighbors, Forehand, & Bau, 1997; Steinberg, Lamborn, Darling, Mounts, & Dornbusch, 1994).

Evidence exists that the effects of parental discipline and conflict management may vary as a function of ethnicity and community context. Several studies have documented concurrent correlations and predictive risk between harsh or inconsistent parental discipline, or both, and child/adolescent conduct problems in African-American and Hispanic samples (Knight et al., 1994; Lindahl, 1998), but other studies have found different effects. For example, harsh discipline had different effects on European-American and African-American children. In a study of children in early elementary school, physical discipline (e.g., spanking) predicted increased externalizing behavior for European-American but not for African-American children (Deater-Deckard, Dodge, Bates, & Pettit, 1996). These differences, however, were significant only in the nonabusive range of corporal punishment; physically abusive parenting is associated with antisocial behavior for both African-American and European-American children (Dodge, Pettit, Bates, & Valente, 1995; Shumow et al., 1998). In adolescence, unilateral parental decision making was related to fewer conduct problems among African-American youth and was unrelated to externalizing behavior problems among European Americans, Hispanics, and Asian Americans (Lamborn, Dornbusch, & Steinberg, 1996).

Parental discipline and conflict management have been primary targets for many prevention programs. These trials have consistently documented that improvement in these aspects of parenting leads to improvements in child and adolescent conduct (Webster-Stratton, 1998). Beginning in toddlerhood, through middle childhood and adolescence, interventions that include improvement in parental discipline, in addition to monitoring and validation, show reductions in youth conduct problems and antisocial behavior (Bank et al., 1991; Patterson et al., 1998).
et al., 1982; Tremblay et al., 1991; Wahler et al., 1993). For adjudicated youth, improvements in parental discipline have stronger effects on youth conduct when parents are supported to intervene in peer and academic settings outside the home (Borduin et al., 1995). Also, therapeutic foster home placements that emphasize effective parental discipline have shown significant reductions in delinquency among adjudicated youth (Chamberlain & Reid, 1998). Thus, there is substantial evidence that parental discipline and conflict management are causal risk factors for child and youth externalizing behavior problems and conduct problems.

Family Problem Solving

"Family problem solving" refers to behaviors that aid in exploring a given problem and that generate potential solutions. For young children this also includes parental exploration of problems, helping to give structure to the situation and encourage prosocial means of understanding the situation. Although a relatively large body of research has examined basic family problem solving, little of this research has been directed toward understanding externalizing behavior problems. This is striking because many family-based interventions use training in problem solving as part of the intervention package.

The limited work that has been conducted suggests that parental problem solving, from the early years of child development through adolescence, is correlated with less problematic child and adolescent behavior. In early childhood, parental exploration of child emotional experiences, particularly anger and sadness, has been correlated with fewer behavior problems (Hooven, Gottman, & Katz, 1995; Zahn-Waxler, Iannotti, Cummings, & Denham, 1990). There is some evidence that poorer family problem solving in middle childhood may predict later delinquent behavior (Coughlin & Vuchinich, 1996; Vuchinich, Wood, & Vuchinich, 1994). However, it tends to be associated with other problems in parenting (e.g., engagement, discipline) and, in general, accounts for less of the variance in externalizing behavior outcomes than engagement, discipline, and validation. Some research indicates, however, that changes in family problem solving can lead to reductions in child aggression (Sayger, Horne, Walker, & Passmore, 1988).

Parental Structuring of the Learning Environment

Parents and families can structure children's time in ways that enhance access to learning opportunities in the home, neighborhood, or community and protect children from negative environmental influences. Although this concept is theoretically and practically relevant, there is little research regarding the influence of family structuring of children's time and activities on externalizing behavior problems.

Research to date, conducted with school-aged children and adolescents, suggests that families that encourage involvement with school and maintain contact with the school have children who show fewer problematic behaviors than do families that are less involved with school (Jenkins, 1997; Ketsetzis, Ryan, & Adams, 1998). Also, parents who provide firm discipline and monitoring of their adolescents tend to have children who become involved with peers with similar parental discipline styles (Fletcher, Darling, Steinberg, & Dornbusch, 1995). Being involved in networks of this type appears to be protective against delinquency, because parental monitoring protects against association with deviant peers (Aseltine, 1995). These few findings suggest that parental structuring correlates with child conduct; however, more research is needed to determine the
predictive and possible causal relationship with conduct problems.

**Family Modeling of Norm-Maintaining Versus Antisocial Behavior**

Family modeling of norm-maintaining behavior involves exposing the child to prosocial behavior versus rule-breaking and antisocial behavior by other family members. Three different types of evidence can be used to support the contribution of family modeling in externalizing behavior problems.

A sizable body of literature has examined whether the presence of antisocial behavior, delinquency, or criminal behavior in other family members places children at increased risk for similar behaviors. Much of this work has found increased risk when mothers, fathers, or siblings were rated as more antisocial or had a history of delinquency or criminal behavior (Farrington & Hawkins, 1991).

It is not known whether this increased risk stems from modeling; from poorer parental discipline, monitoring, and engagement; or from sharing some common genetic predisposition.

A second body of literature concerns the relationship between marital conflict and child outcomes, where greater marital discord is assumed to model behaviors relevant to externalizing behavior problems in children. Research over three decades documents modest to moderate correlations between parental conflict and children's externalizing behavior problems. Younger and older children appear to be comparably influenced by parental conflict (Brody et al., 1996; Jouri les et al., 1991). Family conflict in more than one area (i.e., parent-parent, parent-child, sibling-sibling) is correlated with child aggression (Schwartz, Dodge, Pettit, & Bates, 1997). This pattern continues to be seen among adolescents, where greater marital discord is modestly correlated with increased delinquency and problem behavior in both boys and girls (Davies & Windle, 1997; Mekos, Hetherington, & Reiss, 1996; Neighbors et al., 1997). Again, it is not clear whether these effects are due to modeling, disruptions in parenting behavior, increased physiological dysregulation, or some combination of these factors.

A third, more poorly documented area of literature focuses on parental values, attitudes, or beliefs concerning deviance and law-abiding behavior. These few studies have found evidence of a correlation between parental antisocial attitudes and externalizing behavior problems/youth offending (Gorman-Smith, Tolan, Loeber, & Henry, 1998). However, additional research is needed to examine these relationships for younger children and to support predictive relationships.

**Implications for Malleable Family Risk Factors and Developmental Processes**

It is clear from the research that a number of aspects of family interaction can increase the risk for developing externalizing behavior problems from early childhood through adolescence. Specifically, lower levels of engagement, greater use of invalidation, and harsh and inconsistent discipline have all been identified as causal risk factors for the development of externalizing behavior problems. Although parental problem solving, structuring of the learning environment, and modeling of normative behavior show some correlation with the development of conduct problems, research on these processes has not advanced to a level where inferences about predictive or causal risk can be made soundly.

It is important to note that the three most frequently studied family processes—engagement,
validation, and discipline—also tend to correlate strongly with one another. This is to say that parents who are less engaged also tend to be less validating and to use harsher and less consistent discipline. Thus, it is not surprising that empirically driven family-focused intervention trials typically target all three processes. These trials have provided evidence for the malleability of these processes and the causal nature of the relationship by demonstrating that intervention can substantially decrease child externalizing behavior problems. Interventions beginning during pregnancy and extending into the second year of life have shown consistent effects on these parenting processes. Indeed, one such early intervention trial has shown long-term effects on serious delinquent behavior during adolescence. Also, a number of randomized trials have tested interventions aimed at families of preschoolers and young children in elementary school. These trials have consistently shown both immediate and longer term reductions in externalizing behavior problems. Similarly, in later childhood and adolescence, randomized trials aimed at family processes have shown effects.

Given these important intervention results, it is imperative that strategies for enhancing family interactions be transported and implemented in community services and mental health practice. Research is needed that identifies opportunities within communities for providing effective interventions, explains how to provide the interventions cost-effectively, and develops community infrastructure and buy-in for sustaining the interventions. In many cases, this process will involve building collaborative relationships with community leaders and policymakers, as well as people in other scientific disciplines such as community psychology, sociology, and social work.

In addition to the effectiveness and dissemination research needed on established risk factors and interventions, further research is needed on the predictive and potentially causal role of family problem solving, structuring of the learning environment, and family modeling. Do these processes significantly contribute to conduct problems over and above the effects of engagement, validation, and discipline? Are there developmental periods in which some family processes are more influential than others? When family processes are disrupted, does this increase the child’s vulnerability to being affected by factors in other domains, such as characteristics of the child, the peer group, the school, and the neighborhood? This last question is particularly challenging, given the wide array of factors that could be influential at any given time. However, considering these interaction effects—which involve the child, the family, the peer group, and the broader social environment—may prove to be the most insightful for developing interventions for real-world settings.

Whether conducting future research on the effectiveness and dissemination of interventions or studying basic processes of family problem solving, structuring of the learning environment, or modeling, scientists must address cultural issues. The research to date on cultural effects has suggested some interesting distinctions, particularly in the study of parental discipline. It is essential for future research on family processes relevant to conduct problems to include diverse ethnic samples and methodologies sensitive to potential cultural distinctions. These efforts will provide not only a richer empirical understanding of how risk factors are similar or differ across ethnic groups but also a much stronger base on which to develop interventions relevant to the world’s diverse population.
References


### Table 2: Family Factors and Processes—Research Summaries
#### Family Structure and Transitions

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year Design</th>
<th>Design</th>
<th>Population</th>
<th>Mean Age</th>
<th>% Male</th>
<th>% Female</th>
<th>% African American</th>
<th>% Asian American</th>
<th>% Caucasian</th>
<th>% Hispanic</th>
<th>% Other</th>
<th>SES**</th>
<th>Ethnicity</th>
<th>Result</th>
<th>Key Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aneshensel &amp; Sucoff</td>
<td>1996</td>
<td>Concurrent</td>
<td>sample of Los Angeles County, CA-ethnic tract, blocks, &amp; households; screened for 12-17-year-old permanent residents &amp; Latino youth over-represented; non-Hispanic whites under-represented</td>
<td>3 &gt; 18 yrs</td>
<td>100%</td>
<td>93%</td>
<td>39% 1-3</td>
<td>22% 4-6</td>
<td>11% African American</td>
<td>3% 7-9</td>
<td>4% Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Henry, Caspi, et al.</td>
<td>1996</td>
<td>Prospective</td>
<td>Population: consecutive births, spring 1972-1973, Dunedin, New Zealand</td>
<td>475</td>
<td>100%</td>
<td>92%</td>
<td>39% 1-3</td>
<td>22% 4-6</td>
<td>11% African American</td>
<td>3% 7-9</td>
<td>4% Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patterson, Forgatch, et al.</td>
<td>1998</td>
<td>Prospective</td>
<td>Population: recruited from all 4th-grade boys in 11 randomly selected schools, neighborhoods with high delinquency rates, metro area, mid-size Pacific NW city</td>
<td>206</td>
<td>100%</td>
<td>96%</td>
<td>39% 1-3</td>
<td>22% 4-6</td>
<td>11% African American</td>
<td>3% 7-9</td>
<td>4% Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smith &amp; Jarjoura</td>
<td>1988</td>
<td>Concurrent</td>
<td>Population: random sample, 200 households, 3 SMSAs: Tampa-St. Petersburg, FL, St. Louis, MO, &amp; Rochester, NY, 1977; data aggregated by neighborhood</td>
<td>57</td>
<td>N/R</td>
<td>N/R</td>
<td>N/R</td>
<td>N/R</td>
<td>N/R</td>
<td>N/R</td>
<td>N/R</td>
<td></td>
<td></td>
<td>Violent crime rates (residents) were predicted by the interaction of low income (under $5,000) &amp; residential mobility, % single-parent households, population density, &amp; % age 12-20 yrs, taking into account low income, residential mobility (main effects), % non-white, % living alone, racial heterogeneity, &amp; location.</td>
<td>Violent Crime Rates R² = .53</td>
</tr>
</tbody>
</table>

Note: Please check "Ethnic Minority Populations" and "Treatment & Preventative Interventions" sections for additional citations.

* > indicates that data at first age are used to predict data at second age.

** Unless otherwise indicated, income is reported in yearly amounts.
## Family Characteristics—Engagement/Disengagement
### Ages 0–3

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year Design</th>
<th>Size</th>
<th>Age</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Erickson, Sroufe, &amp; Egeland</td>
<td>1985 Prospective longitudinal</td>
<td>96</td>
<td>12+ 60 mths</td>
<td>54%</td>
<td>Low</td>
<td>Anxious/avoidant attached children at 12 &amp; 18 mths were rated by preschool teachers as more hostile than anxious/resistant children &amp; more exhibitionistic/impulsive &amp; less compliant than secure or anxious/resistant children.</td>
</tr>
<tr>
<td>Lyons-Ruth, Ablern, &amp; Repachol</td>
<td>1993 Prospective longitudinal</td>
<td>62</td>
<td>18 mths &gt; 5 yrs</td>
<td>60%</td>
<td>Low</td>
<td>Infant attachment security, maternal home hostile-instructive behavior during infancy, &amp; maternal history of psychosocial problems* predicted teacher ratings of preschool children's deviant hostile behavior toward peers, controlling for classmate's behavior. Children with disorganized infant attachment were rated more hostile than securely attached children. Current depression, hx child maltreatment, psychiatric hospitalization (controlling for classmate behavior score) (ANOVA, Student Newman-Keuls post hoc comparisons)</td>
</tr>
<tr>
<td>Shaw, Keenan, &amp; Vondra</td>
<td>1994 Prospective longitudinal</td>
<td>82</td>
<td>12 mths &gt; 3 yrs</td>
<td>59%</td>
<td>Low</td>
<td>Maternal responsiveness (observed at 12 mths) was correlated with maternal ratings of aggression at age 2 &amp; externalizing at age 3 for boys but not girls. Multivariate analyses found that maternal responsiveness &amp; infant noncompliance at 18 mths predicted age 2 aggression for boys after accounting for infant persistence. Maternal responsiveness interacted with boys' aggression at age 2, &amp; marginally predicted maternal ratings of externalizing at age 3. No significant predictors were found for girls.</td>
</tr>
<tr>
<td>Shaw, Owens, et al.</td>
<td>1996 Prospective longitudinal</td>
<td>77</td>
<td>12 mths &gt; 5 yrs</td>
<td>59%</td>
<td>Low</td>
<td>Aggression at age 5 was predicted by observed disorganized attachment at 12 mths, maternal ratings of infant difficulty during yr 2, &amp; the attachment by difficulty interaction. Children exhibiting disorganized attachment &amp; high difficulty had higher aggression scores than children with 1 or neither risk factor.</td>
</tr>
</tbody>
</table>

### Key Statistics
- Hostility $F = 3.36, p = .04$
- Impulsivity $F = 5.32, p = .008$
- Compliance $F = 3.53, p < .04$
- AA = anxious/avoidant, AR = anxious/resistant (ANOVA, Student Newman-Keuls post hoc comparisons)

### Notes
- Preschool Hostile Behavior, Teacher Ratings
- Multivariate, Boys $F (3, 41) = 4.09, p = .02$
- Multivariate, Girls $F (3, 41) = 4.09, p = .02$
- Externalizing Age 3, Maternal Responsiveness 12 Mths $r = -.05, p = ns$
- Global aggression 12 mths $r = -.20, p = .005$
- Hierarchical multiple regression
Family Characteristics—Engagement/Disengagement

**Ages 0–3**

*Key Statistics*

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</tr>
</thead>
<tbody>
<tr>
<td>47%</td>
<td>Low</td>
<td>Compared to controls, dyads in the maternal responsiveness intervention group showed effects on maternal &amp; infant interactive behavior (mother more responsive, visually attentive, stimulating, &amp; controlling of behavior while infants more self-soothing, sociable, &amp; exploring), infant exploration (more sophisticated exploring &amp; less mouthing), &amp; infant attachment (IV group more likely to be securely than insecurely attached at 12 mths).</td>
</tr>
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*Van den Boom* 1994 Intervention random assignment followup 1 interactions, followup 2 attachment

**Ages 4–6**

*Key Statistics*

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<tbody>
<tr>
<td>948</td>
<td>Low</td>
<td>Boys classified as nonfighters from ages 6–12 reported more supervision, less punishment, &amp; fewer rules at ages 10–12 than fighters. High supervision, low fighting behavior between ages 10–12, low punishment, &amp; low family adversity reduced the likelihood of being involved in delinquency at age 13 &amp; 14.</td>
</tr>
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</table>

*Haapasalo & Tremblay* 1994 Prospective longitudinal 8 yrs

**Ages 7–13**

*Key Statistics*

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<tr>
<td>411</td>
<td>Low</td>
<td>Low paternal involvement in leisure activities ages 8–10 was the strongest predictor of early convictions (10–13) &amp; persistence of offending between ages 21 &amp; 32. High troublemaking, authoritarian parents, poor psycho-motor skills, &amp; convicted parent also predicted early convictions while heavy drinking, low commitment to school, poor housing, low verbal IQ, &amp; unemployment predicted persistence. Poor parental supervision increased the likelihood of a criminal conviction.</td>
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*Farrington & Hawkins* 1991 Prospective longitudinal 24 yrs

**Ages 14+**

*Key Statistics*

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<tbody>
<tr>
<td>838</td>
<td>Low</td>
<td>Parental supervision was associated with lower delinquency at time 1 &amp; change in delinquency between times 1 &amp; 2. Delinquency at time 1 was associated with reduced change in perceived supervision between times 1 &amp; 2. The model induced affective bias at times 1 &amp; 2.</td>
</tr>
</tbody>
</table>

*Jong & Smith* 1997 Prospective longitudinal 1.5 yrs

(see Validation* section for effective test results) (multivariate structural equation model)
### Family Characteristics—Engagement/Disengagement

#### Ages 7–13

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<th>Age</th>
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<tbody>
<tr>
<td>Patterson &amp; Yoerger</td>
<td>1995</td>
<td>Prospective longitudinal 4 yrs</td>
<td>Population recruited from 2 birth cohorts of all 4th-grade boys attending randomly selected schools in 10 neighborhoods with highest delinquency rates, metro area, midsize OR city</td>
<td>206</td>
<td>10-11 yrs</td>
<td>100%</td>
<td>Low</td>
<td>99% Caucasians</td>
<td>Poor parental monitoring predicted early arrest (ages 10-14). Monitoring did not predict early arrest when antisocial behavior, SES, parent transitions, discipline, unsupervised time, &amp; deviant peers were taken into account.</td>
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#### Ages 14–19

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</thead>
<tbody>
<tr>
<td>Aseltine</td>
<td>1995</td>
<td>Prospective longitudinal 2 yrs</td>
<td>Convenience probability sample of 9th-11th graders from the only public high schools in 3 communities, Boston, MA, metro area</td>
<td>435</td>
<td>9th-10th gr</td>
<td>43%</td>
<td>Low-middle</td>
<td>&lt; 2% Asian</td>
<td>According to high school youths' self-reports, delinquency at time 1 predicted lower attachment to mother &amp; father 1 yr later (time 2), &amp; attachment to mother at time 2 was associated with less delinquency the following year (time 3). Parental monitoring at time 2 was associated with reduced exposure to delinquent peers at time 3.</td>
</tr>
<tr>
<td>Barnes, Farrell, Banerjee</td>
<td>1994</td>
<td>Prospective longitudinal 1 yr</td>
<td>Population recruited adolescents &amp; families via random digit dialing, Buffalo, NY, metro area; oversampled African-American families</td>
<td>658</td>
<td>13-16 yrs</td>
<td>45%</td>
<td>Low-middle</td>
<td>30% African-American</td>
<td>Adolescents' reports of parental monitoring, mother support, &amp; positive communication with mother were associated with fewer deviant behaviors 1 yr later, after accounting for race, gender, age, parents' substance abuse, family structure, mother's education, family income, youth religion, &amp; religiosity.</td>
</tr>
<tr>
<td>Simons, Johnson, et al.</td>
<td>1998</td>
<td>Prospective longitudinal 2 yrs</td>
<td>Population recruited from all 7th-grade students in 34 public &amp; private schools in communities ≤ 6,500, 8 counties in N. Central Iowa, 1989; 2-parent families; Iowa Youth &amp; Families Project</td>
<td>179</td>
<td>7th &gt; 9th gr</td>
<td>100%</td>
<td>Low-upper</td>
<td>100% Caucasian</td>
<td>Youths' reports of quality parenting (low hostility &amp; harsh discipline, high monitoring &amp; consistency) mediated the relationship between observed &amp; parent-reported oppositional/defiant behavior in late childhood &amp; self-reports of delinquency in early adolescence. High-quality parenting led to a relative decline in problem behavior over time, taking into account deviant peers.</td>
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#### Key Statistics

- **Parental Monitoring & Early Arrest, Ages 10–14**
  - Univariate $\beta = -0.64, p < .01$
  - Multivariate $\beta = -0.05, p = ns$
  - $\beta = 1.50, p < .001$ antisocial behavior
  - $\beta = 0.48, p < .05$ parental transitions
  - (logistic regression analysis)

- **Parental Monitoring**
  - $F = 58.7, p < .001$

- **Mother Support**
  - $F = 33.5, p < .001$

- **Positive Communication**
  - $F = 15.1, p < .001$
  - (controls: race, gender, age, parents' substance abuse, family structure, mother's education, family income, youth religion, & religiosity; MANCOVA, means not reported in paper)

- **Youths' reports of quality parenting (low hostility & harsh discipline, high monitoring & consistency)**
  - $r^2 (60) = 0.91, p = .792; AGFI = .96$
  - $p = -0.135$ attachment mom T2—delinquent T1–T3
  - $p = -0.137$ delinquency T1—attachment mom T2
  - $p = -0.197$ delinquency T1—attachment dad T2
  - $p = -0.185$ parent monitoring T2—del peer T1–T3
  - (all $p's < .05$)
  - (covariance structure model)

- **Parental Monitoring**
  - $F = 58.7, p < .001$

- **Mother Support**
  - $F = 33.5, p < .001$

- **Positive Communication**
  - $F = 15.1, p < .001$
  - (controls: race, gender, age, parents' substance abuse, family structure, mother's education, family income, youth religion, & religiosity; MANCOVA, means not reported in paper)

- **Youths' reports of quality parenting (low hostility & harsh discipline, high monitoring & consistency)**
  - $r^2 (22) = 0.96, GFI = .962, AGFI = .96$
  - $p = -0.21$ opp/def behavior T1—quality parenting T2
  - $p = -0.27$ behavior T1—school commitment T2
  - $p = -0.20, p = .06$ behavior T1—deviant peers T2
  - $p = -0.21, quality parenting T2—delinquency T3
  - $p = -0.21$ school commitment T2—delinquency T3
  - $p = -0.42$ deviant peers T2—delinquency T3
  - $p = -0.10, p = ns$ behavior T1—delinquency T3
  - (all $p's < .05$ unless otherwise noted)
  - (structural equation modeling)
Family Characteristics—Engagement/Disengagement
Ethnic Minority Populations

Forehand, et al., 1997 Concurrent
correlational

Miller, et al., 1995 Concurrent
group comparisons, correlational

Fridrich & Flannery, 1995 Concurrent
group comparisons, correlational

Representativeness

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<tr>
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<td>907</td>
<td>14-16 yrs</td>
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<td>1995 Concurrent</td>
<td>recruited from all 7th &amp; 8th graders in 3 schools, 1 school district, midsize Southwestern city; no ESL classes; 81% participation rate</td>
<td>1,021</td>
<td>7th &amp; 8th gr</td>
<td>M = 12.7 yrs</td>
<td>52%</td>
<td>Low-middle</td>
<td>24% Cau</td>
<td>M = $32,272 ($17k-$48.6k)</td>
<td>63% Cau</td>
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### Family Characteristics—Engagement/Disengagement

#### Treatment & Preventative Interventions

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<td>1998</td>
<td>Intervention random assignment</td>
<td>1994</td>
<td>Intervention random assignment</td>
<td>2-mth followup</td>
<td>van Ijzendoorn, 1995 Meta-analysis</td>
<td>Luffer, intervention &amp; Duyvesteyn</td>
<td>11 mothers recruited pregnant women from free clinics &amp; private obstetricians, semi-rural, part of upstate NY</td>
<td>315</td>
<td>Birth &gt; 15 yrs</td>
<td>52% Low-middle</td>
<td>88% Caucasian</td>
<td>Adolescents whose mothers received prenatal or pre- &amp; postnatal nurse visits at home in addition to prenatal &amp; well-child care had fewer arrests &amp; conviction probation violations than adolescents whose mothers were in the comparison group (prenatal &amp; well-child care without nurse visits). Intervention effects were found for a subsample of low SES, unmarried mothers as well. Intervention groups did not differ on parent, child, or teacher reports of adolescents' behavior problems. The intervention targeted parental engagement, validation, &amp; problem solving.</td>
<td>18 mths &gt; 10 mths</td>
<td>N/R</td>
<td>10 mths</td>
<td>1-2 Dutch</td>
</tr>
<tr>
<td>Sheeber &amp; Johnson</td>
<td>1994</td>
<td>Intervention random assignment</td>
<td>3-5 yrs</td>
<td>60% Middle</td>
<td>N/R Caucasian</td>
<td>Mothers of temperamentally difficult children who attended a temperament-focused parent-training group reported fewer child behavior problems &amp; greater attachment to their children at post-treatment &amp; 2-mth followup compared to wait-list controls.</td>
<td>N/R</td>
<td>M = 16 yrs</td>
<td>65% low T1</td>
<td>12% N/R</td>
<td>Adolescents whose mothers received prenatal or pre- &amp; postnatal nurse visits at home in addition to prenatal &amp; well-child care had fewer arrests &amp; conviction probation violations than adolescents whose mothers were in the comparison group (prenatal &amp; well-child care without nurse visits). Intervention effects were found for a subsample of low SES, unmarried mothers as well. Intervention groups did not differ on parent, child, or teacher reports of adolescents' behavior problems. The intervention targeted parental engagement, validation, &amp; problem solving.</td>
<td>40</td>
<td>10 mths &gt; 5 mths</td>
<td>2 yrs</td>
<td>N/R</td>
<td>1 Ahm &amp; Hope</td>
<td>1 Hip</td>
</tr>
</tbody>
</table>

#### Key Statistics

- Total Sample, Arrests
- Total Sample, Convictions
- High Risk, Low SES & Unmarried, Arrests
- High Risk, Low SES & Unmarried, Convictions
- Externalizing, Maternal Report
- Child Behavior Problems, Maternal Report
- Parental Sensitivity

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Description</th>
<th>p-value</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p's = .005</td>
<td>tx preg &amp; tx infant</td>
<td>.005</td>
<td>(all models adjusted for child's gender, maternal age, ed, SES, work, marital status, support from significant other, &amp; paternal public assistance)</td>
</tr>
<tr>
<td>p's &lt; .001</td>
<td>tx preg &amp; tx infant</td>
<td>&lt; .001</td>
<td></td>
</tr>
<tr>
<td>p's = .02</td>
<td>tx preg &amp; tx infant</td>
<td>.02</td>
<td></td>
</tr>
<tr>
<td>p's = .47</td>
<td>tx preg &amp; tx infant</td>
<td>.47</td>
<td></td>
</tr>
<tr>
<td>F (1, 35) = 9.33, p &lt; .01</td>
<td>post-treatment</td>
<td>9.33</td>
<td></td>
</tr>
<tr>
<td>F (1, 32) = 6.52, p &lt; .01</td>
<td>followup (fu)</td>
<td>6.52</td>
<td></td>
</tr>
<tr>
<td>M's = .66</td>
<td>pre, .06</td>
<td>.66</td>
<td></td>
</tr>
<tr>
<td>M's = .63</td>
<td>pre, .61</td>
<td>.63</td>
<td></td>
</tr>
<tr>
<td>M's = .11</td>
<td>pre, .08</td>
<td>.11</td>
<td></td>
</tr>
<tr>
<td>M's = .15</td>
<td>pre, .08</td>
<td>.15</td>
<td></td>
</tr>
<tr>
<td>M's = .58</td>
<td>pre, .83</td>
<td>.58</td>
<td></td>
</tr>
<tr>
<td>M's = .15</td>
<td>pre, .08</td>
<td>.15</td>
<td></td>
</tr>
<tr>
<td>Effect size d = .58, p = n/r, range = -0.1 – 2.62</td>
<td>Parental Sensitivity</td>
<td>.58</td>
<td></td>
</tr>
<tr>
<td>Effect size d = .17, p = .036, range = -.42 – .97</td>
<td>Children's Attachment</td>
<td>.17</td>
<td></td>
</tr>
</tbody>
</table>

---

Bank et al. (1991), Bordui et al. (1995), Chamberlain & Reid (1998), Patterson et al. (1982), Tremblay et al. (1991), and Wahler et al. (1993): see "Discipline and Conflict, Treatment & Preventive Interventions"
Family Characteristics—Engagement/Disengagement
Treatment & Preventative Interventions

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year Design</th>
<th>Representativeness</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wendland-Cera, Piccinini, &amp; Millar</td>
<td>1999 Intervention</td>
<td>Convenience: volunteer mothers &amp; their newborns, Porto Alegre, Brazil</td>
<td>36</td>
<td>2-3 days &gt; 1 mth</td>
<td>44%</td>
<td>Low</td>
<td>100% Brazil</td>
<td>Mothers of newborns who took part in an intervention designed to increase sensitivity showed greater responsiveness to infant vocalizing &amp; looking at mother &amp; less unresponsiveness to infant cries, vocalizations, &amp; involuntary behaviors during home observations at 1 mth of age, compared to mothers in the control group who had received basic caregiving instructions. Maternal education, paternal occupation, &amp; infant birth weight were controlled.</td>
</tr>
<tr>
<td>Belsky, Hsieh, &amp; Cmic</td>
<td>1998 Prospective longitudinal</td>
<td>Convenience: recruited from birth announcements, semi-rural university town, central PA, firstborn son from intact families</td>
<td>125</td>
<td>10 mths &gt; 37 mths</td>
<td>100%</td>
<td>Low-upper</td>
<td>N/R</td>
<td>Observed negative mothering (intrusiveness &amp; negative affect), during the 2nd &amp; 3rd yrs of life predicted age 3 parent reports of externalizing problems for highly negative infant boys. Positive mothering was not related to externalizing.</td>
</tr>
</tbody>
</table>

Key Statistics

- Wilks' Λ = .356 (synchronous-asynch scores)
  - F (2, 30) = 27.06, p < .01
  - Infant vocalizes, mother vocalizes
    - M's = 11.47 tx, 4.74 ctrl free-play
    - M's = 13.23 tx, 6.00 ctrl bathing
  - Infant vocalizes, mother unresponsive
    - F (1, 31) = 3.98, p < .05 group x situation
    - F (1, 31) = 14.54, p < .001 group
    - M's = .35 tx, 2.37 ctrl free-play
    - M's = 1.70 tx, 4.53 ctrl bathing
  - (see study for additional significant effects)

- (p's = ns, covariates: maternal education, paternal occupation, infant birth weight)
  - (ANCOVAs, Tukey test when needed)

- Negative Mothering, 2nd Year
  - R = .07, A_r = .07, S_F = 4.45, p < .05
  - β = −.07, p = ns

- Negative Mothering, 3rd Year
  - R = .16, A_r = .08, S_F = 5.46, p < .05
  - β = .40, p < .05
  - (p's = ns: positive mothering)
  - (regression)

- Aggression, Teacher Ratings, Boys
  - R^2 = .33, F (9, 66) = 3.62
  - Developmental history set (attachment & affect)
    - R^2 = .17, F (4, 91) = 4.69, p < .01
    - Maternal hostility set
      - R^2 = .19, A_r = .02, F (2, 97) = 11.73, p < .01
    - Life stress set
      - R^2 = .18, β_r = .02, F (3, 74) = 5.17, p < .01
    - Aggression, Teacher Ratings, Girls
      - R^2 = .25, F (9, 56) = 2.05, p < .05
      - Developmental history set (attachment & affect)
        - R^2 = .08, F (4, 76) = 1.60, p = .18
      - Maternal hostility set
        - R^2 = .11, A_r = .04, F (2, 77) = 4.83, p < .01
      - Life stress set
        - R^2 = .17, A_r = .03, F (3, 66) = 3.01, p < .03
        - (multiple regressions with sets)
### Family Characteristics—Validation/Invalidation

#### Ages 0–3

**Authors**
- Shaw, Winslow, et al.
- Campbell, Breaux, et al.

**Year Design**
- 1998 Prospective longitudinal
- 1986 Prospective
- 1994 Prospective

**Representativeness**
- Convenience: high-risk mothers in WIC Nutritional Supplement Program, metro area of Pittsburgh, PA, cohort 2
- Source specific/convenience: high-risk mothers in WIC Nutritional Supplement Program, metro area of Pittsburgh, PA, cohort 2
- Convenience: recruited parents of children with behavior problems & nonsymptomatic controls from doctor’s offices & child groups

**Size**
- Ages 0-3: 103
- Ages 4-6: 51-63
- Ages 7-13: 378

**Age**
- Ages 0-3: 3.5 yrs
- Ages 4-6: 3 yrs
- Ages 7-13: 12 yrs

**% Male**
- Ages 0-3: 59%
- Ages 4-6: 60%
- Ages 7-13: 48%

**SES**
- Ages 0-3: Low
- Ages 4-6: Low-upper
- Ages 7-13: Low-middle

**Ethnicity**
- Ages 0-3: 39% African American (AA), 57% Caucasian (Cauc), < 4% Hispanic (Hispanic)
- Ages 4-6: 60% Low-upper
- Ages 7-13: 100% Caucasian

**Result**

For boys, age 1 high maternal responsiveness & age 2 maternal rejection predicted age 3.5 mother reports of child externalizing. For boys, age 2 maternal rejection & child noncompliance predicted mother-rated externalizing at 3.5 yrs, accounting for age 2 externalizing. For girls, the interaction of maternal rejection & child noncompliance predicted mother-rated externalizing at 3.5 yrs, accounting for age 2 externalizing.

#### Ages 4–6

**Source specific/convenience**
- Recruited parents of children with behavior problems & nonsymptomatic controls from doctor’s offices & child groups

**Convenience**
- Recruited parents of children with behavior problems & nonsymptomatic controls from doctor’s offices & child groups

**Size**
- Ages 4-6: 51-63

**Age**
- Ages 4-6: 8.1 yrs

**% Male**
- Ages 4-6: 60%

**SES**
- Ages 4-6: Low-upper

**Ethnicity**
- Ages 4-6: 60% Low-upper

**Result**

Negative & directive maternal behavior at age 3 showed increasing correlation with maternal ratings of child aggression at ages 3, 4, & 6 after controlling for SES, family stress, & number of siblings.

#### Ages 7–13

**Population**
- Ages 7-13: 7th graders in all public & private schools in 8 adjacent rural counties, Iowa, 1989; region had experienced economic decline

**Size**
- Ages 7-13: 378

**Age**
- Ages 7-13: 12.6 yrs

**% Male**
- Ages 7-13: 48%

**SES**
- Ages 7-13: Low-middle

**Ethnicity**
- Ages 7-13: 100% Caucasian

**Result**

Maternal & paternal hostility toward the adolescent mediated the relationship between parent-adolescent financial conflict & adolescent externalizing for boys & girls.

### Key Statistics

#### Externalizing Age 3.5, Boys, Mother Report

- Overall F (7, 76) = 3.57, p < .003
- R² = .25, A² = .06, p = .90

#### Externalizing Age 3.5, Girls, Mother Report

- Overall F (8, 82) = 15.86, p < .001
- R² = .62, A² = .02, p = .93

#### Child Aggression Predicted by Maternal Behavior

- Age 3 (n = 63)
  - R = -.55, A² = .06, F = 5.02, p < .05
  - R = .58, A² = .14, F = 9.61, p < .05

- Age 6 (n = 52)
  - R = .46, A² = .16, F = 9.79, p < .05

### Further Details

- Maternal & paternal hostility—externalizing
  - Mother Model: g*(138) = 261.5, G² = .32
  - Father Model: g*(138) = 227.6, G² = .94

- Structural equation models
Family Characteristics—Validation/Invalidation

Ages 7–13

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year Design</th>
<th>Population:</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metzler,</td>
<td>1998 Prospective longitudinal 6 mths</td>
<td>Convenience/</td>
<td>174</td>
<td>5th–7th gr</td>
<td>53% Low-middle</td>
<td>2% AfrA</td>
<td>Positive family relations &amp; positive reinforcement by parents (latent variables based on 3 child reports, 6 mths apart) were associated with lower antisocial behavior at wave 3.</td>
<td></td>
</tr>
<tr>
<td>Biglan, et al.</td>
<td>1998 Prospective longitudinal 6 mths</td>
<td>source specific: students randomly sampled &amp;/or rated by teachers as at risk; public schools in 2 small Pacific NW communities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conger &amp; Conger</td>
<td>1994 Prospective longitudinal 2 yrs</td>
<td>Population:</td>
<td>359</td>
<td>7th &gt; 9th gr &amp; sibling pairs</td>
<td>48% Low-middle T1 Med = $33k</td>
<td>100% Cauc</td>
<td>The sibling treated with the most hostility by the mother or father reported the greatest increase in delinquency from early to mid-adolescence.</td>
<td></td>
</tr>
<tr>
<td>Feldman &amp; Weinberger</td>
<td>1994 Prospective longitudinal 4 yrs</td>
<td>Convenience:</td>
<td>81</td>
<td>6th &gt; 10th gr</td>
<td>100% Middle</td>
<td>5% AfrA</td>
<td>Parent/child reports of effective parenting (consistent, nonaversive, nonrejecting) &amp; observations/reports of positive family functioning in 6th grade were associated with lower parent/child reports of delinquency in 10th grade. In meditational analyses, effective parenting &amp; father's family functioning indirectly influence delinquency, through boys' positive self-restraint. For mother's parenting, positive family functioning exerted a direct negative influence on delinquency.</td>
<td></td>
</tr>
<tr>
<td>&amp; Weinberger</td>
<td></td>
<td>6th grade boys &amp; their families were recruited from 2 school districts, San Francisco, CA, area</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Key Statistics

- \( \chi^2 = 200.67, df = 113, p < .001, \text{GFI} = .972 \)
- \( r = r \text{n/r affective ties T1-delinquency T2} \)
- \( r = .17, p < .05 \text{delinquent T1--affective ties T2} \)
- \( r = .02, p = .05 \text{affective ties T1--delinquency T1} \)
- \( r = .03, p = .05 \text{affective ties T2--delinquency T2} \)

(see "Engagement" section for supervision results)

(multiwave structural equation model)

Positive Family Relations & Antisocial Behavior

- \( r = .67, p < .05 \) (trust, warmth, fun, togetherness)

Positive Reinforcement & Antisocial Behavior

- \( r = -.35, p = .05 \) (latent variable structural equation models)

- \( \beta = .15, t = 2.01 \) hostility T1 > delinquency T2

- \( \beta = .06, t = .72 \) delinquency T1 > hostility T2

- \( \beta = .26, p < .05 \) hostility T1 > delinquency T1

(p's = ns, hostility T2 > delinquency T2)

- \( \beta = .26, p < .05 \) hostility T1 > delinquency T1

*p's = ns, hostility T2 > delinquency T2* (latent variable structural equation models)

Parenting, Family Functioning, & Delinquency

- \( r = -.22, p = .05 \) effective parenting 6th, delinquency 10th

- \( r = -.37, p < .01 \) family functioning 6th, delinquency 10th

Father Parenting Model

- \( \beta = .35, p < .001 \) effective parent T1–restraint T1

- \( \beta = .37, p < .05 \) restraint T1–delinquency T2

Mother Parenting Model

- \( \beta = .40, p < .01 \) effective parent T1–restraint T1

- \( \beta = .32, p < .05 \) restraint T1–delinquency T2

(p's = ns, parent T1–del T1; father model family T1–del T2)

(path analysis, least squares regression analyses)
### Family Characteristics—Validation/Invalidation

#### Ages 14–19

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year Design</th>
<th>Representativeness</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Key Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scaramella, Conger, &amp; Simons</td>
<td>1999 Prospective longitudinal</td>
<td>Recruited from all 7th-grade students in 34 public &amp; private schools in communities</td>
<td>319</td>
<td>7th-8th &gt; 8th-12th gr</td>
<td>47%</td>
<td>Low-upper female = $33.7k</td>
<td>$2.5k - $57.9k</td>
<td></td>
</tr>
<tr>
<td>Brody, Stoneman, &amp; Flor</td>
<td>1996 Concurrent correlational</td>
<td>2-parent families with firstborn children ages 9–12 were recruited from schools, churches, &amp; community contacts in rural (population under 2,500) GA &amp; SC</td>
<td>90</td>
<td>9–12 yrs</td>
<td>47%</td>
<td>Low-middle M = $29,003</td>
<td>19% &lt; poverty</td>
<td></td>
</tr>
<tr>
<td>Harnish, Dodge, &amp; Valente</td>
<td>1995 Concurrent correlational</td>
<td>Selected kindergarten children &amp; their parents from schools with high at-risk populations; no father-only households; representative of schools distribution on race, gender, behavior problems; Durham, NC, Nashville, TN, central PA, &amp; Seattle, WA</td>
<td>376</td>
<td>K-1st gr M = 6.5 yrs</td>
<td>51%</td>
<td>Low-upper M = $29,053</td>
<td>(2.5k - $57.9k)</td>
<td></td>
</tr>
</tbody>
</table>

#### Ethnic Minority Populations

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Sample M's-Parent Low Hostility, Girls, 8th–10th, 12th grades above Mdn M's = .95, 1.63, 2.98, 4.82 grades below Mdn M's = 2.18, 3.29, 5.03, 8.25 grades</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caucasians (Cauc)</td>
<td>Sample M's-Parent Low Hostility, Girls, 8th–10th, 12th</td>
</tr>
<tr>
<td>Low-upper</td>
<td>Sample M's-Parent Low Hostility, Girls, 8th–10th, 12th</td>
</tr>
<tr>
<td>M = $33.7k</td>
<td>Sample M's-Parent Low Hostility, Girls, 8th–10th, 12th</td>
</tr>
<tr>
<td>M = 13 yrs parents ed</td>
<td>Sample M's-Parent Low Hostility, Girls, 8th–10th, 12th</td>
</tr>
</tbody>
</table>

#### Result

Adolescents whose parents were above the median on warmth & low hostility reported lower levels of externalizing each year from 8th to 12th grades & lower rates of growth in externalizing over this time than adolescents of parents below the median.

#### Key Statistics

- **Main Effects**
  - Parent warmth $\eta^2 = 3\%$, $F (1, 12) = 8.56, p < .01$ parent warmth
  - Low hostility $\eta^2 = 4\%$, $F (1, 12) = 13.55, p < .001$ low hostility

- **Repeated Measures**
  - Parental warmth $F (3, 12) = 2.97, p < .05$
  - Low hostility $F (3, 12) = 2.16, p < .10$

- **Correlations**
  - Maternal depressive symptoms & teacher ratings of mother-child interactions was partially mediated by the quality of mother-child interactions (observed) for African-American, but not for Caucasian, mothers. For both groups, a positive/warm mother-child relationship was associated with lower externalizing scores. For African-American mothers, level of maternal depressive symptoms did not affect the quality of the mother-child interaction, as it did for Caucasian mothers. For all families, mother-child interaction quality mediated the relationship between SES & child externalizing.

- **Latent variable structural equation analyses**
  - Total effect = -.39 SES on child behavior problem

- **Ethnic Group Differences**
  - Maternal depression & mother-child interactions $X^2 (1) = 6.80, p < .01$
  - $r (164) = .05, p = ns$ African American
  - $r (188) = .31, p < .01$ Caucasian

#### Ethnic Minorities

- **Caucasians (Cauc) Sample M's-Parent Low Hostility, Girls, 8th–10th, 12th grades above Mdn M's = .95, 1.63, 2.98, 4.82 grades below Mdn M's = 2.18, 3.29, 5.03, 8.25 grades (repeated measures ANOVAs, effect size, eta-square)**

- **Family Cohesion & Externalizing**
  - Sample M's-Parent Low Hostility, Girls, 8th–10th, 12th grades above Mdn M's = .95, 1.63, 2.98, 4.82 grades below Mdn M's = 2.18, 3.29, 5.03, 8.25 grades (repeated measures ANOVAs, effect size, eta-square)**

- **Mother-Child Interactions, Mat Dep, Child Behavior**
  - $\chi^2 (12) = 31.92, p < .01$, AGFI = .95 model 1a
  - Total effect = .37 mat depression on child behavior

- **Mother-Child Interactions, SES & Child Behavior**
  - $\chi^2 (4) = 12.10, p < .05$, AGFI = .98 model 2a
  - Total effect = -.39 SES on child behavior problem

#### Ethnic Group Differences

- **Maternal depression & mother-child interactions**
  - $X^2 (1) = 6.80, p < .01$
  - $r (164) = .05, p = ns$ African American
  - $r (188) = .31, p < .01$ Caucasian (chi-square, bivariate correlations)
Family Characteristics—Validation/Invalidation

Ethnic Minority Populations

Authors: Knight, Virdi, & Rosso

Year Design: 1994 Concurrent correlational

Representativeness:
- Recruited children & mothers in communities surrounding 10 schools in 3 school districts of a large Southwestern metro area; schools offered prevention program for children of alcoholics; 50% of sample had 1 parent with a drinking problem; Hispanic sample spoke English.

Size: 231
Age: 9-13 yrs

% Male: 50%
SES: N/R
Ethnicity: 70% Caucasian, 30% Hispanic (Mexican American)

Result:
- Mother & child (M/Ch) reports of maternal acceptance were associated with lower mother & child reports of conduct disorder, while M/Ch reports of maternal rejection were associated with higher M/Ch reports of conduct disorder, for Anglo-American & Hispanic children, regardless of level of acculturation.
- There were ethnic differences in reported levels of maternal acceptance & rejection. Anglo-American mothers reported less rejection, and their children reported less rejection & more acceptance than Hispanic children. Acculturated Hispanic mothers reported less rejection & less acceptance. No ethnic or acculturation differences were found for mother or child reports of conduct disorder.

Key Statistics
- Acceptance & Conduct Disorder
  - Anglo: M = $20k-$25k
  - Mexican American: M = $10k-$15k
  - Anglo, M's = 13-14 yrs
  - Mexican American, M's = 11-11.6 yrs
- Rejection & Conduct Disorder
  - Anglo: M = $10k-$19k

Ethnic Group, Rejection, Mother Report
- F = 11.9, p < .001, M's = 1.29 Anglo, 1.43 Mexican American

Ethnic Group, Rejection, Child Report
- F = 8.6, p < .01, M's = 1.49 Anglo, 1.65 Mexican American

Ethnic Group, Acceptance, Child Report
- F = 2.2, p < .10, M's = 2.73 Anglo, 2.61 Mexican American

(see study for gender results)

Multivariate
- F (21, 282) = 9.43, p < .001

Growth
- F (3, 105) = 37.76, p < .001
- M's = 54°C, 43°A, 41°O - .66°Co

Parental Support
- F (3, 105) = 8.09, p < .001
- M's = 3.33° control, 2.18°comorbid

Parental Rejection-Correction
- F (3, 105) = 25.27, p < .001
- M's = 1.45** C, 2.39 A, 3.07°O, 3.46° Co

(With different letters differ p < .05)

C = control, A = ADHD, O = ODD, Co = comorbid ODD & ADHD

MANCOVA, family income covariate, univariate tests with Bonferroni correction, chi-square
### Family Characteristics—Validation/Invalidation

#### Treatment & Preventative Interventions

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year Design</th>
<th>Design</th>
<th>Intervention</th>
<th>Year Design</th>
<th>Design</th>
<th>Intervention</th>
<th>Source Specific</th>
</tr>
</thead>
<tbody>
<tr>
<td>McNeil, Eyberg, et al.</td>
<td>1991</td>
<td>not random</td>
<td>tx group referred for behavior problems at home &amp; school, 1 child with behavior problems, not treated, &amp; 1 child with average behavior picked from tx child's classroom for deviant &amp; normal control groups</td>
<td>1991</td>
<td>not random</td>
<td>tx group referred for behavior problems at home &amp; school, 1 child with behavior problems, not treated, &amp; 1 child with average behavior picked from tx child's classroom for deviant &amp; normal control groups</td>
<td>1991</td>
</tr>
<tr>
<td>Webster-Stratton, Kolpacoff, &amp; Hollinsworth</td>
<td>1998</td>
<td>Intervention random assignment</td>
<td></td>
<td>1998</td>
<td>Intervention random assignment</td>
<td>in 1 urban district; 2 cohorts, fall 1993 &amp; 1994</td>
<td>in 1 urban district; 2 cohorts, fall 1993 &amp; 1994</td>
</tr>
</tbody>
</table>

#### Key Statistics

<table>
<thead>
<tr>
<th>Time Point</th>
<th>Group</th>
<th>Problem Behavior, Classroom, Teacher Report</th>
<th>% Compliance, Classroom, Observed</th>
<th>Problem Behavior, Parent Report</th>
<th>% Compliance, Observed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-</td>
<td>NM</td>
<td>F (1, 15) = 5.03, p &lt; .05 (pre-, post-N)</td>
<td>M's = 20, 10 tx; 13, 10 deviant ctrl; 0.67, 1.1 ctrl</td>
<td>t = 5.03, p &lt; .01, M's = 23.3 pre-, 6.1 post-tx</td>
<td></td>
</tr>
<tr>
<td></td>
<td>GD</td>
<td>F (1, 15) = 4.59, p &lt; .05</td>
<td>M's = 54, 87 tx; 64, 75 deviant ctrl; 73, 80 ctrl</td>
<td>t = 7.59, p &lt; .01, M's = 40.7 pre-, 70.4 post-tx</td>
<td></td>
</tr>
<tr>
<td></td>
<td>GDVM</td>
<td>F (1, 15) = 5.24, p &lt; .05</td>
<td>M's = 47, 90 tx; 63, 78 deviant ctrl; 73, 80 ctrl</td>
<td>t = 6.57, p &lt; .01, M's = 49.9 pre-, 71.5 post-tx</td>
<td></td>
</tr>
</tbody>
</table>

#### Key Statistics

<table>
<thead>
<tr>
<th>Time Point</th>
<th>Group</th>
<th>Problem Behavior, Classroom, Teacher Report</th>
<th>% Compliance, Classroom, Observed</th>
<th>Problem Behavior, Parent Report</th>
<th>% Compliance, Observed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-</td>
<td>NM</td>
<td>F (1, 15) = 5.03, p &lt; .05 (pre-, post-N)</td>
<td>M's = 20, 10 tx; 13, 10 deviant ctrl; 0.67, 1.1 ctrl</td>
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<td></td>
</tr>
<tr>
<td></td>
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<td>F (1, 15) = 4.59, p &lt; .05</td>
<td>M's = 54, 87 tx; 64, 75 deviant ctrl; 73, 80 ctrl</td>
<td>t = 7.59, p &lt; .01, M's = 40.7 pre-, 70.4 post-tx</td>
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<td></td>
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<td>t = 6.57, p &lt; .01, M's = 49.9 pre-, 71.5 post-tx</td>
<td></td>
</tr>
</tbody>
</table>

#### Source Specific

- Recruited families entering Head Start, 9 centers in 1 urban district; 2 cohorts, fall 1993 & 1994; Seattle, WA
### Family Characteristics—Discipline and Conflict

#### Ages 0–3

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year Design</th>
<th>Representation</th>
<th>Convenience</th>
<th>Size</th>
<th>Age (Range)</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Key Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crockenberg &amp; Lourie</td>
<td>1996 Prospective longitudinal</td>
<td>N/R</td>
<td>N/R</td>
<td>42</td>
<td>2 &gt; 6 yrs</td>
<td>49%</td>
<td></td>
<td>81% Cauc</td>
<td>Age 6 externalizing (father report) was associated with fathers' (boys) &amp; mothers' (girls) reports of coercion. Child reports of manipulative behavior with peers at age 6 were predicted by age 2 observed negative maternal control for boys &amp; less observed maternal guidance for girls.</td>
</tr>
<tr>
<td>Fagot &amp; Leve</td>
<td>1998 Prospective longitudinal</td>
<td>3.5 yrs</td>
<td>from metro area of middle OR city, sampling method N/R</td>
<td>122</td>
<td>18 &gt; 60 mths</td>
<td>53%</td>
<td></td>
<td>2% AYA</td>
<td>Parent coerciveness at age 2 predicted teacher ratings of age 5 externalizing, taking into account family structure &amp; negative child behavior in play group (observed), attachment, temperament, negative behavior at home, parent ratings of externalizing, gender, income, contact with police, &amp; family agency use.</td>
</tr>
</tbody>
</table>

#### Ages 4–6

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year Design</th>
<th>Convenience</th>
<th>Size</th>
<th>Age (Range)</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Key Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Campbell</td>
<td>1994 Prospective longitudinal</td>
<td>recruited from 16 suburban preschools, teacher-rated ADD &amp; matched (birthday) controls &amp; parent referred from clinics, dr's offices, preschools</td>
<td>105</td>
<td>M's = 46 &gt; 64 mths</td>
<td>100%</td>
<td>1% AYA</td>
<td>1% AYA</td>
<td>Maternal negative control at time 1 was highest for boys with behavior problems (parent &amp; new teacher ratings) that continued for 2 yrs after pre-school, followed by boys whose behavior problems did not continue, followed by controls.</td>
</tr>
<tr>
<td>Campbell, March, et al.</td>
<td>1991 Prospective longitudinal 1 yr</td>
<td>recruited from 16 suburban preschools, teacher-rated ADD &amp; matched (birthday) controls &amp; parent referred from clinics, dr's offices, preschools</td>
<td>108</td>
<td>M = 42.8-47.5 mths</td>
<td>100%</td>
<td>1% AYA</td>
<td>1% AYA</td>
<td>Negative maternal control predicted higher ratings of externalizing 1 yr later for boys referred by parents or recruited from preschools for problem behavior. For the parent-referred group, this relationship remained significant even after initial symptom level was taken into account.</td>
</tr>
<tr>
<td>Campbell, Pierce, et al.</td>
<td>1996 Prospective longitudinal 5–6 yrs</td>
<td>recruited from 16 suburban preschools, teacher-rated ADD &amp; matched (birthday) controls &amp; parent referred from clinics, dr's offices, preschools</td>
<td>104</td>
<td>4 &gt; 9 yrs</td>
<td>100%</td>
<td>1% AYA</td>
<td>1% AYA</td>
<td>Observed negative maternal control at age 4 predicted externalizing at age 9. Externalizing at age 4 did not predict maternal control at age 9. Negative maternal control &amp; externalizing showed positive concurrent relationships as well.</td>
</tr>
</tbody>
</table>

#### Key Statistics

- **Age 6 Externalizing, Father Report**
  - \( r(12) = .68, p < .01 \) paternal coercion, boys
  - \( r(22) = .57, p < .03 \) maternal coercion, girls

- **Age 6 Manipulative Behavior With Peers, Child Report**
  - \( r(22) = -.47, p < .03 \) maternal guidance, girls (zero-order correlations)
### Family Characteristics—Discipline and Conflict

#### Age 4–6

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Size</th>
<th>Age 2–3 yrs</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kingston &amp; Prior</td>
<td>1995</td>
<td>Prospective</td>
<td>175</td>
<td>2–3 yrs</td>
<td>61%</td>
<td>N/R</td>
<td>N/R</td>
<td></td>
</tr>
<tr>
<td>Schwartz, et al.</td>
<td>1997</td>
<td>Prospective</td>
<td>520</td>
<td>K &gt; 3rd</td>
<td>100%</td>
<td>Low-middle</td>
<td>21% AYA</td>
<td></td>
</tr>
<tr>
<td>Cohen &amp; Brook</td>
<td>1995</td>
<td>Prospective</td>
<td>976</td>
<td>1–10 yrs</td>
<td>50%</td>
<td>Low-upper</td>
<td>5% AYA</td>
<td></td>
</tr>
</tbody>
</table>

- Parental use of nonphysical discipline, parental control through guilt & anxiety, & hostile sibling interactions (parent reports) differentiated stable aggressive children (ages 2–3 & 7–8) from nonaggressive children, along with child’s temperament at ages 2–3, 3–4, 5–6, & 7–8, & mother’s overall perception of child at ages 2–3, 5–6, & 7–8.

- Boys who were aggressive victims in middle childhood had experienced more restrictive control in their home environments in early childhood than did passive victims, nonvictim aggressors, & normative controls.

- Power-assertive parental punishment in early childhood predicted conduct disorder at ages 10–18 & 12–20 after controlling for early behavior problems, parent psychopathology, marital conflict, age, & SES.

#### Ages 7–13

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Size</th>
<th>Age 2–3 yrs</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
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<tbody>
<tr>
<td>Schwartz, et al.</td>
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<td>100%</td>
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<td>1995</td>
<td>Prospective</td>
<td>976</td>
<td>1–10 yrs</td>
<td>50%</td>
<td>Low-upper</td>
<td>5% AYA</td>
<td></td>
</tr>
</tbody>
</table>

- **Key Statistics**
  - $x^2(14) = 35.05, p < .001$ (84% Fl, 14.2% F2)
  - Nonphysical discipline $r's = .41 F1, -.12 F2$
  - $M's = 4.01 stable agg, 3.01 non agg$
  - Parental control, guilt $r's = .31 F1, -.10 F2$
  - $M's = 3.50 stable agg, 2.77 non agg$
  - Sibling interaction, hostile $r's = .56 F1, .27 F2$
  - $M's = 4.31 stable agg, 2.59 non agg$
  - Child temperament F1, F2 $r's = .34, .35 (2–3 yr); .49, .40 (3–4 yr); .62, .25 (5–6 yr); .59, .20 (7–8 yr)$
  - Mother perception F1, F2 $r's = .47, .26 (2–3 yr); .62, .26 (5–6 yr); .76, .45 (7–8 yr)$
  - Wilks’s $\lambda = .61, F (27, 354) = 2.39, p < .001$
  - Restrictive discipline $F (3, 190) = 3.32, p < .05$
  - $M = 3.4 aggressive victims$
  - $M = 2.8 passive victims$
  - $M = 2.7 nonvictim aggressors$
  - $M = 2.7 controls$ (MANOVA, ANOVA, planned contrasts)

- **Punishment & Conduct Disorder ages 10–18**
  - OR = 2.02, CI = 0.99–4.15 ($n = 721$)
  - (controls: age, gender, SES, early problems)

- **Punishment & Conduct Disorder ages 12–20**
  - OR = 3.35, CI = 0.98–11.4 boys
  - OR = 3.34, CI = 0.74–15.0 girls
  - (controls: early problems, age, SES, marital conflict, parent psychopathology)

- Younger Children (1–5 yrs at T1) $r = .19$ behavior problem T1—punish T2 $r = .10$ punish T1—behavior problem T2 $r = .13$ punish T2—behavior problem T3 $r = .25$ behavior problem T1—punish T1 $r = .29$ behavior problem T2—punish T2 (p's = ns: behavior problem T2—punish T2 & T3)

- Older Children (6–10 yrs at time 1) $r = .42$ behavior problem T1—punish T1 $r = .27$ behavior problem T2—punish T2 (p's = no: beh T1 — punish T2, punish T1—beh T2) (cross-lagged correlations)
### Family Characteristics—Discipline and Conflict

**Ages 7–13**

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year Design</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feehan et al.</td>
<td>1991 Prospective</td>
<td>consecutive births, spring 1965 - 1973, Dunedin, New Zealand</td>
</tr>
<tr>
<td>McGee et al.</td>
<td>6-8 yrs longitudinal</td>
<td></td>
</tr>
<tr>
<td>Patterson et al.</td>
<td>1998 Prospective</td>
<td>recruited from 4th-grade boys in 11 randomly selected schools in neighborhoods with high delinquency rates, metro area of mid-size NW city.</td>
</tr>
<tr>
<td>Shumow et al.</td>
<td>1993 Prospective</td>
<td>convenience sample of parents of 3rd graders in 9 urban public schools with highest % of subsidized school lunch, Milwaukee, WI; children in after school programs &amp; matched (gender) random sample with mother after school</td>
</tr>
<tr>
<td>Vandell &amp; Posner</td>
<td>1998 longitudinal</td>
<td>parents of 3rd graders in 9 urban public schools with highest % of subsidized school lunch</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>849</td>
<td>7–9 yrs</td>
<td>N/R</td>
<td>N/R</td>
<td>N/R</td>
<td>Parents' reports of early behavior problems were associated with inconsistent discipline, male gender, &amp; poor maternal mental health, taking into account family adversity &amp; parental strictness. Externalizing in adolescence was predicted by inconsistent &amp; relaxed (tax or neutral) discipline, accounting for gender &amp; early behavior problems.</td>
</tr>
<tr>
<td>206</td>
<td>9–10 yrs</td>
<td>100%</td>
<td>Low-middle</td>
<td>N/R</td>
<td>Ineffective discipline (observed coercion, negative behavior, verbal and/or physical aggression) increased the risk of antisocial behavior, early arrest, &amp; chronic offending, after accounting for parental monitoring, marital transitions, &amp; social disadvantage.</td>
</tr>
<tr>
<td>184</td>
<td>3rd &gt; 5th gr</td>
<td>47%</td>
<td>Low</td>
<td>AYa</td>
<td>Parenting variables did not predict child behavior problems over time. Firm and responsive parenting was concurrently associated with 3rd &amp; 5th-grade behavior problems (parent report), &amp; misconduct in 5th gr (child report) &amp; lower adjustment in 5th gr (teacher report), accounting for family income &amp; structure, parent education, race, &amp; maternal unemployment. Firm-responsive parenting was associated with more child responsibility in 3rd grade &amp; less 5th-grade misconduct &amp; behavior problems. Permissive parenting was not associated with adjustment in 3rd or 5th gr.</td>
</tr>
</tbody>
</table>

**Key Statistics**

- Early Problem Behavior, Age 7–9 Predictors
  - Adj OR = 3.0, p < .001 inconsistent discipline
  - Adj OR = 1.5, p < .05 male
  - Adj OR = 4.5, p < .001 poor maternal mental health (controls: family adversity & strictness)

- Externalizing, Age 15 Predictors
  - Adj OR = 2.3, p < .05 early behavior problems
  - Adj OR = 2.1, p < .05 relaxed & inconsistent discipline

- Antisocial Behavior (n = 103)
  - Exp β = .46, p = .78, p = .000 effective discipline
  - β = .53, p = .003 parental monitoring
    (β's = ns: social disadvantage, marital transitions)

- Early Onset (n = 53)
  - Exp β = .62, p = .48, p = .006 effective discipline
  - β = .46, p = .033 social disadvantage
  - β = .50, p = .006 marital transitions
  - β = .31, p = .097 parental monitoring

- Chronic Offending (n = 51)
  - Exp β = .65, p = .44, p = .02 effective discipline
  - β = .48, p = .027 social disadvantage
  - β = .42, p = .019 marital transitions
  - β = .32, p = .083 parental monitoring

- Behavior Problem Grade 3, Parent Report
  - R² = .11, p < .01, Adj R² = .04; F = 3.67, p < .05
  - β = .25, p < .01 harsh parenting

- Behavior Problem Grade 5, Parent Report
  - R² = .22, p < .0001, Adj R² = .08; F = 5.64, p < .01
  - β = .23, p < .05 harsh parenting
  - β = .21, p < .01 firm-responsive parenting

- Misconduct Grade 5, Child Report
  - R² = .09, p < .05, Adj R² = .07; F = 3.92, p < .05
  - β = .10, p < .05 harsh parenting
  - β = .23, p < .05 firm-responsive parenting

- Adjustment Grade 3, Teacher Report
  - R² = .23, p < .0001, Adj R² = .06; F = 4.69, p < .01
  - β = .24, p < .01 harsh parenting

- Child Responsibility Grade 5
  - R² = .09, p < .05
  - Adj R² = .06; F = 4.27, p < .01
  - β = .24, p < .001 firm-responsive parenting

(controls: race, income, education, family structure, unemployment)

(hierarchical regression analyses)
<table>
<thead>
<tr>
<th>Authors</th>
<th>Year Design</th>
<th>Ages</th>
<th>Sample Characteristics</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wasserman, et al.</td>
<td>1996 Prospective</td>
<td>7-13</td>
<td>Recruited 6-10 yr-old brother(s) of male delinquents in New York City, NY, from court &amp; probation records; 6% eligible agreed</td>
<td>Less parent-reported punishment &amp; monitoring, &amp; more parent-child conflict-related increases in externalizing over 15 mths, after accounting for initial level of externalizing, parental involvement, parent rejection, &amp; child reports of punishment &amp; monitoring.</td>
</tr>
<tr>
<td>Miller, et al.</td>
<td>1997 Prospective</td>
<td>14-19</td>
<td>Recruited 112 divorced families from court records &amp; nondivorced families by ads &amp; fliers, midsize college town &amp; metro area of large city, in the Southeast</td>
<td>Self-reported antisocial behavior in young adulthood was related to youths' perceptions of the quality of their relationship with father (conflict, communication, emotionality) &amp; current interparental conflict (mother report), controlling for age, behavior problems, marital status, &amp; interparental conflict in adolescence.</td>
</tr>
<tr>
<td>Sampson &amp; Laub</td>
<td>1994 Concurrent/retrospective</td>
<td>1950</td>
<td>Reanalysis of Gluecks' 1950 data; delinquents in correctional schools; matched controls (age, neighborhood, social disadvantage, ethnicity, &amp; IQ) from public schools, Boston, MA, 1939-1948</td>
<td>Erratic/harsh discipline, low maternal supervision, &amp; weak parent-child attachment were associated with delinquency, accounting for retrospective reports of child anti-social behavior, poverty, mobility, family disruption &amp; size, parental deviance &amp; instability, foreign birth, &amp; maternal employment.</td>
</tr>
<tr>
<td>Steinberg, et al.</td>
<td>1994 Prospective</td>
<td>1950+</td>
<td>Recruited high school students in WI (3) &amp; North CA (6) schools; urban, suburban, &amp; rural areas; 15% of students absent on survey days, 5% refused</td>
<td>Self-reported delinquent behavior of adolescents with neglectful parents increased after 1 yr while the delinquent behavior of adolescents with authoritative, authoritarian, or indulgent parents decreased or stayed the same.</td>
</tr>
</tbody>
</table>

**Key Statistics**

- Externalizing: $F(9, 94) = 11.05, p = .0001, R^2 = .51$
- $\beta = -.23, p = .009$ punishment, parent report
- $\beta = -.21, p = .03$ fighting
- $\beta = -.23, p = .009$ monitoring, parent report
- $\beta = -.20, p = .02$ parent communication

**Antisocial Behavior, Young Adulthood, Self-Report**

- Boys: $R^2 = .06, F = 2.20, p < .05$
- $\beta = -.23, F = 4.96, p < .05$ relationship with father
- $\beta = -.39, F = 8.05, p < .01$ parent conflict
- Girls: $R^2 = .11, F = 3.50, p < .01$
- $\beta = -.34, F = 4.8, p < .01$ relationship with father

**Official Delinquency Status**

- $\chi^2 = 475, p < .05$
- $p = 0.33, \chi = 4.22, p < .05$ harsh discipline
- $(p < .05: \text{supervision, parent-child attachment, family size, & child antisocial behavior})$

**Self-Parent-Teacher Report Delinquency**

- $R^2 = .52$
- $\beta = 0.13, t = 3.87, p < .05$ harsh discipline
- $(p < .05: \text{supervision, parent-child attachment, family size & disruption, mobility, & child behavior})$

**Delinquency, Self-Report**

- $\Delta = .11, T_1 = 1.31$ neglectful
- $\Delta = .02, T_1 = 1.09$ authoritative
- $\Delta = .07, T_1 = 1.15$ authoritarian
- $\Delta = .01, T_1 = 1.22$ indulgent

($\Delta = \text{post hoc comparison}$)
Family Characteristics—Discipline and Conflict
Ethnic Minority Populations

Representativeness

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year Design</th>
<th>Conveniences</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deater et al.</td>
<td>1996 Prospective</td>
<td>parents recruited in person during pre-registration for kindergarten or at beginning of school year through mail, telephone, or at school, Nashville &amp; Knoxville, TN, &amp; Bloomington, IN; 2 cohorts, 1987 &amp; 1988</td>
<td>566</td>
<td>K &gt; gr 3</td>
<td>52%</td>
<td>Low-upper</td>
<td>T1</td>
<td>18% African-American, 82% Caucasian</td>
</tr>
<tr>
<td>Deckard, et al.</td>
<td>1994 Concurrent</td>
<td>recruited children &amp; mothers in communities around 10 schools in 3 school districts of a large Southwestern metro area; schools offered prevention program for children of alcoholic; 50% of sample had 1 parent with a drinking problem</td>
<td>231</td>
<td>9–13 yrs</td>
<td>N/R</td>
<td>Low</td>
<td>70% Caucasian: M = $20k–25k, M = 13.7 yrs parents ed Mexican American: M = $15k–$25k, M = 11–14 yrs parents ed</td>
<td>Hostile control (maternal report) was positively related to conduct disorder (mother &amp; child reports) for Anglo- &amp; Mexican-American children, even after controlling for acculturation. For Anglo children, control &amp; conduct disorder (maternal report), hostile control &amp; conduct disorder (child report), &amp; hostile control (maternal report), &amp; hostile control (child report), were also positively associated. Hispanic mothers reported higher levels of control, hostile control, &amp; inconsistent discipline than Anglo mothers, &amp; Hispanic children reported higher levels of maternal control &amp; hostile control than Anglo children. Mothers who were more acculturated reported less inconsistent discipline &amp; hostile control, &amp; their children reported less hostile control.</td>
</tr>
</tbody>
</table>

Key Statistics

School Externalizing, Teacher & Peer Ratings
Step 1: $R^2 = .27, p < .001$
  - $p = .02$ race
  - $p's = -.42$ gender; -.20 SES $p's < .001$
  - $p = -.17, p < .001$ marital status
Step 2: $R^2 = .30, p < .001$
  - $p = -.31, p < .001$ discipline
Step 3: $R^2 = .30, p < .001$
  - $p = -.31, p < .001$ Euro American
  - $r = .22, r = .22$ race & physical discipline
  - $r = -.40$ race & SES

Control & Conduct Disorder
- Anglo: $r = .26$, ns
- Hispanic: $r = .25$, ns

Hostile Control & Conduct Disorder
- Anglo: $r = .39$, Anglo: $r = .28$, M/M
- Hispanic: $r = .32$, Anglo: $25$, M/M

Inconsistent Discipline & Conduct Disorder
- Anglo: $r = .34$, Anglo: $r = .28$, M/M
- Hispanic: $r = .28$, Anglo: $r = .28$, M/M

Acculturation & Hostile Control
- Hostile Control: $r = .34$, $r = .30$, M/M
- Hostile Control: $r = .34$, $r = .25$, M/M

Inconsistent Discipline & Conduct Disorder
- Hostile Control: $r = .34$, $r = .30$, M/M
- Hostile Control: $r = .34$, $r = .25$, M/M

Acculturation—Hostile Control
- $r = .25$, $r = .37$, M/M

Acculturation—Inconsistent Discipline
- $r = -.30, p < .01$ mother

(see study for gender, control result)
### Family Characteristics—Discipline and Conflict

**Ethnic Minority Populations**

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year Design</th>
<th>Design</th>
<th>Sample Details</th>
<th>Key Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dombusch, 1 yr</td>
<td>Longitudinal</td>
<td></td>
<td>CA high schools</td>
<td>Uni- &amp; joint decision making for African-American adolescents, &amp; joint decision making for Asian-, European-, &amp; Hispanic-American adolescents.</td>
</tr>
<tr>
<td>Lindahl, 1998</td>
<td>Concurrent</td>
<td></td>
<td>110, 7-11 yrs, 100% Low-Upper, 30% &lt; $30K, 41% $30K-&lt;60K, 29% &gt; $70K M = 40k-&lt;50k, ctrl, ADHD, ADHD/ODD M = $10k-&lt;15k ODD</td>
<td>African-, Asian-, European-, Hispanic-American adolescents.</td>
</tr>
<tr>
<td>Bank, 1991</td>
<td>Intervention</td>
<td>Random, 3-yr</td>
<td>55, M = 14 yrs, all &lt; 10 yrs, Low-middle M = 12 yrs ed, M = 2.8, maternal occ = 3.6 paternal occ = Hollingshead</td>
<td>Institution Time, Tx, Followup 1, Followup 2 U = 266.5, p &lt; .04; M's = 28.5 PT, 45.4 CC U = 264.6, p &lt; .03; M's = 33.9 PT, 69.3 CC U = 250.5, p &lt; .07; M's = 34.4 PT, 37.7 CC Nonstatus Offense Rates Wilks's Λ = .73, Baseline Tx: F (1, 53) = 8.21, p &lt; .01 M's = 3.6, 1.1 PT, 3.9 2.5 CC TxFollowup 1 F (1, 53) = 2.12, p = .15 M's = 1.1, 1.4 PT, 2.5, 1.1 CC (p's = ns: followup yrs 2 &amp; 3) Nonstatus Prevalence Rates Wilks's Λ = .72 Followup yr 3 F (1, 53) = 4.25, p &lt; .05 M's = 10 PT, 17 CC Overall Offense Rates p = ns: group, p &lt; .01 year Status Offense Rates p's = ns: grp, yr, gp x yr *no treatment effects for status offenses (MANCOVA, status, nonstatus, &amp; overall offense rates) PT = parent training; CC = community control</td>
</tr>
</tbody>
</table>
## Family Characteristics—Discipline and Conflict Treatment & Preventative Interventions

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year Design</th>
<th>Intervention Source</th>
<th>Sample Characteristics</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES Low-middle</th>
<th>SES Lower</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Borduin et al.</td>
<td>1995</td>
<td>Intervention random assignment</td>
<td>Detained youth &amp; their families referred by juvenile services; youth had 2+ arrests &amp; lived with at least 1 parent</td>
<td>126</td>
<td>12-17 yrs</td>
<td>68%</td>
<td>Low-middle</td>
<td>69% Lower</td>
<td>AfrA 30%</td>
<td>Adolescents &amp; their families who completed multisystemic therapy (MST) demonstrated greater improvements in family relationships &amp; parent-reported adolescent behavior than those who completed individual therapy (IT). Observations of mother-adolescent, father-adolescent, &amp; mother-father dyads found increased supportiveness &amp; reduced conflict-hostility for families. At 4-yr followup, MST completers had a lower risk of arrest than IT completers. In addition, MST completers who were arrested again had fewer overall arrests, and fewer arrests for violent crimes, &amp; they were arrested for less serious crimes, compared to IT completers recidivists.</td>
</tr>
<tr>
<td>Mann et al.</td>
<td>2000</td>
<td>Intervention random assignment</td>
<td>Chronic delinquents referred by juvenile justice system for community placement, metro area of mid-size Pacific NW city</td>
<td>79</td>
<td>12-17 yrs</td>
<td>100%</td>
<td>N/R</td>
<td>85% Cauc</td>
<td>6% AfrA 6% M/C</td>
<td>3% NaA</td>
</tr>
</tbody>
</table>

### Key Statistics

- **Supportiveness, Pre – Post Intervention**
  - F (1, 123) = 6.42, p < .01 group × time
  - MST: .09, 23 MST; .10, 14 IT
  - IT: .03, 23 IT

- **Conflict & Hostility, Pre – Post Intervention**
  - F (1, 123) = 5.30, p < .01 group × time
  - MST: .09, 23 MST; .11, 22 IT
  - IT: .06, 23 IT

- **Behavior Problems, Mother Report, Pre – Post**
  - F (1, 125) = 4.97, p < .05 group × time
  - MST: .07, 23 MST; .10, 27 IT

- **Arrest Risk, 4-yr Followup, MST vs. IT Completers**
  - F (1, 123) = 4.97, p < .05 group × time
  - MST: .10, 23 MST; .15, 27 IT

- **Recidivist, 4-yr Followup, # of Arrests**
  - F (1, 82) = 10.36, p < .002, MST: 1.7 MST, 5.4 IT

- **Recidivist, Less Serious**
  - F (1, 60) = 12.80, p < .001, MST: 6.4 MST, 9.7 IT

### Rate of Official Criminal Referrals

- F (1, 77) = 3.93, p < .001 group × time
  - MST: 8.5 pre-bx, 5.5 post-bx MTFC
  - IT: 6.7 pre-bx, 5.5 post-bx GC

- R² = .19, p = .23, 2-tailed, p = .002 bx group

### Delinquency, Self-Report, 1-Year Followup

- F (1, 77) = 6.50, p < .01
  - MST: 12.8 MTFC, 28.9 GC
  - IT: 24, p = .23, 2-tailed, p = .04 bx group

### Index Offenses, Self-Report, 1-Year Followup

- F (1, 77) = 10.30, p < .001, MST: 3.2 MTFC, 8.6 GC
  - R² = .15, p = .23, 2-tailed, p = .05 bx group

### Felony Assaults, Self-Report, 1-Year Followup

- F (1, 77) = 4.40, p < .05, MST: 1.4 MTFC, 2.7 GC
  - R² = .20, p = .27, 2-tailed, p = .02 bx group

### Regression Results

1. Age at first referral
2. Age baseline
3. Pre-bx official referral rate
4. BX group (ANOVA, stepwise Hierarchical multiple regression)
## Family Characteristics—Discipline and Conflict Treatment & Preventative Interventions

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year Design</th>
<th>Design</th>
<th>Source Specific</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patterson, Chamberlin, &amp; Reid</td>
<td>1982</td>
<td>Intervention</td>
<td>referred by medical/school personnel or parents for primary problem of social aggression, Pacific NW</td>
<td>19</td>
<td>3-11 yrs</td>
<td>66%</td>
<td>Low</td>
<td>N/R</td>
<td>Children in the parent training group (monitoring, effective discipline, &amp; reinforcement) showed a greater reduction in observed deviant behavior compared to children in the wait list/community-treated group. All but 1 wait-listed child received tx in the community.</td>
</tr>
<tr>
<td>Wahler, Carter, et al.</td>
<td>1991</td>
<td>Intervention</td>
<td>boys who participated in a 2-yr preventative treatment program of parent training (monitoring, effective discipline, &amp; positive reinforcement) &amp; boys' social skills training reported less theft in the home &amp; less fighting both inside &amp; outside the home 2 yrs after treatment ended compared to boys in the control/comparison groups. Mothers' ratings of disruptive behavior, particularly fighting, were higher for the treatment group immediately following treatment; however, there were no group differences for disruptive behavior after 1 yr, nor for fighting after 2 yrs.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tremblay, McCord, et al.</td>
<td>1993</td>
<td>Intervention</td>
<td>boys referred to clinic from social service agency for oppositional/aggressive behavior at home; mothers had multiple stressors</td>
<td>29</td>
<td>7-13 yrs</td>
<td>79%</td>
<td>Low-middle</td>
<td>17% N/R</td>
<td>Mothers who attended a parent training intervention (monitoring, discipline, &amp; reflective listening) that included synthesis teaching (training to discriminate child care stress from outside stress) as well as discussion demonstrated greater reductions in observed maternal indiscriminate responding &amp; child aversive behavior than mothers in the parent training/problem discussion group. No reductions were found in the clinic setting immediately following the 5-mth intervention; however, reductions were found in the home setting 6 &amp; 12 mths following tx.</td>
</tr>
</tbody>
</table>

### Key Statistics

#### Deviant Behavior, Observed

- Children in the parent training group showed a greater reduction in observed deviant behavior compared to children in the wait list/community-treated group. All but 1 wait-listed child received tx in the community.

#### Misbehavior, % Children Reporting 1 (+) Incident

- Fighting outside home
  - \( z^2 (1) = 5.81, p < .03; 40\% \) tx, 55\% ctrl, 64\% obsv
  - Fighting in the home
  - \( z^2 (1) = 4.58, p < .03; 28\% \) tx, 43\% ctrl, 49\% obsv
  - Theft in the home
  - \( z^2 (1) = 5.50, p < .02; 7\% \) tx, 24\% ctrl, 23\% obsv

### Mother Ratings

- Child disruptive behavior
  - \( F = 5.32, p < .02 \) post-b	M's = 13.3 bc, 10.4 ctrl, 11.0 obsv (p's = ns: followup yrs 1 & 2)
  - Fighting
    - \( F = 8.59, p < .004 \) post-b	M's = 2.8 bc, 1.8 ctrl, 1.9 obsv
    - \( F = 5.61, p < .02 \) followup 1	M's = 2.3 bc, 1.7 ctrl, 2.0 obsv
    - \( F = 3.99, p < .07 \) followup 2	M's = 1.8 bc, 1.3 ctrl, 1.8 obsv
  - Teacher Ratings
    - \( p's = ns, F's & M's not reported \) (chi-square, ANOVA)

### Teacher Ratings

- Child Indiscriminate Reactions, Home
  - \( F (3, 81) = 5.55, p < .01 \) group x phase
  - \( F (1, 27) = 9.48, p < .01 \) group followup 2
  - Approx. M's = 10 bc, 14 ful, 13 fu2 parent

- Child Aversive Behavior, Home
  - \( F (3, 81) = 5.50, p < .01 \) group x phase
  - \( F (1, 27) = 9.80, p < .01 \) group followup 2
  - Approx. M's = 10 bc, 14 ful, 13 fu2 synthesis-parent

(Note: synthesis teaching was conducted during baseline; no group differences were found at baseline) (ANOVA)
Problem Solving, Ages 0–3

Zahn-Waxler, 1990 Prospective longitudinal et al. 4 yrs

Source specific: mothers recruited from participants in earlier study, sampling method not reported; each mother asked to bring in 1 mother & her child; sample included old & new mother-child pairs

44 2 > 6 yrs N/R Middle 1% A/H 1% Caucasian

M's = 16 yrs, 18 yrs

Mothers’ child rearing practices & child behavior at age 2 predicted maternal guidance at age 2 (anticipatory, respectful guidance reflecting perspective taking & modulated control) attenuated the relationship between maternal depression & externalizing. Child dysregulated aggression was associated with greater externalizing for children of depressed mothers. Child reports of externalizing at age 6 were lower for depressed mothers who exhibited high maternal guidance, (age 2), and higher for children who exhibited dysregulated aggression at age 2.

Child Rearing Practice, Age 2—Externalizing, Age 5

1: maternal diagnosis R² = .26 p = .04

2: sex of child R² = .45

3: peer play aggression R² = .49

4: anticipatory, respectful guidance R² = .58

5: depression R² = .65

6: guidance x maternal diagnosis R² = .71

7: guidance x maternal diagnosis R² = .44

8: dysregulated aggression R² = .28

(p’s = ns: 4, dysreg agg-child, 5, sensitivity-mom)

Child Rearing Practice, Age 2—Externalizing, Age 6

4: dysregulated aggression R² = .28

(p’s = ns: 4, dysreg agg-child, 5, sensitivity-mom)

Family Characteristics—Discipline and Conflict

Treatment & Preventative Interventions

Authors Webster-Stratton

Year Design 1998 Intervention random assignment 1-yr followup

Problem-Solving, Ages 0–3

Zahn-Waxler, 1990 Prospective longitudinal et al. 4 yrs

Source specific: mothers recruited from participants in earlier study, sampling method not reported; each mother asked to bring in 1 mother & her child; sample included old & new mother-child pairs

44 2 > 6 yrs N/R Middle 1% A/H 1% Caucasian

M's = 16 yrs, 18 yrs

Mothers’ child rearing practices & child behavior at age 2 predicted maternal guidance at age 2 (anticipatory, respectful guidance reflecting perspective taking & modulated control) attenuated the relationship between maternal depression & externalizing. Child dysregulated aggression was associated with greater externalizing for children of depressed mothers. Child reports of externalizing at age 6 were lower for depressed mothers who exhibited high maternal guidance, (age 2), and higher for children who exhibited dysregulated aggression at age 2.

Child Rearing Practice, Age 2—Externalizing, Age 5

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4: anticipatory, respectful guidance R² = .58

5: depression R² = .65

6: guidance x maternal diagnosis R² = .71

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8: dysregulated aggression R² = .28

(p’s = ns: 4, dysreg agg-child, 5, sensitivity-mom)

Child Rearing Practice, Age 2—Externalizing, Age 6

4: dysregulated aggression R² = .28

(p’s = ns: 4, dysreg agg-child, 5, sensitivity-mom)
### Family Characteristics—Problem Solving

#### Ages 4-6

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Sample Characteristics</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hooven, Gottman, &amp; Katz</td>
<td>1995</td>
<td>Prospective longitudinal</td>
<td>Recruited nonclinical sample from Champaign-Urbana, IL, community through newspaper ads; screened for range of marital satisfaction</td>
<td>56</td>
<td>4-5 yrs &gt; 8 yrs</td>
<td>56%</td>
<td>Low-moderate</td>
<td>N/R</td>
</tr>
</tbody>
</table>

#### Ages 7-13

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Sample Characteristics</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ouchlhin &amp; Vuchinich</td>
<td>1996</td>
<td>Prospective longitudinal</td>
<td>Recruited from schools in neighborhoods with high delinquency rates, metro area of midsize OR city</td>
<td>194</td>
<td>10 &gt; 17 yrs</td>
<td>100%</td>
<td>Low</td>
<td>98.5%</td>
</tr>
</tbody>
</table>

#### Key Statistics

- **Mother Coaching, Age 5**
  - $r = -.27, p < .10$
  - $r = -.36, p < .05$

- **Father Coaching, Age 5**
  - $r = -.32, p < .05$

- **Stepfamilies (n = 59)**
  - Correct prediction: 75%, $OR = 0.47, p < .05$
  - Family problem solving: $OR = 0.23, p < .001$
  - Peer relations: $OR = 2.09, p = ns$

- **Single-mother Families (n = 55)**
  - Correct prediction: 73%, $OR = 0.47, p < .05$
  - Family problem solving: $OR = 2.25, p < .05$
  - Peer relations: $OR = 2.59, p < .10$

### Treatment & Preventative Interventions

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
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<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sawyer, Home, et al.</td>
<td>1988</td>
<td>Intervention random assignment followup</td>
<td>Recruited from referrals to tx by school personnel; most aggressive students in classroom, midsize Midwestern city</td>
<td>37</td>
<td>2nd-6th gr</td>
<td>100%</td>
<td>N/R</td>
<td>N/R</td>
</tr>
</tbody>
</table>

#### Key Statistics

- **Externalizing, Parent Report**
  - $p = .001$, $M's = 19.90$ b; $-76$ ctrl

- **Aggressive Behavior, Parent Report**
  - $p = .001$, $M's = 11.75$ b; $-13$ ctrl

- **Positive solutions, Observed**
  - $F = 7.48, p < .001$
  - $M's = 7.4$ pre, $6.3$ post, $6.2$ followup

- **Positive solutions, Parents**
  - $F = 7.65, p < .001$
  - $M's = 26$ pre, $14$ post, $15$ followup

(repeated measures ANOVA)
### Family Characteristics—Structuring of the Learning Environment

#### Ages 7–13

**Authors**

- Jenkins
- Kelsetzis, Ryan, & Adams

<table>
<thead>
<tr>
<th>Year</th>
<th>Design</th>
<th>Representativeness</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
<th>Key Statistics</th>
</tr>
</thead>
</table>
| 1997 | Concurrent correlational | Recruited from middle school in DE, students from urban & suburban areas; 83% participation | 754  | 7th & 8th gr | 50%    | Low-middle | 22% APA | Parent involvement in school was indirectly associated with lower school crime & lower school misconduct through students' greater attachment & commitment to school, & belief in school rules, taking into account gender, mother's education, race, grade, math ability, sibling in school, & living with a step-parent. | School Crime  
  \( R^2 = .32, p < .05 \)  
  \( r = -.23 \) belief—school crime  
  \( r = -.23 \) belief—school misconduct  
  \( r = -.23 \) attachment—school crime  
  \( R^2 = .29, p < .05 \)  
  \( r = -.15 \) parent involvement—belief  
  \( r = -.15 \) parent involvement—commitment  
  \( r = -.25 \) commitment—school crime  
  \( r = -.26 \) attachment—school crime  

  (model includes gender, mother's education, race, grade, math ability, sibling in school, & living with a step-parent)  
  (structural equation models)  

<table>
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<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
<th>Key Statistics</th>
</tr>
</thead>
</table>
| 1998 | Concurrent correlational | Recruited from 7 Catholic elementary schools in southern Ontario, Canada, 52–55% response | 312  | 4th & 7th gr | 48%    | Middle | 100% Cauc | For 4th graders, perceived maternal pressure to achieve academically had positive direct effects on teacher-reported externalizing. Parental pressure to achieve had indirect positive effects on externalizing, through lower frustration tolerance & intellectual effectiveness, & indirect negative effects, through lower assertiveness. Paternal support had positive direct & indirect effects (through lower frustration tolerance & intellectual effectiveness), while no effect was found for maternal support. For 7th graders, maternal & paternal pressure to achieve had indirect positive effects on externalizing through lower frustration tolerance & lower intellectual effectiveness. Maternal & paternal support had indirect positive effects (through higher assertiveness) & negative effects (through higher frustration tolerance) on externalizing. | Mother, Grade 4  
  \( \chi^2(12) = 18.80, p = .09 \)  
  \( R^2 = .45 \)  
  \( r = .30 \) pressure—intel. eff,/int eff—ext  
  \( r = .30 \) pressure—assert, assert—ext  
  \( r = .18 \) support—intel. eff, int eff—ext  
  \( r = .16 \) support—assert, assert—ext  

  (structural equation models)  
  (path analysis)  

  (model includes gender, mother's education, race, grade, math ability, sibling in school, & living with a step-parent)  
  (structural equation models)
## Family Characteristics—Structuring of the Learning Environment

### Ages 14–19

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year Design</th>
<th>Sample Description</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aselline</td>
<td>1995 Prospective</td>
<td>Recruited from 3 high schools in middle-class neighborhoods, metro area, Boston, MA</td>
<td>435</td>
<td>9th–11th gr</td>
<td>43% Middle</td>
<td>2% AFA</td>
<td>2% AsA</td>
<td>Adolescent-reported parental monitoring was associated with lower exposure to delinquent peers over time &amp; unrelated to adolescent-reported delinquency. Gender, age, family type, living standard, &amp; parent education were included in the model.</td>
</tr>
<tr>
<td>Fletcher, Darling, et al.</td>
<td>1995 Concurrent</td>
<td>Recruited students from high schools in WI (3) &amp; Northern CA (6); urban, rural, &amp; suburban areas; 15% of students absent on day of survey, 5% refused; over 50% of 11,000 participants had missing data on questions about friends</td>
<td>4,431</td>
<td>9th–12th gr</td>
<td>43% Low-middle</td>
<td>9% AFA</td>
<td>14% AsA</td>
<td>Adolescents' perception of parental authoritativeness (home authoritativeness) was associated with having friends who perceived their own parents to be authoritative (network authoritativeness) &amp; with less delinquency. Network authoritativeness was associated with lower levels of delinquency, even after accounting for home authoritativeness &amp; peers' delinquency.</td>
</tr>
</tbody>
</table>

### Modeling Antisocial/Norm-Maintaining Behaviors, Ages 0–3

<table>
<thead>
<tr>
<th>Authors</th>
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<th>Sample Description</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jouriles, Murphy, et al.</td>
<td>1991 Concurrent</td>
<td>Study 1: Recruited mothers in intact families from pre-schools, public records, &amp; birth announcements; suburban Suffolk County, NY</td>
<td>200</td>
<td>6–7 mths</td>
<td>100% Lower-middle</td>
<td>N/R</td>
<td>Home &amp; Network Authoritativeness</td>
<td>r's = .12 boys, .15 girls, p's &lt; .01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Study 2: Recruited intact families from nursery schools &amp; through newspaper ads; suburban Harris County, TX</td>
<td>87</td>
<td>40–75 mths</td>
<td>100% Lower-middle</td>
<td>N/R</td>
<td>Home &amp; Network Authoritativeness, Delinquency</td>
<td>r's = .17 boys, -.20 girls, p's &lt; .001</td>
</tr>
</tbody>
</table>

### Key Statistics

- \( \chi^2 (60) = 50.91, \ p = .79, \ AGFI = .987 \)
- \( \beta = -.185, \ p < .05 \), monitoring T2–peer del T3
- \( \beta = -.134, \ p = ns \), monitoring T2–adolescent del T3

### Behavior Problems Age 3

- Step 1: General marital disagreement
  \( R = .15, \Delta R^2 = .02, \Delta F = 4.57, \ p < .05 \)
- Step 2: Child-rearing disagreements
  \( R = .35, \Delta R^2 = .10, \Delta F = 20.73, \ p < .001 \)

### Behavior Problems Age 5

- Step 1: General marital disagreement
  \( R = .17, \Delta R^2 = .03, \Delta F = 2.64, \ p < .05 \)
- Step 2: Child-rearing disagreements
  \( R = .22, \Delta R^2 = .02, \Delta F = 1.63, \ p = ns \)

### Behavior Problems Age 3 & Child-Rearing Disagree

- Partial \( r = .27, \ p < .001 \) (exposure controlled)
- \( p = ns: \) exposure, child-rearing disagree controlled

### Behavior Problems Age 5

- Partial \( r (1, 1379) = -.35, \ p < .05 \) boys
- \( p = -.07, \ r (1, 1894) = -.30, \ p < .01 \) girls

### Behavior Problems Age 3 & Child-Rearing Disagree

- Partial \( r (85) = -.17, \ p < .05 \) general marital adjustment
- Partial \( r (85) = .22, \ p < .05 \) exposure to conflict
- Partial \( r (85) = -.17, \ p < .05 \) child-rearing disagreements

### Behavior Problems Age 5

- Partial \( r (85) = -.17, \ p < .05 \) general marital adjustment
- Partial \( r (85) = .22, \ p < .05 \) exposure to conflict
- Partial \( r (85) = -.17, \ p < .05 \) child-rearing disagreements

### Correlations

- Partial \( r (85) = -.17, \ p < .05 \) child-rearing disagreements
- Partial \( r (85) = -.17, \ p < .05 \) child-rearing disagreements
- Partial \( r (85) = -.17, \ p < .05 \) child-rearing disagreements
- Partial \( r (85) = -.17, \ p < .05 \) child-rearing disagreements
- Partial \( r (85) = -.17, \ p < .05 \) child-rearing disagreements
### Family Characteristics—Modeling Antisocial/Norm-Maintaining Behaviors

#### Ages 4–6

<table>
<thead>
<tr>
<th>Authors</th>
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<th>Representativeness</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schwartz, et al.</td>
<td>1997</td>
<td>Prospective longitudinal</td>
<td>Convenience: parents recruited during preregistration for kindergarten, Nashville, Knoxville, TN, &amp; Bloomington, IN</td>
<td>520</td>
<td>Pre-K &gt; 3rd, 4th gr</td>
<td>100% Low-middle</td>
<td>21% AHA</td>
<td>77% Cauc</td>
<td>2% Other</td>
</tr>
</tbody>
</table>

According to mother reports, boys who were both aggressive & bullied (aggressive victims) in middle childhood had experienced more marital & parental aggression at home in early childhood than passive victims, nonvictim aggressors, & controls, & more marital conflict than passive victims or controls. Nonvictimized aggressors had been exposed to more violence than control boys.

#### Ages 7–13

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Population</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farrington &amp; Hawkins</td>
<td>1991</td>
<td>Prospective longitudinal</td>
<td>411</td>
<td>8–9 yrs</td>
<td>100% Low-middle</td>
<td>23% &lt; 45 yrs</td>
<td>10% &lt; 15 yrs</td>
<td>90% Cauc</td>
<td>80% 2 yrs income/week</td>
</tr>
</tbody>
</table>

Conclusions between ages 10 and 20 were predicted by having a convicted parent, accounting for child troublesomeness from ages 8–18. Having a delinquent older sibling predicted convictions between ages 10 and 20, once parent conviction, child troublesomeness, daringness, & low school attainment were taken into account.

Compared to nondelinquent adolescents, serious chronic offenders were more likely to come from families characterized by deviant behaviors & attitudes (parental antisocial or criminal behavior) & multiple problems (disruption-conflict & low parental involvement). Chronic minor offenders were less likely to come from deviant families, & escalating or late onset offenders were more likely to come from families with disruption & conflict than nondelinquent adolescents.

**Key Statistics**

- **Home Environment & Aggressor/Victim Status**
  - Wick’s $\lambda = .51$, $F(27, 354) = 2.39$, $p < .001$
  - Parental use of aggressive strategies
    - $F(3, 182) = 5.12$, $p < .005$
    - $M's = 1.2^{*}$ aggressive victim
    - $-0.1^{*}$ passive victim
    - $0.2^{*}$ nonvictim aggressor
  - Dyadic marital aggression
    - $F(3, 182) = 6.43$, $p < .005$
    - $M's = 1.2^{*}$ aggressive victim
    - $-0.4^{*}$ passive victim
    - $0.1^{*}$ nonvictim aggressor
  - Marital conflict
    - $F(3, 182) = 5.43$, $p < .005$
    - $M's = 2.9^{*}$ aggressive victim
  - Exposure to violence
    - $F(3, 182) = 3.65$, $p < .05$
    - $M's = 2.3^{*}$ nonvictim aggressor
    - (MANOVA, ANOVAs, planned comparisons)

- **Convictions Ages 10–20**
  - Convicted parent, age 10
    - $R^2 = .47$
  - Delinquent older sibling, age 10
    - $R^2 = .44$, $r (r) = .26$, $\Delta F = 17.17$, $p < .001$

- **Convictions Ages 7–13**
  - Convicted parent, age 10
    - $R^2 = .47$
  - Delinquent older sibling, age 10
    - $R^2 = .44$, $r (r) = .26$, $\Delta F = 17.17$, $p < .001$

- **Family Pattern & Delinquency Pathways**
  - Multiple Problems, Including Deviance & Conflict
    - $\chi^2 (N = 287) = 4.30$, $p < .05$ serious Chronic
      - $\gamma = .92$, OR = 2.51, 90% CI = 1.2–5.3
      - (p = ns: chronic minor & escalating offenders)
    - Deviant Behavior & Attitudes
      - $\chi^2 (N = 287) = 3.72$, $p < .10$ chronic minor
      - $\delta = .70$, OR = 2.29, 90% CI = 1.1–4.8
      - (p = ns: serious chronic & escalating offenders)
    - Disruption & Conflict
      - $\chi^2 (N = 287) = 3.52$, $p < .10$ escalating
      - $\gamma = .83$, OR = 2.29, 90% CI = 1.1–4.8
      - (p = ns: chronic minor & serious chronic offenders)
      - (polytomous logistic regression model)
### Family Characteristics—Modeling Antisocial/Norm Maintaining Behaviors

#### Ages 14–19

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year Design</th>
<th>Design</th>
<th>Population</th>
<th>Size</th>
<th>Age Range</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Davies &amp; Windle</td>
<td>1997</td>
<td>Prospective</td>
<td>Recruited 10th- &amp; 11th-grade students &amp; primary caregiver from 3 suburban high schools, western NY</td>
<td>443</td>
<td>M = 15.5 yrs</td>
<td>46%</td>
<td>Middle</td>
<td>0.5% AFA</td>
<td>Family discord (marital discord &amp; low levels of family intimacy) mediated the relationship between maternal depressive symptoms &amp; delinquency for girls. For boys, delinquency was associated with low levels of family intimacy.</td>
</tr>
<tr>
<td>Mekos, Hetherington, &amp; Reiss</td>
<td>1996</td>
<td>Concurrent</td>
<td>Recruited national sample from random dialing, market survey; same-sex siblings, twin &amp; non-twin, from nondivorced &amp; remarried families</td>
<td>516</td>
<td>11-18 yrs</td>
<td>N/R</td>
<td>Middle- &amp; upper middle</td>
<td>94% Cauc, 6% N/R</td>
<td>Sibling differences in exposure to marital conflict &amp; delinquency were associated with differences in self-reported sibling delinquency. Siblings exposed to more marital conflict were at higher risk for delinquency.*</td>
</tr>
<tr>
<td>Neighbors, Forhand, &amp; Bau</td>
<td>1997</td>
<td>Prospective</td>
<td>Recruited divorced families from court records &amp; nondivorced families by ads &amp; fliers; midsize college town &amp; metro area of large city in the Southeast</td>
<td>243</td>
<td>M = 13.1 yrs</td>
<td>47%</td>
<td>Middle</td>
<td>100% Cauc</td>
<td>Boys' self-reported antisocial behavior in young adulthood was associated with current interparental conflict (mother report &amp; quality of relationship with father (adolescent perception), accounting for early adolescent problem behavior, age, earlier marital conflict, &amp; parents' marital status. For girls, antisocial behavior in young adulthood was associated with perceived quality of their relationship with father.</td>
</tr>
<tr>
<td>Brody, Storeman, &amp; Flor</td>
<td>1996</td>
<td>Concurrent</td>
<td>Recruited 2-parent families with firstborn children ages 9-12 were recruited from schools, churches, &amp; community contacts in rural (population under 5,000) GA &amp; SC</td>
<td>90</td>
<td>9-12 yrs</td>
<td>47%</td>
<td>Low-middle</td>
<td>100% AFA</td>
<td>Exposure to parental conflict (parent reports) had an indirect positive effect on mother &amp; teacher ratings of externalizing through lower youth self-regulation, after accounting for per capita income, parental religiosity, &amp; family cohesion.</td>
</tr>
</tbody>
</table>

#### Key Statistics

- Delinquency, Boys & Low Family Intimacy
  - \( r = .20, p < .01 \) (correlation)
  - Delinquency, Girls, Unmediated Model
    - \( R^2 = .02, p = .14, p < .05 \) maternal dep symptoms (regression, maternal dep only predictor in equation)
  - Girls, Mediated Model \( R^2 = .03, p < .05 \) low family intimacy (\( p = ns \: parental \) impairment, stressful events, maternal depressive symptoms)

#### Ethnic Minority Populations

- Exposure to Parent Conflict & Externaling
  - Maternal model \( R^2 = .50, F (5, 87) = 17.21, p < .01 \)
    - \( p = -.26 \) interparental conflict
    - \( p = -.24 \) family cohesion
    - \( p = .55 \) self-regulation
    - \( p = .23 \) religiosity
  - Paternal model \( R^2 = .47, F (5, 87) = 15.25, p < .01 \)
    - \( p = -.26 \) interparental conflict
    - \( p = .22 \) family cohesion
    - \( p = .65 \) self-regulation
    - \( p = .22 \) religiosity

#### Exposure to Conflict & Delinquency

- \( r^2 (31) = .28, p = .27, GFI = .957 \)
- \( p = .24, t < .20 \) mother/sibling
- \( p = .23, t < .20 \) father/sibling
- *Results similar across 3 sibling groups: both bio siblings, nondivorced family; both step-siblings, remarried; 1 biological/1 step-sibling, remarried*
Peer Influences

Peers play an important role in child development. Particularly as children mature into adolescents, peers play a large role in shaping both appropriate and inappropriate behaviors. However, newer evidence indicates that as early as preschool, peers begin to exert noticeable influences on child aggressive behavior. Research on the influence of peers on externalizing behavior problems can be categorized into three domains—peer rejection of aggressive behavior, peer victimization, and peer enhancement of aggression and antisocial behavior.

At first glance, the first and third domain may appear contradictory. How can aggressive behavior be rejected and also enhanced by peers? This seeming contradiction is at the heart of peer influence on externalizing behavior problems. Aggressive behavior may be rejected by conventional peers and at the same time negatively and positively reinforced. Rejection by conventional peers encourages similarly aggressive and rejected children to find one another, form friendships, and develop ways of approving and accepting aggression. Although much is known about predictive and causal risks within each domain, the interdependence, possible sequencing, and points of vulnerability across domains of peer influence are not well established.

Peer Rejection of Aggressive Behavior

Peer rejection has been shown to be a middle-childhood predictive risk factor for adolescent conduct problems over and above its concurrent correlation with childhood aggression. Several longitudinal studies have documented that children who are both rejected by their peers and highly aggressive exhibit the poorest overall adjustment in elementary school (Bierman & Wargo, 1995; Lochman & Wayland, 1994). As early as first grade, children who come from families marked by higher amounts of conflict and coercion are more likely to engage in aggressive interactions with peers (Dishion, Duncan, Eddy, Fagot, & Fetrow, 1994; Schwartz, Dodge, Pettit, & Bates, 1997). In turn, aggressive children who are rejected by their peers are at increased risk for behavior problems prior to middle school (Bierman, Smoot, & Aumiller, 1993; Bierman & Wargo, 1995). For boys, the predictive relationship between early aggression and peer rejection and later externalizing behavior problems has been documented into adolescence (Coie, Terry, Lenox, Lochman, & Hyman, 1995).

To understand why peer rejection has such negative effects for children, one must recall research described in the Child Characteristics section. Children who are both rejected and aggressive show a more pervasive pattern of behavioral and social deficits—including inattention, argumentative and disruptive behaviors, and poor prosocial behavior—unlike children who are aggressive but not rejected or rejected but not aggressive. Also, children who are both rejected and aggressive are more likely than their nonaggressive well-liked peers to develop biased social information processing involving a
tendency to attribute hostile intentions to others (Dodge, 1980; Dodge & Frame, 1982). This attributional style increases the likelihood that they will respond toward other children in a retaliatory, aggressive manner (see Child Characteristics section for more details).

Evidence exists that peer rejection associated with aggression is malleable and can function as a causal risk factor for externalizing behavior problems. By specifically targeting children who appear rejected because of their aggressive behavior, interventions that provide anger management skills and prosocial means of solving peer conflicts have resulted in increased peer acceptance and decreased child aggressive and externalizing behavior problems (Conduct Problems Prevention Research Group, 1999; Lochman, Cole, Underwood, & Terry, 1993).

**Victimization**

In addition to the negative attributional biases exhibited by rejected and aggressive children, evidence shows that peers are more likely to attribute hostile intentions and respond more aversively when the perpetrator is considered an aggressive youngster (Dodge, 1980; Dodge & Frame, 1982). Rejected youth are more likely to be treated negatively by their peers and are more likely to be victims of peer attack and abuse (Perry, Kusel, & Perry, 1988). Newer research has documented that the victimization experienced by socially rejected children includes not only physical attacks but also acts that undermine their relationships with other peers (i.e., relational aggression) (Crick, Casas, & Ku, 1999; Crick & Grotpeer, 1996). The correlation between peer rejection and relational aggression victimization has been found for children in preschool and elementary school.

Adding to the work on early peer victimization is the consistent correlation between being a victim of crime and being a criminal offender (Esbensen & Huizinga, 1991; Sampson & Lauritsen, 1990; Singer, 1986). Adolescents who are offenders are likely to be victims, and vice versa. It is not clear whether criminal victimization predicts later offending or whether early offending predicts later victimization. Also, it is not known whether criminal victimization in adolescence is predicted by the experience of peer victimization in elementary and middle school.

**Peer Enhancement**

Although aggressive children are at higher risk for peer rejection, aggressive and rejected children do have friends, and their friends also tend to be aggressive (Cairns, Cairns, Neckerman, Gest, & Gariepy, 1988; Haselager, Hartup, van Lieshout, & Riksen-Walraven, 1998; Tremblay, Masse, Vitaro, & Dobkin, 1995). As early as preschool, research has documented aggressive children to be part of social cliques that are particularly likely to be characterized by aggression (Farver, 1996). Aggressive friendships tend to be stable (Giordano, Cernkovich, & Pugh, 1986), and being a member of a group with other aggressive children and/or adolescents is a predictor of later conduct problems for both girls and boys (Kupersmidt, Burchinal, & Patterson, 1995).

Selection of mutually aggressive and deviant friends can expand in adolescence to pairings with the opposite sex. Antisocial behavior is a strong selection factor in couple formation. Individuals with a history of antisocial behavior in adolescence are likely to become partners with similar individuals (Krueger, Moffitt, Caspi, Bleske, & Silva, 1998). In turn, assortive pairing for antisocial behavior is associated with continued involvement in antisocial behavior during the adult years (Yamaguchi & Kandel, 1993). In contrast,
supportive, nondeviant partners are a source of protection, breaking the continuity in antisocial behavior between adolescence and adulthood (Quinton, Pickles, Maughan, & Rutter, 1993). Peers also serve to reinforce aggressive behavior, particularly for children who have difficulty with aggression (Snyder, Horsch, & Childs, 1997). Young (preschool- and elementary school-aged) aggressive children are much more likely to initiate, reciprocate, and persist with aversive behavior with their peers than are nonaggressive children (Snyder & Brown, 1983). In elementary school, research on bullying (the assertion of power through aggression, repeated over time and intended to cause harm) has found the peer group to be critical in maintaining, exacerbating, and terminating bullying. Peers tend to give positive attention to bullies by watching, cheering, and sometimes joining the bully. The positive attention has been correlated with longer bouts of bullying (O'Connell, Pepler, & Craig, 1999). Also, boys who bully in early adolescence have been shown to be at higher risk for antisocial behavior in adulthood (Farrington, 1993). Although several antibullying programs have been developed for schools, these interventions have not specifically targeted peer processes in bullying.

The role of peers in enhancing delinquent and antisocial behavior in adolescence is well established. Most of the externalizing behavior problems of adolescents—including violent acts toward others—occur in deviant peer groups. For elementary- and middle school-aged boys, association with deviant peers is not only correlated concurrently with conduct problems but is also a predictive risk factor for increased involvement over time (Elliott, Huizinga, & Menard, 1989; Keenan, Loeber, Zhang, Stouthamer-Loeber, & Van Kammen, 1995; Patterson, 1993; Vitaro, Tremblay, Kerr, Pagani, & Bukowski, 1997). Deviant peers also engage in forms of deviancy training in which antisocial talk (e.g., bragging about physical assaults, discussing delinquent acts) meets with approval and positive reinforcement (Dishion, Eddy, Haas, Li, & Spracklen, 1997). In highly deviant groups (i.e., juvenile street gangs), group membership is correlated with increased delinquent behavior (Bjerregaard & Smith, 1993). Studies following youth before, during, and after their gang membership show that rates of delinquency, especially violent delinquency, are substantially higher when a young person is a member of a gang than either before or after membership (Esbensen & Huizinga, 1993; Thornberry, Krohn, Lizotte, & Chard-Wierschem, 1993).

The most powerful evidence for documenting peer enhancement of conduct problems as a causal risk factor comes from failed interventions that involved grouping together high-risk youth. Interventions that group together high-risk youth, even in the presence of therapeutic intervention, have been shown to result in increasing delinquent behavior (Dishion & Andrews, 1995; Dishion, Mc Cord, & Poulin, 1999). In contrast, research on therapeutic foster homes for delinquent youth that involve definitive changes in parenting and strict enforcement of no contact with deviant peers shows that these interventions result in decreased delinquency (Chamberlain & Reid, 1998).

Clearly, peer enhancement of conduct problems is a significant causal risk factor for antisocial behavior. By adolescence, the only established way to effectively reduce this influence is to remove contact with deviant peers. It is not known whether interventions aimed at reducing early peer reinforcement of aggressive behavior or bullying also may be effective in reducing conduct problems and deterring development of delinquent behavior. Nor is it known whether interventions designed to decrease peer rejection also may decrease peer enhancement of aggressive behavior. Given the strength of evidence about the role of peers in externalizing behavior problems, these questions appear ripe for investigation.
Implications for Malleable Peer Risk Factors and Developmental Processes

Research on peer influences shows that, beginning in elementary school, peers can have profound causal effects on externalizing behavior problems. Within the first years of school, one can see peer rejection of aggressive children, aggressive children beginning to form relationships with similarly aggressive children, and peers beginning to attribute greater hostile intent and aversion to aggressive classmates. At the same time, aggressive children are more likely to engage in and escalate their aggressive behavior with aggressive peers, to develop hostile attributional styles for interpreting social encounters with others, to be the victim of peer attacks, and to bully others. This vicious cycle of early peer rejection, hostile attributional processes, and increased aggressive behavior, however, is malleable. Interventions that target early aggressive behavior by providing anger management skills and prosocial means of solving peer conflicts and reducing hostile intent toward others have resulted in increased peer acceptance and decreased externalizing behavior problems.

It is critical to expand on these important results in two ways. First, the outcomes from these interventions should be expanded beyond peer rejection and hostile intent to include indices of peer victimization and formation of peer cliques. Are the skills learned through intervention generalizable to these domains of peer influence? Also, long-term effects need to be documented. If these early interventions are successful in deterring the formation of aggressive and antisocial cliques, this could have profound effects during adolescence by deterring association with deviant peers and preventing the escalation of serious antisocial behavior. Clearly, long-term followup of these interventions is needed.

The second way to expand these interventions is through research to determine ways of effectively translating the interventions for use by communities, schools, and mental health service systems. School policies, classroom structure, and classroom management also may correlate with externalizing behavior problems (see the Broader Social Environment, Communities, and Schools section), which could intensify or constrain interventions. Critical issues will need to be addressed: who will receive the intervention (all children or only targeted high-risk children), when in development the intervention will be most effective (e.g., early versus late elementary school), for whom the intervention should continue, who should administer and deliver the intervention, and what should administering and delivering the intervention cost? However, the potential gain of decreased externalizing behavior problems is well worth the effort.

Although the potential for early peer interventions to affect adolescent association with deviant peers requires further empirical testing, the current data on deviant peers are quite clear: association with deviant peers during adolescence is a significant causal risk factor for antisocial behavior. Grouping similarly deviant adolescents together, even in the presence of therapeutic interventions, serves only to maintain and possibly enhance antisocial behavior. This finding is in direct conflict with many educational, community, and state policies and services that group troubled youth together in classrooms or in group homes. Clearly, these policies deserve re-examination given these research findings. Also, there needs to be more research that examines alternatives to group placement (e.g., therapeutic foster care) and that addresses ways of preventing association with deviant peers during pre- and early adolescence (e.g., after-school programs, increased parental monitoring).

In looking over the research on peer rejection, victimization, and enhancement of aggressive
behavior, it is not clear how these three forms of peer influence interact or mutually develop over time. Although research indicates that rejected and aggressive children are more likely to be victimized in grade school, it is not clear whether these children are also at risk for victimization during adolescence. Also, how does early victimization affect peer acceptance and the formation of social cliques? Are there developmental events, child characteristics, or family influences that increase vulnerability to peer influence and, therefore, could be used to more effectively target preventive interventions? Some of the fundamental peer processes involved in the development of externalizing behavior problems have been established; research is needed that pursues more complex interactions and the developmental timing of peer influences from early childhood through adolescence.

References


Table 3. Peer Influences—Research Summaries  
**Peer Rejection**

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Representativeness</th>
<th>Size</th>
<th>Age*</th>
<th>% Male</th>
<th>SES**</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bierman, Smoot, &amp; Aumiller</td>
<td>1993</td>
<td>Concurrent group comparisons</td>
<td>selected 4 groups of children from rural sample of 415; aggressive, rejected, aggressive-rejected, &amp; comparison</td>
<td>95</td>
<td>1/2, 3/4, 5/6 gr</td>
<td>6.4-13 yrs</td>
<td></td>
<td>Mixed</td>
<td>Elementary school boys rated by their peers as both aggressive &amp; rejected had higher teacher, peer, &amp; observer ratings of argumentative-disruptive behavior (verbal aggression, hyperactivity, rule violations, &amp; disruptiveness) than boys who were rejected only, aggressive only, or nonproblematic. All 3 problem groups had lower peer &amp; teacher ratings of prosocial behavior than nonproblematic boys.</td>
</tr>
<tr>
<td></td>
<td>1995</td>
<td>Prospective longitudinal 2 yrs</td>
<td>Convenience: followup study of 95 schoolchildren selected from sample of 415 students in rural area; included aggressive, rejected, aggressive-rejected, &amp; comparison children</td>
<td>81</td>
<td>1/2, 3/4, 5/6 gr</td>
<td>6.4-13 yrs</td>
<td></td>
<td>Mixed</td>
<td>Elementary school boys rated by peers as aggressive-rejected exhibited a maladaptive developmental trajectory over 2 yrs; they continued to be rated as more aggressive &amp; hyperactive-disruptive by peers &amp; teachers than comparison children, taking into account T1 behavioral differences, &amp; were also less preferred by peers. Rejected or aggressive children had a more normalizing trajectory; on most T2 measures they resembled comparison children, although aggressive children continued to be more disruptive.</td>
</tr>
<tr>
<td>Bierman, Terry, et al.</td>
<td>1995</td>
<td>Prospective longitudinal 8 yrs</td>
<td>Convenience: stratified random sample from 1,147 3rd graders from 28 schools, Durham, NC; selected according to peer nominations of aggression &amp; rejection</td>
<td>407</td>
<td>3rd &gt; 6th, 8th, 10th gr</td>
<td>60-13 yrs</td>
<td></td>
<td>Mixed</td>
<td>Self-reported externalizing behavior increased from grade 6 to grade 10 for boys nominated as rejected &amp; aggressive by 3rd-grade peers, but not for aggressive, rejected, or nonproblematic boys; 6th-grade intercepts did not differ across group. For girls, 6th-grade externalizing was higher for aggressive girls, &amp; was consistent from 6th to 10th grades. Analyses of parent reports found that externalizing was higher for rejected than nonrejected boys. Aggressive boys showed an increase in externalizing from 6th to 10th grades, while nonaggressive boys showed a decrease.</td>
</tr>
</tbody>
</table>

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**Key Statistics**

- **Argg/Rej Group Time 1 & Behavior Time 2**
  - Aggression: $F(3, 84) = 16.45, p < .001$
  - $M = .86^{a}$ aggressive-rejected
  - $M = .35^{b}$ aggressive
  - $M = .12^{c}$ rejected
  - $M = .58^{d}$ comparison

- **Prosocial Behavior**
  - $F(3, 84) = 4.31, p < .001$
  - $M = .45^{a}$ aggressive-rejected
  - $M = .39^{b}$ rejected
  - $M = 1.14^{c}$ comparison

---

* Indicates that data at first age are used to predict data at second age.  
** Unless otherwise indicated, income is reported in yearly amounts.
### Key Statistics

#### Child: Observed Aggression, School

- **t (356) = 8.76, p < .004**
- **M's = 1.95 IV, 1.92 control**

#### Child: Behavior Change, Parent

- **d = .50, F (245) = 15.55, p < .0001**
- **M's = 1.33 IV, 1.00 control**

#### Child: Behavior Change, Teacher

- **d = .53, F (1, 359) = 17.38, p < .0001**
- **M's = 1.62 IV, 1.37 control**

#### Social Cognition: Social Problem Solving

- **d = .33, F (1, 359) = 9.61, p < .002**
- **M's = .61 K, .70 gr 1 IV, .63 k, .67 gr 1 ctrl**

#### Social Cognition: Aggressive Retaliation

- **d = .23, F (1, 359) = 4.57, p < .04**
- **M's = .43 K, .31 gr 1 IV, .42 k, .35 gr 1 ctrl**

#### Peers: Positive Peer Interaction

- **d = .27, F (356) = 6.30, p < .02**
- **M's = .38 IV, .66 control**

#### Peers: Peer Social Preference

- **d = .28, F (356) = 6.38, p < .02**
- **M's = -.47 IV, -.63 control**

#### Coercive Interactions & Antisocial Behavior

- **\(z^2 (24, N = 380) = 33.9, p = .08, CFI = .98\)**
- **p's = .21 boys, .22 girls child-peer**
- **p's = .37 boys, .34 girls child-parent**
- \((p's < .05, structural equation model)\)

### Rejection, Post-IV, Teacher Ratings

- **t (17) = 2.81, p < .01 rejection**
- **M's = 3.21 AR IV, 4.18 AR ctrl**

### Aggression, Post-IV, Teacher Ratings

- **t (17) = 2.12, p < .04 aggression**
- **M's = 1.53 AR IV, 3.15 AR ctrl**

### Social Acceptance, Post-IV, Peer Ratings

- **t (17) = 2.23, p < .04 acceptance**
- **M's = -.57 AR IV, -1.55 AR ctrl**

### Aggression, 1-yr Followup, Teacher Ratings

- **t (12) = 2.41, p < .03 aggression**
- **M's = 2.69 AR IV, 3.98 AR ctrl**

### Prosocial, 1-yr Followup, Teacher Ratings

- **t (12) = 2.05, p < .05 prosocial**
- **M's = 3.32 AR IV, 2.49 AR ctrl**

\((p's < .05, all IV \times outcome F's)\) (ANOVAs, covariate: pre-intervention scores)
Peer Influences—Peer Rejection

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lachman &amp; Wayland</td>
<td>1994</td>
<td>Prospective longitudinal 4 yrs</td>
<td>114</td>
<td></td>
<td>100%</td>
<td>Low-middle middle</td>
<td>20% AfA 74% Cauc</td>
<td>Peer-rated low social status &amp; aggression in 4th-6th grade predicted higher composite externalizing scores (teacher/peer/observer ratings) 4 yrs later. Self-reports of crimes against persons were predicted by higher composite peer-rated aggression but not social status.</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Schwartz et al., 1997: see &quot;Family Characteristics, Conflict-Discipline&quot;</td>
<td></td>
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</tbody>
</table>

**Schwartz et al., 1997: see "Family Characteristics, Conflict-Discipline"**

Peer Victimization

<table>
<thead>
<tr>
<th>Authors</th>
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<th>Size</th>
<th>Age</th>
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<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crick, Casas, &amp; Ku</td>
<td>1999</td>
<td>Concurrent group comparisons</td>
<td>129</td>
<td>M = 4.5 yrs</td>
<td>52%</td>
<td>N/R</td>
<td>44% AfA 10% AsnA 2% Other</td>
<td>Preschoolers who experienced relational (ignored, left out) or physical (hit, pushed, called names) victimization were more rejected by peers than nonvictims. Children who experienced relational victimization were also less accepted by peers than other children. Relational victimization accounted for variance in boys’ &amp; girls’ acceptance scores, &amp; in boys’ &amp; younger children’s (3.1-4.6 vs. 4.7-5.6 yrs) rejection scores, controlling for physical victimization. Analyses were based on peer reports.</td>
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<tr>
<td>Crick &amp; Grotzetter</td>
<td>1996</td>
<td>Concurrent group comparisons</td>
<td>474</td>
<td>3rd-6th gr</td>
<td>52% 30%</td>
<td>Low-middle middle</td>
<td>60% Cauc 2% Other</td>
<td>Rejected children (according to peer nominations) reported more relational* victimization than popular, average, neglected, or controversial children &amp; more overt** victimization than popular or controversial children. Rejected children also received fewer prosocial acts than popular children.</td>
</tr>
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</tbody>
</table>

**Key Statistics**

- **Externalizing Behavior, Other Report**
  - $r^2 (65) = .53$ aggression, .38 low social
  - $\beta = .07$, $p < .001$ aggression
  - $\beta = 1.35$, $p < .05$ social status
  - (both models, $p's$ = ns: race, social status)

- **Crimes Against Persons, Self-Report**
  - $r (65) = .23$ aggression
  - $r^2 = .056$, $\beta = .009$, $p < .05$ aggression
  - (both models, $p's$ = ns: all interactions)
  - (stepwise multiple regressions)

- **Relational Victimization, Peer Rejection**
  - $F (1, 114) = 6.02$, $p < .05$
  - M’s = .08 nonvictim, .63 victim

- **Relational Victimization, Peer Acceptance**
  - $F (1, 114) = 5.04$, $p < .05$
  - M’s = .08 nonvictim, -.58 victim

- **Physical Victimiation, Peer Rejection**
  - $F (1, 114) = 4.27$, $p < .05$
  - M’s = .08 nonvictim, .41 victim

- **Controlling Physical Victimization**
  - $p's < .05$, M’s victim > nonvictim:
  - peer acceptance; peer rejection, boys, & peer rejection, younger child
  - (see study for $P's$ and means)
  - (ANOVA, univariate & by gender, grade)

- **Treatment by Peers & Status**
  - Multivariate $F (12, 921) = 3.0$, $p < .001$
  - Relational victimization
    - $F (4, 250) = 7.2$, $p < .001$
    - M’s = 2.69*, rejected, 2.39* average, 1.94* pop, 2.11* neglect, 2.03* contro
  - Overt victimization
    - $F (4, 250) = 2.5$, $p < .05$
    - M = 2.54* rejected
  - M’s = 2.03* popular, 2.01* contro
  - Target of prosocial acts
    - $F (4, 250) = 3.3$, $p < .01$
    - M’s = 3.06* rejected, 3.54* popular
  - (M’s w/different superscripts, differ $p < .05$)
  - (MANOVA, ANOVA, Student Newman-Keuls)
<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Dodge</td>
<td>1980</td>
<td>Concurrent group comparisons</td>
<td>Source specific: selected boys rated by teachers highest on aggression &amp; by peers lowest on liking (rejected) &amp; matched by race</td>
<td>90</td>
<td>2nd, 4th, 6th gr</td>
<td>100%</td>
<td>Low-middle</td>
<td>33% AHA</td>
<td>Aggressive boys exposed to frustrating negative outcomes in a laboratory situation reacted with more retaliatory aggression than nonaggressive boys when peer intentions were ambiguous; responses to benign or hostile intentions did not differ. Boys responding to hypothetical negative outcomes with ambiguous peer intentions were more likely to attribute hostile intention &amp; retaliate aggressively toward aggressive than nonaggressive instigators.</td>
</tr>
<tr>
<td>Dodge &amp; Frame</td>
<td>1982</td>
<td>Concurrent group comparisons</td>
<td>Source specific: studies 1 &amp; 2, recruited boys rated by peers &amp; teachers high on aggression, low on prosocial/liking, &amp; matched (race &amp; classroom) nonaggressive/prosocial peers; 2 public elementary schools</td>
<td>81</td>
<td>K-5th gr</td>
<td>100%</td>
<td>N/R</td>
<td>80% Cau</td>
<td>Boys attributed more hostile intentions for instigating the same outcomes &amp; indicated more aggressive retaliation toward aggressive than nonaggressive peers. In a replication study, children were more likely to indicate that boys labeled aggressive would commit a future hostile act than boys labeled popular or not labeled. Aggressive boys who were the target of negative or ambiguous story outcomes attributed more hostility to the instigator than nonaggressive boys, although there were no differences when the outcome was directed at another peer. Aggressive boys indicated more aggressive retaliation to stories than nonaggressive boys.</td>
</tr>
</tbody>
</table>

**Key Statistics**

- **Behavior, Agg Status, Intention, Retaliation**
  - F (2, 72) = 2.64, p < .08 (agg x intent)
  - F (1, 72) = 6.56, p < .02 aggression
  - M’s = 2.3 agg, 1.5 nonagg; ambiguous
  - M’s = 1.8 agg, 1.7 nonagg; benign
  - M’s = 2.7 agg, 2.5 nonagg; hostile (ANOVA, Newman-Keuls post hoc)

- **Hypothetical Situation, Attributions of Hostile Intent, & Status of Peer Target**
  - F (1, 84) = 46.51, p < .0001 Aggressive subjects
    - M’s = 1.40 agg peers, 1.10 nonagg
  - Nonaggressive subjects
    - M’s = 1.31 agg peers, 1.03 nonagg

- **Hypothetical Situation, Retaliation**
  - F (1, 84) = 19.37, p < .0001
    - Aggressive subjects
      - M’s = 1.48 agg peers, 1.31 nonagg
    - Nonaggressive subjects
      - M’s = 1.39 agg peers, 1.20 nonagg (ANOVA)

- **Study 1: Hostile Attributions About Agg**
  - F (1, 75) = 4.48, p < .04
    - M’s = 1.48 agg, 1.38 nonagg

- **Study 1: Aggressive Retaliation on Boys**
  - F (1, 75) = 7.42, p < .01
    - M’s = 1.32 agg, 1.26 nonagg

- **Study 1: Aggressive Retaliation by Agg**
  - F (1, 75) = 3.20, p < .08
    - M’s = 1.34 agg, 1.23 nonagg

- **Study 1: Agg Status & Hostile Attribution**
  - F (1, 75) = 6.51, p < .02
    - Aprx M = 1.52 agg, self-directed
    - Aprx M = 1.37 nonagg, other directed
    - Aprx M = 1.43 agg, other directed
    - Aprx M = 1.43 nonagg, other directed

- **Study 2: Future Hostile Acts, Agg Status**
  - F (2, 148) = 61.75, p < .001
    - M’s = .59 agg, .35 no label, .20 pop
    - Aprx = approximate M’s from figure (ANOVA, Newman-Keuls post hoc)
### Peer Influences—Peer Victimization

#### Peer Attribution

<table>
<thead>
<tr>
<th>Authors</th>
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<th>Age</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Dodge &amp; Frame</td>
<td>1982</td>
<td>Concurrent group</td>
<td>48</td>
<td>2nd gr</td>
<td>100%</td>
<td>Low-mid</td>
<td>10% N/R</td>
<td>Concomitant designs study 3, recruited volunteers from 8 schools in small Midwestern town. T1 not used to predict T2. Aggressive boys initiated more acts of physical or verbal unprovoked aggression than average or nonaggressive boys. Overall, aggressive boys received more aggressive acts than they were victims of, while average &amp; nonaggressive boys received more aggressive acts than they initiated. Analyses were based on classroom observations.</td>
</tr>
<tr>
<td>Perry, Kusel, &amp; Perry</td>
<td>1988</td>
<td>Prospective longitudinal</td>
<td>165</td>
<td>3rd-6th gr</td>
<td>50%</td>
<td>Middle</td>
<td>N/R</td>
<td>Peer-rated victimization (verbal &amp; physical) was associated with more peer-rated rejection &amp; less peer-rated acceptance. Rejected children had higher victimization scores than children rated by their peers as popular, neglected, average, or controversial.</td>
</tr>
</tbody>
</table>

#### Victimization & Criminal Offending

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
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<tbody>
<tr>
<td>Esbensen &amp; Huizinga</td>
<td>1991</td>
<td>Retrospective group comparisons</td>
<td>877</td>
<td>11, 13, &amp; 15 yrs</td>
<td>100%</td>
<td>Low</td>
<td>33% AfA</td>
<td>Self-reports of lifetime personal (assault) and/or property (theft) victimization were higher for youths reporting a history of delinquency (minor &amp; felony assault, theft, alcohol &amp; marijuana use, &amp; drug sales) than for nondelinquent youths. The likelihood of victimization increased with increases in the variety &amp; number of delinquent behaviors. Among youth victimized in the past year, those involved in delinquent activities reported higher rates of personal or property victimization in the past year than did nondelinquent youths.</td>
</tr>
</tbody>
</table>

#### Key Statistics

- **Study 3: Agg Status by Initiator on Agg**
  - $F(2, 34) = 2.95, p < .06$ (agg x initiate)
  - $F(2, 45) = 6.93, p < .01$ (aggression)
  - Aggressive boys, verbal aggression 28.3 initiate, 19.2 receive, +46%
  - Aggressive boys, physical aggression 4.3 initiate, 3.6 receive, +19%
  - Average boys, verbal aggression 17.7 initiate, 18.3 receive, -4%
  - Average boys, physical aggression 1.9 initiate, 2.1 receive, -10%
  - Nonaggressive boys, verbal aggression 7.5 initiate, 9.1 receive, -18%
  - Nonaggressive boys, physical aggression 1.7 initiate, 2.7 receive, -37%
  - (ANOVA)

- **Victimization & Rejection, Acceptance**
  - $r = .57$ reject, -36 accept, $p's < .001$

- **Status & Victimization**
  - $F(4, 93) = 8.31, p < .001$
  - $M = 171.2$ rejected
  - $M = 52.9$ neglected
  - $M = 46.7$ controversial
  - $M = 39.6$ average
  - $M = 25.8$ popular
  - (ANOVA, t tests, $t$'s not reported, $p's < .05$)

- **Lifetime Prevalence of Personal & Property Victimization & Delinquency**
  - 24%, 35% no delinquent acts
  - 37%, 44% 1 type of delinquent act
  - 45%, 48% 2 types of delinquent acts
  - 51%, 67% 3–5 types of delinquent acts
  - 68%, 68% ≥ 6 types of delinquent acts
  - (order of %: personal, property victim)
  - (chi-squares not reported, $p's < .001$)

- **Last Year Frequency Personal Victimization**
  - $M's = 1.74$ nondel, 3.03 delinquent

- **Last Year Frequency Property Victimization**
  - $M's = 1.95$ nondel, 3.40 delinquent
  - (ANOVA, $F$'s not reported, $p's < .05$)
Peer Influences—Peer Victimization
Victimization & Criminal Offending

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<tbody>
<tr>
<td>Sampson &amp; Lauritsen</td>
<td>1990</td>
<td>Concurrent Population: randomly selected an age 16+ person from households in 238 (1982) &amp; 300 (1984) electoral districts, England &amp; Wales, for a national representative sample; British Crime Survey</td>
<td>21,935</td>
<td>16+ yrs</td>
<td>N/R</td>
<td>Low</td>
<td>2% Afr</td>
<td>95% Cau</td>
<td>3% Other</td>
</tr>
<tr>
<td>Singer</td>
<td>1986</td>
<td>Retrospective Conveniences: randomly sampled 10% of participants from earlier study of males born in 1945, Philadelphia, PA</td>
<td>567</td>
<td>26 yrs</td>
<td>100%</td>
<td>Low-middle</td>
<td>N/R</td>
<td>Afr</td>
<td>N/R</td>
</tr>
<tr>
<td>Cairns, et al.</td>
<td>1988</td>
<td>Concurrent Conveniences/Source specific: recruited 696 children from 4 elementary &amp; 3 middle schools in suburban &amp; rural areas of 2 counties; selected 49 children rated as highly aggressive by school personnel &amp; nonaggressive controls matched on gender, race, SES, age, size, &amp; classroom 80</td>
<td>4th &amp; 7th gr</td>
<td>50%</td>
<td>Low-upper M = 30.9 (7-48)</td>
<td>25% &quot;Minority&quot; (mostly Afr)</td>
<td>75% Cau</td>
<td>Highly aggressive children &amp; nonaggressive matched controls were equally distributed among nuclear, secondary, peripheral, &amp; isolated status in social clusters. Aggressive children did not differ on peers' judgment of isolation or number of times chosen as a reciprocal best friend, although they were rated by teachers as less popular than controls. Ratings of aggression were similar for best friend boys in 4th &amp; 7th grade, 7th-grade girls, &amp; 7th-grade nonreciprocal boy best friends.</td>
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</tbody>
</table>

Key Statistics

1982 Cohort: Victimization & Offending
$\chi^2(8) = 395.01$
$= .25, p < .001$ offending
$= .43, p < .001$ high crime
$= .23, p < .01$ male
$= .02, p < .001$ age

1984 Coh: Victimization & Minor Deviance
$\chi^2(8) = 369.46$
$= .21, p < .05$ minor deviance
$= .12, p < .001$ high crime
$= .26, p < .01$ male
$= .03, p < .001$ age
$= .37, p < .001$ single
$= .66, p < .01$ nights out

Self-Reported Assault & Victimization
$\chi^2(12) = 10.65, p = .56$
$r = .77$ victimization
$r = .63$ gang membership
$r = .48$ weapon use

Adult Arrest Record
68% victim, 27% nonvictim

Logistic regression analyses

Social Cluster Analysis
30% agg, 35% ctrl nuclear
45% agg, control secondary
20% agg, control peripheral
5% agg, 0% ctrl isolated

Peer Isolation: 10% agg, 5% ctrl

Reciprocal Best Friend
30% agg, 35% ctrl

Chi-squares not reported, p's = ns

Popularity, Teacher Ratings
$F(1, 36) = 21.08, p < .001$
$M^a = 4.12, 2.73 nonagg 4th boys$
$M^a = 4.32, 3.03 nonagg 4th girls$
$M^a = 4.23, 3.73 nonagg 7th boys$
$M^a = 4.53, 2.13 nonagg 7th girls$

Best Friend Aggressiveness
$r = .61, p < .01$ reciprocal 4th boys
$r = .63, p < .01$ reciprocal 7th boys
$r = .51, p < .01$ reciprocal 7th girls
$r = .40, p < .01$ nonreciprocal 7th boys

ANOVA, correlations
### Peer Influences—Peer Enhancement

#### Peer Selection

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<tr>
<th>Authors</th>
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<tr>
<td>Farver</td>
<td>1996</td>
<td>Concurrent</td>
<td>Convenience: recruited preschool children from 4 classrooms, 1 school in low-income, ethnically diverse area of large West Coast city</td>
<td>64</td>
<td>4 yrs</td>
<td>50%</td>
<td>Low</td>
<td>45% Cauc</td>
<td>Highly aggressive preschool children were rated by teachers as having more reciprocal friendships than less aggressive children but fewer friendships than children who were rated as nonaggressive. Aggressive preschoolers were members of social cliques with children observed to have similar levels of aggression. Nuclear members of social cliques had more observed aggression than peripheral, secondary, or isolated members.</td>
</tr>
<tr>
<td>Giordano, Cemkovich, &amp; Pugh</td>
<td>1986</td>
<td>Concurrent</td>
<td>Convenience: recruited preschool children from 4 classrooms, 1 school in low-income, ethnically diverse area of large West Coast city</td>
<td>884</td>
<td>12-19 yrs</td>
<td>49%</td>
<td>Low-middle</td>
<td>53% AFA</td>
<td>There were no significant differences in self-reported friendship stability (average length of time being friends) for nonoffenders, low &amp; high frequency minor offenders, &amp; low &amp; high frequency major offenders, controlling for age. * SMSA: American Standard Metropolitan Statistical Area</td>
</tr>
<tr>
<td>Haselager, Hartup, et al.</td>
<td>1998</td>
<td>Concurrent</td>
<td>Convenience: recruited children from 102 classes, 51 elementary &amp; 8 special education schools in the Netherlands; included target child, 1 mutual same-sex friend, &amp; 1 nonfriend of target</td>
<td>576</td>
<td>4th-8th gr</td>
<td>50%</td>
<td>Low-middle</td>
<td>90% Cau; 10% Other*</td>
<td>Friends were more similar than nonfriends &amp; boys were more similar than girls on classmates’ ratings of antisocial behavior (starts fights, disrupts, &amp; bullies). Friends showed more similarity for antisocial behaviors than prosocial behaviors, shyness/dependency, or sociometric measures. Friends did not differ from nonfriends on ratings of social acceptance.</td>
</tr>
<tr>
<td>Kupersmidt, Burchinal, &amp; Patterson</td>
<td>1995</td>
<td>Prospective longitudinal</td>
<td>Convenience: recruited all 2nd–4th graders in school system, small southern city; 62% of population sampled</td>
<td>880</td>
<td>3rd-4th gr</td>
<td>49%</td>
<td>Low-N/R</td>
<td>39% AFA</td>
<td>Students rated by peers as having an aggressive best friend, high rates of conflict with this friend, or who were rejected by peers were at greater risk for delinquency 4 yrs later (teacher or self-reports).</td>
</tr>
</tbody>
</table>

#### Key Statistics

- **Aggression & Reciprocal Friends**: $\chi^2(4) = 18.76, p = .000$
  - No reciprocal friends
    - 1% no agg, 8% few, 6% many
  - One reciprocal friend
    - 2% no agg, 12% few, 28% many
  - More than 2 reciprocal friends
    - 20% no agg, 14% few, 8% many
  - (Aggressive incidents: few 1-4, many > 7)

  **Aggression Within 12 Cliques**
  - $r^2 = .73$ to .86, $p < .01$ to .05 (9 cliques)
  - $r^2 = .50$, .54, .59, $p = ns$ (3 girl cliques)

  **Aggression by Clique Status, Sex**
  - $F(4, 63) = 6.54, p = .00$
  - M’s = 2 Nuc; 1.8 Sec, Isol; 1.5 Periph

  **Stability of Friendships**
  - $F = .54, p = ns$
  - M = 4.75 low-frequency minor del
g     - M = 5.20 high-frequency minor del
g     - M = 5.37 high-frequency major del

  **Fights**
  - $F(1, 188) = 9.73, p < .01$
  - M’s = .28 girls, .76 boys friends
g     - M’s = .43 girls, 1.00 boys nonfriends

  **Disrupts**
  - $F(1, 188) = 7.22, p < .01$
  - M’s = .37 girls, .86 boys friends
g     - M’s = .50 girls, 1.15 boys nonfriends

  **Bullies**
  - $F(1, 188) = 6.14, p < .01$
  - M’s = .24 girls, .80 boys friends
g     - M’s = .33 girls, 1.07 boys nonfriends

  **Cumulative Risk Model: Delinquency**
  - $\beta = .31, p < .001$ peer rejection
  - $\beta = .27, p < .001$ conflict with friend
  - $\beta = .21, p < .001$ aggressive friend

  (Backward logistic regression analysis)
Peer Influences—Peer Enhancement

Peer Selection

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</tr>
</thead>
<tbody>
<tr>
<td>Tremblay, et al.</td>
<td>1995</td>
<td>Concurrent correlational</td>
<td>Population:</td>
<td>1,034</td>
<td>10, 11, &amp; 12 yrs</td>
<td>100%</td>
<td>Low</td>
<td>100% Caus (French Canadian)</td>
<td>Peer ratings of aggression were similar for boys &amp; their friends at ages 10, 11, &amp; 12. Boys' &amp; friends' likability at ages 10, 11, &amp; 12 were taken into account.</td>
</tr>
<tr>
<td>Masse, et al.</td>
<td></td>
<td>Cross-sectional</td>
<td>recruiting boys in 53 public schools, low-SES areas, Montreal, Canada; boys who had Canadian-born, French-speaking parents &amp; a mutual friend were eligible</td>
<td></td>
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</tr>
<tr>
<td>Krueger, et al.</td>
<td>1998</td>
<td>Concurrent correlational</td>
<td>Convenience:</td>
<td>360</td>
<td>21 yrs</td>
<td>50%</td>
<td>N/R</td>
<td>N/R Cauc</td>
<td>Intimate partners at age 21 had similar self-reports of antisocial behavior, including variety of offenses &amp; peers' delinquency. They also had similar attitudes about the consequences of crime.</td>
</tr>
<tr>
<td>Moffitt, et al.</td>
<td></td>
<td>Correlational</td>
<td>recruiting at age 21 from Dunedin study participants &amp; their partners of 6 mths or more; original sample: consecutive births, spring, 1972-1973, Dunedin, New Zealand</td>
<td></td>
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</tr>
<tr>
<td>Quinton, et al.</td>
<td>1993</td>
<td>Prospective longitudinal</td>
<td>Convenience:</td>
<td>352</td>
<td>10.5 yrs</td>
<td>47%</td>
<td>Low</td>
<td>N/R</td>
<td>A supportive nondeviant partner at age 21 interrupted the continuity between conduct disorder in childhood (measured by teacher &amp; retrospective self-reports at age 10) &amp; adult criminal convictions. Childhood conduct disorder (retrospective report) &amp; deviant peers increased the risk of having a 1st partner who was deviant.</td>
</tr>
<tr>
<td>Pickles, et al.</td>
<td></td>
<td>Cross-sectional</td>
<td>Convenience:</td>
<td>150+</td>
<td>M = 10.5 yrs</td>
<td>T1</td>
<td>N/R</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yamaguchi, et al.</td>
<td>1993</td>
<td>Retrospective correlational</td>
<td>Convenience:</td>
<td>454</td>
<td>26-31 yrs</td>
<td>50%</td>
<td>N/R</td>
<td></td>
<td>There was moderate concordance between partners on measures of illicit drug use over the lifetime, prior to marriage, &amp; in the past 12 mths for adults who had used a class of drug 10 or more times. Latent trait log-linear models controlling for population heterogeneity indicated that this concordance was due to assortative mating, not socialization.</td>
</tr>
</tbody>
</table>

Key Statistics

- Boys' & Friends' Aggressiveness
  \[ \beta = .166, p < .05 \] age 10
  \[ \beta = .268, p < .05 \] age 11
  \[ \beta = .268, p < .05 \] age 12

- (structural equation model)

- Assortative Mating & Antisocial Behavior
  \[ r = .54, AGFI = .90 \] variety of offenses
  \[ r = .54, AGFI = .99 \] peers' delinquency

- Assortative Mating & Attitudes
  \[ r = .21, AGFI = .91 \] risk of being caught
  \[ r = .20, AGFI = .97 \] sanctioned by job
  \[ r = .41, AGFI = .99 \] sanctioned by partner
  \[ r = .38, AGFI = .99 \] sanctioned by family
  \[ r = .42, AGFI = .99 \] sanctioned by friends

- Assortative Mating coefficient
  \[ AGFI = \text{adjusted goodness of fit index} \]

- (confirmatory factor analytic models)

- Continuity of Conduct Disorder & Partner
  \[ \chi^2(2) = 10.44, p < .005 \] (n = 150)
  \[ M = 0.00 \] with nondeviant partner
  \[ M = 17.7 \] without nondeviant partner

- (latent class models)

- First Cohabitation With Deviant Partner
  Conduct disorder (n = 352)
  OR = 1.67, CI = 1.1-2.5, Wald p = .01
  Deviant peers
  OR = 2.72, CI = 1.3-5.3, Wald p = .007

- (Cox proportional hazards model)

- Concordance of Drug Behavior, Partners
  \[ X = .34 \] ever lifetime
  \[ X = .34 \] ever prior marriage
  \[ X = .43 \] last 12 mths

- (all p's < .001)

- (see study for loglinear models)

- (weighted kappas)
Peer Influences—Peer Enhancement
Peer Reinforcement

Key Statistics

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Design</th>
<th>Sample Size</th>
<th>Gender</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reciprocate: Aversive Antecedent</td>
<td>Prospective longitudinal</td>
<td>14 &gt; 18 yrs, 32 yrs</td>
<td>Low</td>
<td>10% White</td>
<td>90% Caucasian</td>
<td>Bullying at age 14 predicted bullying at age 32, independent of aggression at 14 or 32. Self-reports of bullying at age 32 were almost twice as likely for boys who had reported bullying at age 14, &amp; almost 5 times as likely for boys who reported bullying at 18. Men who reported bullying at age 32 were over 2 times more likely to have been convicted of a violent crime.</td>
</tr>
<tr>
<td>Continue: Oppositional Antecedent</td>
<td>Prospective longitudinal</td>
<td>14 &gt; 18 yrs, 32 yrs</td>
<td>Low</td>
<td>10% White</td>
<td>90% Caucasian</td>
<td>Bullying at age 14 predicted bullying at age 32, independent of aggression at 14 or 32. Self-reports of bullying at age 32 were almost twice as likely for boys who had reported bullying at age 14, &amp; almost 5 times as likely for boys who reported bullying at 18. Men who reported bullying at age 32 were over 2 times more likely to have been convicted of a violent crime.</td>
</tr>
<tr>
<td>Opponent: Positive Antecedent</td>
<td>Prospective longitudinal</td>
<td>14 &gt; 18 yrs, 32 yrs</td>
<td>Low</td>
<td>10% White</td>
<td>90% Caucasian</td>
<td>Bullying at age 14 predicted bullying at age 32, independent of aggression at 14 or 32. Self-reports of bullying at age 32 were almost twice as likely for boys who had reported bullying at age 14, &amp; almost 5 times as likely for boys who reported bullying at 18. Men who reported bullying at age 32 were over 2 times more likely to have been convicted of a violent crime.</td>
</tr>
</tbody>
</table>

Aggression, Teacher Ratings

F (2, 69) = 13.50, p < .001

Aprox M's = 1.12, 1.40 substantial > 30%
Aprox M's = 0.70, 1.1 substantial > 30%

Aggression, Observed

F (2, 69) = 5.02, p < .01

Aprox M's = 0.70, 1.1 substantial > 30%

Bullying Age 14 & Bullying Age 32

OR = 4.83, \( \chi^2 = 28.3, p = .0001 \)
Bullying Age 32 & Violent Crimes by 32

OR = 2.18, \( \chi^2 = 4.31, p = .019 \)

Peers Present & Bullying Duration

r = .23, p < .05

Reinforcement 21% active, 54% passive

Peers & Intervention: 25.4%

Gender, Grade on Bullying

F (1, 120) = 6.5, p < .002
Aprox M's = 17 yb, 36 cb, 25 yg, 10 og

Gender, Grade on Victim Support

F (1, 120) = 4.7, p < .04
Aprox M's = 28 yb, 11 cb, 26 yg, 34 og

y = younger, o = older, b = boys, g = girls

aprox = approximate M's from figures

(ANOVAs)

(controls: aggression T1, T2, & T1 x 1-2)

Logistic regressions

(ANOVAs)
### Peer Influences—Peer Enhancement

#### Deviant Peers

**Authors**: Chamberlin & Reid  
**Year**: 1998  
**Design**: Intervention random assignment  
**1 yr followup**  
**Representativeness**: Source specific: chronic delinquents referred by juvenile justice system for community placement, metro area of mid-sized Pacific NW city  
**Size**: 79  
**Age**: 12-17 yrs  
**% Male**: 100%  
**SES**: N/R  
**Ethnicity**: 83% CA, 6% HISP, 3% NAT  
**Result**: Boys who participated in multidimensional tx foster care (MTFC) showed a greater reduction in rate of official criminal referrals & reported less delinquency, index offenses, & felony assaults in the year following treatment than boys who received group care (GC). Participation in MTFC predicted official referral rate, self-reported delinquency, index offenses, & felony assaults, even after accounting for age of first offense, age at baseline, & pre-treatment offense rates.

**Key Statistics**

- **Rate of Official Criminal Referrals**
  - $F(1, 77) = 3.93, p = .023$ group x time
  - $R^2 = .19, F = -3.22, p = .002$ tx
  - $M's = 8.5, 2.6$ MTFC, 6.7, 5.5 GC

- **Delinquency, Self-Report**
  - $F(1, 77) = 6.50, p = .01$ group x time
  - $R^2 = .19, F = -2.1, p = .04$ tx
  - $M's = 3.2$ MTFC, 8.6 GC

- **Felony Assaults, Self-Report**
  - $F(1, 77) = 4.10, p = .03$ group x time
  - $R^2 = .20, F = -5.1, p = .03$ tx
  - $M's = 1.2$ MTFC, 2.7 GC

**Authors**: Dishion & Andrews  
**Year**: 1995  
**Design**: Intervention random assignment  
**1 yr followup**  
**Convenience**: self-referred families recruited through ads, flyers, & community professionals; eligible at-risk children had at least 4 out of 10 possible risk factors; Adolescent Transitions Program  
**Size**: 158  
**Age**: 6th-8th gr  
**% Male**: 53%  
**Low Msd = $15k-$20k**  
**Low-middle 50% > 12 yrs**  
**Convenience**: Low-middle = 15, $15k-$20k  
**Low-middle M's = 8.5, 2.6$ MTFC; 6.7, 5.5 GC  
**5% Other**  
**95% Cauc**  
**5% Other**  
**95% Cauc**  
**Adolescents who participated in an intervention that aggregated high-risk youth showed increased externalizing behavior according to teacher reports at 1-yr followup compared to controls. Adolescents in a parent-focused intervention showed a decrease in externalizing post-tx compared to controls. Dishion, McCord, & Poulin (1999) (see below) report that iatrogenic effects for teacher reports of delinquency were found at 1st, 2nd, & 3rd year followups.**

**Key Statistics**

- **Delinquency, Teacher Report**
  - $F(1, 125) = 3.44, p < .06$
  - $M's = 19.3, 18.2 post parent 1 yr followup $F(1, 125) = 3.94, p < .05$
  - $Post hoc F(1, 125) = 4.29, p < .05$
  - $M's = 10.3, 13.1 post teen group$
  - $M's = 10.3, 11.3, p < .10 parent & teen$

**Delinquency, Teacher Report**

- **Violence, self-report**
  - $F(1, 77) = 4.10, p = .06$
  - $R^2 = .20, F = -5.1, p = .03$ tx
  - $M's = 1.2$ MTFC, 2.7 GC

- **Dishion, Eddy, et al.**
  - **1997**  
  - **Prospective longitudinal**  
  - **8-9 yrs**  
  - **T1: discipline & antisocial behavior**  
  - **T2-4: deviance training & violence**  
  - **Population**: recruited from 2 birth cohorts of 4th grade boys attending randomly selected school in 10 neighborhoods with highest delinquency rates, metro area, midsize OR city; Oregon Youth Study  
  - **Size**: 194  
  - **Age**: 9-10 > 13-18 yrs  
  - **100%**  
  - **Low-middle 20%**  
  - **receive aid T1**  
  - **N/R, % Other**  
  - **Adolescent peer deviancy training* (ages 13-18) predicted police contact for violent arrests & self-reported violence, controlling for childhood antisocial behavior (child/parent/teacher reports) & childhood parental coercive discipline (observed).**
  - **Peer deviancy training: the average duration of rule-breaking talk during videotaped interactions with 1 of 3 peers child spends most of his or her time with, measured at ages 13/14, 15/16, 17/18.**

**Key Statistics**

- **Externalizing, Teacher Report**
  - $Post-tx F(1, 125) = .39, p < .06$
  - $M's = 13.3 pre, 12.2 post parent 1 yr followup $F(1, 125) = 3.94, p < .05$
  - $Post hoc F(1, 125) = 4.29, p < .05$
  - $M's = 10.3, 13.1 post teen group$
  - $M's = 10.3, 11.3, p < .10 parent & teen$

**Externalizing, Teacher Report**

- **Violence, self-report**
  - $F(1, 77) = 4.10, p = .05$
  - $R^2 = .20, F = -5.1, p = .03$ tx
  - $M's = 1.2$ MTFC, 2.7 GC

**Adolescent Transitions**

- **Program**
  - **1-yr FU aprx M's = 3.3 teen, 2.1 control**
  - **3-yr FU aprx M's = 4.2 teen, 2.6 control**
  - aprx = approximate means from figure (covariate: baseline externalizing) (ANOVA, hierarchical multiple regression)
### Peer Influences—Peer Enhancement

#### Deviant Peers

| Authors           | Year | Design                          |Representativeness | Size  | Age | % Male | SES   | Ethnicity | Result |
|-------------------|------|---------------------------------|-------------------|-------|-----|--------|-------|-----------|--------|-------------------------------|
| Dishion, McCord, & Poulin | 1999 | Intervention random assignment, 5.5 yrs of matched pairs on aggression, family stability, family hx crime & substance abuse, acceptance of authority, parent discipline | Convenience; analyzed data from Cambridge-Somerville Youth Study; matched pairs of boys from high-crime & impoverished areas of eastern MA; tx 1936-1939 to 1945, 40 yr followup | 250   |     | 10.5 > 100% | M = 49 yrs |          | Boys sent to summer camp for more than 1 summer as part of a 5.5-yr treatment intervention had a 10:1 risk of having an undesirable outcome (defined as being convicted of a serious crime, dying by age 35, or being diagnosed with alcoholism or a psychiatric illness), compared to untreated matched peers. See Dishion & Andrews, 1995, for Adolescent Transitions Program results. |
| Elliott, Huizinga, & Menard   | 1999 | Prospective longitudinal 1 yr 1976-1977 replication 1977-1978 | Population: probability sample of U.S. households, representative of 11-17 yr olds according to U.S. Census Bureau; National Youth Survey | 1,725 | 13-18 > 14-19 yrs approx | Low-upper | N/R% AfrA N/R% Cauc N/R% Other | Delinquent peer group bonding & gender (male) predicted level of self-reported general delinquency & index offending, taking into account SES, age, race, cohort size, rural-urban residence, occupational & school strain, internal bonding (family, school, & belief), & external bonding (family & school involvement). Results were replicated the following year. Variables included in analyses (see study for β's for male gender) (path analysis, OLS regression) |
| Keenan, Loebcr, et al. | 1995 | Prospective longitudinal/concurrent correlational | Convenience/Source specific; randomized sample recruited from inner-city public schools, Pittsburgh, PA; 1/2 high risk for behavior problems, 1/2 randomly selected from remainder | 1,014 | 4th & 7th gr | 100% | Low-middle | M = 36.5 Hollingshead | Boys who reported that all or most of their peers had conflicts with authorities were twice as likely to have conflicts with authority themselves. Similarly, boys with peers involved in overt or covert delinquency were 1.5 times more likely to have conflicts with authorities later on, while boys previously exposed to peers engaged in overt or covert delinquency were twice as likely to engage in either one of these behaviors. Effects remained after accounting for parental supervision, parental warmth, & grade. |
Peer Influences—Peer Enhancement

Deviant Peers

authors: Patterson, vitaro, Tremblay, et al.
year: 1993
design: prospective longitudinal

representativeness: population: recruited 4th grade boys from 11 randomly selected schools in low-SES areas, neighborhoods with high delinquency rates, metro area of midsize NW city

size: 206
age: 4th > 8th gr
% male: 100%
SES: low-middle
ethnicty: N/R

result: initial level of antisocial behavior in grade 4 (intercept, parent/child/self-report) was associated with ineffective parental discipline & monitoring. Growth in antisocial behavior from 4th to 8th grade (slope) was related to increased deviant peer involvement & wandering. Deviant peer involvement continued to predict increased antisocial behavior, after controlling for wandering.

Vitaro, Tremblay, et al. 1997 prospective longitudinal

representativeness: population: boys in 53 public schools in low-SES area, Montreal, Canada, were rated by kindergarten teachers; eligible boys had Canadian-born, French-speaking parents with < 15 yrs ed

size: 868
age: 11-12 yrs
% male: 100%
SES: low
ethnicty: 100% Cauc

result: moderately disruptive (MD) boys (teacher ratings) with aggressive-disruptive (AD) friends reported more delinquency 1.5 yrs later than MD boys with average, nonaggressive-nondisruptive, or no friends, taking into account previous delinquency & parental occupational prestige. AD friends reported similar rates of delinquency as highly disruptive boys, controlling for parent occupational prestige. Highly disruptive boys had high levels of delinquency, regardless of their friends' level of aggressiveness.

Gangs

Bjerregaard & Smith 1993 concurrent group comparisons

data collected at 2 points; 6 mths apart; T1 not used to predict T2

representativeness: population: recruited from all 7th & 8th graders in public schools, Rochester, NY; over-sampled high-risk youth (male, high-crime areas)

size: 969
age: 13-15.5 yrs
% male: 73%
ethnicty: 68% AfrA

result: moderate disruptive (MD) boys members reported higher prevalence & incidence rates of serious, moderate, & minor delinquency than adolescents who were not affiliated with a gang. Male gang members reported higher prevalence & incidence of serious delinquency & higher incidence of moderate & minor delinquency than female gang members.

Key Statistics

Parenting & Antisocial Behavior

$R^2$ (4, $N = 201$) = 25.2, $p = .04$, $R^2 = .58$, .70, .36

Antisocial behavior from 4th to 8th grade (slope) was related to increased deviant peer involvement & wandering. Deviant peer involvement continued to predict increased antisocial behavior, after controlling for wandering.

Moderately Disruptive Boys & Friends

$F (3, 129) = 3.28, p = .01$

Highly Disruptive Boys & Friends

$F (3, 127) < 1.00, p = ns$

Serious Delinquency Incidence (%)

M'S = 3.7 gf, 6.6 nf, 6.5 gm, .03 nm

Moderate Delinquency Incidence (%)

M'S = 6.7 gf, 6.6 nf, 82 gm, 11 nm

Minor Delinquency Incidence (%)

M'S = 6.2 gf, .1 nf, 14 gm, 2.9 nm

Moderate Delinquency Prevalence (%)

M'S = 68 gf, 62 nf, 76 gm, 38 nm

Minor Delinquency Prevalence (%)

M'S = 11 gf, 2.6 nf, 22 gm, 3.2 nm

*em > f, gang vs. nongang p's < .05

(no other statistics reported)
### Peer Influences—Peer Enhancement

#### Gangs

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Representative</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Esbensen &amp; Huizinga</td>
<td>1993</td>
<td>Prospective longitudinal</td>
<td>799~</td>
<td>7, 9, 13, 15 yrs</td>
<td></td>
<td>52%</td>
<td>N/R</td>
<td>33% AfA</td>
<td>Prevalence of street &amp; serious offending and individual rates of offending were higher during active gang membership than prior to joining or after leaving a gang. Rates of offending were higher for gang than nongang members before, during, &amp; after active gang membership.</td>
</tr>
<tr>
<td>Thomberry, Krohn, et al.</td>
<td>1993</td>
<td>Prospective longitudinal</td>
<td>987</td>
<td>8th &amp; 9th gr, fall &gt; 10th &amp; 11th gr, spring</td>
<td></td>
<td>100%</td>
<td>Low-upper</td>
<td>64% AfA</td>
<td>Individual, street offending—Yr 3 (see study for additional results)</td>
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<td></td>
<td>Transient (1 yr) &amp; stable (2 or more yrs) gang members reported more delinquency &amp; crimes against persons while active gang members. Stable gang members reported higher rates of delinquency than transient &amp; nongang members before, during, &amp; after active status but reported more crimes against persons only while active members of the gang. Transient gang members reported more delinquency &amp; crimes against persons than nongang members only when an active gang member. Crimes against property showed no consistent cross-time or cross-group differences.</td>
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<td>Crimes Against Persons—Yr 3 (see study for additional results)</td>
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<td>Transient (n = 53) vs. n ongang: Cross-time: * p's = .01, .003, ns Cross-group: ** p's = .002, .047, ns Stable T1 &amp; T2 (n = 24; n ongang: Cross-time: p's = .001, .08 Cross-group: p's = .002, .047, ns M's = 4.3, 3.7, 3.1 nongang M's = 18.9, 7.7, 6.8 transient M's = 26.7, 37, 13.3 stable</td>
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<td></td>
<td>General Delinquency—Yr 3 (see study for additional results)</td>
</tr>
</tbody>
</table>

#### Key Statistics

- **Prevalence, Street Offenses**
  - Gang members during yr 3 only
    - Yr 1: .43 gang, .13 nongang (n = 799)
    - Yr 2: .55 gang, .14 nongang (n = 765)
    - Yr 3: .90 gang, .15 nongang (n = 1,091)
    - Yr 4: .77 gang, .15 nongang (n = 1,056)
  
- **Individual, street offending—Yr 3**
  - Yr 1: 13.9 gang, 2.0 nongang
  - Yr 2: 20.9 gang, 2.0 nongang
  - Yr 3: 34.5 gang, 5.7 nongang
  - Yr 4: 22.9 gang, 4.2 nongang

- **(see study for additional results)**

- **(t tests, gang vs. nongang, all p's < .05; temporal tests were not conducted)**
Broader Social Environment, Communities, and Schools

Research on the impact of community and broader social environmental factors differs from research discussed in other areas of this report in several fundamental ways. First, many of the community and social environmental features that elevate risk for externalizing behavior problems operate in a cluster. That is, while one can statistically identify distinct factors (e.g., minority group membership, economic disadvantage), in reality, risk of youth conduct problems is particularly elevated in social areas characterized by a confluence of these structural features.

Second, in the other sections of this report, assessments of risk are associated with individual variation in externalizing behavior problems and conduct problems. However, research examining the influence of community and broader social environment factors traditionally has focused on rates of violence and crime across particular geographic entities rather than on individual variation. For example, neighborhoods characterized by high rates of unemployment often have a high overall crime rate. These variables may not be strong in predicting which youth will exhibit externalizing behavior problems. However, the "strain" associated with the inability to achieve along traditional educational and occupational lines may be an important contextual factor influencing antisocial behavior.

Broader Social Environment

Within the broader social environment, two key factors have been related to aggression and delinquent behavior—culture and SES. Indeed, it can be very difficult to distinguish the effects of these two factors because SES is frequently confounded with ethnic membership. As noted above, it may be the interaction of culture and SES that is most germane to youth conduct problems. Given this caveat, cross-cultural research on aggression and violence has shown American culture to be more accepting of aggressive behavior (Hartz, 1995; Kumagai & Straus, 1983) compared with other cultures. This can be particularly striking within some U.S. subcultural groups (Heimer, 1997), such as street gangs (Bjerregaard & Smith, 1993; Esbensen & Huizinga, 1993; Thornberry, Krohn, Lizotte, & Chard-Wierschem, 1993). Research on lower SES and poverty consistently shows these variables to correlate with elevated rates of crime (Heimer, 1997). Rates of crime are likely to increase where there is a decline in access to jobs or where unemployment is high (Almgren, Guest, Immerwahr, & Spittel, 1998; Catalano, Novaco, & McConnell, 1997).

Economic discrimination also is associated with increased violence (Messner, 1989). In the criminal justice system, lower SES and minority youth were
more likely to be referred to court and to receive more intensive police scrutiny than higher SES and Caucasian youth (Sampson, 1986).

Communities and Neighborhoods

Studying the impact of communities and neighborhoods on children, researchers have examined three major features: (1) structural and demographic features, (2) exposure to situations or events, and (3) community-level processes and forms of social control. In terms of structural and demographic features, research on the extent to which neighborhoods are characterized by deteriorating housing (Spelman, 1993), overcrowding (Wallace, 1990), greater population density, and greater numbers of female-headed households (Harries & Powell, 1994; Smith & Jarjoura, 1988) consistently shows correlations with neighborhood crime rates and violence.

Children and young people who live in deteriorating neighborhoods with higher crime rates are more likely to be exposed to and witness robberies, assaults, and murders. Experiencing their neighborhood as dangerous, young people may become anxious, depressed, defiant, and/or aggressive (Aneshensel & Sucoff, 1996; Gorman-Smith & Tolan, 1998; Greenberg, Lengua, Cole, & Pinderhughes, 1999; Griffin, Scheier, Botvin, Diaz, & Miller, 1999). Children who have seen or been the victim of violence are more likely to perceive themselves as vulnerable to violence and are more likely to report carrying weapons to school (Simon, Dent, & Sussman, 1997; Uehara, Chalmers, Jenkins, & Shakoor, 1996).

A newer line of research has begun to examine how community-level processes and forms of social control may be related to youth delinquency. Studies have shown that the extent of collective social control (e.g., the extent to which members of the community have local friendship networks and share collective willingness to intervene in youth misbehavior, such as skipping school, painting graffiti, showing disrespect to adults) correlates with decreased rates of delinquency and problem behaviors and partially mediates the relationship between community structure variables and delinquency (Bursik & Grasmick, 1993; Elliott et al., 1996; Sampson, 1997; Sampson & Groves, 1989; Sampson, Raudenbush, & Earls, 1997).

Social Environment and Community Influences on Families and Children

Another strategy for assessing the impact of the broader social environment and community is to examine how these broader contextual factors influence group and individual processes (e.g., family, peer, or child individual characteristics). The basic notion is that structural or demographic variables—such as SES, culture, and community deterioration—probably influence everyday social routines and ways of relating, which may in turn affect the risk of antisocial behavior.

Compared with lower-SES parents, those in middle-class families are more likely to monitor their children's friendships and less likely to use harsh discipline (Heimer, 1997); both are parenting behaviors shown to be causal risk factors for child externalizing behavior problems (see Family Factors and Processes section). Additional research has documented that higher levels of perceived economic stress are associated with parental distress, which in turn increases parental hostility, decreases parental monitoring, and subsequently increases youth externalizing behavior (Conger et al., 1992). Other research has documented differences between children of middle-SES families and children of lower-SES families; middle-SES children show less physical aggression and more cooperative interactions with peers (Ramsey, 1988).
Schools

Recently, incidents of school violence have drawn people’s attention to the nature of schools and the identification of educational policies, educational practices, and student behavior that can contribute to child and youth conduct problems and violence. It is important to note that the majority of youth who receive any help for a mental health problem receive interventions through their school (Burns et al., 1995). However, such services tend to be brief (approximately one visit per quarter for outpatient or three days for inpatient) and are more typical for younger children (Farmer, Stangl, Burns, Costello, & Angold, 1999).

A number of school policies may affect youth conduct. These policies include zero-tolerance practices (the suspension and expulsion of students for problem behaviors), proficiency testing (requiring students to pass standardized exams to qualify for graduation), full inclusion (providing uniform services in the general classroom regardless of the intensity of the problem), and use of the social maladjustment clause of the federal definition of students with serious emotional disturbance, which indicates that students who are socially maladjusted are not eligible for special education services and civil rights protections unless it is determined that they have an emotional disturbance. Little systematic research, however, has examined how these school policies affect youth conduct. Limited research examining the impact of the social maladjustment clause indicates that this policy may be extremely difficult to apply appropriately. Current rating scales for discriminating between social maladjustment and emotional disturbances have been found to be unreliable (Costenbader & Buntaine, 1999).

Similarly, research on teacher assessments of those in need of special education services has shown that while students with externalizing behavior problems are deemed troubled, many are not identified for special education services (Farmer, Rodkin, Pearl, & Acker, 1999). However, in another study, boys recommended for special services showed higher rates of conduct disorder than boys who were referred but not recommended (Mattison, Morales, & Bauer, 1992). This unreliability and lack of clear identification can have profound implications under the social maladjustment clause. By not identifying children with externalizing behavior problems as emotionally disturbed, schools are able to suspend and expel these children without invoking any of the civil rights protection practices that are required for students with identified disabilities.

Even when children are identified as emotionally disturbed, the impact of placement into special classrooms is difficult to assess. Placement into special services is governed by legal mandates, and students placed in more restrictive settings are expected to have more intensive needs than those placed in less restrictive settings. Thus, special placements cannot be experimentally manipulated, and studies comparing outcomes of students in different settings must be conducted with nonequivalent groups. Given these limitations, research indicates that interventions designed to decrease disruptive classroom behavior do result in desired outcomes in both special services classrooms and typical classrooms, with children in restricted classrooms more likely to evidence reduction in disruptive behavior than students in regular classrooms (Stage & Quiroz, 1997). Interestingly, interventions designed to prevent school dropout found that correlated reductions in conduct problems in youth ages 9, 10, and 11 also helped to prevent placement in special classrooms, which in turn reduced the risk of dropping out of school (Vitaro, Brendgen, & Tremblay, 1999). Cumulatively, these results suggest that special classroom placement supplemented with interventions to reduce disruptive behavior may be effective. However, it is not clear whether these effects are similar for children and youth in elementary, middle, and high school or whether
prevention of special classroom placement may be even more effective.

Changing schools frequently is associated with a variety of problems, including lower academic performance, worse behavior in school, lower grade retention, school dropout, and serious disciplinary problems (Rumberger & Larson, 1998; Swanson & Schneider, 1999; Tucker, Marx, & Long, 1998). Based on data collected by the National Educational Longitudinal Survey, changes that occur during the early school years have little impact on child behavior problems. However, school changes during high school were correlated with a moderate increase in behavioral problems (Swanson & Schneider, 1999). The importance of number of school changes may be mediated by family structure. In families with two biological parents, excessive mobility (eight or more moves) correlated with school problems. However, for all other family configurations, any move was associated with problematic youth behavior (Tucker et al., 1998). Also, school changes and dropout were predicted by high rates of absenteeism, misbehavior, and low-educational expectations (Rumberger & Larson, 1998).

Another school variable considered relevant to child conduct is the type of disciplinary practices invoked for misbehavior. Although disciplinary practices are aimed at reducing problem behavior in schools, surprisingly few studies have directly examined the relationships between school discipline and the development and maintenance of externalizing behavior problems. Given the growing trend of adopting zero-tolerance policies, this lack of data is cause for concern. In a survey on school suspension, the majority of middle school and high school students who received suspensions did not consider this form of discipline to be very helpful in solving problems (Costenbader & Markson, 1998). Data on less punitive forms of school discipline also are limited. However, there is some evidence that use of less punitive forms of school discipline in elementary school (e.g., reminders to be safe and respectful) did result in reduced problem behavior (Lewis, Sugai, & Colvin, 1998).

Another school practice that has received attention is tracking (i.e., the arrangement of students in classrooms by levels of ability). Tracking is a complex factor, as it is intertwined with other characteristics of students, families, friends, and schools in ways that seem to solidify differences among students. Students who come from low-SES backgrounds, attend low-SES schools, are members of ethnic-minority groups (Jones, Vanfossen, & Ensminger, 1995), and display behavior problems (Farmer, 1993) are over-represented among low-ability tracks. Being placed in a low-ability track is associated with less effective instruction, more disruptive off-task behavior by students, and lower than expected academic attainment (Gamoran, Nystrand, Berends, & LePore, 1995).

Public concerns about class and school size have grown with concerns about violence in the schools and poor pupil performance. Yet educational researchers have had difficulty determining whether reduced class size positively affects student performance and behavior. Part of this difficulty comes from the fact that schools do not randomly assign students to classes (e.g., there is tracking) and that there are state and federal regulations that limit the size of special education classes. However, when special education restrictions are taken into account, smaller class size does correlate with enhanced performance (Akerhielm, 1995). Research on the size of schools has focused on academic outcomes rather than behavioral outcomes (Lee & Smith, 1997; McGiverin, Gilman, & Tillitski, 1989). This research indicates that the most effective high schools serve 600–900 students. Neither small schools (< 300) nor large schools (> 2,100) are associated with strong learning environments. Similarly, the effect of school size is more profound in schools with lower-SES students and in schools with higher concentrations of minority students (Lee & Smith,
1997). It is not known, however, whether these same effects would be useful indicators of student behavior and conduct.

Within schools, youth develop social hierarchies and groups that, in some cases, can set the tone for conduct problems and delinquency. Students in high-status cliques can wield considerable social power with peers and classmates. Recent research has shown that aggressive behavior by boys can enhance the likelihood of their obtaining prominent positions in social structures (Xie, Cairns, & Cairns, 1999), particularly when accompanied by high athleticism or above-average academic performance (Rodkin, Farmer, Pearl, & Van Acker, 2000). Additional research, however, is needed to understand how social cliques and hierarchies develop and contribute to student conduct in schools.

Two features of the classroom also have been related to child externalizing behavior problems—the level of classroom disruption/aggression and teacher-student interactions. One study has documented that the overall level of classroom aggression can have significant effects on individual children's risk for aggression over time (Kellam, Ling, Merisca, Brown, & Ialongo, 1998). More aggressive boys who were assigned to first grade classrooms that were high in disruption and aggression were at markedly increased risk for continuing to be aggressive over the next years of elementary school. This was in comparison with aggressive boys who were not placed in aggressive/disruptive classrooms. In addition, recent research on teacher-student interactions indicates that teachers interact differently with students who have externalizing behavior problems. Students with behavior problems receive more teacher reprimands and fewer opportunities to respond appropriately to teacher requests (Van Acker, Grant, & Henry, 1996; Wehby, Dodge, & Valente, 1993). To some extent, lowering teacher-student ratios, particularly in special education classrooms, can mitigate these teacher-student interactions (Thurlow, Ysseldyke, Wotruba, & Algozzine, 1993).

Complementing research on the impact of schools on children and youth is research that examines how children and youth feel about their schooling experience. "School bonding" consists of attachment to school, commitment to educational pursuits, and belief in the fairness of school rules. Evidence shows that school bonding is related to delinquency in middle school, with decreased bonding associated with increased rates of delinquency (Jenkins, 1997). Further, interventions designed to modify elementary school teaching practices to increase school bonding showed bonding to be a predictive risk factor for externalizing behavior problems in adolescence. Through an intervention designed to modify teacher behavior, successful changes in school bonding were associated with improved academic achievement (Abbott, O'Donnell, Hawkins, Hill, & Kosterman, 1998). Long-term effects of this intervention program, when combined with parent training and social competence training for the children, showed that the package of interventions provided throughout elementary school had enduring modest effects in reducing self-reported violent behavior, heavy drinking, and sexual intercourse before age 18 among multiethnic urban children (Hawkins, Catalano, Kosterman, Abbott, & Hill, 1999).

Implications for Malleable Community Risk Factors and Developmental Processes

Existing research on the broader social environment, communities, and schools indicates that many factors affect the development and likelihood of youth conduct problems. As noted at the beginning of this section, many of the social and community factors that have been associated with youth conduct problems operate in
conjunction. Lower SES, income inequality, and deteriorated housing frequently occur together and, as a cluster, are associated with high rates of crime and delinquency. However, much of this research is correlational and has focused on rates of problem behavior across geographic regions rather than individual variations in conduct. Also, social and community variables are difficult to conceptualize as “malleable” because altering income, housing, and employment opportunities would require major social change and incredible financial resources.

How then do we go about incorporating these relevant variables into developmental models for predicting and intervening with child and youth conduct problems? One strategy frequently employed by researchers is to use SES, income, violent neighborhoods, and so forth as selection criteria for determining high-risk groups and targeting interventions. This way, such social and community factors serve as contextual variables and are conceptualized as factors that potentially moderate the salience of other child, family, and peer risk factors and processes (e.g., parental monitoring, peer deviance). Although a useful strategy (it increases the probability not only that those most in need will be in the intervention but also that it will be possible to detect a change), it does little to help understand how such social and community factors affect conduct problems.

This question of “how” has motivated researchers interested in identifying variables that mediate the association between social and community factors and child/youth conduct problems. To date, two important sets of factors have been identified as mediators—family processes and a community process known as collective social control. Lower-SES families or families experiencing economic distress are more likely to engage in harsh discipline and provide less effective monitoring, which, in turn, partially mediates the effect of these broader variables on youth conduct problems. Similarly, the research on collective social control indicates that it partially mediates the relationship between community disadvantage and rates of delinquency and violent crime. Although research on family processes has shown that parental monitoring and discipline are causal risk factors for child and youth conduct problems, additional research is needed on collective social control to determine its malleability and the resulting impact on youth behavior. Studying the malleability of collective social control is a critical next step that could have profound implications for indicating the causal potential of this variable and developing more effective community-level interventions to prevent youth problem behavior.

The information reviewed here about school effects on child and youth conduct problems also suggests a range of important factors. School policies, classroom placement, tracking, and classroom size all could affect youth conduct. Although many of these school variables have been related to academic success and failure, surprisingly few studies have examined these issues in relation to child and youth conduct. Those studies that have examined behavioral and conduct-related outcomes suggest that school variables do correlate with problematic behavior. However, more systematic research is needed to establish the strength of these associations and the degree to which school policies and practices predict youth behavior.

Promising research has been conducted on classroom aggression, teacher-student interactions, and school bonding. Each of these school variables has been related to child and youth conduct. In the case of classroom aggression, levels of classroom aggression in first grade reliably predicted increased aggressive behavior in later grades for children who were already showing some problem behavior. Similarly, the research on early school
bonding has shown it to reliably predict decreases in conduct problems in adolescence.

These important results need to be advanced to determine ways to modify early classroom aggression levels, improve school bonding, and evaluate the impact of these changes on child behavior. However, it is equally important that this work be integrated with research reviewed in previous sections—child characteristics, family processes, and peer factors. What are the consequences of altering early classroom aggression on child development of hostile attributions, peer rejection, and bullying? By improving school bonding, is one also influencing parental monitoring of child behavior or structuring of the learning environment? Are school-based interventions more or less effective in different neighborhood and community contexts? Clearly, many important questions remain to be investigated, questions whose answers could have enormous impact on the development of more effective preventive interventions for child and youth conduct problems.

References


Table 4: Broader Social Environment, Communities, and Schools—Research Summaries
Broader Social Environment—Culture

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design Type</th>
<th>Sample Details</th>
<th>N</th>
<th>Age*</th>
<th>% Male</th>
<th>SES**</th>
<th>Ethnicity</th>
<th>Size</th>
<th>Representativeness</th>
<th>Convenience</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hartz</td>
<td>1995</td>
<td>Concurrent comparisons</td>
<td>recruited students from university lab school, Honolulu, HI; school representative of Hawai'i on ethnicity, SES, &amp; achievement</td>
<td>96</td>
<td>11th-12th gr</td>
<td>N/R</td>
<td>N/R</td>
<td>27% Cau</td>
<td>96</td>
<td>I</td>
<td>High school students' ratings of parents' aggression during conflict resolution were higher for Polynesian-American than European-, Filipino-, or Japanese-American students. Students' reports of reciprocal aggression were higher for European-American families than Filipino-, Japanese-, or Polynesian-American groups.</td>
<td></td>
</tr>
<tr>
<td>Heimer</td>
<td>1997</td>
<td>Prospective longitudinal 3 yrs</td>
<td>national probability sample of U.S. house-holds, 11-17 yr olds, representative on age, sex, race; low attrition; National Youth Survey</td>
<td>870</td>
<td>11-17 yrs &gt; 13-19 yrs</td>
<td>100% Low-upper</td>
<td>N/R</td>
<td>N/R Cau</td>
<td>870</td>
<td>I</td>
<td>Youths' learning/acceptance of definitions favorable to violence mediated the relationship between SES (occupation, education, &amp; income) &amp; self-reports of violent delinquency, taking into account age, race, nonintact home, neighborhood crime, parenting in 1977, peer associations in 1978, &amp; violence in 1977 &amp; 1978. Low-SES youth were more likely to endorse attitudes that favored violence. Predictors of definitions favoring violence included power-assertive discipline, urban residence, 1977 aggressive friends, &amp; 1977 violent delinquency.*</td>
<td></td>
</tr>
<tr>
<td>Kumagai &amp; Strauss</td>
<td>1983</td>
<td>Concurrent correlational</td>
<td>recruited students: 1) Central India, 8 Catholic high schools, 2) Japan, public &amp; private high schools in 12 rural &amp; urban prefectures, 3) United States, rural upstate NY county, central high schools</td>
<td>1,165</td>
<td>12th gr</td>
<td>54% Low-upper</td>
<td>N/R</td>
<td>N/R India</td>
<td>1,165</td>
<td>I</td>
<td>According to youth reports, Indian, Japanese, &amp; U.S. parents used reasoning as the primary tactic to resolve conflict, followed by verbal aggression, &amp; then by violence. Parents' use of violent tactics was reported more frequently by U.S. than by Japanese or Indian students. U.S. students reported similar rates of violence for both parents, while Indian &amp; Japanese students reported lower rates for mothers than fathers. Husbands &amp; wives had high reciprocity for type of conflict tactics.</td>
<td></td>
</tr>
</tbody>
</table>

Key Statistics

<table>
<thead>
<tr>
<th>Parent Aggression Toward Teen</th>
<th>R² = .28, F (6, 129) = 8.17, p &lt; .0001</th>
</tr>
</thead>
<tbody>
<tr>
<td>F = .43, p &lt; .05 mothers</td>
<td></td>
</tr>
<tr>
<td>F = .45, p &lt; .05 Polish-Am parents</td>
<td></td>
</tr>
<tr>
<td>F = 10.45, p &lt; .01 Polish-Am father (mother)</td>
<td></td>
</tr>
<tr>
<td>M's = 49.5 PA, 20.5 EA, 10.8 JA, 28.9 FA father</td>
<td></td>
</tr>
<tr>
<td>M's = 129.8 PA, 31.5 EA, 11.2 JA, 26.0 FA mother</td>
<td></td>
</tr>
</tbody>
</table>

Teen Aggression Toward Parent

<table>
<thead>
<tr>
<th>R² = .38, F (1, 173) = 35.43, p &lt; .0001</th>
</tr>
</thead>
<tbody>
<tr>
<td>F = 101.7, p &lt; .0001 parent conflict tactics</td>
</tr>
<tr>
<td>F = 21.5, p &lt; .0001 CTS = EuroAm</td>
</tr>
</tbody>
</table>

(Statistical analyses on means not conducted)

References

Bjerregaard & Smith (1993), Esbensen & Huizinga (1993), & Thornberry et al. (1993); see “Peer Characteristics, Gangs”

* > indicates that data at first age are used to predict data at second age.

** Unless otherwise indicated, income is reported in yearly amounts.
### Broader Social Environment, Communities, and Schools—Broader Social Environment

#### Social Structure

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Represenativeness</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Almgren, Guest, et al.</td>
<td>1998</td>
<td>Prospective</td>
<td>75 CAs</td>
<td>157</td>
<td>0-75+ yrs</td>
<td>50%</td>
<td>N/R</td>
<td>39% Black</td>
<td>Increase in the homicide rate between 1970 and 1990 for 75 Chicago communities was predicted by 1970 &amp; 1990 unemployment rates for black residents &amp; 1990 unemployment rates for nonblack residents.</td>
</tr>
<tr>
<td>Catalano, Novaco, &amp; McConnell</td>
<td>1997</td>
<td>Concurrent correlational time-series data collected over 1 yr</td>
<td>Population: weekly dept. of public health data on civil commitments, danger to others, &amp; claims for unemployment insurance, San Francisco, CA</td>
<td>N/R</td>
<td>Adults</td>
<td>N/R</td>
<td>N/R</td>
<td>N/R</td>
<td>Increases in civil commitments for danger to others coincided with small increases in layoffs as measured by applications for unemployment insurance. Large increases in layoffs, however, were associated with fewer commitments.</td>
</tr>
<tr>
<td>Heimer</td>
<td>1997</td>
<td>Prospective longitudinal 3 yrs</td>
<td>Population: national probability sample of U.S. households, 11-17 yr olds, representative on age, sex, race, low attrition; National Youth Survey</td>
<td>870</td>
<td>11-17 yrs &gt; 13-19 yrs</td>
<td>100%</td>
<td>Low-upper SES</td>
<td>N/R% N/R% AFA/Cauc/N/R% Other</td>
<td>Low SES, urban residence, &amp; residence in a nonintact home predicted concurrent self-reports of violent delinquency, taking into account age, race, &amp; neighborhood crime.</td>
</tr>
</tbody>
</table>

### Key Statistics

#### Black Homicide Rates, Age-Standardized

<table>
<thead>
<tr>
<th>Model</th>
<th>β</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men adj $R^2 = .72$, $F = 26.36$, $p &lt; .01$</td>
<td>$β = .35$, $p &lt; .10$ 1970 unemployment</td>
<td></td>
</tr>
<tr>
<td>Women adj $R^2 = .46$, $F = 9.59$, $p &lt; .01$</td>
<td>$β = .46$, $p &lt; .05$ 1990 unemployment</td>
<td></td>
</tr>
</tbody>
</table>

#### Nonblack Homicide Rates, Age-Standardized

<table>
<thead>
<tr>
<th>Model</th>
<th>β</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men adj $R^2 = .56$, $F = 21.84$, $p &lt; .01$</td>
<td>$β = .71$, $p &lt; .01$ 1990 unemployment</td>
<td></td>
</tr>
<tr>
<td>Women adj $R^2 = .17$, $F = 4.26$, $p &lt; .01$</td>
<td>$β = .49$, $p &lt; .01$ 1990 unemployment</td>
<td></td>
</tr>
</tbody>
</table>

#### Model: Net Effect of Job Loss on Violence—Men

- $ρ = -37.3 + .38$ (OLS regressions) $p = .39$, $p < .05$ dummy econ discrimination* (p's = ns: 1970 homicide, unemployment rates)

#### Model: Net Effect of Job Loss on Violence—Women

- $ρ = -22.2 + .32$ (OLS regressions) $p = .20$, $p < .05$ dummy econ discrimination* (p's = ns: 1970 homicide, unemployment rates)

### Average INTERPOL Homicide Rates

- $R^2 = .26$ $β = .39$, $p < .05$ dummy econ discrimination* (p's = ns: income inequality, % urban, % male 15-29, ethno-linguistic heterogeneity, population, population density, population under age 15, development index, democracy index) *(variable from the World Handbook of Political & Social Indicators, 1983) (regression analysis)
Broader Social Environment, Communities, and Schools—Broader Social Environment

Social Structure

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Representativeness</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sampson</td>
<td>1986</td>
<td>Concurrent/retrospective correlational retrospective police contact</td>
<td>Population: random selection of youth from sample stratified by race, sex, official delinquency status, &amp; SES; Seattle Youth Study</td>
<td>1,612</td>
<td>15-18 yrs</td>
<td>75%</td>
<td>Low-upper</td>
<td>31% AfrA 69% Cauc</td>
</tr>
<tr>
<td>Harries &amp; Powell</td>
<td>1994</td>
<td>Pattern analysis geocoding &amp; spatial analysis</td>
<td>Population: census data &amp; police records of juvenile gun crimes, Baltimore, MD, 1980-1990</td>
<td>2,369</td>
<td>14-17 yrs</td>
<td>98%</td>
<td>Low-upper locations</td>
<td>91.6% AfrA 8.1% Cauc 0.3% Other (offenders)</td>
</tr>
</tbody>
</table>

Result

Neighborhood SES, self-reported delinquency, & race predicted lifetime history of major police contact for adolescents in a model that included gang membership & family structure. Individual SES & delinquent peers were also significant predictors for male youth. Neighborhood SES & delinquency predicted police contact during the past year, with race & delinquent peers additional predictors for male youth. Major court referrals by police were predicted by individual SES & major police contact.

Key Statistics

<table>
<thead>
<tr>
<th>Police Contacts Ever, Male Youth</th>
<th>$R^2 = .27, p &lt; .01$</th>
<th>$\beta = -.27, p &lt; .10$ individual SES</th>
<th>$\beta = -.11$ neighborhood SES</th>
<th>$\beta = .14$ delinquent peers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Police Ever, Female Youth</td>
<td>$R^2 = .21, p &lt; .01$</td>
<td>$\beta = -.15$ neighborhood SES</td>
<td>$\beta = .25$ black</td>
<td></td>
</tr>
<tr>
<td>Major Court Referrals</td>
<td>$R^2 = .34, .32 f, p &lt; .01$</td>
<td>$\beta = -.04$ individual SES</td>
<td>$\beta = .31$ male, .28 female major police contacts (OLS regressions)</td>
<td></td>
</tr>
</tbody>
</table>

Juvenile Gun Crimes & High Social Stress* Tracts

* overall
* black juvenile offender, black victim
* black juvenile offender, black juvenile victim
* white juvenile offender, black victim
* white juvenile offender, white victim

*Social Stress Index: persons/occupied housing unit, median home value, % female, % black, % under 18

(see study for spatial analyses)

(dm regressions)
### Broader Social Environment, Communities, and Schools—Communities & Neighborhoods

#### Housing

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smith &amp; Jarjoura</td>
<td>1988</td>
<td>Concurrent</td>
<td>57</td>
<td>N/R</td>
<td>N/R</td>
<td>N/R</td>
<td>N/R</td>
</tr>
<tr>
<td></td>
<td></td>
<td>correlational</td>
<td></td>
<td></td>
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<td></td>
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<td>nhhoods</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>11,419</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


#### Speelman

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wallace</td>
<td>1990</td>
<td>Concurrent</td>
<td>52</td>
<td>N/R</td>
<td>N/R</td>
<td>N/R</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>correlational</td>
<td></td>
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</tr>
</tbody>
</table>

Population: NY City Health Dept. & census data from 62 contiguous health areas, the Bronx, NY; data from years prior to & following large population migration & pupil transfers from South-Central Bronx, 1970-1973 & 1978-1982.

#### Wallace

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Concurrent</td>
<td>59</td>
<td>N/R</td>
<td>N/R</td>
<td>N/R</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>blocks</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Convenience: low-income, high-crime neighborhood, Austin, TX; blocks with abandoned residential buildings & control blocks, 2 diagonal blocks over, matched on land use & residential traffic patterns.

#### Result

Violent crime rates (resident reports) were predicted by the interaction of % low income (under $5,000) & residential mobility, % single-parent households, population density, & % ages 12-20 yrs, taking into account % low income, residential mobility (main effects), % nonwhite, % living alone, racial heterogeneity, & location.

#### Key Statistics

**Violent Crime Rates**

- $R^2 = .63$
- $\beta = .002, t = 2.70$ mobility x low income
- $\beta = .07, t = 1.89$ % single-parent household
- $\beta = .52, t = 2.64$ population density
- $\beta = .06, t = 2.91$ % ages 12-20

(p's = N.S. % low income, residential mobility, city, racial heterogeneity, % nonwhite, % living alone)

(see study for burglary rate results)

#### Crime Rates Unsecured (n = 16) vs. Other (n = 43)

- Property crimes/block, Ratio 1.8
  - $t = 1.95, p < .05, M's = 5.31 case, 2.93 ctrl
- Drug crimes/block, Ratio 3.2
  - $t = 2.47, p < .05, M's = 2.69 case, 0.84 ctrl

#### Per Block Crime Rates

- Property crimes
  - $\Delta R^2 = .07, F(1, 57) = 4.33, p < .05$
- Drug crimes
  - $\Delta R^2 = .10, F(1, 57) = 5.36, p < .05$

(p's = N.S for vacancy status, building condition, block location & demographics; rates based on calls for police service resulting in an official police report)

(see study for burglary rate results)

#### Intentional Violent Deaths (IVD) 1970-1973

| Adj $R^2 = .78$
| $\beta = .12, p = N.S$ constant
| $\beta = .02, p = .000$ SES x crowding
| $\beta = .02, p = .000$ low birthweight**

**Intentional Violent Deaths 1978-1982**

| Adj $R^2 = .79$
| $\beta = 1.59, p = .003$ constant
| $\beta = .02, p = .000$ SES x crowding
| $\beta = .02, p = .000$ low birthweight**

*SES (citywide SES rank) x crowding (% with over 1.51 persons/room x population/100,000); **# LOB babies/100k live births x pop/100,000 (MANCOVA)*
### Key Statistics

#### Conduct Disorder
- $R^2 = .11$, $F(17, 857) = 6.19$
- $\beta = .21$, $p < .001$ parent report, ambient hazards
- $\beta = -.13$, $p < .05$ poverty-working class neighborhood, Lat
- $\beta = .14$, $p < .05$ middle-class neighborhood, Wh & Lat

#### ODD
- $R^2 = .14$, $F(17, 857) = 7.84$
- $\beta = .22$, $p < .001$ parent report, ambient hazards
- $\beta = -.17$, $p < .001$ working-class neighborhood, Afr Am
- $\beta = .13$, $p < .05$ poverty-working class neighborhood, Lat

#### Conduct Disorder R
- $R^2 = .11$, $F(17, 857) = 6.19$
- $\beta = .21$, $p < .001$ parent report, ambient hazards
- $\beta = -.13$, $p < .05$ poverty-working class neighborhood, Lat

#### ODD R
- $R^2 = .14$, $F(17, 857) = 7.84$
- $\beta = .22$, $p < .001$ parent report, ambient hazards
- $\beta = -.17$, $p < .001$ working-class neighborhood, Afr Am
- $\beta = .13$, $p < .05$ poverty-working class neighborhood, Lat

#### Time 2 Aggression
- $R^2 = .44$
- $\beta = .48$, $p < .001$ aggression Time 1
- $\beta = .26$, $p < .001$ exposure to violence
- $\beta = .16$, $p < .05$ family structure
- $\beta = .14$, $p < .05$ structure x exposure

#### Exposure to Violence, Aggression by Family Structure
- $r's = .38$, $p < .001$ high fam, $r's = .30$, $p < .001$ low fam

### Authority Acceptance, Teacher Report
- $R^2 = .21$
- $\beta = .11$, $p < .05$ family risk: life stress
- $\beta = -.13$, $p < .05$ family risk: expressiveness

### Externalizing, Parent Report
- $R^2 = .26$
- $\beta = -.12$, $p < .05$ SES/race: occupation
- $\beta = .24$, $p < .001$ family risk: life stress
- $\beta = .25$, $p < .001$ mother's depression

### Authority Acceptance, Teacher Report
- $R^2 = .21$
- $\beta = .11$, $p < .05$ family risk: life stress
- $\beta = -.13$, $p < .01$ family risk: expressiveness
- $\beta = .17$, $p < .01$ neighborhood risk

### Externalizing, Parent Report
- $R^2 = .26$
- $\beta = -.12$, $p < .05$ SES/race: occupation

### Authority Acceptance, Teacher Report
- $R^2 = .21$
- $\beta = .11$, $p < .05$ family risk: life stress
- $\beta = -.13$, $p < .01$ family risk: expressiveness
- $\beta = .17$, $p < .01$ neighborhood risk

### Time 2 Aggression
- $R^2 = .44$
- $\beta = .48$, $p < .001$ aggression Time 1
- $\beta = .26$, $p < .001$ exposure to violence
- $\beta = .16$, $p < .05$ family structure
- $\beta = .14$, $p < .05$ structure x exposure

### Exposure to Violence, Aggression by Family Structure
- $r's = .38$, $p < .001$ high fam, $r's = .30$, $p < .001$ low fam

#### Broader Social Environment, Communities, and Schools—Communities & Neighborhoods

#### Communities & Neighborhoods

### Community

#### Key Statistics

<table>
<thead>
<tr>
<th>Age</th>
<th>Ethnicity</th>
<th>% Male</th>
<th>SES</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-17 yrs</td>
<td>54%</td>
<td>Low-upper</td>
<td>11% AfrA</td>
</tr>
<tr>
<td>7th &amp; 9th</td>
<td>90%</td>
<td>Low-middle</td>
<td>11% AfrA</td>
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<tr>
<td>5th &amp; 7th</td>
<td>80%</td>
<td>Low-middle</td>
<td>11% AfrA</td>
</tr>
</tbody>
</table>

### Authors

- Aneshensel & Sucoff 1996
- Gorman-Smith & Tolan 1999
- Greenberg, Lengua, et al. 1999
### Broader Social Environment, Communities, and Schools—Communities & Neighborhoods

#### Community

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Representativeness</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
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<th>Result</th>
<th>Key Statistics</th>
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<tbody>
<tr>
<td>Griffin, et al.</td>
<td>1999</td>
<td>Concurrent</td>
<td>Convenience:</td>
<td>452</td>
<td>6th gr</td>
<td>51%</td>
<td>Low-middle</td>
<td>90% AfrA</td>
<td>Self-reports of perception of neighborhood risk (gang activity &amp; delinquency, toughness necessary in neighborhood), friends' delinquency, &amp; less parental monitoring were associated with higher interpersonal aggression. Individual differences in risk taking partially mediated the relationship between neighborhood risk, friends' delinquency, &amp; aggression, while anger control skills partially mediated the relationship between parental monitoring &amp; aggression.</td>
<td>$\chi^2 (263, N = 452) = 708.9, p &lt; .001, \text{CFI} = .90$</td>
</tr>
<tr>
<td>Scheier, et al.</td>
<td>1997</td>
<td>Concurrent</td>
<td>Convenience:</td>
<td>504</td>
<td>M = 15.6</td>
<td>57%</td>
<td>Low-middle</td>
<td>10% Asian</td>
<td>Students' perceived vulnerability to victimization, peer knife or gun carrying, gang/tagging crew affiliation, &amp; male gender increased the risk of carrying a weapon to school (25% of sample, self-report), accounting for age &amp; type of school attended (traditional or continuation). Ethnicity, parents' education, &amp; living arrangements were not associated with weapon carrying.</td>
<td>$\beta = .15, p &lt; .05$ neighborhood risk—aggression $\beta = .28, p &lt; .01$ neighborhood risk—risk taking $\beta = .21, p &lt; .01$ risk taking—aggression $\beta = .39, p &lt; .001$ friends' delinquency—aggression $\beta = .23, p &lt; .01$ friends' delinquency—risk taking $\beta = .21, p &lt; .01$ risk taking—aggression $\beta = -.15, p &lt; .05$ parent monitoring—anger control $\beta = .30, p &lt; .001$ parent monitoring—anger control skills $\beta = -.16, p &lt; .01$ anger control skills—aggression (structural equation modeling)</td>
</tr>
<tr>
<td>Simon, Dent, &amp; Sussman</td>
<td>1996</td>
<td>Retrospective</td>
<td>Convenience: recruited students from standard classrooms in 7 schools in 29 southern CA school districts; schools &amp; classrooms were arbitrarily selected from a larger sample participating in a substance abuse study</td>
<td>1,035</td>
<td>10-19 yrs</td>
<td>52%</td>
<td>Low</td>
<td>100% AfrA</td>
<td>Ever Witnessed Violence (yes/no) $\phi = .26, p &lt; .001$ current weapon carrying $\phi = .22, p &lt; .001$ current weapon carrying $\phi = .21, p &lt; .001$ school attended $\phi = .14, p &lt; .01$ age range $\phi = .21, p &lt; .01$ gender $\phi = .37, p &lt; .001$ current weapon carrying $\phi = .25, p &lt; .001$ school attended $\phi = .17, p &lt; .001$ age range $\phi = .10, p &lt; .001$ gender (chi-square, $\phi$ coefficient)</td>
<td>$\phi = .26, p &lt; .001$ current weapon carrying $\phi = .22, p &lt; .001$ current weapon carrying $\phi = .21, p &lt; .001$ school attended $\phi = .14, p &lt; .01$ age range $\phi = .21, p &lt; .01$ gender $\phi = .37, p &lt; .001$ current weapon carrying $\phi = .25, p &lt; .001$ school attended $\phi = .17, p &lt; .001$ age range $\phi = .10, p &lt; .001$ gender (chi-square, $\phi$ coefficient)</td>
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</tbody>
</table>
### Broader Social Environment, Communities, and Schools—Communities & Neighborhoods

#### Community-Level Processes & Social Control

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Representativeness</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
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</thead>
<tbody>
<tr>
<td>Brosil &amp; Grasmick</td>
<td>1993</td>
<td>Concurrent</td>
<td>census data &amp; juvenile court referral records for 74 neighborhoods, Chicago, IL, 1960 &amp; 1980</td>
<td>74</td>
<td>N/R</td>
<td>N/R</td>
<td>20% AFA</td>
<td>N/R Other M's 1960; 40% AFA</td>
<td>Regulatory capacity partially mediated the relationship between economic deprivation &amp; delinquency rates for 1960 &amp; 1980. Economic deprivation showed direct &amp; indirect effects, while SES showed no effects. Relationship patterns were similar across years, although the % of households with economic deprivation increased from 1960 to 1980. * Regulatory capacity: % owner occupied, residential mobility, % net migration, &amp; % children w/ parents. Economic deprivation: % families under poverty line, public assistance/100, unemployment rate, % black residents. SES: professional pop, median ed, income</td>
</tr>
<tr>
<td>Elliott, Wilson, et al.</td>
<td>1996</td>
<td>Concurrent</td>
<td>Chicago: identified households with age-eligible youth in 2 census tracts: 1) high poverty: 546 hh, 887 yth, 20% under poverty line; 2) low poverty: med 662 fam, $30k, 30% AFA; Denver: 16 yrs, 58 tracts, 50% AFA; N/R Other M's 1980</td>
<td>91</td>
<td>10, 12, 14, N/R</td>
<td>Low-upper Denver: 15% AFA, 45% Cauc, 21% Hisp</td>
<td>4% Other</td>
<td>N/R Other M's 1980</td>
<td>Informal control (aggregated parent reports of neighborhood bonding, social control, institutional control, &amp; mutual respect) mediated the relationship between neighborhood disadvantage (SES, gender, age, family structure, length of residence) &amp; neighborhood rates of youth problem behavior (delinquency, drug use, &amp; arrests), prosocial behavior, &amp; involvement with conventional friends. Neighborhood variables (informal control, social integration, &amp; informal networks) contributed small but unique effects.</td>
</tr>
</tbody>
</table>

#### Key Statistics

- Delinquency 1960 adj $R^2 = .66$
  - $\beta = .71, t = 7.87$ economic deprivation
  - Regulatory Capacity 1960 adj $R^2 = .69$
  - $\beta = .79, t = 9.19$ economic deprivation
  - Regulatory Capacity Mediating 1960 adj $R^2 = .73$
  - $\beta = .34, t = 2.79$ economic deprivation
  - $\beta = -48, t = -4.25$ regulatory capacity
- Delinquency 1980 adj $R^2 = .52$
  - $\beta = .73, t = 7.32$ economic deprivation
  - Regulatory Capacity Mediating 1980 adj $R^2 = .55$
  - $\beta = .78, t = 8.00$ economic deprivation

#### Youth Problem Behavior
- $R^2 = .39$ C ribox disadvantage—informal control
- $p's = .39$ C ribox disadvantage—informal control
- $p's = .28$ D informal control—problem behavior

#### Youth Prosocial Competence
- $R^2 = .45$ C ribox disadvantage—informal control
- $p's = .45$ C ribox disadvantage—informal control
- $p's = .33$ C informal control—prosocial
- $p's = .61$ D informal control—prosocial

#### Youth Involvement With Conventional Friends
- $R^2 = .39$ C ribox disadvantage—informal control
- $p's = .39$ C ribox disadvantage—informal control
- $p's = .45$ C informal control—conventional friends
- $p's = .53$ D informal control—conventional friends

- $p's < .05$
- $p's = ns$: neighborhood disadvantage—problem behavior, prosocial competence, & conventional friends

#### Reduction in Variance, Neighborhood Effects
- 2% C, 1% D problem behavior
- 5% C, 3% D prosocial
- 6% C, 2% D conventional friends

(p's = ns: Neighborhood disadvantage—problem behavior, prosocial competence, & conventional friends) (path analysis)

(hierarchical linear modeling)
<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Population:</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sampson</td>
<td>1997</td>
<td>Concurrent</td>
<td>nationwide</td>
<td>3,864</td>
<td>N/R</td>
<td>N/R</td>
<td>N/R</td>
<td>N/R% AF</td>
<td>Collective social control, structural disadvantage, ethnicity/immigration, lower residential stability, &amp; the lagged crime rate predicted adolescent delinquency, violent victimization, &amp; 1995 homicides. Collective social control mediated the relationship between residential stability &amp; delinquency &amp; partially mediated the relationships between structural disadvantage, ethnicity/immigration, &amp; delinquency. *Collective social control: perceived willingness of neighbors to intervene with juvenile truancy, graffiti, or disrespect of adults</td>
</tr>
<tr>
<td>Sampson &amp; Groves</td>
<td>1989</td>
<td>Concurrent</td>
<td>nationwide</td>
<td>21,935</td>
<td>N/R</td>
<td>16 yrs</td>
<td>N/R</td>
<td>N/R% AF/AN</td>
<td>Social disorganization process variables (unsupervised peer groups &amp; density of social friendship networks) mediated the relationship between community structural factors (SES, ethnic heterogeneity, residential mobility, urbanization, &amp; family disruption) &amp; self-reported rates of property (burglary &amp; vandalism) &amp; personal (robbery &amp; assault) victimization. Results were replicated 2 yrs later. For 1982 data, 46% of the effect of SES was mediated by unsupervised peers.</td>
</tr>
<tr>
<td>Sampson, Raudenbush, &amp; Earls</td>
<td>1997</td>
<td>Concurrent</td>
<td>nationwide</td>
<td>8,762</td>
<td>N/R</td>
<td>N/R</td>
<td>All</td>
<td>N/R% AF/K</td>
<td>Collective efficacy (neighborhood social cohesion &amp; informal social control) partially mediated the relationship between neighborhood composition (disadvantage, immigrant concentrations, &amp; residential stability) &amp; perceived violence, violent victimization, &amp; 1995 homicides, controlling for average homicide rates from 1998 to 1990. Collective efficacy was the strongest predictor of violence, even when social process correlates (friendship &amp; kinship ties, neighborhood services, &amp; organizational participation) were taken into account.</td>
</tr>
</tbody>
</table>

Key Statistics

<table>
<thead>
<tr>
<th>Social Disorganization &amp; Collective Social Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>$r^2 = .56$</td>
</tr>
<tr>
<td>$\beta = -.36$ structural disadvantage</td>
</tr>
<tr>
<td>$\beta = -.44$ ethnicity/immigration</td>
</tr>
<tr>
<td>$\beta = .50$ residential stability</td>
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</table>

<table>
<thead>
<tr>
<th>Collective Social Control &amp; Delinquency $R^2 = .75 $</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\beta = -.18$ collective social control</td>
</tr>
<tr>
<td>$\beta = -.33$ structural disadvantage</td>
</tr>
<tr>
<td>$\beta = .64$ ethnicity/immigration</td>
</tr>
<tr>
<td>$\beta = .05$ lagged crime rate</td>
</tr>
<tr>
<td>$\beta = -.09$ residential stability</td>
</tr>
</tbody>
</table>

Social Disorganization & Delinquency

- $R^2$ not reported; $b = -.19$ residential stability (weighted least squares regressions; all $p's < .05$)

Structure & Unsupervised Peer Groups

<table>
<thead>
<tr>
<th>$R^2 = .30$ 1982; $R^2 = .12$ 1984</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\beta's = -.34$ 1982; .17 '84 SES</td>
</tr>
<tr>
<td>$\beta's = .13$ 1982; .11, $p &lt; .10$ 1984 ethnic heterogeneity</td>
</tr>
<tr>
<td>$\beta's = .12$ 1982; $p &lt; .10$ residential stability</td>
</tr>
<tr>
<td>$\beta's = -.22$ 1982; .19 family disruption</td>
</tr>
<tr>
<td>$\beta = .15$ 1982 urbanization</td>
</tr>
<tr>
<td>($p's = ns$ 1984 residential stability, 1984 urbanization)</td>
</tr>
</tbody>
</table>

Structure, Social Disorganization, & Delinquency $R^2 = .21$ 1982; $R^2 = .19$ 1984

| $\beta's = .38$ 1982, 35 1984 unsupervised peer |
| $\beta's = -.16$ 1982 & 1984 SES |
| $\beta's = -.15$ 1982; $p = ns$ 1984 residential stability |
| ($p's < .05$ unless noted; models: SES, residential stability, ethnic heterogeneity, family disruption, friend networks, urbanization, unsupervised peers, & in 1982, organizational participation) |

(WLS regressions)

Perceived Neighborhood Violence

| $\beta =-.59$, $t = -5.33$ collective efficacy |
| $\beta = .15$, $t = 6.38$ concentrated disadvantage |
| $\beta = -.05$, $t = -3.39$ residential stability |

($p's = ns$: immigrant concentration, prior homicide)

Collective Efficacy

| $\beta = .28$, $t = 13.30$ concentrated disadvantage |
| $\beta = .04$, $t = 2.44$ concentrated disadvantage |
| $\beta = -.10$, $t = -6.95$ residential stability |

Violence Scale (All 3 Violence Measures)

- $b = -.53$, $t = -8.59$ collective efficacy
- $b$ controls: prior homicide, disadvantaged, immigrant, residential stability, social process correlates.
- (see study for victimization & homicide rate analyses)
- (multiple regression, no other statistics reported)
### Broader Social Environment, Communities, and Schools—Social Environmental & Community Influences on Families & Children Social Status

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Representativeness</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
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<tbody>
<tr>
<td>Conger,</td>
<td>1992</td>
<td>Concurrent</td>
<td>Convenience</td>
<td>205</td>
<td>7th gr</td>
<td>100%</td>
<td>Low-middle</td>
<td>100% Cau</td>
<td>Family economic pressure mediated the relationship between economic</td>
</tr>
<tr>
<td>et al.</td>
<td></td>
<td>correlational</td>
<td>recruited 7th grade</td>
<td></td>
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<td>conditions (per capita income, unstable work, &amp; debt-to-asset ratio) &amp;</td>
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<td>students from 34</td>
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<td>father's &amp; mother's depressed mother. In turn, mother's depressed</td>
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<td>public &amp; private</td>
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<td>mood was associated with marital conflict &amp; less maternal nurturant/</td>
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<td>schools in towns</td>
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<td>involved parenting. Father's</td>
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<td>of less than 6,500</td>
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<td>depressed mood was associated with marital</td>
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<td>in 8 counties,</td>
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<td>conflict &amp; less maternal nurturant/involved parenting. Both maternal</td>
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<td></td>
<td></td>
<td>north central</td>
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<td>&amp; paternal parenting mediated the relationship between</td>
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<td></td>
<td>Iowa, 1989;</td>
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<td>mother's/father's depressed</td>
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<td>only families with 2</td>
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<td>mood &amp; adolescent adjustment problems. Father's depressed</td>
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<td>parents &amp; a sibling</td>
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<td>within 4 yrs of age</td>
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<td>involved parenting. Father's</td>
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<td>included; area had</td>
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<td>depressed mood was associated with marital conflict &amp; less maternal</td>
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<td>experienced recent</td>
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<td>nurturant/involved parenting. Both maternal &amp; paternal</td>
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<td>mood &amp; adolescent adjustment problems.</td>
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</tbody>
</table>

| Heimer        | 1997 | Prospective   | Population        | 870  | 11-17 > | 100% | Low-upper | N/R% AfA | N/R% Cau | N/R% Other | Lower SES parents reported greater use of power-assertive discipline, which, in turn, directly & indirectly (through aggressive friends) predicted youth definitions favorable to violence, which, in turn, predicted self-reports of violent delinquency. Lower SES parents also reported less supervision, which predicted more aggressive friends, etc. Higher SES parents were more likely to disapprove of using aggression; however, parental disapproval of aggression was not associated either directly or indirectly with violent delinquency. Lower SES youth were more likely to have aggressive friends, through more power-assertive parenting & lower supervision. Aggressive friends were associated with definitions of violence, which were predictive of violent delinquency. SES did not affect violent peers directly, but low SES was associated with violent delinquency, which predicted having aggressive friends 1 yr later. |
|              |      | longitudinal   | sample of U.S.     |      |   13-19 yrs | 100% |           | N/R% Cau |           | N/R% Other | |
|              |      |                | households, 11-17 yr olds, representative on age, sex, race, low attrition; National Youth Survey |      |       |       |           |           |           |           | |

### Key Statistics

<table>
<thead>
<tr>
<th>Economic Condition, Pressure, &amp; Depressed Mood</th>
</tr>
</thead>
<tbody>
<tr>
<td>$x^2(53) = 70.53, p = .054, GFI = .952$</td>
</tr>
<tr>
<td>$\beta = .47$ per capita income—family econ pressure</td>
</tr>
<tr>
<td>$\beta = .14$ unstable work—family econ pressure</td>
</tr>
<tr>
<td>$\beta = .25$ debt-to-asset ratio—family econ pressure</td>
</tr>
<tr>
<td>$\beta = .58$ econ pressure—father depressed mood</td>
</tr>
<tr>
<td>$\beta = .68$ econ pressure—mother depressed mood</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Depressed Mood, Adjustment Problems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mediated by Marital Conflict &amp; Parenting</td>
</tr>
<tr>
<td>$x^2(62) = 75.89, p = .11, GFI = .951$</td>
</tr>
<tr>
<td>$\beta = .48$ mother depression—marital conflict</td>
</tr>
<tr>
<td>$\beta = .31$ marital conflict—mother parenting</td>
</tr>
<tr>
<td>$\beta = .47$ mother depression—mother parenting</td>
</tr>
<tr>
<td>$\beta = .48$ mother parenting—adjustment problems</td>
</tr>
<tr>
<td>$x^2(62) = 81.67, p = .048, GFI = .945$</td>
</tr>
<tr>
<td>$\beta = .42$ father depression—father parenting</td>
</tr>
<tr>
<td>$\beta = .46$ marital conflict—father parenting</td>
</tr>
<tr>
<td>$\beta = .53$ father parenting—adjustment problems</td>
</tr>
</tbody>
</table>

(All $p's < .05$)

(series of latent variable structural equation models)

<table>
<thead>
<tr>
<th>SES &amp; Parenting 1977</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parents' power-assertive discipline $R^2 = .15$</td>
</tr>
<tr>
<td>$\beta = -.30$, $p &lt; .01$ SES</td>
</tr>
<tr>
<td>$\beta = -.12$, $p &lt; .05$ age</td>
</tr>
<tr>
<td>$\beta = .15$, $p &lt; .01$ race, black</td>
</tr>
<tr>
<td>$\beta = .12$, $p &lt; .05$ urban residence</td>
</tr>
<tr>
<td>(P's = ns: nonintact home, neighborhood crime, violent delinquency 1977)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parents' supervision $R^2 = .07$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\beta = .11$, $p &lt; .05$ SES</td>
</tr>
<tr>
<td>$\beta = -.10$, $p &lt; .05$ age</td>
</tr>
<tr>
<td>$\beta = -.11$, $p &lt; .05$ nonintact home</td>
</tr>
<tr>
<td>(P's = ns: race, urban, neighborhood crime, violent delinquency 1977)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parents' disapproval of aggression $R^2 = .04$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\beta = .13$, $p &lt; .01$ SES</td>
</tr>
<tr>
<td>(P's = ns: age, race, urban, nonintact home, neighborhood crime, violent delinquency 1977)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Aggressive Friends 1978 $R^2 = .15$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\beta = -.10$, $p &lt; .05$ age &amp; race, black</td>
</tr>
<tr>
<td>$\beta = .31$, $p &lt; .01$ violent delinquency 1977</td>
</tr>
<tr>
<td>$\beta = .11$, $p &lt; .05$ parents' power-assert discipline 1977</td>
</tr>
<tr>
<td>$\beta = -.13$, $p &lt; .01$ parents' supervision 1977</td>
</tr>
<tr>
<td>(P's = ns: SES, urban, nonintact home, neighborhood crime, parents' disapproval of aggression 1977)</td>
</tr>
</tbody>
</table>

(See other Heimer entries for full model) (structural equation model)
### Broader Social Environment, Communities, and Schools—Social Environmental & Community Influences on Families & Children

#### Social Status

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ramsey</td>
<td>1988</td>
<td>Concurrent</td>
<td>94</td>
<td>3.2-5.7 yrs</td>
<td>50%</td>
<td>Low-middle</td>
<td>48% Middle occupational status</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>convenience comparisons</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Low-SES children responded to hypothetical social problem-solving situations with more aggressive solutions than did middle-SES children, who used more reassuring &amp; sharing strategies. Aggression was associated with lower sociometric ratings for middle-SES children, but not low-SES children. Low-SES children were rated lower on social competence by teachers than middle-SES children.</td>
</tr>
</tbody>
</table>

#### Schools—School & Community Services Integration

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Population: recruited students from public schools in 11 mostly rural counties, western NC; 2-stage sample, children with behavior problems &amp; 10% random sample of remaining students; Great Smoky Mountains Study of Youth</th>
<th>1,015 9, 11, &amp; 13 yrs</th>
<th>56% Low-middle 34% &quot;poor&quot; 66% &quot;non-poor&quot; 9% AFR</th>
<th>66% 91% Cauc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burns,</td>
<td>1995</td>
<td>Concurrent</td>
<td>1,007 9, 11, 13 &gt; 10, 12, 14 yrs</td>
<td>51% Low-middle 27% poverty 34% 93% Cauc</td>
<td>21% of students used mental health services over the course of 1 yr, according to parent reports. Services were most likely received in a education setting &amp; with a school counselor. Treated children averaged 3.34 contacts with any service during a 3-mth period. (Median by service: 3 days inpatient, 1-5 visits outpatient, &amp; 0.7 contacts education services). Poverty, younger age, &amp; # of child symptoms predicted service in an education setting, while specialty mental health service was predicted by parent psychiatric problems &amp; # of child symptoms. Intensity of service was predicted by male gender &amp; impact on the family.</td>
<td></td>
</tr>
<tr>
<td>et al.</td>
<td></td>
<td>group comparisons</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Key Statistics

- **SES & Social Strategies**
  - $F(1, 90) = 11.13, p < .001$ aggressive
  - $M's = .76$ low, .16 middle
  - $F(1, 90) = 6.64, p < .05$ reassurances
  - $M's = .80$ low, 1.27 middle
  - $F(1, 90) = 4.82, p < .05$ sharing
  - $M's = .37$ low, .62 middle

- **SES & Social Competency, Teacher Ratings**
  - $F(1, 90) = 13.09, p < .001$ social problem solving
  - $M's = 3.0$ low, 3.6 middle

- **% SED Children Receiving Services by Sector ($n = 68$)**
  - 71.5% multiple, 46.5% sole education
  - 41.5% multiple, 14.3% sole mental health
  - 16.4% multiple, 1.2% sole child welfare
  - 10.9% multiple, 5.5% sole health
  - 4.3% multiple, 3.2% sole juvenile justice
  - 29.3% multiple sectors; 70.7% one sector

- **Use of Education Service**
  - $2.2(3) = 9.5$
  - $OR = 0.77$ age (younger)
  - $OR = 1.63$ poverty
  - $OR = 1.20, p < .001$ # child symptoms

- **Use of Specialty Mental Health**
  - $2(2) = 5.0$
  - $OR = 1.50$ parent education
  - $OR = 1.63$ poverty
  - $OR = 1.20, p < .001$ # child symptoms

- **Intensity/3-mth Period**
  - $x2(3) = 8.6, p < .05$
  - $OR = 0.41$ male
  - $OR = 2.99$ impact on family

(see study for results for empathy & helping)

(2 x 2 MANOVAs)

(See study for similar results with diagnosed only, impaired only, or nonproblem children)

(all p's < .05 unless noted; *models include male, age, poverty, parent ed & parent psychiatric history, # child symptoms, impairment, insurance, impact, & tx barriers) (logistic regressions)
### Broader Social Environment, Communities, and Schools—Schools

#### School Policy

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Gender</th>
<th>Age</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Representativeness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Costenbader &amp; Bunta Ine</td>
<td>1999</td>
<td>Concurrent group comparisons</td>
<td>Recruited emotionally disturbed (ED) students in special ed facility serving 26 rural school districts, upstate NY, socially maladjusted (SM) students (mix of internal or external suspensions, but no ED services) from 2 area middle schools</td>
<td>Special Educ.</td>
<td>N/R</td>
<td>N/R</td>
<td>50%</td>
</tr>
<tr>
<td>Farmer, Rodkin, et al.</td>
<td>1999</td>
<td>Concurrent correlational</td>
<td>Convenience: Recruited students in 59 general ed classes that contained at least 2 students with mild disabilities attending class 1/2 day or more; included behaviors, learning, Mul, speech, hearing disabilities; schools in suburban &amp; inner-city Chicago, &amp; rural &amp; small-city North Carolina</td>
<td>4th-6th gr</td>
<td>12-15 yrs</td>
<td>82%</td>
<td>94% ED</td>
</tr>
<tr>
<td>Mattison, Morales, &amp; Bauer</td>
<td>1992</td>
<td>Concurrent correlational</td>
<td>Source specific: Consecutive referrals from school personnel for SED placement evaluations, 1982–1987; students had no prior seriously emotionally disturbed (SED) residential placements; semiural central PA</td>
<td>Low</td>
<td>6-11 yrs</td>
<td>100%</td>
<td>89% Cauc</td>
</tr>
</tbody>
</table>

#### Result

- Two teacher rating scales were examined for their ability to discriminate between students with social maladjustment & students with emotional disturbance. The DT/CEP Scale correctly identified 21% of the ED students, & incorrectly identified 14% of SM students. In addition, 65% of ED & 61% of SM students had conduct problems. On the ESPS Scale, 2 of 5 subscales showed group differences, with lower scores for ED than SM children. Similarly, discriminant analyses found that 100% of children were classified as ED on 3 of 5 ESPS subscales.

#### Key Statistics

<table>
<thead>
<tr>
<th>DT/CEP Scale</th>
<th>Emotional disturbance</th>
<th>CD/ODD</th>
<th>Conduct Problems</th>
<th>CD/ODD</th>
</tr>
</thead>
<tbody>
<tr>
<td>SES (%)</td>
<td>14% SM, 21% ED</td>
<td></td>
<td>21% SM, 65% ED</td>
<td></td>
</tr>
<tr>
<td>t</td>
<td>1.64, p = ns</td>
<td></td>
<td>0.88, p = ns</td>
<td></td>
</tr>
<tr>
<td>Conduct Problems</td>
<td>61% SM, 65% ED</td>
<td></td>
<td>6.01 SM</td>
<td></td>
</tr>
<tr>
<td>t</td>
<td>2.83, p &lt; .01</td>
<td></td>
<td>8.83 SM</td>
<td></td>
</tr>
<tr>
<td>Physical symptoms/fears</td>
<td>15% SM, 45% ED</td>
<td></td>
<td>6.88 ED</td>
<td></td>
</tr>
<tr>
<td>t</td>
<td>3.03, p &lt; .01</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discriminant analysis</td>
<td>11% SM, 89% ED</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Boys with mild disabilities were over-represented in teacher-rated configurations of low academic, troubled, & extremely troubled boys, & under-represented in the model configuration. Girls with mild disabilities were over-represented in the distressed & very unhappy configurations & under-represented in the model, studious, & bright antisocial configurations. Only 25% of boys & 10% of girls in the 4 antisocial configurations were disabled students.

#### Boys referred & recommended for SED (seriously emotionally disturbed) placement had higher rates of conduct disorder, lower adaptive functioning, and more prior therapy, & had families with lower SES, more marital disruption, greater history of psychiatric illness, more physical abuse, & more stressors compared to nonrecommended boys. IQ & hx of educational interventions showed no differences. The strongest predictor of SED placement was CD/ODD diagnosis followed by hx of tr, SES, & physical abuse, controlling for broken home & parent psychiatric illness.

#### Boys x2(6, N = 452) = 52.2, p < .0001

- 18% disability, 11% no disability
- Troubled x2 = 9.93, p = .002; 19% disabled, 6% not
- Extremely troubled x2 = 32.0, p < .0001
- 15% disability, 2% no disability
- Model x2(4) = 24.4, p < .0001; 6% disabled, 30% not
- Girls x2(6, N = 496) = 47.6, p < .0001
- Distressed x2 = 9.57, p < .002
- 28% disability, 9% no disability
- Very unhappy x2 = 13.60, p < .002
- 31% disability, 8% no disability

#### Multivariate

- Psychiatric Characteristics
  - 32% SED, 10% non-SED, p = .005 CD/ODD
  - 37% SED, 17% non-SED, p = .01 therapy
  - 5.28 SED, 4.60 non-SED, p = .001 functioning*

- Family Characteristics
  - 5.00 SED, 4.50 non-SED, p = .005 SES*
  - 74% SED, 53% non-SED, p = .01 broken home
  - 86% SED, 72% non-SED, p = .05 prepsych hx
  - 61% SED, 41% non-SED, p = .05 abuse
  - 2.40 SED, 1.80 non-SED, p = .05 stressors
  - high scores = lower functioning, lower SES

- Logistic regression
  - b's not reported, variables listed in order of entry
  - p's = ns: broken home, parent psychiatric illness
  - p's < .05: CD/ODD, hx past tr, SES, abuse;
### Broader Social Environment, Communities, and Schools—Schools Classroom Placement

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Sample</th>
<th>Setting</th>
<th>Data Collection</th>
<th>Baseline Measures</th>
<th>Stage</th>
<th>Method</th>
<th>Pop</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitaro, &amp; Quiroz</td>
<td>1997</td>
<td>Meta-analysis</td>
<td>PsychINFO search; selected studies in public school settings, with control group or baseline measures</td>
<td>99</td>
<td>9-12th gr</td>
<td>N/R</td>
<td>N/R</td>
<td>N/R</td>
<td>N/R</td>
<td>N/R</td>
<td>100%</td>
<td>100%</td>
<td>Other</td>
<td>78% of treated students showed reductions in disruptive classroom behavior, with students in self-contained classrooms showing greater reductions than students in regular education classrooms. Teacher ratings were less sensitive to change than behavioral observation.</td>
<td></td>
</tr>
<tr>
<td>Brendgen, &amp; Tremblay</td>
<td>1999</td>
<td>Intervention random assignment</td>
<td>boys in 53 public schools in low-SES area, Montreal, Canada, were rated by kindergarten teachers; only boys with Canadian-born French-speaking parents, &lt; 15 yrs ed, eligible; at-risk boys (70% disruptive) took part in intervention; 42% not included because of parent refusal or missing data</td>
<td>149</td>
<td>6-17 yrs</td>
<td>100%, Low</td>
<td>100% Cauc</td>
<td>10.5 yrs</td>
<td>100% parent ed</td>
<td>Participation in a dropout prevention intervention program (social skills training for boys &amp; training) predicted lower average disruptive behavior from ages 9 to 11, controlling for age 6 disruptive behavior, family configuration, IQ, &amp; parent education. Post-intervention disruptive behavior mediated the relationship between program participation &amp; non-age-appropriate regular classroom placements (non-AARC, retention, &amp; special ed class). Less disruptiveness was associated with fewer non-AARC placements. In turn, non-AARC placements at age 12 mediated the effect of the IV program on school dropout. In both analyses, family configuration, parent education, &amp; children's IQ were significant predictors; age 6 disruptive behavior was not. The risk of dropping out of school was 4.95 times higher for retained &amp; 4.75 times higher for combined retained/special classroom students.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Key Statistics

- **Mean Effect Size** ($\Delta M = -0.78$, $sd = 0.58$, $N = 323$)
- **Effect Size by Setting, Teacher Ratings, & Observed**
  - $F (2, 220) = 7.62, p < .001, t = 5.39, p < .05$
  - $ES = 0.45$ regular
  - $ES = 0.96$ resource room
  - $ES = 0.97$ self-contained
- **Effect Size by Setting, Behavioral Observation**
  - $F (2, 197) = 4.13, p < .05, t = 4.12, p < .05$
  - $ES = 0.71$ regular
  - $ES = 0.97$ self-contained
- **Effect Size by Instrument**
  - $F (1, 221) = 13.67, p < .001$
  - $ES = 0.37$ teacher rating
  - $ES = 0.83$ behavioral observation
- **Postintervention Disruptiveness**
  - $R^2 = 0.07, p < .05$
  - $\beta = 0.20, p < .05$ age 6 disruptive
  - $\beta = 0.76, p < .10$ program participation
  - $p < .05, \beta's = 8.74 IV, 10.72 ctrl$
- **Post-IV Disruptiveness Mediating IV & Non-AARC**
  - Step 1: $\Delta \beta^2 = 1.94, p < .001$
  - Step 2: $\Delta \beta^2 = 1.89, p < .10$
  - $OR = 0.44, p < .10$ program participation
- **Step 3: $\Delta \beta^2 = 1.94, p < .001$**
  - $OR = 0.44, p < .10$ program participation
  - $OR = 0.57, p = ns$ non-AARC
- **Non-AARC Mediating IV & Dropout**
  - Step 1: $\Delta \beta^2 = 4.15, p < .05$
  - $\beta = 0.76, p < .05$
  - $\beta = 0.76, p = ns$ program participation
  - $\beta = 0.44, p < .10$ non-AARC
- **Step 4: $\Delta \beta^2 = 5.39, p < .05$**
  - $OR = 0.27, p < .05$ non-AARC
  - $(p's = ns$: program participation, post-IV disruption $)$
- **(p's = ns$: program participation, post-IV disruption)**
  - $\beta = 0.76, p < .05$
  - $\beta = 0.76, p = ns$ age 6 disruptive

---

* (p's < .05: family configuration, IQ, parent education, $p = ns$: age 6 disruptive)
**Broader Social Environment, Communities, and Schools—Schools**

**Student Mobility**

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Population</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rumberger &amp; Larson</td>
<td>1998</td>
<td>Prospective longitudinal 6 yrs</td>
<td>national representative sample of students from public &amp; private schools; National Education Longitudinal Study, NELS:88</td>
<td>11,671</td>
<td>8th gr &gt; 12th gr</td>
<td>50%</td>
<td>N/R</td>
<td>The relative odds of changing schools or dropping out of school between 8th &amp; 12th grades were higher for students who had moved between 8th &amp; 12th grades &amp; who had low school engagement in 8th grade (absenteeism, misbehavior, low educational attainment), controlling for student, family, &amp; school characteristics.*</td>
</tr>
<tr>
<td>Swanson &amp; Schneider</td>
<td>1999</td>
<td>Prospective longitudinal 6 yrs</td>
<td>national representative sample of students from public &amp; private schools, 1988-1994; National Education Longitudinal Study</td>
<td>9,976</td>
<td>8th gr &gt; 12th gr</td>
<td>50%</td>
<td>N/R</td>
<td>Late school changing (changing schools but not residences, 10th-12th grade) was associated with greater increases in behavioral problems &amp; lower gains in math achievement. In contrast, early moving (change of residence, not schools, grades 8-10) &amp; early changing had no effect on behavioral problems &amp; was associated with increased math achievement from grades 10 to 12. Students with histories of early moving, changing, or leaving (moving &amp; changing schools) were at increased risk for early dropout. Early or late high school dropout were also predicted by the total number of times a student had changed schools prior to 8th grade. All analyses controlled for prior math scores &amp; behavioral status, mobility, gender, race, family background,* &amp; educational history.</td>
</tr>
</tbody>
</table>

**Key Statistics**

- **Change Schools 8th-12th Grade**
  - OR = 1.29 high absenteeism
  - OR = 1.22 misbehavior
  - OR = 7.18 move
  - OR = 0.78 grades
  - OR = 0.91 preparation for class
  - OR = 0.75, p < .05 low educational expectations

- **School Dropout, 8th-12th Grade**
  - OR = 4.53 move
  - OR = 2.53 high absenteeism
  - OR = 1.38 misbehavior
  - OR = 1.75 low educational expectations
  - OR = 0.65 grades

- **Gains in Math Achievement, 10th-12th Grade**
  - Adj R² = .37, p < .05 early mover
  - β = .37, p < .05 early mover
  - β = .38, p < .05 changer
  - β = .80, p < .05 late changer

- **High School Dropout, 8th-12th Grade**
  - x²(23) = 844.2 (n = 12,518)
  - β = .36, p < .05 early mover
  - β = .55, p < .05 early changer
  - β = .94 late changer
  - β = .17 # school changes prior to 8th grade

- **High School Dropout, 10th-12th Grade**
  - x²(26) = 1,446.4 (n = 12,578)
  - β = .29 early mover
  - β = -.70 early changer
  - β = -1.15 early leave
  - β = .55 late mover
  - β = .15 # school changes prior to 8th grade

* (p's < .05: Asian, Black, Hispanic, school change by grade 8, SES, stepfamily, urban, Catholic, private, teach quality)
## Broader Social Environment, Communities, and Schools—Schools

### Student Mobility

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Population:</th>
<th>Representative</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tucker, Marx, &amp; Long</td>
<td>1998</td>
<td>Concurrent/retrospective correlational</td>
<td>cc: school life; retro: mobility</td>
<td>17,000 sampled were ages 7–12, AfA or Cauc, &amp; enrolled in elementary school; children with missing data excluded</td>
<td>4,178</td>
<td>7–12 yrs</td>
<td>N/R</td>
<td>N/R</td>
<td>N/R AfA</td>
<td>For students living with 2 biological parents, residential mobility did not predict caregiver reports of school problems (academic or behavioral), expect for hypermobile students, those who had moved 8 or more times by elementary school. For children in any other family structure, any move (1, 2–3, 4–5, 6–7, 8+) was associated with increased likelihood of academic or behavioral school problems. Analyses controlled for age, gender, race, mother's education, family income, # of siblings, recency &amp; distance of last move, family type, &amp; number of moves.</td>
</tr>
</tbody>
</table>

### School Discipline

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Population:</th>
<th>Representative</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
</table>
| Costenbader & Markson | 1998 | Concurrent | recruited middle & high school students from 4 schools in 2 inner-city (33%) & small rural town (67%) school districts | 209 | 7th-10th gr | 48% | N/R | 23% AfA | One-third of the middle & high school students surveyed about their experiences with internal & external school suspensions reported that being suspended was "not at all helpful" for solving their problems & that they probably would be suspended again. 36% of these students reported suspension helped "a little," 12% "a lot," & 19% endorsed the item "I learned a lesson & I will never be suspended again."

### Lewis, Sugai, & Colvin

<table>
<thead>
<tr>
<th>Authors</th>
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<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1998</td>
<td>Intervention</td>
<td>recruited all 1st-5th-grade students in a small suburban elementary school; school &quot;at risk&quot;: large percentage of students received financial assistance or special services</td>
<td>110</td>
<td>1st-5th gr</td>
<td>51%</td>
<td>Low</td>
<td>N/R AfA</td>
<td>A school-based proactive intervention designed to reduce problem behavior through social skill instruction &amp; direct intervention demonstrated modest sustainable reductions in the overall level of problem behavior during recess, during transitions, &amp; in the cafeteria. Examples of rules &amp; positive behaviors included Be Safe (walk, keep food on tray) &amp; Be Respectful (follow adult directions, use polite language). Group contingencies were used for recess &amp; the cafeteria, precorrection &amp; active supervision during transitions. Changes were maintained 1–3 mths post-Iv.</td>
<td></td>
</tr>
</tbody>
</table>

### Key Statistics

<table>
<thead>
<tr>
<th>Structural Variables &amp; Times Moved, by Family Type, Academic or Behavioral School Problems</th>
<th>$\chi^2$</th>
<th>n = 209</th>
<th>p &lt; .05</th>
</tr>
</thead>
<tbody>
<tr>
<td>Both biological parents</td>
<td>$\beta = .34$, p &lt; .05, OR = 2.28 8+ moves</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All other family types</td>
<td>$\beta = .21$, p &lt; .001, OR = 2.05 1 move</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>$\beta = .18$, p &lt; .001, OR = 2.84 2–3 moves</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$\beta = .20$, p &lt; .001, OR = 2.39 4–5 moves</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$\beta = .24$, p &lt; .001, OR = 2.38 6–7 moves</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$\beta = .27$, p &lt; .01, OR = 2.24 8+ moves</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(p's < .05: male, race, mother's ed, fam income) (p's = ns: # sibs, recency & distance of last move; family type & moves: 2 bio parents & 0, 1, 2–3, 4–5, & 6–7 moves; other family types & 0 moves) (multiple logistic regressions)

<table>
<thead>
<tr>
<th>Average Rate of Problem Behavior per Minute</th>
</tr>
</thead>
<tbody>
<tr>
<td>Califonia</td>
</tr>
<tr>
<td>3.40 baseline (BL)</td>
</tr>
<tr>
<td>4.17 social skills training (SS)</td>
</tr>
<tr>
<td>2.15 direct intervention (DI)</td>
</tr>
<tr>
<td>1.57 followup (FU)</td>
</tr>
<tr>
<td>PND = 56% D1, 83% FU (3 mths)</td>
</tr>
<tr>
<td>PND = % of nonoverlapping data points: BL-DI, FU</td>
</tr>
<tr>
<td>Recess</td>
</tr>
<tr>
<td>1.42 BL, 1.39 SS, 0.61 DI, 0.68 FU</td>
</tr>
<tr>
<td>PND = 63% D1, 50% FU (2 mths)</td>
</tr>
<tr>
<td>Transition</td>
</tr>
<tr>
<td>6.08 BL, 5.74 SS, 3.82 DI, 2.5 FI (1 mth)</td>
</tr>
<tr>
<td>PND: 20% 1st half, 60% 2nd half* DI, 100 FU*</td>
</tr>
<tr>
<td>*2nd half: followed a change in strategy (no other statistics reported)</td>
</tr>
</tbody>
</table>
### Broader Social Environment, Communities, and Schools—Schools Tracking

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Representativeness</th>
<th>Size</th>
<th>Age</th>
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<th>SES</th>
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<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmer</td>
<td>1993</td>
<td>Prospective longitudinal 16 yrs</td>
<td>Population: located children in the National Child Development Study (NCDS), which included &quot;nearly all children&quot; born in Great Britain the 1st week of March, 1958</td>
<td>2,996</td>
<td>7 &gt; 11, 16, 23 yrs</td>
<td>100%</td>
<td>N/R</td>
<td>N/R</td>
<td>Boys in the top 19% for parent or teacher ratings of externalizing were more likely to be in low-ability tracts &amp; less likely to be in high-ability tracts, taking into account academic ability, parents' interest in education, family background &amp; difficulties, &amp; receipt of special education.</td>
</tr>
<tr>
<td>Gamoran, Nystrand, et al.</td>
<td>1995</td>
<td>Concurrent correlational data collected over 1 yr; T1 not used to predict T2</td>
<td>Convenience: recruited students from 92 honors, regular, &amp; remedial English classes in 10 junior high/ middle schools &amp; 8 high schools in 7 Midwestern communities</td>
<td>1,564</td>
<td>8th-9th gr</td>
<td>50%</td>
<td>Low-upper middle</td>
<td>Classroom observations of remedial English literature students found more off-task behavior &amp; lower engagement (% of reading &amp; writing completed) than in regular or honors classes. Remedial classes had lower achievement than regular or honors classes, controlling for prior reading &amp; writing scores, ability, SES, gender, &amp; minority status.</td>
<td></td>
</tr>
<tr>
<td>Jones, Vanfossen, &amp; Ensminger</td>
<td>1995</td>
<td>Concurrent correlational</td>
<td>Convenience: from High School &amp; Beyond data set, a 2-stage probability sample from 1,100 high schools; oversampled for race &amp; private/Catholic school, random sample of 36 students per school</td>
<td>N/R</td>
<td>10th gr</td>
<td>N/R</td>
<td>N/R</td>
<td>N/R</td>
<td>The likelihood of being in the academic versus general track decreased for students who came from low-SES families or low-SES neighborhoods; who were Hispanic, male or nonblack; or who had lower grades, ability, or educational aspirations.</td>
</tr>
</tbody>
</table>

### Key Statistics

- **Track Placement, Externalizing**
  - $p < .0001$
  - $M's = .22$ ext, .47 nonext; high-ability group
  - $M's = .40$ ext, .18 nonext; low-ability group
  - (model included academic ability, family background & difficulties, parent interest in ed, special ed) (no other statistics reported; OLS regressions)

- **Class Level Off-Task Classroom Behavior**
  - $M's = 2.04$ honors, 4.06 regular, 6.84 remedial
  - $M's = 87.8$ honors, 82.0 regular, 80.4 remedial

- **Class Level % Writing Completed**
  - $M's = 91.3$ honors, 84.7 regular, 82.6 remedial
  - ($F$ values not reported, all $p's < .05$)

- **Achievement**
  - $\chi^2 = 55.89^* vs. 66.32^{**} = 10.73, p < .01$
  - Intercept: $-1.71$ hon, $-2.55$ reg, $-3.70$ remedial

- **Predictors of Academic vs. General Track**
  - $\beta = .38$, OR = 1.34 individual SES
  - $\beta = .12$, OR = 1.12 school SES
  - $\beta = .04$, OR = 0.96 Hispanic
  - $\beta = .05$, OR = 1.05 ability
  - $\beta = .40$, OR = 1.50 educational aspirations
  - $\beta = .22$, OR = 1.24 grades
  - $\beta = .75$, OR = 2.10 black
  - $\beta = .007$, OR = 1.02 female
  - ($p's < .001$)
  - (model included school electivity, inclusiveness, & individual x organizational interactions)
  - (multinomial logistic regression)
## Broader Social Environment, Communities, and Schools—Schools

### Class & School Size

<table>
<thead>
<tr>
<th>Authors</th>
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<th>Size</th>
<th>Age</th>
<th>% Male</th>
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<th>Ethnicity</th>
<th>Result</th>
<th>Key Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Akerhielm</td>
<td>1995</td>
<td>Concurrent</td>
<td>nationally representative sample of students; 24,000 8th graders from 1,052 public &amp; private schools; only public schools included in this study; U.S. Dept. of Education, National Educational Longitudinal Survey, 1988</td>
<td>4,973</td>
<td>8th gr</td>
<td>50%</td>
<td>Low-upper approx</td>
<td>N/R% AfrA</td>
<td>N/R% AfrA</td>
<td>N/R% AsnA</td>
<td>Larger class size was associated with high achievement scores in math &amp; English, taking into account teacher, family, &amp; community variables, but not ability. However, smaller classes had more low-ability students. When ability was taken into account, smaller class size was associated with higher history &amp; science scores. Class size had a smaller effect than most family, teacher, or community variables, including parents' education. Decreases in class size contributed to small increases in test scores.</td>
</tr>
<tr>
<td>Lee &amp; Smith</td>
<td>1997</td>
<td>Prospective</td>
<td>nationally representative sample of students from 789 public, elite private, &amp; Catholic schools, only students who attended same high school all 4 yrs with data from all 3 waves included here; U.S. Department of Education, National Educational Longitudinal Survey, 1988, NELS: 88</td>
<td>9,812</td>
<td>8th &gt; 12th gr</td>
<td>49%</td>
<td>Low-upper</td>
<td>N/R% AfrA</td>
<td>N/R% AfrA</td>
<td>N/R% AsnA</td>
<td>Gains in reading &amp; math achievement between 8th &amp; 12th grades were highest for schools with moderate enrollment (600-900). Small schools (&lt; 300) showed fewer gains, while very large schools (&gt; 2,100) showed even fewer. School size had a greater effect on schools with lower SES &amp; &gt; 40% minority enrollment. Differences in math gains between low-SES schools &amp; high-SES schools were greater in small &amp; large than in moderate-size schools. Differences in math &amp; reading gains between schools with low &amp; high minority enrollment were greater in large (&gt; 1,800—math; &gt; 1,500—reading) schools.</td>
</tr>
<tr>
<td>Tillitski</td>
<td>1989</td>
<td>Meta-analysis</td>
<td>convenience: schools in randomly selected school districts, IN; IV led to reduced class size for 6 of 9 schools</td>
<td>24 scores</td>
<td>1st–2nd gr</td>
<td>N/R Low-middle</td>
<td>N/R% Cau &amp; N/R% Other</td>
<td>N/R% Cau &amp; N/R% Other</td>
<td>Academic achievement (reading, math, &amp; composite scores) was higher in classes that experienced the PRIME TIME intervention to reduce class size, than in classes that had not been reduced.</td>
<td>Gains, Math &amp; Reading Achievement, 8th–12th: y's = −93, math, −53, p &lt; .05 read : 200 y's = 1.5, math, .54, p &lt; .05 read 601-900 y's = 1.5, math, −91, p &lt; .05 read &gt; 2,100 y = slope SES &amp; gains (p's &lt; .001 math; model: base estimate, average SES, minority enrollment, Catholic/private school, school size)</td>
<td></td>
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</tbody>
</table>

**Note:** AsnA = not a minority in this study.
Broader Social Environment, Communities, and Schools—Schools

School Social Dynamic

<table>
<thead>
<tr>
<th>Authors</th>
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</thead>
<tbody>
<tr>
<td>Rodkin, Farmer,</td>
<td>2000</td>
<td>Concurrent</td>
<td>recruited children from 31 Chicago</td>
<td>452</td>
<td>4th-6th gr</td>
<td>100%</td>
<td>N/R</td>
<td>40% AfA</td>
<td>Teacher ratings of interpersonal competence yielded configurations of...</td>
</tr>
<tr>
<td>et al.</td>
<td></td>
<td>correlational</td>
<td>classrooms (inner-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>54% Cauc</td>
<td>of popular (Toughs) &amp; unpopular (Bright Antisocial, Troubled) aggressive...</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>city to suburban) &amp; 28 North Carolina</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6% Hisp</td>
<td>boys. Configurations of nonaggressive boys included Model (popular-prosocial), Low Academic, &amp; Passive (average popular). Tough &amp; Model boys received the highest peer nominations for &quot;cool&quot; &amp; &quot;athletic&quot;; Tough &amp; Troubled boys had the highest scores on antisocial behavior, &amp; Tough boys had the highest self-ratings of popularity. Tough &amp; Model boys were more often nuclear or central members of social networks, while Troubled boys were more often found in less central roles (isolated or peripheral).</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>classrooms (rural &amp; small city); classrooms were chosen to include students with disabilities</td>
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<td>_______________________________________________________________________</td>
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<td>_______________________________________________________________________</td>
</tr>
<tr>
<td>Xie, Cairns, &amp;</td>
<td>1999</td>
<td>Concurrent</td>
<td>recruited children from 1 elementary &amp; 3 middle schools in high-crime inner-city areas of a large Southeastern city</td>
<td>506</td>
<td>4th-7th gr</td>
<td>42%</td>
<td>N/R</td>
<td>100% AfA</td>
<td>Boys &amp; girls affiliated with social networks having similar configurations of teacher-rated interpersonal competence factors: aggression, popularity, affiliation, physical competence, &amp; academic competence. Individuals in the risk configuration (high on aggression &amp; low on academic competence, physical competence, popularity, &amp; affiliation) were more likely to affiliate with a social network of at-risk peers. In addition, boys who were nominated by peers as highly central to their social networks were rated by teachers as more aggressive than boys with median or low centrality. For girls, greater social network centrality was related to higher teacher ratings of popularity, not aggression.</td>
</tr>
<tr>
<td>Cairns</td>
<td></td>
<td>correlational</td>
<td></td>
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<td></td>
<td>_______________________________________________________________________</td>
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</tbody>
</table>

Key Statistics

Configural Analysis From Teacher Ratings
- Tough: 1.3 agg, 0.46 pop, 0.31 phys, 0.02 aff (+)
  0.38 acad, 0.27 internal, 0.85 shy (-)
- Bright AS: 0.64 agg, 0.39 acad, 0.34 int (+)
  0.80 pop, 0.66 phys, 0.84 aff, 0.21 shy (-)
- Troubled: 1.04 agg, 0.62 int, 0.13 shy (+)
  0.98 pop, 0.78 phy, 1.1 aff, 1.35 acad (-)

Peer Ratings: Wilkes Λ = .45
Approx F (35, 1853) = 11.1, p < .001
Cool: +.46 Tough, +.26 Model (+.16 to -.28 rest) 
Athl: +.47 Tough, +.28 Model (+.06 to -.32 rest)
Self Ratings: Wilkes Λ = .70
Approx F (35, 1274) = 4.64, p < .001
Pop: +.44 Tough (+.07 to -.19 rest)
(MANOVAs, univariate F's not reported, p's < .05)

Configurations & Centrality
χ²(15, N = 452) = 31.6, p < .01
- Nuclear: 64% tough, 62% model, 51% bline
- Isolated: 15% troubled, 6.2% baseline
- Peripheral: 13% troubled, 7.7% baseline
(log linear analysis)

Individual Configurations
- 35% high competence: low agg, high rest
- 40% average competence: median all
- 25% risk: high agg, low rest of factors

Social Network Configurations
- Average scores of peers in group
- 36% high competence: low agg, high rest
- 45% average competence: median all
- 19% risk: high agg, low rest of factors

Individual Configurations & Social Networks
- Mantel-Haenszel χ²'s not reported, p's < .05
- proportions for gr 4 & 5 girls shown in figure but not reported in text; four analyses conducted: boys, girls, 4th & 5th gr, 6th & 7th gr

Aggression & Social Network Status, Boys
F (2, 209) = 5.14, p < .01
- M's = 4.43 high central, 3.55 med, 3.27 low

Popularity & Social Network Status, Girls
F (2, 277) = 11.00, p < .001
- M's = 5.12 high central, 4.72 med, 4.21 low
(ANOVA, no post hoc tests)
<table>
<thead>
<tr>
<th>Authors</th>
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<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Representativeness</th>
<th>Population:</th>
<th>Task Relevance</th>
<th>Key Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kellam, Unu, et al.</td>
<td>1996</td>
<td>Convenience: students above median for risk of aggression, 2 inner-city &amp; 2 metro area Midwest schools; Metropolitan Area Child Study control schools</td>
<td>206</td>
<td>2nd, 3rd, 5th gr students</td>
<td>59%</td>
<td>N/R</td>
<td>56/20% AFA</td>
<td>11/66% Cauc</td>
<td>Teachers gave more reprimands, fewer opportunities to respond academically, &amp; more behavioral requests to students at high risk for aggression than mid-risk students.</td>
<td>$\chi^2 = 20.46$, $p = .0004$ $(n = 106)$</td>
<td>Boys' 1st-grade classroom aggression, classroom poverty, &amp; the interaction of 1st-grade individual &amp; classroom aggression predicted teacher ratings of highly aggressive In 6th grade than highly aggressive boys in 1st-grade classrooms low in aggression. For girls, 6th-grade aggression was predicted by individual aggression &amp; classroom poverty in 1st grade, but not by classroom aggression.</td>
</tr>
<tr>
<td>Thurlow, Yusealye, et al.</td>
<td>1993</td>
<td>Conventional comparisons: students observed 1 time over 1 yr</td>
<td>139</td>
<td>1st-6th gr</td>
<td>66%</td>
<td>N/R</td>
<td>N/R</td>
<td>Source specific: students in special education &amp; regular services, 27 schools, 8 school districts; 114 learning disabled, 19 emotional/behaviorally disturbed, &amp; 6 educable mentally retarded students</td>
<td>$\chi^2 = 20.74$, $p = .0004$ $(n = 105)$</td>
<td>Girls 1st Grade on 6th Grade Aggression $(n = 201)$</td>
<td>$\chi^2 = 20.1$, $p = .0004$ $(n = 103)$</td>
</tr>
<tr>
<td>Van Acker, Grant, &amp; Henry</td>
<td>1996</td>
<td>Prospective longitudinal 15 mins observed 30 mins, 4x, over 2 yrs</td>
<td>82</td>
<td>K &gt; 1st gr</td>
<td>57%</td>
<td>N/R</td>
<td>52% AFA</td>
<td>Children identified in kindergarten as at high risk for developing conduct problems were given more negative commands in structured &amp; unstructured settings by their 1st-grade teachers than low-risk students.</td>
<td>$\chi^2 = 20.46$, $p = .0004$ $(n = 106)$</td>
<td>Boys 1st Grade on 6th Grade Aggression $(n = 202)$</td>
<td>$\chi^2 = 20.46$, $p = .0004$ $(n = 106)$</td>
</tr>
<tr>
<td>Ysseldyke, et al.</td>
<td>1995</td>
<td>Convenience: students chosen from larger study, Southeast, 3-stage screening for risk: school, class, parents</td>
<td>25</td>
<td>Teachers</td>
<td>18%</td>
<td>N/R</td>
<td>56/20% AFA</td>
<td>11/66% Cauc</td>
<td>Teachers gave more reprimands, fewer opportunities to respond academically, &amp; more behavioral requests to students at high risk for aggression than mid-risk students.</td>
<td>$\chi^2 = 20.46$, $p = .0004$ $(n = 106)$</td>
<td>Girls 1st Grade on 6th Grade Aggression $(n = 201)$</td>
</tr>
</tbody>
</table>

**Task Relevance**
- $\chi^2 = 20.46$, $p = .0004$ $(n = 106)$
- $\chi^2 = 20.74$, $p = .0004$ $(n = 105)$
- $\chi^2 = 20.1$, $p = .0004$ $(n = 103)$
- $\chi^2 = 20.46$, $p = .0004$ $(n = 106)$

**Key Statistics**
- Boys' 1st-grade classroom aggression, classroom poverty, & the interaction of 1st-grade individual & classroom aggression predicted teacher ratings of highly aggressive In 6th grade than highly aggressive boys in 1st-grade classrooms low in aggression. For girls, 6th-grade aggression was predicted by individual aggression & classroom poverty in 1st grade, but not by classroom aggression.
- Girls 1st Grade on 6th Grade Aggression $(n = 201)$
- Boys 1st Grade on 6th Grade Aggression $(n = 202)$
### Broader Social Environment, Communities, and Schools—Schools

#### School Bonding & Attachment

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abbott, O’Donnell, et al.</td>
<td>1998</td>
<td>Intervention</td>
<td>800</td>
<td>spr 6th gr</td>
<td>51%</td>
<td>Low-middle</td>
<td>52% eligible for school lunch program</td>
<td>Greater implementation of targeted teaching strategies, classroom management, interactive teaching, &amp; cooperative learning resulted in greater student-reported bonding to school, involvement in the classroom, &amp; opportunity for &amp; reinforcement of classroom involvement. IV group students also had higher CAT achievement scores at the end of 6th grade (controlling for 5th-grade CAT) but showed no differences on school bonding variables when implementation was not examined.</td>
</tr>
<tr>
<td>Hawkins, Catalano, et al.</td>
<td>1999</td>
<td>Intervention nonrandom</td>
<td>598</td>
<td>5th gr</td>
<td>50%</td>
<td>Low-middle</td>
<td>26% A/A</td>
<td>High school seniors in preventative intervention classrooms during 1st-6th grades reported more commitment &amp; attachment to school; less school misbehavior, heaving drinking, or repeating a grade; &amp; less lifetime violence, sexual activity, or pregnancy than students in control classrooms. Poverty interacted with intervention status. School attachment was higher for poor IV students than poor controls, fewer poor IV than controls repeated a grade, &amp; fewer working-/middle-class IV students were/get a woman pregnant than controls. The late IV (5th &amp; 6th grade only) showed no treatment effects.</td>
</tr>
<tr>
<td>Jenkins</td>
<td>1997</td>
<td>Concurrent correlational</td>
<td>754</td>
<td>7th &amp; 8th gr</td>
<td>50%</td>
<td>Low-middle</td>
<td>22% A/A</td>
<td>Components of the school social bond predicted self-reported school delinquency. Educational commitment &amp; belief in school rules directly predicted school crime (drug use, vandalism), school misconduct (cheating, talking in class) &amp; school nonattendance (cutting or tardiness, class or school). Attachment to school directly predicted misconduct &amp; nonattendance. Involvement in school activities was an indirect predictor of school delinquency, through the school social bond.</td>
</tr>
</tbody>
</table>

#### Key Statistics

- **Academic Achievement—CAT**
  \[ \chi^2 = 53.3 (df = 36), p = .004; t = 2.69, p < .05 \]
  - M's = 537.06 IV, 527.64 control
- **Bonding to School—Implementation Score**
  \[ \chi^2 = 222.7 (df = 41), p = .001; t = 2.23, p < .05 \]
- **Opportunity for Involvement—Implementation**
  \[ \chi^2 = 220.9 (df = 36), p < .01; t = 3.14, p < .01 \]
- **Actual Involvement—Implementation**
  \[ \chi^2 = 106.5 (df = 41), p = .001; t = 2.49, p < .01 \]
- **Reinforcement Involvement—Implementation**
  \[ \chi^2 = 244.1 (df = 41), p < .05; t = 2.36, p < .05 \]
  - (M's not reported for high & low implementation)
  - (controlling for 5th-grade baseline scores)

- **Bonding to School, School Commitment**
  \[ p = .03, M's = 2.65 IV, 2.50 control \]
- **Bonding to School, School Attachment**
  \[ p = .03, M's = 3.18 IV, 2.84 control poverty \]
- **School Success/Failure, Repeated a Grade**
  \[ p = .04, M's = 14 IV, 30% control poverty \]
- **School Misbehavior, Self-Report, Past Year (n = 529)**
  \[ p = .02, M's = 3.66 IV, 4.27 control \]
- **School Crime**
  \[ R^2 = .32, p < .05 \]
  \[ r = .35 educational commitment, -.23 belief in school rules \]
  - r's = .33 sitting at school, .14 male
- **School Misconduct**
  \[ R^2 = .29, p < .05 \]
  \[ r's = -.26 ed commit, -.15 belief, -.26 attach \]
  - r's = .07 family size, .18 male
  - r's = -.06 8th grade, .10 single-parent family
- **School Nonattendance**
  \[ R^2 = .29, p < .05 \]
  \[ r's = -.36 ed commit, -.12 belief, -.16 attachment \]
  - r = .08 family size
  - (see study for results with indirect predictors: parental involvement in school, mother's education, grade, ethnicity, male, math ability, living w/step-parent)
Synthesis and Epilogue

This review of empirical studies was guided by two objectives: (1) to identify the significant risk factors associated with externalizing behavior problems; and, (2) to estimate the likelihood that each factor influences the occurrence of externalizing behavior problems. In pursuing these objectives, an evaluative framework developed by Kraemer et al. (1997) was used to categorize factors as correlates, predictive risk factors, or causal risk factors based on the scientific evidence to date. Three important lessons were learned quickly. First, research in this area has blossomed in the past decade, resulting in hundreds of empirical papers covering a wide range of possible factors. Second, while a number of significant causal risk factors have been identified (i.e., child hostile attributional processes; parental engagement, validation, and discipline; peer rejection and association with deviant peers), a number of factors have empirical support as predictive risk factors and many more have been identified as concurrent correlations. Third, many researchers have moved beyond a simple risk-factors perspective, driven by findings that pointed to a more complex and richly textured view of children and how they develop from infancy through early adulthood.

The preceding sections of this report have, with some exceptions, stayed close to the original objectives, focusing in turn on each of the many factors discussed in this literature. It is important, however, to expand on these objectives to take into account the complexity of externalizing behavior problems and to encourage the next generation of empirical studies. This expansion includes: (1) the importance of defining externalizing behavior in developmental terms; (2) the need to "put the organism back together" in considering individual child characteristics as they relate to risk and protection; (3) the problem of "correlated environments" and their implications; and (4) the necessity of studying child characteristics and environmental factors in concert.

Defining Externalizing Behavior in Developmental Terms

The past decade has seen a movement from defining externalizing behavior problems as isolated acts or static traits to defining externalizing behaviors as an organized system of responses that emerges, grows, and changes over the course of development. These responses are multifaceted, including not just overt actions but also patterns of thinking and feeling (e.g., hostile attributions, irritability). To completely characterize externalizing behavior problems, researchers must describe not only the kinds of actions, thoughts, and emotions involved, but also how they are interrelated and how these interrelated patterns develop and change over the months and years from infancy through childhood, adolescence, and early adulthood. While a number of recent longitudinal studies have given some initial picture of these developmental "trajectories," "pathways," or "reorganizations," a great many questions remain unanswered. For instance, there are questions about continuity and discontinuity (Which young children remain aggressive throughout childhood, and which do not?) and questions about reorganization of behavior (Which aggressive children later become bullies, which
later become involved with drugs, and which become prosocial and lose their aggressiveness?). Given the richness of some of the existing longitudinal studies, some of the questions may be answerable through secondary data analysis.

This more dynamic view of externalizing behavior problems already has had important implications for studying risk factors. Etiology becomes more complicated. A factor that leads to early aggressive behavior may not have as great an effect on later conduct problems. A factor that maintains conduct problems may have had little to do with the initial onset. A factor that leads to desistance from delinquency may have had nothing to do with either bringing about or maintaining the behaviors in the first place. And a factor that puts one child at risk for externalizing behavior in one context may actually protect another child from developing that same behavior in another context.

**Putting the Organism Back Together in Considering Individual Child Characteristics**

A substantial number of studies have focused on the question, what is it about individual children that puts them at risk for engaging in externalizing behavior? Researchers have studied a range of individual characteristics that span multiple levels of analysis within the child, including neurotransmitters, neurohormones, physiology, cognitive processes, expression of emotion, and patterns of behavior. They have developed better and better ways to study these various components of child functioning and have greatly increased our understanding of such characteristics. While such work needs to continue, there is a growing need to develop complementary studies that will expand this focus in two directions.

First, most of the studies reviewed here examine these individual child factors only in relation to single points in time in the development of externalizing behavior problems (e.g., difficult/irritable temperament in young childhood, hostile attributional processes in elementary school-aged children). A few studies have begun to place these factors in a developmental context, studying how such characteristics change with development and are involved in trajectories for externalizing behavior.

Second, most studies to date have restricted their focus to one child characteristic, studying how that characteristic is related to externalizing behavior but providing no information about relationships among different characteristics. Research that attends to more than one characteristic will be important for two reasons. When two or more characteristics are implicated as risk factors, understanding how these systems influence one another is essential in learning how to treat or prevent such behavior. For example, social information processing may shape emotion regulation, emotional regulation may shape social information processing, or the two may reciprocally influence one another or be controlled by a third unknown process. Understanding the nature of these links will help people ascertain whether interventions that target social information processing will be effective independent of any attention to emotion regulation, or whether both need targeting. The latter strategy may be essential if these two systems influence one another.

In addition, cross-characteristic studies can help identify risk factors that moderate other child factors and account for meaningful increases in risk. For example, neural processes related to ADHD may constrain social information processing, which, in turn, increases the child's risk for externalizing behavior problems. Not only might social information processing interventions be the best way of approaching such cases, but such interventions may require tailoring when used with children with ADHD.
Studying Correlated Environments

This review found that a wide range of environmental factors from a variety of social contexts are likely to influence the developmental course of externalizing behavior problems. Single variables by themselves do a poor job of describing the environments that influence developmental pathways. In addition, the variables we use to describe these environments often co-occur with one another, both within and between social contexts. Recent literature uses terms such as "correlated constraints," "correlated environments," or "bundled risk factors" to describe such co-occurrence. These findings have important implications for research and effective intervention.

- Simple risk factor studies have played an important but more preliminary role in the field. They provided initial evidence about where attention needed to be focused. Now, research on environmental risk factors needs to move to describing environments in more complex ways. Indeed, this review organized environmental factors into three primary areas—family, peer, and the broader social environment. Many correlations and predictive risk factors were identified in each area, as well as several noted causal risk factors. Research now must build on this foundation by examining how factors within and across these areas converge to increase or decrease risk for conduct problems at various phases of development.

- Interventions that focus on single environmental risk factors are very likely to be compromised by hidden constraints, threshold problems, and even boomerang effects. Hidden constraints are linked risk factors that are overlooked. For example, parent training programs may fail to change important parenting behaviors because they fail to appreciate the constraints on parenting imposed by parental depression, interparental conflict, work, or economic conditions. Threshold problems occur when interventions fail to target a broad enough array of important factors. For example, programs that target only reductions in conduct problems may not reach a threshold for effectiveness if they do not also include training in how to carry out prosocial alternatives. Boomerang effects occur when interventions to reduce one risk factor actually enhance other risk factors. For example, interventions that bring children with conduct problems together in groups to work on social skills may inadvertently enhance the formation of self-reinforcing deviant peer groups.

Recent studies have made some headway, suggesting important directions for studying correlated environments and their effects.

- Studies involving more comprehensive assessments of the child's developmental context find important continuities across aspects of the environment. For example, various dimensions of parenting behavior tend to co-occur (validation, monitoring, engagement, discipline) (Barnes, Farrell, & Banerjee, 1994; Farrington & Hawkins, 1991; Haapasalo & Tremblay, 1994; Patterson, Chamberlain, & Reid, 1982; Sampson & Laub, 1994; Scaramella, Conger, & Simons, 1999; Simons, Johnson, Conger, & Elder, 1998; Wasserman, Miller, Pinner, & Jaramillo, 1996).

- Studies that include measurement of more than one social context also find cross-context links (Borduin et al., 1995). For example, parenting patterns are related to peer relationships (Aseltine, 1995; Dishion, Duncan, Eddy, Fagot, & Fetrow, 1994; Schwartz, Dodge, Pettit, & Bates, 1997), and communities may reinforce local friendship networks that enhance the operation of these effects (Brody et al., 2001; Sampson, Raudenbush, & Earls, 1997).
- Studies that include assessment of broader social factors, such as regional economic conditions or density of local friendship networks, find that these factors can place constraints on peer and family contexts in ways that are related to externalizing behavior problems. In some cases, these constraints can even eliminate the association between such context factors and externalizing. For example, there is evidence for cultural variation in the effects of parenting on externalizing, such that some parenting variables are related to externalizing in Caucasian families but not in African-American families (Deater-Deckard, Dodge, Bates, & Pettit, 1996).

Studying Child Characteristics and Environmental Factors in Concert

While the study of child factors and environmental risk factors has proliferated, evidence is emerging to suggest that these two domains must be studied together. Three sets of findings demonstrate this, suggesting important directions for future work.

- Child behavior both shapes the child's environment and is a response to that environment. A number of recent studies suggest that trajectories of child development are shaped by patterns of reciprocal influence between the child and the child's social context. Negative emotionality in the infant and young child increases the likelihood of parental hostility and rejection, which in turn increases negative emotionality (Shaw et al., 1998). Conduct problems in middle childhood reduce effective parenting (discipline, monitoring, validation), which reinforces antisocial behavior (Simons et al., 1998). Reduced parental monitoring and warmth in late childhood increases the risk of delinquency, and increased delinquency reduces monitoring and warmth (Jang & Smith, 1997). Recent studies of evocative gene-environment correlations further support the thesis that a range of child characteristics both shape and are shaped by social context (Ge et al., 1996; O'Connor, Deater-Deckard, Fulker, Rutter, & Plomin, 1998).

- Social contexts can have different effects on the developmental trajectories of different children, depending on what the children bring to the context. Several studies now suggest that specific environmental factors may be risk factors for some children, have no effect on others, and be protective factors for still others. For example, high levels of parental control appear to increase risk for children with one temperament but protect children with a different temperament (Bates, Pettit, Dodge, & Ridge, 1998). Again, these patterns also appear in behavioral genetics studies, indicating that heritable child characteristics and particular environmental factors interact in influencing the developmental trajectories of externalizing behavior problems (Cadoret, Yates, Troughton, Woodworth, & Stewart, 1995).

- These two patterns, reciprocal effects and child-environment interaction effects, must also be considered in a developmental context. There is evidence that the reciprocal effects between child conduct problems and lax parental monitoring are strongest before age 15 and that in later adolescence it is delinquency that leads to lax monitoring (Jang & Smith, 1997). Similar fading of reciprocal effects may occur for conduct problems and poor parental disciplinary practices, with the latter much more likely to drive the former in late adolescence (Cohen & Brook, 1995). This change may also be concomitant with increasingly reciprocal effects among antisocial adolescent peers.

Implications for Future Research

The four issues discussed above reflect the progress of a scientific field as it grapples with the complexities of human development. Investigators
concerned with externalizing behavior problems are moving beyond simple risk factor studies into the study of risk and protective mechanisms that not only explain variance in predicting outcomes, but also suggest malleable processes that can be tested for causality and become targets for intervention. These risk mechanisms are developmental and appear to involve more complex interactions between organism and environment, which themselves change in potency over the course of development.

Acknowledging and truly taking into account this complexity will be the task of the next generation of risk research in externalizing behavior problems. Indeed, several recent studies have moved in this direction by studying how selected child factors interact with specific environmental factors at critical points in development and examining how patterns among these factors affect the development of externalizing behavior problems (Conger et al., 1992; Deater-Deckard, Dodge, Bates, & Pettit, 1998; Henry, Caspi, Moffitt, & Silva, 1996; Pettit, Bates, Dodge, & Meece, 1999; Shaw, Owens, Vondra, Keenan, & Winslow, 1996). These initial studies are taking on the challenge of reducing the now-overwhelming four-plus-dimensional matrix (resulting from the intersection of child, family, peer, broader social environment, and development) to workable sets of multiple factors that hold significant power for predicting risk and revealing stronger groupings of causal risk factors for externalizing behavior problems.

What can be used to guide this complex and challenging work? The research reviewed here suggests four strategies for advancing research on risk factors and interventions for externalizing behavior problems.

- Several important factors have been identified as causal risk factors, including child hostile attributional processes; parental engagement, validation, and discipline; and peer rejection and association with deviant peers. It is critical that these findings be disseminated to the public and that effectiveness research be conducted with the intervention strategies known to affect these factors to ensure appropriate implementation by communities, schools, and mental health service systems.

- The framework provided by Kraemer et al. (1997) suggested that research on risk factors relevant to developing interventions can follow a developmental course of its own. Once factors are found to be correlated with outcomes, further research should document the potential for prediction and, ultimately, the potential for causation. The current review identified a number of predictive risk factors and concurrent correlations with externalizing behavior problems. It is critical that this research be advanced (i.e., that concurrent correlations be tested for predictive risk and effect size, and that potent predictive risk factors be tested for potential causality). This type of research will provide the foundation for developing more effective interventions.

- Studying multiple factors simultaneously is critical for furthering intervention and risk factor research. Simple risk factor studies have played an important role, but the field must advance to describing, measuring, analyzing, and experimentally intervening with child factors and environments in more complex ways.

- A developmental perspective will need to be incorporated into all research. Externalizing behavior problems have a developmental course, and it is likely that the risk factors and mechanisms that lead to this development also change over time. In particular, it is important to know if there are particular points in development when specific risk factors converge to substantially increase vulnerability or when there are windows of opportunity for intervention.
References


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