Taking Stock 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.

This report provides a summary of the first of these objectives—describing what is known about existing risk factors and processes that contribute to externalizing behavior problems. To accomplish this objective, four primary domains of risk were identified: child characteristics; family factors and processes; peer influences; the broader social environment, communities, and schools.

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,
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).

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, Boulerice, 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, 1995; 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, Piffiner, 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; Pine 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, Wickramaratne, & 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 irritability.

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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 irritability.

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/Methodology</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>
| Cohen                   | 1996 | Concurrent         | 62   | 14–18 yrs | 47%  | Low-middle | N/R           | Conduct-disordered boys & girls scored lower than a comparison group of children without conduct disorder on affective & cognitive measures, including measures of empathic concern & perspective taking. | Empathy: $F (1, 60) = 26.87, \ p < .0001$  
  $M's = 40.67$ conduct disorder, 64.20 comparison  
  Empathy—Affective: $F (1, 60) = 18.34, \ p < .0001$  
  $M's = 11.53$ conduct disorder, 30.75 comparison  
  Empathic Concern: $F (1, 60) = 8.14, \ p < .007$  
  $M's = 19.92$ conduct disorder, 24.39 comparison (ANOVAs) |
| Eisenberg, Fabes, et al.| 1996 | Concurrent         | 199  | K–3rd gr | M = 90 mths | Middle | 51% | Middle | Children with low levels of baseline distress & fewer gaze aversions during a distress film had higher mother, father, & teacher ratings of behavior & conduct problems, respectively. | Baseline Distress & Behavior Problems: Partial $r (185) = .19, \ p < .01$ mother  
  Partial $r (127) = .16, \ p < .06$ father  
  Partial $r (185) = .20, \ p < .006$ teacher  
  Gaze Aversions & Conduct Problems: Partial $r (178) = .15, \ p < .05$ mother  
  Partial $r (127) = .21, \ p < .02$ father  
  Partial $r (185) = .20, \ p < .007$ teacher (partial correlations) |
| Miller & Eisenberg      | 1988 | Meta-analysis      | N/R  | 6 yrs–adult | >70%  | N/R | N/R     | Greater empathy was associated with lower levels of aggression & externalizing negative behaviors when assessed by questionnaire methods. For children school age 5 & older, empathy assessed by the picture/story method was also related to lower levels of aggression. | Questionnaire Empathy—Aggression: $\chi^2 (14, N = 15) = 23.72, \ p < .05$  
  $z^+ = -1.8, z = 4.90, \ p < .001$  
  Questionnaire Empathy—Externalizing: $\chi^2 (9, N = 10) = 10.27, \ p = ns$  
  $z^+ = -1.5, z, p < .001$  
  Picture/Story Empathy—Agg (>5 yrs old): $\chi^2 (8, N = 9) = 7.26, \ p = ns, CI = (-24) - (-0.03)$  
  $z^+ = -1.3, z = 2.52, \ p < .02$ (meta-analysis, chi-square, z scores) |
| Tremblay, Pih, et al.   | 1994 | Prospective        | 915  | K > 13 yrs | 100% | Low | 100% | Low reward dependence (empathy/prosociability), high novelty seeking, & low harm avoidance/inhibition in kindergarten predicted delinquency at ages 11–13. | Delinquency: Goodness of fit $\chi^2 (910) = 894.62, \ p = .64$  
  Low reward dependence (empathy/prosociability): Wald’s $\chi^2 (1) = 4.8, \ p < .03$  
  High novelty seeking: Wald’s $\chi^2 (1) = 20.1, \ p < .0001$  
  Low inhibition: Wald’s $\chi^2 (1) = 5.9, \ p < .02$ (logistic regression analysis) |
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<tr>
<th>Authors</th>
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<tbody>
<tr>
<td>Bates, Pettit, et al.</td>
<td>1998</td>
<td>Prospective longitudinal</td>
<td>Convenience: recruited families with infants from birth records, Bloomington, IN (BLS), &amp; families with 5 yr olds, Bloomington, IN, Knoxville &amp; Nashville, TN, balanced for gender, low-high aggression (CDP)</td>
<td>90</td>
<td>6 mths &gt; 10 yrs</td>
<td>56% BLS; 49% CDP</td>
<td>Low-upper middle</td>
<td>19% AFA &amp; 1% Other CDP</td>
<td>Externalizing at 7-10 yrs of age (mother &amp; teacher ratings) was predicted by the interaction of infant’s resistance to control &amp; mother’s restrictive control. Resistance to control in infancy predicted externalizing for children with mothers low in restrictive control.</td>
</tr>
<tr>
<td>Pettit, &amp; al.</td>
<td>longitudinal recruited families</td>
<td>10 yrs</td>
<td>49% CDP middle</td>
<td>84% Cauc</td>
<td>15% up mid</td>
<td>64% middle</td>
<td>β = .27 low ctrl, β = .05 high ctrl BLS = .32 low ctrl, β = -.03 high ctrl CDP</td>
<td>Subjects were divided into high and low emotional reactivity groups based on maternal and teacher ratings of emotional reactivity at age 3. The interaction of low emotional reactivity and high maternal care predicted externalizing behavior at age 3.</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>Caspi, &amp; al.</td>
<td>1996</td>
<td>Prospective longitudinal</td>
<td>Population: consecutive births, spring 1972–1973, Dunedin, New Zealand</td>
<td>961</td>
<td>3 &gt; 21 yrs</td>
<td>50% N/R</td>
<td>&gt;93% Cauc, &lt;7% Maori, &lt;7% Polyn</td>
<td>Undercontrolled aggression at age 4 was associated with higher activity level, social fearfulness, anger proneness, &amp; fear of express pleasure at age 4. None of the temperament measures at age 18 mths predicted aggression at age 4.</td>
<td></td>
</tr>
<tr>
<td>Goldsmith, &amp; Thomas</td>
<td>1997</td>
<td>Prospective longitudinal</td>
<td>Convenience: recruited from newspaper birth announcements</td>
<td>49</td>
<td>18 mths &gt; 4 yrs</td>
<td>N/R Working-middle</td>
<td>N/R% AFA &amp; N/R% CDP</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>
<td></td>
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</table>

**Key Statistics**

- **Resistance to Control & Externalizing**
  - $\chi^2 (2, N = 239) = 7.05, p = .002$
  - Teacher report
  - $\beta = .27$ low ctrl, $\beta = .05$ high ctrl BLS = .32 low ctrl, $\beta = -.03$ high ctrl CDP

- **Undercontrolled, Age 3 & Antisocial Personality**
  - OR = 2.9, $p < .05$, 95% CI = 1.1–8.1

- **Undercontrolled, Age 3 & Recidivistic Offender**
  - OR = 2.2, $p < .05$, 95% CI = 1.1–4.7

- **Undercontrolled, Age 3 & Violent Offense**
  - OR = 4.5, $p < .01$, 95% CI = 1.8–10.9

- **Inhibited Boys, Age 3, Violent Offense**
  - OR = 5.7, $p < .05$, 95% CI = 0.9–7.9 (multivariate logistic regressions)

- **Temperament Age 4, Aggression Age 4**
  - $r (49) = .38, p < .05$ activity level
  - $r (49) = .24, p < .05$ social fearfulness (beh inhib)
  - $r (49) = .58, p < .05$ anger proneness
  - $r (49) = -.29, p < .05$ express pleasure
  - (p’s = ns: temperament 18 mths, aggression age 4) (correlations)

- **Difficultness, 1.5 yrs**
  - $r = .39, p < .001$ problem behavior 3.25 yrs
  - $r = .34, p < .001$ hostility/aggressive 3.5 yrs
  - $r = .57, p < .001$ externalizing 4–6, parent
  - $r = .54, p < .001$ externalizing 7–9, parent
  - $r = .45, p < .001$ externalizing 10–12, parent
  - $r = .22, p < .05$ externalizing 6–8, teacher

- **Hostile Aggressive Behavior, Preschool**
  - $\chi^2 = 6.35, p < .05$, 12% not, 43% difficult 3.5 yrs

- **Aggressive Behavior**
  - $\chi^2 = 21.15, p < .001$, 4.6% not, 50% difficult 4–6 yrs
  - $\chi^2 = 8.23, p < .01$, 3.4% not, 29% difficult 7–9 yrs
  - $\chi^2 = 6.50, p < .05$, 4.6% not, 29% difficult 10–12 yrs

- **Externalizing**
  - $\chi^2 = 6.89, p < .05$, 23.3% not, 64% difficult 4–6 yrs
  - $\chi^2 = 9.98, p < .01$, 12.6% not, 50% difficult 7–9 yrs
  - $\chi^2 = 6.70, p < .01$, 11.5% not, 43% difficult 10–12 yrs (correlations, chi-square)
### Child Characteristics—Behavioral and Emotional Influences

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

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</table>
| Raine, et al.    | 1998  | Prospective     | Population:        | 1,130| 3 > 11 yrs| 51%    | N/R     | < 5.6% Asian | 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 & ethnicity, SES, body size, & fearlessness controlled. | Aggression Age 11, Stimulation Seeking Age 3  
F (1, 394) = 6.1, p < .02, d = .25  
(p's = ns: gender or ethnicity × aggression)  
F (1, 384) = 3.0, p < .05 (control for SES)  
F (1, 380) = 4.4, p < .04 (covariates: height, weight, bulk, & fearlessness)  
(ANCOVAs, ANCOVAs, Cohen's d) |
| Reynolds, et al. | 1989  | Longitudinal    | Population:        | 320  | 24 yrs    | 51%    | N/R     | < 5.6% Caucasian | 26% Cree; 69% Indian  
High troublesomeness of a convicted parent, low school attainment, (island country in the Indian Ocean)  
| Tremblay et al., 1994: see "Empathic, Sympathetic, and Prosocial Behaviors" |
| Eisenberg, et al. | 2000  | Prospective     | Convenience:       | 146  | 1st–3rd    | 60%    | Middle  | 1% African American | In the best-fitting model, the path between attentional control (att control) & problem behavior at T1 & 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 & T2 behavior problems for high or low NE children. | Regulation, NE, & Externalizing  
\( \chi^2 \) (2, 146) = 337.8; p < .01  
\( \beta = -.32, p < .01 \)  
High troublesomeness multiple R = .29  
\( \beta = -.22, p < .01 \)  
(behavior × aggression)  
\( \beta = .21, p < .01 \)  
| Farrington & Hawkins | 1991 | Prospective     | Population: sampled boys ages 8–9 yrs from 6 state primary & 1 special school in working-class area of London, 1961–1962; Cambridge Study in Delinquent Development | 411  | 8–9 yrs    | 100%   | Low     | 100% Caucasian | 23% < .05  
High daring (age 8–10), high troublesomeness, a convicted parent, school attainment, delinquent older siblings, & poor housing predicted convictions between ages 10 & 20, taking into account high nervousness, poor parent-child rearing, & low commitment to family. | Convicted Ages 10–20 multiple R = .46  
High troublesomeness multiple R = .29  
\( \beta = -.22, p < .01 \)  
High delaying multiple R = .29  
High delaying multiple R = .29  
(behavior × aggression)  
\( \beta = .21, p < .01 \)  
| Henry, et al. | 1996  | Prospective     | Population:        | 475  | 3 > 18 yrs| 50%    | Upper    | 100% Hawaiian  
93% Caucasian  
7% Asian  
89% Caucasian | 22%  
Low regulation combined with negative emotionality & negativity (lack of control) at ages 3–5 predicted violent criminal status by age 18. | Regulation & Negative Emotionality  
Violent vs. no conviction  
OR = 1.52, r = .42, SE = .17, p < .05  
Violent vs. nonviolent conviction  
OR = 1.75, r = .56, SE = .19, p < .01 (logistic regression analysis) |
| Lengua, et al. | 1998  | Concurrent correlational | Convenience: recruited from AZ courts records of divorce petitions, mothers at child custody; 38% recruited through ads, self- & other referrals; metro area of Phoenix, AZ | 232  | 9–12 yrs  | 50%    | Low-middle | 1% African American | Mothers report of impulsivity & attention focusing (regulation) & negative emotionality were related to mother & child reports of conduct problems. This study attempted to reduce item contamination by eliminating items determined to be overlapping according to confirmatory factor analysis & expert ratings. | Temperament & Conduct, Mother & Child Reports  
\( r = -.3, p < .05 \)  
Temperament & Conduct, Mother & Child Reports  
\( r = -.13, p < .01 \)  
Temperament & Conduct, Mother & Child Reports  
\( r = -.18, p < .01 \)  
Temperament & Conduct, Mother & Child Reports  
\( r = -.3, p < .05 \)  
(analysis of r's: mother report, temperament & child report, conduct; mother reports of temperament & conduct; zero-order correlations, items based on factor analysis) |
### Child Characteristics—Cognitive Influences

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<th>Authors</th>
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</table>
| Biederman, Faroone, et al. | 1996 | Prospective longitudinal 4 yrs | Source specific/ convenience: ADHD referred for ADHD & pediatric-referred normal controls | 260   | 6–17 yrs > 10–21 yrs | 100%   | N/R | Cauc      | Children with ADHD & 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. | ODD vs. Non-ODD \[\chi^2 = 4.01, p < .05\]  
ADHD vs. Non-ADHD \[\chi^2 = 2.35, p = ns\] (data analyzed by reviewer, percentages not reported) (chi-square) |
| Faraone, et al. | 1991 | Prospective longitudinal replication 8–14 yrs M = 12 yrs | Source specific/ convenience: ADHD referred for hyperactivity without diagnosis of delinquency or aggressivity; controls recruited at followup from medical center & phone calling, no hx behavior problems | 172   | M = 7.3 > 18.5 yrs | 100%   | Middle M = 3.0 Hollingshead | 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. No differences between groups at followup. | Prevalence CD or Antisocial PD at Followup \[\chi^2 = 15.11, p < .001\]  
32% probands with ADHD, 8% controls (chi-square)  
Group, Followup CD or Antisocial PD, Control for SES Adjusted OR = 4.9, p < .01, 95% CI = 1.4–36 (logistic regressions) |
| Mannuzza, Klein, et al. | 1990 | Prospective longitudinal 15 yrs | Population: consecutive births, spring 1972–1973, Dunedin, New Zealand | 435   | 3 > 15 yrs | 100%   | N/R | > 93% Cauc < 7% Maori < 7% Polyn | Children in the ADD + delinquency group at age 3 had higher levels of antisocial behavior than children in the delinquency-only group. The delinquency-only & ADD + delinquency groups had higher levels of antisocial behavior than the ADD-only group & nondisordered controls. | Antisocial Behavior & ADD  
\[F (12, 1202) = 14.92, p < .001\]  
\[F (3, 405) = 57.75, p < .001\]  
(ANOVA, means not reported) |
| Moffitt, et al. | 1990 | Prospective longitudinal 15 yrs | Population: consecutive births, spring 1972–1973, Dunedin, New Zealand | 435   | 3 > 15 yrs | 100%   | N/R | > 93% Cauc < 7% Maori < 7% Polyn | Children in the ADD + delinquency group at age 3 had higher levels of antisocial behavior than children in the delinquency-only group. The delinquency-only & ADD + delinquency groups had higher levels of antisocial behavior than the ADD-only group & nondisordered controls. | Antisocial Behavior & ADD  
\[F (12, 1202) = 14.92, p < .001\]  
\[F (3, 405) = 57.75, p < .001\]  
(ANOVA, means not reported) |

### Executive Functioning and Inhibitory Control

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</table>
| Oosterlaan, Logan, & Sergeant | 1998 | Meta-analysis 8 studies, group comparisons | Source specific/ clinic referred, 1990–1997 | 456   | 6–12 yrs | 100%   | N/R | N/R | 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. | 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) \[d = .56, Z = 2.23, p < .05\]  
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 = 369.4 ADHD, 246.4 control  
Conduct disorder vs. control (4 studies) \[d = .51, Z = 2.66, p < .01\]  
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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<tr>
<th>Authors</th>
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<tbody>
<tr>
<td>Oosterlaan &amp; Sergeant</td>
<td>1996</td>
<td>Concurrent group comparisons</td>
<td>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>Sequin, Bouletice, et al.</td>
<td>1999</td>
<td>Prospective longitudinal 9 yrs</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>149</td>
<td>6–15 yrs</td>
<td>100%</td>
<td>Low M = $21k U.S. M = 10.5 yrs maternal ed</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>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 85% Cauc 15% Polyn (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>
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#### Key Statistics

- **Response Execution Process, Latency (MRT)**
  - $F (3, 66) = 4.02, p = .011$
  - $M's = 428 ADHD, 398 agg, 385 anxious, 352 ctf$
- **Response Execution Process, Variability of Response**
  - $F (3, 66) = 5.92, p = .001$
  - $M's = 116 ADHD, 110 aggress, 95 anxious, 81 ctrl$
- **Inhibitory Process, Stop Signal Reaction Time**
  - $t (33) = 3.77, p = .001$ aggressive vs. control
  - $t (30) = 1.81, p < .04$ ADHD vs. control
  - $M's = 256 ADHD, 224 control, 273 aggressive$
- **Inhibitory Process, Probability of Inhibition, Inhibitory Function Slope**
  - $t (33) = 2.52, p < .04$ aggressive vs. control
  - $t (30) = 1.86, p < .009$ aggressive vs. control
  - $M's = .163 ADHD, .206 control, .145 aggressive$
- **Executive Functioning, Posterior Dorsolateral Frontal Lobe**
  - Conditional Association Tasks
    - Partial $F (2, 138) = 3.90, p < .05, \eta^2 = .05$
    - $t (100) = -2.41, p < .02$ stable vs. unstable agg
    - $t (90) = 2.34, p = .02$ unstable vs. nonagg
    - $M's = .10$ stable, -.27 unstable, .13 nonagg
- **Executive Functioning, Mid-dorsolateral Frontal Lobe**
  - Subjective Ordering
    - Partial $F (2, 138) = 4.19, p < .01, \eta^2 = .06$
    - $t = -3.02, p < .003$ unstable agg vs. nonagg
    - $M's = -.19$ stable, -.01 unstable, .24 nonagg

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

- Log likelihood $\chi^2 (34) = 27.6, p > .60, GFI = .99$
- $\beta = .88, p < .0001$ conduct—delinquency 15
- $\beta = .003, p = ns$ school ability—delinquency
- $\beta = .78, p < .0001$ conduct—attention deficit
- $\beta = -.27, p < .0001$ attention deficit—school ability
- $\beta = -.38, p < .0001$ IQ—school ability
- $\beta = -.41, p < .0001$ IQ—attention deficit
- $\beta = -.38, p < .0001$ IQ—conduct problems
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<tr>
<td>Stattin &amp; Klackenberg-Larson</td>
<td>1993</td>
<td>Prospective longitudinal 30 yrs</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% Cauc</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>
<td>Early Language Ability, IQ &amp; Criminality by Age 30 Partial r = -.16; language ability, 18–24 mths Partial r = -.18; language comprehension, 5 yrs Partial r = -.15; language maturity, 5 yrs Partial r = -.16; IQ, age 3 (p's &lt; .05; p's = ns: IQ at ages 5, 8, 11, 14, 17) Offender Status &amp; Average IQ, Ages 3–17 F (2, 109) = 4.08, p &lt; .05, p &lt; .01 contrast M's = 101.7 nonoffender, 91.4 frequent (partial correlations, SES controlled, ANOVA, contrasts)</td>
</tr>
<tr>
<td>Larsson</td>
<td>1955–1958</td>
<td>Longitudinal recruited every 4th birth, age 3, &amp; age 5) &amp; IQ at age 30 yrs</td>
<td>Partial</td>
<td>804</td>
<td>5 &gt; 15 yrs</td>
<td>51%</td>
<td>N/R</td>
<td>&gt; 93% Cauc &lt; 7% Maori &lt; 7% Polyn</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>
<td>Total IQ Scores, Risk, &amp; Delinquent Status F (2, 407) = 4.82, p &lt; .01 boys M's = 98.6 high-risk, 102.9 low-risk delinquent M's = 105.1 high-risk, 109.1 low-risk nondelinquent F (2, 387) = 3.31, p &lt; .05 girls M's = 97.8 high-risk, 101.2 low-risk delinquent M's = 105.2 high-risk, 107.0 low-risk nondelinquent (p's = ns: risk status, risk x delinquency interaction) (MANOVA, means with different letters differ p &lt; .05)</td>
</tr>
<tr>
<td>White, Moffitt, &amp; Silva</td>
<td>1989</td>
<td>Prospective longitudinal 10 yrs</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% Cauc &lt; 7% Maori &lt; 7% Polyn</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>
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</tr>
<tr>
<td>Fergusson, &amp; Horwood</td>
<td>1998</td>
<td>Prospective longitudinal 10 yrs</td>
<td>Population: 1977 birth cohort, Christchurch, New Zealand, urban, high attrition</td>
<td>969</td>
<td>8 &gt; 18 yrs</td>
<td>N/R</td>
<td>Low-upper</td>
<td>85% Cauc 15% Polyn (p &lt; 5)</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 (9-8 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>
<td>% Leaving School by Extent Conduct Problems OR = 1.8, p &lt; .05 (95% CI = 1.1-2.6) 17.0% low (1–50th), 19.9% low–mid (51–75th) 23.2% mid (76–90th), 26.8% mid–high (91–95th) 30.7% high (96–100th percentile) % Leaving School by Extent Conduct p &gt; .001 adjusted for adolescent behavior p &lt; .001 delinquent peer affiliations p &lt; .05 cannabis use p &lt; .05 suspension from school 19.9%–29% low, low-mid, mid, mid-high, high (covariates: attention problem, age 8 WISC–R, maternal age, living standards, &amp; parent conflict) (logistic regression models)</td>
</tr>
<tr>
<td>Frick, Kamphaus, et al.</td>
<td>1991</td>
<td>Concurrent group comparisons</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 at least 12% in each of 5 Hollingshead levels</td>
<td>70% Cauc 30% N/R</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>
<td>% of Children Underachieving, by Diagnosis 23% ADHD (n = 111), 22% CD (n = 68) 22% ADHD + Hy (n = 97), 7% clinic control (n = 42) (p's &lt; .05, group vs. clinic control)</td>
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**Child Characteristics—Cognitive Influences on Academic Performance**

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</table>
| Maguin & Loeb   | 1996 | Meta-analysis      | Convenience        | 28,552| Under 18 | 74%   | N/R         | N/R% AfrA & N/R% Cauc | 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. | Academic Performance & Delinquency: ES = -.149, OR = 2.07 cross-sectional, bivariate  
z = 3.2, p < .005 ES = -.15 males, -.09 females  
ES = -.127, OR = 1.87 longitudinal, bivariate  
ES = -.128 longitudinal, control SES (meta-analysis, effect size, weighted for sample size) |
| Crick           | 1995 | Concurrent         | School in midsize  | 239   | 3rd-6th gr | 55%   | N/R         | 26.6% AfrA & 73.0% Cauc | Relationally & relationally + overtly aggressive children held more hostile attributions for relational & instrumental conflict respectively than nonaggressive children. | Intent Attr. & Relational Conflict: F (2, 227) = 5.9, p < .01; M’s = 7.2 agg, 5.6 non  
Intent Attr. & Instrumental Conflict: F (2, 227) = 4.4, p < .01; M’s = 6.6 agg, 5.2 non (group x grade x sex ANOVAs; Duncan tests p < .05) |
| Dodge, Bates,   | 1990 | Prospective        | Comfort            | 309   | 5 > 5.5 yrs | 53%   | Middle      | 16% AfrA & 83% Cauc | Social information processing variables predicted peer, teacher, & observer ratings of aggression 6 months later. Significant variables included encoding of relevant cues, aggressive responses, low competent responses, hostile attributional bias, low solution generation, & evaluations of aggression as leading to positive outcomes. | Social Information Processing & Aggression: Teacher ratings: R = .24, F (7, 294) = 2.51, p < .02  
r = .16, p < .006 encoding relevant cues  
r = .16, p < .001 access aggressive responses  
r = .17, p < .001 no access competent responses  
Peer ratings: R = .25, F (7, 294) = 2.70, p < .01  
r = .13, p < .03 encoding relevant cues  
r = .19, p < .001 access aggressive responses  
Observer ratings: R = .29, F (7, 294) = 3.86, p < .001  
r = .14, p < .02 hostile attributional bias  
r = .21, p < .001 solutions to social problems  
r = .16, p < .005 pos eval outcome of aggression (multiple regressions) |
| & Pettit        |      | Longitudinal       | Nashville, Knoxville, Tennessee, IN | 309   | 5 > 5.5 yrs | 53%   | Middle      | 16% AfrA & 83% Cauc | Social information processing variables predicted peer, teacher, & observer ratings of aggression 6 months later. Significant variables included encoding of relevant cues, aggressive responses, low competent responses, hostile attributional bias, low solution generation, & evaluations of aggression as leading to positive outcomes. | Social Information Processing & Aggression: Teacher ratings: R = .24, F (7, 294) = 2.51, p < .02  
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r = .14, p < .02 hostile attributional bias  
r = .21, p < .001 solutions to social problems  
r = .16, p < .005 pos eval outcome of aggression (multiple regressions) |
| Dodge, Pettit,  | 1995 | Prospective        | Convenience        | 520   | K > 4th gr | 52%   | N/R         | 16% AfrA & 82% Cauc | 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 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. | SIP & Externalizing Gr 4: R² = .11, p < .001  
β = .23, p < .001 encoding errors  
β = .15, p < .05 hostile attributions  
β = .33, p < .001 access aggressive responses  
SIP & Conduct Problems: F (4, 430) = 4.66, p < .001  
Encoding errors: F (1, 433) = 12.39, p < .001  
Ms = .55 conduct problem, .06 no problem  
Hostile attribution: F (1, 434) = 4.44, p < .04  
Ms = .37 conduct problem, .06 no problem  
Access agg resp: F (1, 433) = 4.47, p < .04  
Ms = .32 conduct problem, .04 no problem (multiple regression, MANOVA, univariate ANOVAs)  
# of SIP Problems & Risk of Conduct Problems:  
χ² (3, N = 442) = 11.76, p < .013 3 vs. no problems  
χ² (1, 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

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<tbody>
<tr>
<td>Hudley &amp; Graham</td>
<td>1993</td>
<td>Intervention</td>
<td>Convenience: recruited students rated by teachers &amp; peers as aggressive, 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 attribution 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**
  - $F(2, 63) = 3.48, p < .05$
  - $t(19) = 2.63, p < .05$ attributional treatment group
  - $M's = 27.55$, $24.05$ post

- **Intentionality, Ambiguous Hypo Peer Provocation**
  - $F(6, 122) = 10.2, p < .01$
  - $t(19) = 8.08, p < .001$ attributional treatment grp
  - $M's = 5.31$, $2.63$ post

- **Moral Reasoning and Social Problem Solving**

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<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>Low</td>
<td>26% AfrA</td>
<td>Delinquent female &amp; male adolescents had lower moral reasoning scores than aggression peers as aggressive, 1) attribution intervention, 2) attention training, 3) no tx control</td>
</tr>
</tbody>
</table>

- **Moral Reasoning & Delinquent vs. Nondelinquent**
  - $Q(14) = 19.52, p < .05$
  - $d = .74, 95% CI = .62–.93$; $d's = .24–1.68$

#### Key Statistics

- **Aggression & Social Goals**
  - $R^2 = .39, F(8, 31) = 2.48, p < .05$
  - Partial $r's = .33$ attention, .40 stop action, $p's < .01$

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

- **r's = -.20 relevant categories, -.23 flexible**
  - **r's = -.21 invitations, .21 abnormal/bizarre**

#### Moral Reasoning & Social Problem Solving

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<tr>
<td>Nelson, Smith, &amp; Dodd</td>
<td>1990</td>
<td>Meta-analysis</td>
<td>15 studies, 3 unpublished 4 dissertations</td>
<td>673</td>
<td>11–17 yrs</td>
<td>N/R</td>
<td>N/R</td>
<td>N/R</td>
<td>Across 15 studies, delinquents had lower levels of moral reasoning than nondelinquents.</td>
</tr>
</tbody>
</table>

#### Key Statistics

- **Aggression & Social Goals**
  - $R^2 = .54, F(11, 28) = 3.00, p < .05$
  - Partial $r = .45, p < .01$ aggressive acts
  - Partial $r = .45, p < .01$ callings
  - Partial $r = .33, p < .02$ statements
  - Partial $r = .28, p < .05$ orienting acts

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

- **r's = -.36 prosocial, .43 manipulate affect**
  - **r's = .27, p < .05**

#### Moral Reasoning & Social Problem Solving

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<tr>
<td>Rubin, Bream, &amp; Rose-Krasnor</td>
<td>1991</td>
<td>Concurrent group comparisons</td>
<td>Convenience: recruited from elementary school, Southern Ontario</td>
<td>54</td>
<td>3rd–4th gr</td>
<td>50%</td>
<td>N/R</td>
<td>N/R</td>
<td>Peer-nominated aggressive children had more aggressive social goals (gain attention &amp; stop or redirect peers' behavior) to resolve hypothetical social dilemmas &amp; more aggressive social strategies (including hitting &amp; grabbing) to resolve naturalistic social dilemmas compared to nonaggressive children.</td>
</tr>
</tbody>
</table>

#### Key Statistics

- **Aggression & Social Goals**
  - $R^2 = .54, F(11, 28) = 3.00, p < .05$
  - Partial $r = .45, p < .01$ aggressive acts
  - Partial $r = .45, p < .01$ callings

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

- **r's = -.20 relevant categories, -.23 flexible**
  - **r's = -.21 invitations, .21 abnormal/bizarre**

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<tr>
<td>Rubin, Moller, &amp; Empage</td>
<td>1987</td>
<td>Concurrent correlational</td>
<td>Convenience: recruited from 4 1st-gr classes in Southwestern Ontario</td>
<td>72</td>
<td>M = 80 mths</td>
<td>47%</td>
<td>Lower</td>
<td>N/R</td>
<td>1st-gr children rated by teachers as hostile/aggressive had less flexible or relevant solutions to a friendship initiation test (offered fewer invitations &amp; showed more abnormal strategies). These children had fewer prosocial &amp; more aggressive solutions to a dilemma requiring object acquisition from peers.</td>
</tr>
</tbody>
</table>

#### Key Statistics

- **Aggression, Teacher Ratings**
  - $R^2 = .39, F(8, 31) = 2.48, p < .05$
  - Partial $r's = .33$ attention, .40 stop action, $p's < .01$

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

- **r's = -.20 relevant categories, -.23 flexible**
  - **r's = -.21 invitations, .21 abnormal/bizarre**

#### Moral Reasoning & Social Problem Solving

- **r = -.36 prosocial, .43 manipulate affect**
  - **r = .27, p < .05**

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

- **r = .36 prosocial, .43 manipulate affect**
  - **r = .27, p < .05**
### Child Characteristics—Cognitive Influences

#### Moral Reasoning and Social Problem Solving

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<tbody>
<tr>
<td>Trevethan &amp; Walker</td>
<td>1989</td>
<td>Concurrent group comparisons</td>
<td>Source specific/ convenience: 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 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>
<td></td>
</tr>
<tr>
<td>Tremblay et al.</td>
<td>1997</td>
<td>Concurrent correlational study</td>
<td>Source specific recruited from larger facility (Tremblay entry); subsample included boys with early onset stable aggression &amp; without aggression</td>
<td>153</td>
<td>10–15 yrs</td>
<td>100%</td>
<td>Low; lower 2 of 6 Canadian SES categories</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>
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<tr>
<td>Raine et al.</td>
<td>1995</td>
<td>Prospective longitudinal study</td>
<td>Population: undesired 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 &lt;5.6% Cauc 26% Creole 69% Indian Children in the low resting heart rate (HR) group at age 3 were twice as likely to be in the high aggression group at age 11. Low HR children had higher aggression scores, more nonaggressive behavior, &amp; more total antisocial behavior at age 11 than children in the high HR group. Children in the high aggressive group had lower HRs than children in the low aggressive group. This effect remained across separate analyses controlling for biological (body size, motor activity), psychological (family discord, temperament, SES deprivation), &amp; comorbidity (hyperactivity) confounds.</td>
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<tr>
<td>Williams</td>
<td>2014</td>
<td>Consecutive correlations</td>
<td>Convenience: recruited from schools in north England city, (1) working-class, poor academic; (2) residential &amp; rural, good academic; (3) mixed, unselected</td>
<td>51</td>
<td>15 &gt; 29 yrs</td>
<td>100%</td>
<td>Low-middle (N/R)</td>
<td>Higher resting heart rate (HR), resting electrodermal (EDA), &amp; orienting EDA at age 15 predicted absence of criminality at age 29. Desisters had higher resting HRs, resting EDAs, and orienting EDAs than criminals. Desisters: ASB age 15 – no adult crime, normals: no ASB age 15 or adult crime, criminals: ASB age 15 &amp; adult crime.</td>
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### Biological Influences—Autonomic Influences

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<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>
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### Key Statistics

- Moral Reasoning, Delinquents, Psychopaths, Controls
  - $F(2, 41) = 5.60, p < .01$ group x dilemma
  - $M = 237.5\%$ normal controls
  - $M = 230.2\%$ delinquents, $224.4\%$ psychopaths
  - $(p < .05$ dilemma type, $p = ns$ interaction)
  - (group x dilemma type ANOVA, Tukey comparison, $Ms$ with different letters differ $p < .05$)

- Antisocial Behavior, Self Report & HR
  - Standing HR
    - $PE = 3.95, partial F (2, 121) = 7.33, p < .008$
    - Supine HF HRV
      - $PE = -3.95, partial F (2, 121) = 7.33, p < .008$
      - Supine LF/HF
        - $PE = -4.06, partial F (2, 121) = 7.33, p < .008$
  - Early onset boys with early onset LF/HF balance, not accounted for differences in respiratory drive.
  - Stable aggression & for by differences in respiratory drive.
  - $PE = .14 (.06), partial F (2, 121) = 7.33, p < .008$
  - $d = .32$ aggression

- Low resting HR
  - Aggression Group & Low Resting HR
    - $\chi^2 = 12.1, df = 1, p < .0005, d = .64, 2.08$ risk
    - $65.5\%$ low HR, $34.5\%$ high HR (age 3, Aggression & Antisociality)
    - $d = .64, 2.08$ risk
    - High HR children had lower HRs than children in the low aggressive group. This effect remained across separate analyses controlling for biological (body size, motor activity), psychological (family discord, temperament, SES deprivation), & comorbidity (hyperactivity) confounds. (ANOVA & ANCOVA, $Ms$ not reported)

- High resting HR
  - High resting HR children had higher aggression scores, more nonaggressive behavior, & more total antisocial behavior at age 11 than children in the high HR group. Children in the high aggressive group had lower HRs than children in the low aggressive group. This effect remained across separate analyses controlling for biological (body size, motor activity), psychological (family discord, temperament, SES deprivation), & comorbidity (hyperactivity) confounds. (ANOVA & ANCOVA, $Ms$ not reported)

- Low resting HR
  - Low resting HR children had higher aggression scores, more nonaggressive behavior, & more total antisocial behavior at age 11 than children in the high HR group. Children in the high aggressive group had lower HRs than children in the low aggressive group. This effect remained across separate analyses controlling for biological (body size, motor activity), psychological (family discord, temperament, SES deprivation), & comorbidity (hyperactivity) confounds. (ANOVA & ANCOVA, $Ms$ not reported)

- Resting HR
  - $t (32) = 2.9, p < .007$ desistors vs. criminals
    - $apx M's = 80$ desisters, $74.5$ norm, $71.7$ criminal
    - $t (29) = 2.9, p < .007$ desistors vs. criminals
    - $M's = 7.5$ desisters, $6.3$ criminals
    - Orienting EDA
      - $F (2, 44) = 3.4, p < .04$
        - $t (28) = 2.7, p < .01$ desistors vs. criminals
        - $M's = 4.0$ desisters, $3.8$ criminals
        - (MANOVAs, ANOVAs, planned comparisons, 2-tailed $t$ tests)
<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
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<th>SES</th>
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<th>Result</th>
<th>Key Statistics</th>
</tr>
</thead>
</table>
| McBurnett,      | 1997 | Concurrent              | Source specific; all clinic referred for problems with aggression | 42   | School age | 100%   | N/R | N/R       | Lower basal cortisol was associated with more symptoms of aggressive conduct disorder & more aggressive behavior with peers. Analyses took into account parent psychopathology, parent-child relationships, & SES. | Aggressive CD Symptoms & Cortisol $R^2 = .466, F(4, 37) = 12.45, p < .001$  
$\beta = -.37, \text{ partial } R^2 = .13, F(1, 37) = 12.8, p < .001$  
($p's < .001$: par psychopathology, par-child rel, SES)  
Peer-Nominated Aggression & Cortisol $R^2 = .236, F(4, 37) = 4.24, p < .01$  
$\beta = -.47, \text{ partial } R^2 = .20, F(1, 37) = 14.5, p < .001$  
($p's < .001$: par psychopathology, par-child rel, SES)  
(multiple regressions) |
| Pfiffner, et al.| 1997 | Correlational            | All clinic referred age associated with more symptoms |       |            |        |     |           |                                                                         | Risk Group, Time, & Salivary Cortisol $F(1, 187) = 4.56, p < .05$ Group × Time  
($p = n.s$ when agg delinquency & impulsivity controlled)  
$\beta = -.14$ aggressive delinquency  
$\beta = -.16$ impulsivity  
(repeated measures ANCOVA, covariate SES) |
| Moss, Vanyukov, & Martin | 1995 | Concurrent group comparisons | Source specific; sons of fathers w/ & without hx of psychoactive substance abuse recruited through ads, tx, & community centers | 184  | 10–12 yrs  | 100%   | Low-middle | Hollinghead | More aggressive delinquent behavior, higher impulsive behavior, and higher risk for substance abuse were associated with lower cortisol reactivity. | Cortisol Reactivity & Nonaggressive Behavior Problems $F(2, 60) = 4.61, p = .01$  
Cortisol Reactivity & Conduct Behavior Problems $F(2, 60) = 5.00, p = .01$  
(ANCOVA, covariate age, M’s not reported) |
| Susman, Dorn, et al. | 1997 | Prospective longitudinal 1 yr | Convenience sample recruited from suburban Washington, DC | 36   | 9–15 yrs   | 58%    | Middle-upper middle | N/R | Increased cortisol reactivity was associated with more nonaggressive behavior problems and overall conduct behavior problems 1 yr later. | Girls, Low-Level Dose Estrogen & Aggression  
48% ($p = .003$) $^\dagger$ (increased) aggressive impulse  
28% ($p = .02$) $^\dagger$ physical aggression to peers  
Girls, Mid-Level Dose Estrogen & Aggression  
31% ($p = .01$) $^\dagger$ aggression toward adults  
28% ($p = .02$) $^\dagger$ aggression toward peers  
40% ($p = .01$) $^\dagger$ aggressive impulse  
Boys, Mid-Level Dose Testosterone & Aggression  
18% ($p = .03$) $^\dagger$ aggression toward adults  
17% ($p = .02$) $^\dagger$ aggression toward peers  
19% ($p = .06$) $^\dagger$ aggressive impulse  
(ANOVA, tx, sequence, sex, visit, sex × tx, Sign test) |
| Finkelstein, Susman, et al. | 1997 | Experiment randomized double-blind, placebo-g, crossover design | Source specific; recruited youth referred for pubertal delay to outpatient clinic | 49   | 10–19 yrs  | 76%    | N/R | N/R       | Physical aggression & aggressive impulses increased following low & mid-level doses of estrogen for girls & mid-level doses of testosterone for boys. | Girls, Low-Level Dose Testosterone & Aggression  
40% ($p = .01$) $^\dagger$ physical aggression to peers  
Girls, Mid-Level Dose Testosterone & Aggression  
40% ($p = .01$) $^\dagger$ aggressive impulse  
Boys, Mid-Level Dose Testosterone & Aggression  
31% ($p = .01$) $^\dagger$ aggression toward adults  
28% ($p = .02$) $^\dagger$ aggression toward peers  
40% ($p = .01$) $^\dagger$ aggressive impulse  
(ANOVA, tx, sequence, sex, visit, sex × tx, Sign test) |
| Olweus, Mattsson, et al. | 1988 | Prospective longitudinal 3 yrs | Population: representative sample of male public school 9th graders, suburban Stockholm, Sweden | 58   | 15–17 yrs  | 100%   | 100% Quoc (Swedish) | N/R | High levels of plasma testosterone were associated with low frustration tolerance (more impatience & irritability) & more provoked aggressive behavior (self-report). Low frustration tolerance mediated the effect of plasma testosterone on provoked aggressive behavior. The model included mother's negativism & passivity for aggression, parent's power assertion, & retrospective report of boys' temperament. | Circulating Testosterone & Aggression, Self-Report  
Provoked aggression $R^2 = .47, p < .01$  
$\beta = .34$ testosterone—provoked aggressive beh  
$\beta = .27$ testosterone—impatience & irritability  
($p = n.s$: impatience & irritability—provoked agg beh)  
Unprovoked aggression $R^2 = .49, p < .05$  
$\beta = .27$ testosterone—impatience & irritability  
$\beta = .34$ impatience & irritability—unprovoked agg  
($p = n.s$: testosterone—unprovoked agg behavior)  
(path analysis) |
<table>
<thead>
<tr>
<th>Authors</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Halperin, Newcorn, et al.</td>
<td>1997</td>
<td>Concurrent</td>
<td>Source specific: met criteria for ADHD based on parent &amp; teacher ratings</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 than young nonaggressive boys. There were no differences in prolactin response for aggressive or nonaggressive older children over 9.1 yrs old.</td>
</tr>
<tr>
<td>Kruesi, Hibbs, et al.</td>
<td>1992</td>
<td>Prospective</td>
<td>Source specific: 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 aggression at followup for children with disruptive behavior disorders.</td>
</tr>
<tr>
<td>Pine, Coplan, et al.</td>
<td>1997</td>
<td>Prospective</td>
<td>Source specific: all younger siblings of delinquents, NY, NY</td>
<td>34</td>
<td>3–13 yrs</td>
<td>100%</td>
<td>Low</td>
<td>44% AfrA</td>
<td>Higher aggression and lower encouragement of maturity was associated with greater prolactin (PRL) response to FEN challenge.</td>
</tr>
<tr>
<td>Galvin, Stillwell, &amp; Shekher</td>
<td>1997</td>
<td>Concurrent</td>
<td>Source specific: all psychiatric inpatients, majority disruptive disorders</td>
<td>17</td>
<td>M = 12.5 yrs</td>
<td>100%</td>
<td>Low–upper</td>
<td>N/R</td>
<td>Poorer conscience functioning (interference with peer- &amp; authority-derived valuation) was associated with lower serum dopamine beta-hydroxylase (DBH).</td>
</tr>
<tr>
<td>Kuperman, Kramer, &amp; Loney</td>
<td>1988</td>
<td>Concurrent</td>
<td>Source specific: 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>100% Guc</td>
<td>Plasma dopamine beta-hydroxylase (DBH) was positively associated with disinhibition &amp; sensation seeking.</td>
</tr>
<tr>
<td>Limson, Goldman, et al.</td>
<td>1991</td>
<td>Concurrent</td>
<td>Source specific: chronic alcoholic inpatients, inpatient nonalcoholic controls</td>
<td>65</td>
<td>M = 44 yrs</td>
<td>100%</td>
<td>N/R</td>
<td>N/R</td>
<td>Greater lifetime history of impulsivity-aggressivity was associated with lower concentrations of CSF dopamine metabolite HVA.</td>
</tr>
</tbody>
</table>

**Key Statistics**
- Prolactin Response to FEN Challenge (5-HT function)
  \[ F(2, 47) = 5.24, p < .05 \] (age x group)
  \[ M = 14.97 \text{ng/ml} \] young, aggressive
  \[ M = 9.32 \text{ng/ml} \] young, nonaggressive
- (p = ns: children over 9.1 yrs old)
  Controlling for plasma medication level
- Physical Aggression & 5-HIAA Concentration
  \[ r = .53, p = .006 \] (partial correlation, controlling for age)
- PRL Response to FEN Challenge, Aggression, & Adverse Rearing (Encouragement of Maturity)
  \[ R^2 = .60, F (4, 29) = 10.5, p < .001 \]
  \[ \beta = .52, t = 2.9, df = 28, p < .01 \] aggression
  \[ \beta = .44, t = 3.6, df = 28, p < .001 \] encour. maturity
  (controlling for baseline prolactin)
  (multiple regression)
- DJH Levels and Conscience Functioning
  \[ t (15) = 2.08, p < .03 \] (one-tailed)
  \[ M (50) = 25.18 \] better conscience funct.
  \[ M (50) = 12.74 \] poorer conscience funct.
- Sensation Seeking & Plasma DJH Activity
  \[ r = .38, p < .05 \] dis inhibition
  \[ r = .37, p < .05 \] sensation seeking, total score
  (Pearson correlation)
- Lifetime Aggression & CSF Concentrations of HVA
  \[ r (65) = .37, p < .01 \] total group
  \[ r (50) = .40, p < .01 \] alcoholics (during sobriety)
  (Pearson correlation, Bonferroni correction)
Child Characteristics—Biological Influences

Maternal Age

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
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<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Christ, Lahey, et al.</td>
<td>1990</td>
<td>Concurrent correlational</td>
<td>253</td>
<td>6–13 yrs</td>
<td>100%</td>
<td>Low–High</td>
<td>12.5% A/A</td>
<td>Teenage motherhood (&lt; 20 or &lt; 18 yrs old, first child or referred child) was correlated with total number of child conduct problems.</td>
</tr>
<tr>
<td>Maternal Age &amp; Conduct Disorder</td>
<td></td>
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<td></td>
<td>Comparison of 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>
<tr>
<td>Larson</td>
<td>1997</td>
<td>Concurrent descriptive</td>
<td>152</td>
<td>6 yrs</td>
<td>60.5%</td>
<td>Low–middle</td>
<td>32% A/A</td>
<td>Boys: 45.7% neither, 35.8% either, 18.5% both</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Girls: 43.3% neither, 45.0% either, 11.7% both</td>
</tr>
<tr>
<td>Lahey et al. 1990</td>
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<td></td>
<td>(p’s = ns: Parent changes (mother &amp; child), planned pregnancy, unhappy childhood, breastfeeding, maternal emotional responsiveness, family income, preschool education, school changes, life events)</td>
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<td>(multiple linear regression model)</td>
</tr>
</tbody>
</table>

**Key Statistics**

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

- **Best Fit Model**
  - $\beta = .11, p = ns$ teen mother 1st child—conduct
  - $\beta = .17, p < .05$ maternal antisocial—conduct
  - $\beta = .16, p < .01$ paternal antisocial—conduct
  - $\beta = .33, p < .0001$ SES—conduct
  - $\beta = .15, p < .01$ maternal antisocial—teen mother
  - $\beta = .20, p < .001$ paternal antisocial—teen mother
  - $\beta = .35, p < .0001$ SES-teen mother

- **Maternal Age & Conduct Disorder**
  - $r = -.19, p < .0001$ age 8 ($n = 1,048$)
  - $r = -.19, p < .0001$ age 10 ($n = 1,022$)
  - $r = -.18, p < .001$ age 12 ($n = 972$)

- **Maternal Background, & Childhood Life History**
  - $\beta = -.13, p < .01$ ($n = 953$)
  - $M's = 54.5 (< 20), 53.3 (20–24), 52.0 (25–29)$
  - $50.2 (30+ yrs)$
  - $p's = ns$: maternal education, SES, family size, avoidance of punishment, parental discord

- **Externalizing, Mother and/or Teacher Reports**
  - Boys ($n = 92$)
  - Girls ($n = 60$)
  - $45.7%$ neither, $35.8%$ either, $18.5%$ both
  - $43.3%$ neither, $45.0%$ either, $11.7%$ both
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<tbody>
<tr>
<td>Brennan, Grekin, Mednick</td>
<td>1999</td>
<td>Prospective</td>
<td>Population: from birth cohort, Copenhagen, Denmark, 9/59–12/61</td>
<td>3,266–3,728</td>
<td>34 yrs &amp; 3–10, 10–20, &gt; 20 cigarettes daily</td>
<td>&gt;100%</td>
<td>Low–upper</td>
<td>N/R</td>
<td>Maternal smoking during the 3rd trimester (0, 1–2, 3–10, 10–20, &gt; 20 cigarettes daily) predicted nonviolent &amp; violent arrests, &amp; 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, &amp; maternal rejection.</td>
<td>Nonviolent Crime &amp; Maternal Smoking ( \chi^2 (1, N = 3,728) = 13.28, p &lt; .001 ) ( OR = 1.13 (CI = 1.06–1.21), p &lt; .001 ) ( p’s &lt; .05: ) delivery complications, drug use, SES, mother age, father crime, parent hospitalizations; ( p’s = ns: ) pregnancy complication, mother rejection</td>
</tr>
<tr>
<td>Woodward, Horwood</td>
<td>1998</td>
<td>Prospective</td>
<td>Population: from birth cohort, 1977, Christchurch, New Zealand, urban; 81% of original cohort</td>
<td>1,048</td>
<td>18 yrs</td>
<td>85% Quac</td>
<td>Low–upper</td>
<td>N/R</td>
<td>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 &amp; selection factors* the relationship remained &amp; was stronger for males than females. *childhood sexual abuse, physical punishment &amp; criminal behavior, maternal age &amp; education, &amp; pregnancy planning</td>
<td>Maternal Smoking &amp; Conduct Disorder Symptoms ( F (1, 1020), p &lt; .001 ) linear trend ( M’s = .33, .36, .57, .85 )</td>
</tr>
<tr>
<td>Navarro, Seidler, et al.</td>
<td>1989</td>
<td>Experiment Random assignment</td>
<td>N/A pregnant Sprague-Dawley rats, mini-pump inserted 4th day gestation, infusion stopped 21st day; bx: nicotine bitartrate, 2 mg/kg/day; control: water, sodium bitartrate</td>
<td>N/A</td>
<td>6–10+ group each postnatal day</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>Low doses of nicotine (2 mg/kg/day) did not affect viability or growth (weight gain or litter size of pregnant rats, body &amp; 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 decreases in [^{3}H]nicotine binding in midbrain &amp; brainstem, increased ornithine decarboxylase (ODC) activity across brain regions, reduced cerebellum DNA content &amp; concentration, &amp; lower kidney norepinephrine levels.</td>
<td>Prenatal Nicotine Exposure &amp; Brain Development ( F (1, 83) = 14.2 ) fmols/mg protein ( n = 6–10 ) grp ( M’s = 74, 77, 96, 87, 61 ) control ( M’s = 79, 81, 101, 94, 66 ) nicotine (order of M’s: gestational age 2, 4, 7, 10, &amp; 15 days) ODC activity* ( F (1, 214) = 4.4 ) pmols/g/hr ( n = 8–10 ) group cerebellar DNA concentration &amp; content* ( F (1, 90) = 5.7 ) mg/g concentration ( n = 10 ) group kidney norepinephrine levels* ( F (1, 135) = 4.8 ) ng/g ( n = 6–10 ) grp *Means not reported, in figures (see study for figures &amp; nonsignificant results) (ANOVA)</td>
</tr>
</tbody>
</table>
### Child Characteristics—Biological Influences

#### Maternal Smoking

<table>
<thead>
<tr>
<th>Authors</th>
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</tr>
</thead>
</table>
| Wakschlag, et al. | 1997 | Retrospective   | Source specific/children referred to university psychology & psychiatry outpatient clinics in PA & GA; Developmental Trends Study | 177  | 7–12 yrs     | 100%   | Low–upper    | 29% AfrA  | 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 & parental antisocial personality disorder (APD). Smoking continued to predict CD in models including parental psychopathologic conditions, pregnancy, family, & parenting risk factors. Maternal age, harsh discipline, & little supervision also predicted CD. | **Basic Model** Maternal Smoking & Childhood CD \( \chi^2 = 36.2, df = 5, p < .001 \)  
Maternal smoking OR = 3.3, CI = 1.3–8.6, \( p = .01 \)  
SES OR = 0.65, CI = 0.5–0.9, \( p = .003 \)  
**Final Model** Maternal Smoking & Childhood CD \( \chi^2 = 56.1, df = 8, p < .001 \)  
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) |
| Lahey, et al.     | 1997 | Correlational   | T1                     | 71   |              |        |              |           | 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, & 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. | Maternal Smoking & Offspring Psychiatric Diagnosis  
Male, conduct disorder before age 13  
Relative risk = 4.1, CI = 1.56–10.78, \( p < .01 \)  
(adjusted for maternal MDD, offspring age, divorce)  
Female, drug abuse/dependence in adolescence  
Relative risk = 5.36, CI = 1.43–20.17, \( p < .05 \)  
(adjusted for offspring current smoking, maternal MDD, offspring age)  
(Cox proportional hazards regression model) |
| Weissman, et al.  | 1999 | Prospective     | Source specific/convenience: recruited parents with hx of depression from bx clinics & normal controls (matched on age) from community surveys | 147  | 6–23 yrs >   | 48%    | Low–upper    | 100% Cauc | 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, & 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. | Maternal Smoking & Offspring Psychiatric Diagnosis  
Male, conduct disorder before age 13  
Relative risk = 4.1, CI = 1.56–10.78, \( p < .01 \)  
(adjusted for maternal MDD, offspring age, divorce)  
Female, drug abuse/dependence in adolescence  
Relative risk = 5.36, CI = 1.43–20.17, \( p < .05 \)  
(adjusted for offspring current smoking, maternal MDD, offspring age)  
(Cox proportional hazards regression model) |
| Warner, et al.    | 2009 | Longitudinal    | M = 16.4 yrs, M = 15 yrs, 27 yrs | 5–8 yrs | 15% 2        | 23% 3  | 42% 4        | 10% 5     | From earlier study who (1) drank during pregnancy, (2) stopped 2nd trimester, after alcohol education, & (3) never drank (random sample); original sample recruited from applicants for prenatal care at university hospital, GA, 1980–1983 | Behavioral Functioning, Social Competence, Teacher  
\( F (4, 90) = 4.15, p < .004 \) MANCOVA  
Externalizing \( F = 8.98, p < .001 \)  
M’s = 52 never, 52 stopped, 64 continued  
Destructive \( F = 4.38, p = .02 \)  
M’s = 60 never, 59 stopped, 66 continued  
Inattentive \( F = 6.71, p = .003 \)  
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, 45 stopped, 36 continued  
(covariate: mother’s current absolute alcohol, oz/wk) (MANCOVAs, ANOVAs, Neuman-Keuls post hoc) |

#### Prenatal Exposure to Alcohol

<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>
<th>Key Statistics</th>
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</thead>
</table>
| Brown, et al.     | 1991 | Prospective     | Source specific/selected mothers from earlier study who (1) drank during pregnancy, (2) stopped 2nd trimester, after alcohol education, & (3) never drank (random sample); original sample recruited from applicants for prenatal care at university hospital, GA, 1980–1983 | 68   | 5–8 yrs >    | 44%    | Low–10k      | 94% AfrA  | Children whose mothers drank during pregnancy had higher teacher ratings of externalizing (including inattentive, destructive, nervous/overactive, & aggressive subscales) & lower ratings of social competency than children of mothers who never drank, or who discontinued drinking in the 2nd trimester after alcohol education, controlling for caretaker’s current drinking. Sustained attention & teacher ratings of internalizing did not differ between groups once caretaker's current alcohol use was controlled. | Behavioral Functioning, Social Competence, Teacher  
\( F (4, 90) = 4.15, p < .004 \) MANCOVA  
Externalizing \( F = 8.98, p < .001 \)  
M’s = 52 never, 52 stopped, 64 continued  
Destructive \( F = 4.38, p = .02 \)  
M’s = 60 never, 59 stopped, 66 continued  
Inattentive \( F = 6.71, p = .003 \)  
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, 45 stopped, 36 continued  
(covariate: mother’s current absolute alcohol, oz/wk) (MANCOVAs, ANOVAs, Neuman-Keuls post hoc) |
### Child Characteristics—Biological Influences

#### Prenatal Exposure to Alcohol

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
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<th>Size</th>
<th>Age</th>
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<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
<th>Key Statistics</th>
</tr>
</thead>
</table>
| Coles, Brown, et al. | 1991 | See previous entry | See previous entry | 464  | 14 yrs | 54% | Middle | "primarily" | Prenatal exposure to alcohol (mother's report, 5th mth for mostly "social drinkers") was associated with increased behavioral/learning problems in adolescence (observations & parent, teacher, youth reports) taking into account potential confounding variables in 5 areas (prenatal exposure to drugs, demographics, child characteristics, examination conditions, & postnatal environment). Binge rather than steady drinking & drinking in early rather than midpregnancy had stronger associations to outcomes. | Cognitive & Academic Functioning, Summary Scores  
  F (10, 114) = 7.89, p < .05 MANCOVA  
  Sequential F = 3.82, p < .03  
  Mental composite (IQ) F = 3.15, p < .05  
  M's = 93 never, 92 stopped, 84 continued  
  Achievement F = 6.47, p < .003  
  M's = 95 never, 88 stopped, 86 continued  
  Academic Subtests  
  F (6, 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) |
| Brown, entry entry entry entry entry et al. | 1997 | Prospective longitudinal study | 464  | Birth > 14 yrs | 54% | Middle | "primarily" | Mental composite (IQ) F = 3.15, p < .05  
  M's = 93 never, 92 stopped, 84 continued  
  Achievement F = 6.47, p < .003  
  M's = 95 never, 88 stopped, 86 continued  
  Academic Subtests  
  F (6, 118) = 2.35, p < .04 MANCOVA  
  Math skills F = 5.64, p < .006  
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  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 Exposure to Drugs

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>Low</th>
<th>100% AfA</th>
<th>Result</th>
<th>Key Statistics</th>
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</thead>
</table>
| Delaney-Black, Gyvington, et al. | 2000 | Prospective longitudinal study | 471  | Prenatal > 6 yrs | 50% | < 12 yrs | < 20k | Prenatal cocaine exposure predicted age 6 externalizing/internalizing difference scores (teacher reports), controlling for custody change & gender. For boys, cocaine exposure was associated with a greater likelihood of clinically significant externalizing & delinquency scores. | Externalizing/Internalizing Difference, Teacher Report  
  Model R = .10, p = .03  
  Individual R's not reported  
  (controls: gender, custody change)  
  % Boys Clinically Significant Externalizing Scores  
  Approx M = 22.5 exposed (n = 94)  
  M = 13.5 controls (n = 140)  
  % Boys Clinically Significant Delinquency Scores  
  Approx M's = 17 exposed, 12 controls  
  (p's < .05; approximate M's from figure) (stepwise multiple regression, two-tailed t tests) |
<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design Description</th>
<th>Representativeness</th>
<th>Size</th>
<th>Age Range</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
<th>Key Statistics</th>
</tr>
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</table>
| Eyler, Behrke, et al.   | 1998  | Prospective       | Source specific: screened > 2,500 pregnant women at prenatal clinics & hospitals for cocaine users & matched controls (race, parity, SES, location of care); eligibles: healthy, age 18+, English speakers *use cocaine & marijuana, nicotine, alcohol only | 274–285 | 3.7–5.2 days old | 77% lowest | Low  | 81% AF, 19% N/R | Alert responsiveness, general irritability, regulatory capacity, state regulation, examiner persistence, & reinforcement value of infant’s behavior (Brazelton subscales) were lower for infants exposed to cocaine prenatally than for nonexposed infants. Controlling for alcohol, tobacco, & marijuana use, alert responsiveness remained lower for infants exposed to cocaine & tobacco. | Prevalent Cocaine Exposure & Brazilian 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 persistence \( p = .02 \), M’s = 4.9 ctrl, 4.5 coc \
Reinforcement value \( p = .02 \), M’s = 6.3 ctrl, 5.9 coc 
Prevalent Cocaine, Alert Responsiveness, Controlling for Alcohol, Tobacco, & Marijuana Use \( p = .03 \), R², s, & M’s not reported \( p’s < .05 \): cocaine x tobacco, marijuana x tobacco 
(Wilcoxon rank sum test, multiple regression) |
| Behnke                  | longitudinal |                   |                     |        |           |        |     |           |                                                                        | Prevalent Cocaine Exposure, IQ, Language: IQ effect = 3.26 (2.01) IQ points \
Receptive language effect = .71 (.26) SD units \
Expressive language effect = .33 (.13) SD units 
(meta-analysis, Z scores, effect sizes) |
| Lester, LaGesse, & Seifer | 1998  | Meta-analysis      | N/R                | 8      | 4–11 yrs  |        | N/R | N/R      | Children prenatally exposed to cocaine had lower IQ scores (3.26 points) than children not exposed. Effect size was small for IQ & medium for receptive & expressive language. | Genetic Effects (\( p’s = ns \): shared environment) 
\( B = .60 +/- .22, p < .01 \) aggressive behavior 
\( B = .51 +/- .22, p < .05 \) externalizing 
\( B = .66 +/- .07, p < .001 \) attention 
Shared Environment (\( p = ns \): genetic) 
\( B = .37 +/- .18, p < .05 \) iniquity (multiple regression) |
| Edelbrock, Rende, et al.| 1995  | Con. twin study    | from birth records, same-sex twin pairs; Western Reserve Twin Project | 181    | 7–15 yrs  | 54%    | Middle \( M = 3.1 \) (1–9) | N/R | Aggressive behavior, externalizing, & attention showed significant genetic effects. Delinquency showed significant shared environmental effects. | Hyperactive-Conduct Disorder A = .54, D = .34, E = .12 
Multisymptomatic Class A = .99, E = .01 
Pure Conduct Disturbance A = .01, C = .97, E = .02 
Nonmultisymptomatic Class A = .45, C = .52, E = .03 
A = additive genes 
C = shared environment 
D = dominant genes 
E = unique environment (latent class analysis) |
| Silberg, Meyer, et al.  | 1995  | Con. twin study    | Con./unselected sample recruited from Virginia schools | 389    | 11–16 yrs | 100%   | N/R | 100% Cauc | Membership in the hyperactive/ conduct disorder & multisymptom groups was predominately explained by genetic effects. Membership in the pure conduct disorder group was explained by shared environmental factors. | Genetic-Environmental Factors & Conduct Disorder \( R^2 = .16, p < .0001 \) 
\( B = .21, p = .01 \) biological parent APD 
\( B = .44, p < .0001 \) adverse adverse home environment 
\( B = .23, p = .01 \) parent APD x adoptive home 
Genetic-Environmental Factors & Adol Aggressivity \( R^2 = .19, p < .0001 \) 
\( B = .27, p < .0001 \) biological parent APD 
\( B = .31, p = .0001 \) parent APD x adoptive home \( (p’s = ns): \) alcoholic biological parent, prenatal exposure to alcohol, & interactions with adoptive home environment |
| Cadoret, Yates, et al.  | 1995  | Con. adoption      | Recruited from 4 adoption agencies in Iowa; biological mothers with a history of antisocial personality disorder (APD) or substance abuse & non-symptomatic matched controls | 197    | 18–47 yrs | 48%    | N/R | N/R      | Conduct disorder showed genetic effects (biological parent APD) environmental effects (adverse home environment), & genetic-environmental interaction effects (biological parent, antisocial behavior x adverse adoptive home environment). Adolescent aggressivity also showed genetic & genetic x environmental interaction effects. | Genetic-Environmental Factors & Conduct Disorder \( R^2 = .16, p < .0001 \) 
\( B = .21, p = .01 \) biological parent APD 
\( B = .44, p < .0001 \) adverse adoptive home enviroment 
\( B = .23, p = .01 \) parent APD x adoptive home 
Genetic-Environmental Factors & Adol Aggressivity \( R^2 = .19, p < .0001 \) 
\( B = .27, p < .0001 \) biological parent APD 
\( B = .31, p = .0001 \) parent APD x adoptive home \( (p’s = ns): \) alcoholic biological parent, prenatal exposure to alcohol, & interactions with adoptive home environment (linear regression models) |
### Child Characteristics—Biological Influence

#### Genetic × Environmental Influences

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</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>
<th>Key Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ge, Conger, et al.</td>
<td>1996</td>
<td>Concurrent</td>
<td>recruited from 3 adoption agencies in Iowa; biological parents with a history of antisocial personality disorder or substance abuse &amp; non-symptomatic matched controls</td>
<td>41</td>
<td>12–18 yrs</td>
<td>56%</td>
<td>Low-middle</td>
<td>N/R</td>
<td>Support for an evocative gene-environment correlation was found for youth adopted near birth. There was a moderate positive relationship between biological parents' antisocial personality disorder &amp;/or substance abuse &amp; adoptive parents' harsh/consistant discipline. This relationship was mediated by child hostile/antisocial behavior. Results were based on adoptive parents &amp; adoptive reports of parenting &amp; antisocial behavior &amp; records of biological parents.</td>
<td></td>
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<tr>
<td>Neiderhiser, et al.</td>
<td>1999</td>
<td>Prospective</td>
<td>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</td>
<td>10–18 yrs</td>
<td>51%</td>
<td>Middle</td>
<td>N/R</td>
<td>The cross-lagged relationships between parental conflict &amp; antisocial behavior were positive and significant.</td>
<td></td>
</tr>
<tr>
<td>O'Connor, et al.</td>
<td>1998</td>
<td>Concurrent</td>
<td>recruited from 2 adoption agencies, CO, 1975–1982; Colorado Adoption Project</td>
<td>53–59</td>
<td>7–12 yrs</td>
<td>N/R</td>
<td>Low-middle</td>
<td>N/R</td>
<td>Children at genetic risk for child behavior problems (biological parent high on antisocial parent) received more non-negative parenting (negative control) from their adoptive parents at age 7–12 than children not at risk. These results suggest an evocative gene-environment correlation. The effect of genetic risk on negative parenting was mediated by child externalizing at each age. No genetic effects were found for positive or inconsistent parenting.</td>
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### Genetic Influences on Relevant Behaviors—Attention & ADH

*Edelbrock et al., 1995: see "Genetic Influences on Conduct Disorder"

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Population</th>
<th>Size</th>
<th>Age</th>
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<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
<th>Key Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gjone, Stevenson, Sundet</td>
<td>1996</td>
<td>Concurrent</td>
<td>from birth records, Norway, 1977–1979, 1983, 1986; sample higher than population on SES</td>
<td>915</td>
<td>5–15 yrs</td>
<td>48%</td>
<td>N/R</td>
<td>100% Gauc.</td>
<td>Genetic and nonshared environmental influences were found for attention problems for 5–9 &amp; 12–15-yr-old males &amp; females.</td>
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</table>
## Child Characteristics—Biological Influences
### Genetic Influences on Relevant Behaviors—Attention & ADHD

<table>
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<th>SES</th>
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</thead>
</table>
| Levy, Hey, et al.  | 1997  | Concurrent, correlational twin study | Source specific recruited same-sex twin pairs from volunteer Australian twin registry; 1 twin with 5 attention deficit hyperactivity disorder (ADHD) symptoms | 583   | 4–12 yrs | 50%    | Low-middle | N/R       | ADHD had very high heritability when one twin had ADHD symptoms. | Heritability of Disorder, ADHD  
  $h^2 = .91$, $c^2 = .13$, $t = 7.58$, $p < .001$  
  Heritability of Trait  
  $h^2 = .75$, $t = 3.51$, $p < .001$  
  Heritability Disorder vs. Trait  
  $h^2 = .67$, $p = ns$  
  $h^2 =$ heritability, $c^2 = $ shared environment (regression models) |
  $A = .73$, $C = 0$, $E = .27$ $\chi^2 (4, N = 181) = .51$, $p < .97$  
  Heritability ADHD, Mother Rating  
  $A = .89$, $C = 0$, $E = .11$ $\chi^2 (4, N = 194) = 3.18$, $p < .53$  
  $A = $ additive genetic, $E = $ nonshared environment  
  $C = $ shared environmental effects (multiple regressions, model-fitting analyses) |

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

<table>
<thead>
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</tr>
</thead>
</table>
  $h^2 (SE) = .56$ (0.09) behavior inhibition  
  $h^2 (SE) = .36$ (0.08) empathy  
  $h^2 (SE) = .39$ (0.08) activity  
  $h^2 (SE) = .28$ (0.09) shyness  
  $h^2 (SE) = .27$ (0.09) sociability  
  ($p$’s < .01; shared environment constrained to zero) (multiple regression model) |
| Goldsmith, Buss, et al. | 1997  | Meta-analysis, 7 studies | Recruited from MZ twins, 9.5 yrs | 1,200  | MZ = 1.75–  
  9.5 yrs | N/R   | N/R   | N/R       | Sociability, emotionality, activity, and impulsivity were influenced by moderate genetic effects. | Temperament & Genetic, Environmental 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) |
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).

**Validation 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 intervention 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., 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; Jouriles 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</th>
<th>Design</th>
<th>Population Description</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>
<tbody>
<tr>
<td>Aneshensel &amp; Sucoff</td>
<td>1996</td>
<td>Concurrent correlational</td>
<td>3-stage probability sample of Los Angeles County, CA-census tract, blocks, &amp; households; screened for 12-17-year-old permanent residents; Latino youth over-represented; non-Hispanic whites under-represented</td>
<td>877</td>
<td>12-17 yrs</td>
<td></td>
<td></td>
<td></td>
<td>Risk for a nonviolent conviction by age 18 was increased by the number of parent changes by age 9. Risk for a violent conviction by age 18 was increased by the number of residence changes by age 13, lack of control at ages 3-5, &amp; the interaction of lack of control &amp; number of parent changes by age 9.</td>
<td>Nonviolent Conviction vs. No Convictor</td>
</tr>
<tr>
<td>Henry, Caspi, et al.</td>
<td>1996</td>
<td>Prospective longitudinal 15 yrs</td>
<td>Population: consecutive births; spring 1972-1973, Dunedin, New Zealand</td>
<td>475</td>
<td>3 &gt; 18 yrs</td>
<td>100%</td>
<td></td>
<td></td>
<td>Risk for a nonviolent conviction by age 18 was increased by residing in a single-parent family by age 13 &amp; the interaction of age, 3-5 lack of control &amp; living with a single parent by age 9.</td>
<td>Risk for a nonviolent conviction by age 18 was increased by residing in a single-parent family by age 13 &amp; the interaction of age, 3-5 lack of control &amp; living with a single parent by age 9.</td>
</tr>
<tr>
<td>Patterson, Forgatch, et al.</td>
<td>1998</td>
<td>Prospective longitudinal 10 yrs</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>9-10 &gt; 18 yrs</td>
<td>100%</td>
<td></td>
<td></td>
<td>Number of marital transitions predicted risk for early onset arrest (by age 14) &amp; chronic offending (by age 18), taking into account social disadvantage, effective discipline, &amp; parental monitoring</td>
<td>Early Onset Arrest (by age 14)</td>
</tr>
<tr>
<td>Smith &amp; Jarjoura</td>
<td>1988</td>
<td>Concurrent correlational</td>
<td>Population: random sample, 200 households, 57 neighborhoods, St. Pete, FL, St. Louis, MO, &amp; Rochester, NY; 1977; data aggregated by neighborhood</td>
<td>57</td>
<td>NR</td>
<td>NR</td>
<td></td>
<td></td>
<td>Violent crime rates (resident reports) were predicted by the interaction of low income (under $5,000) and residential mobility, % single-parent households, population density, &amp; % age 12-20 yrs, taking into account low income, residential mobility (mair effects), % nonwhite, % living alone, racial heterogeneity, &amp; location.</td>
<td>Violent Crime Rates</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</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>
<tbody>
<tr>
<td>Lyons-Ruth, Aphe &amp; Repacholi</td>
<td>1993</td>
<td>Prospective longitudinal</td>
<td>Convenience: high-risk mothers recruited from infant study of high-risk, low-income families; same-sex classmates, matched on birth date, were controls</td>
<td>62</td>
<td>18 mths &gt; 5 yrs</td>
<td>N/R% A/A</td>
<td>N/R% Cauc</td>
<td>N/R% Hisp</td>
<td>Infant attachment security, maternal hostility-intrusive behavior during infancy, &amp; maternal history of psychosocial problems * predicted teacher ratings of preschool children's deviant hostile behavior toward peers, controlling for classmates' behavior. Children with disorganized attachment were rated more hostile than securely attached children.</td>
<td>Multivariate analyses found that maternal responsiveness &amp; infant noncompliance at 18 mths predicted age 2 aggression for boys after accounting for infant persistence at 12 mths. 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, Keenan &amp; Vondra</td>
<td>1994</td>
<td>Prospective longitudinal</td>
<td>Convenience: high-risk mothers recruited from WIC program, metro Pittsburgh, PA, area</td>
<td>82</td>
<td>12 mths &gt; 3 yrs</td>
<td>59%</td>
<td>73% &lt; $12k</td>
<td>61% Cauc</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 at 12 mths. 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>
<td></td>
</tr>
<tr>
<td>Shaw, Owens, et al.</td>
<td>1996</td>
<td>Prospective longitudinal</td>
<td>Convenience: high-risk mothers recruited from WIC program, metro Pittsburgh, PA, area</td>
<td>77</td>
<td>12 mths &gt; 5 yrs</td>
<td>59%</td>
<td>73% &lt; $12k</td>
<td>61% Cauc</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 interaction by difficulty interaction. Children exhibiting disorganized attachment and high difficulty had higher aggression scores than children with 1 or neither risk factor.</td>
<td>Aggression Age 5: F(3, 72) = 7.94, p &lt; .001.</td>
</tr>
<tr>
<td>Erickson, Sroufe, &amp; Englund</td>
<td>1985</td>
<td>Prospective longitudinal</td>
<td>Convenience: high-risk mothers recruited from urban public health clinics, MI</td>
<td>96</td>
<td>12 &gt; 60 mths</td>
<td>54%</td>
<td>Low</td>
<td>80% Cauc</td>
<td>Anxious/avoidant/attachment children at 12 &amp; 18 mths were rated by preschool teachers as more hostile than anxious/resistant children &amp; more exhibitionist/impulsive &amp; less compliant than secure or anxious/resistant children.</td>
<td>Hostility F = 3.36, p = .04.</td>
</tr>
</tbody>
</table>

**Notes:**
- Shaw, Keenan & Vondra (1994) recruited from high-risk mothers.
- Shaw, Owens, et al. (1996) recruited from WIC program.
- "R" refers to Risk factor, "NonR" refers to Non-risk factor.
- "N/R%" refers to Non-Risk or Risk factor.
- "A/A" refers to Anxious/attachment.
- "Cauc" refers to Caucasian.
- "Hisp" refers to Hispanic.
- "NatA" refers to Native American.
- "A" refers to Anxious.
- "AR" refers to Anxious/Resistant.
- "AA" refers to Anxious/Attachment.
- "Secure" refers to Secure.
- "Disorganized" refers to Disorganized.
- "Global aggression" refers to Global aggression.
- "Parental behavior" refers to Parental behavior.
<table>
<thead>
<tr>
<th>Ages 0–3</th>
<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>
<th>Key Statistics</th>
</tr>
</thead>
</table>
|          | Van den Boom               | 1994   | Intervention | Random assignment, followup 1 interactions, followup 2 attachment                   | 100  | 6 mths  | 47%    | Low | 100% Cau. (Netherlands) | Compared to controls, dyads in the maternal responsiveness intervention group showed effects on maternal & infant interactive behavior (mother more responsive, visually attentive, stimulating, & controlling of behavior while infants more self-soothing, socially, & exploring), infant exploration (more sophisticated exploring & less mouthing), & infant attachment (IV group more likely to be securely than insecurely attached at 12 mths). | Maternal Interactive Behavior, Responsiveness  
F(1, 90) = 176.8, p < .001; M's = 4.3 IV, -1.8 ctrl  
Infant Interactive Behavior, Sociable  
F(1, 90) = 31.7, p < .001; M's = 1.4 IV, .22 ctrl  
Infant Exploring, Mouthing  
F(1, 90) = 4.61, p < .05; M's = -31 IV, 33 ctrl  
Quality of Attachment  
L'(1) = 16.96, p < .001  
38% IV, 78% Cau. insecure; 62% IV, 28% Cau. secure  
(*see study for additional results)  
(2 x 2 MANOVAs, log-linear analyses) |

| Ages 4–6 | Haapasalo & Tremblay       | 1994   | Prospective  | longitudinal 8 yrs  
population: boys in 53 public schools in low-SES area, Montreal, Canada  
rated by kindergarten teachers; only boys with Canadian-born, French-speaking parents, < 15 yrs ed eligible | 948  | 6 yrs    | 100% Cau.  
M = 57.1 (US)  
M = 10.5 yrs maternal ed | Boys classified as nonfighters from ages 6–12 reported more supervision, less punishment, & fewer rules at ages 10–12 than fighters. High supervision, low fighting behavior between ages 10–12, low punishment, & low family adversity reduced the likelihood of being involved in delinquency at ages 13 & 14. | Fighter Group Status, Nonfighters  
Wilks's λ = 0.92, approx F = 5.76, p < .001  
F (4, 877) = 8.43, p < .001 supervision  
F (4, 877) = 5.83, p < .001 punishment  
F (4, 877) = 4.46, p < .001 rules at home (MANOVA, Newman-Keuls) |

| Ages 7–13 | Farrington & Hawkins       | 1991   | Prospective  | longitudinal 24 yrs  
population: sample all boys ages 8–9 from 6 state primary & 1 special ed school, working-class area of London, 1961–1962 | 411  | 8–9 yrs  | 100% Cau.  
23% < 4 yrs  
30% > 4 yrs  
10% Cryptid  
income/wk | Low paternal involvement in leisure activities ages 8–10 was the strongest predictor of early convictions (10–13) & persistence of offending between ages 21 & 32. High troubleomeness, authoritarian parents, poor psychomotor skills, & convicted parent also predicted early convictions while heavy drinking, low commitment to school, poor housing, low verbal IQ, & unemployment predicted persistence. Poor parental supervision increased the likelihood of a criminal conviction. | Early Offending, Ages 10–13  
R² = .46 (p = .129)  
R² = .28, p = .751, p < .01 time with father  
Reconvicted Ages 21–32  
R² = .50 (p = .124)  
R² = .35, p = .580, p < .05 time with father  
(see study for additional predictors)  
Parental Supervision & Likelihood of Conviction  
9 = .20, p < .001 (N = 411)  
48.6% poor parental supervision—conviction  
25.6% not poor supervision—conviction  
(see validation section for affective ties results)  
(matwise multiple regression, chi-square) |

|          | Jang & Smith              | 1997   | Prospective  | longitudinal 1.5 yrs  
T1 = parenting wave 2 controls wave 2 delinquency wv 3  
T2 = parenting wave 3 delinquency wv 4  
population: recruited from all 7th & 8th graders in public schools, Rochester, NY, oversampled high-risk youth, male, high-delinquency wv 4 | 838  | 9th–10th gr | 75% N/R  
M's = 14 yrs | Parental supervision was associated with lower delinquency at time 1 & 2. Delinquency at time 1 was associated with reduced change in perceived supervision between times 1 & 2. The model included affective ties at times 1 & 2. | Parental supervision associated with lower delinquency at time 1 & 2. Delinquency at time 1 was associated with reduced change in perceived supervision between times 1 & 2. The model included affective ties at times 1 & 2. | (see "Validation" section for affective ties results)  
(matwise structural equation model) |

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*Note: All statistical tests are significant at the .05 level unless otherwise noted.*
### Family Characteristics—Engagement/Disengagement

#### Ages 7–13

<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>Patterson &amp; Yoerger</td>
<td>1995</td>
<td>Prospective</td>
<td>206</td>
<td>10–11 &gt; 14 yrs</td>
<td>100%</td>
<td>Low</td>
<td>99% Cau</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>
</tr>
<tr>
<td></td>
<td></td>
<td>longitudinal</td>
<td></td>
<td></td>
<td></td>
<td>M = $15k</td>
<td>1% N/R</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 yrs</td>
<td></td>
<td></td>
<td></td>
<td>33% employed</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Ages 14–19

<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>Aseltine</td>
<td>1995</td>
<td>Prospective</td>
<td>435</td>
<td>9th-10th gr</td>
<td>43%</td>
<td>Low-middle</td>
<td>&lt; 2% AfrA</td>
<td>According to high school youth's 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></td>
<td></td>
<td>longitudinal</td>
<td></td>
<td>11th-12th gr</td>
<td></td>
<td>M = $37k-$61k</td>
<td>94% Cau</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 yrs</td>
<td></td>
<td></td>
<td></td>
<td>13% &lt; 12 yr</td>
<td>&lt; 2% Hisp</td>
<td></td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>42% = 12 yr</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>17% &lt; 16 yrs</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>28% &gt; 16 yrs</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>maternal ed</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Barnes, Farrell, & Banerjee

<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>Key Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1994</td>
<td>Prospective</td>
<td>658</td>
<td>13–16 &gt; 14–17 yrs</td>
<td>45%</td>
<td>Low-middle</td>
<td>30% AfrA</td>
<td>Parental Monitoring</td>
</tr>
<tr>
<td></td>
<td></td>
<td>longitudinal</td>
<td></td>
<td></td>
<td></td>
<td>M = $21k</td>
<td></td>
<td>F = 58.7, p &lt; .001</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 yr</td>
<td></td>
<td></td>
<td></td>
<td>African-Am</td>
<td></td>
<td>Mother Support</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>M = $37.5k</td>
<td></td>
<td>F = 33.5, p &lt; .001</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Caucasian</td>
<td></td>
<td>Positive Communication</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>F = 15.1, p &lt; .001</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(controls: race, gender, age, parent's substance abuse, family structure, mother's education, family income, youth religion, &amp; religiosity.)</td>
</tr>
</tbody>
</table>

#### Simons, Johnson, et al.

<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></td>
<td>1998</td>
<td>Prospective</td>
<td>179</td>
<td>7th &gt; 9th gr</td>
<td>100%</td>
<td>Low-upper</td>
<td>100% Cau</td>
<td>Youth's 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>
</tr>
<tr>
<td></td>
<td></td>
<td>longitudinal</td>
<td></td>
<td>12.5 yrs T1</td>
<td></td>
<td>M = $29,642</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 yrs</td>
<td></td>
<td></td>
<td></td>
<td>M = $347.5k</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(8–20 yrs)</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>parents ed</td>
<td></td>
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</tbody>
</table>
### Family Characteristics—Engagement/Disengagement

<table>
<thead>
<tr>
<th>Ethnic Minority Populations</th>
<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><strong>Caucasian</strong></td>
<td>Forehand, Miller, et al.</td>
<td>1997</td>
<td>Concurrent</td>
<td>Convenience: 4 samples of adolescents &amp; their mothers recruited from public high schools, Bronx, NY, (2), Montgomery, AL, &amp; San Juan, PR; adolescents &amp; mothers resided in area for past 10 yrs or more</td>
<td>907</td>
<td>14–16 yrs</td>
<td>43%</td>
<td>Low</td>
<td>M = $12–$24k</td>
<td>Low parental monitoring (combined parent &amp; child ratings) &amp; being male were associated with higher levels of self-reported deviance in four samples: African-American adolescents, Montgomery, AL, &amp; Bronx, NY; Hispanic adolescents, San Juan, PR, &amp; The Bronx, NY. Older age was related to more deviancy for NY youth. Other variables included parental communication, maternal age, education, marital status, residence in city, income, &amp; parenting by age, gender interactions. Ethnic/geographical differences were found for parenting, deviance, &amp; all of the demographic control variables. Hispanic families from San Juan had the highest levels of parental monitoring &amp; the lowest levels of self-reported deviance.</td>
</tr>
<tr>
<td><strong>Mexican-American</strong></td>
<td>Fridrich &amp; Reynery</td>
<td>1995</td>
<td>Concurrent</td>
<td>Convenience: 4 samples of adolescents &amp; their parents recruited from all 7th &amp; 8th grades in 3 schools, 1 school district, middle &amp; Southwestern city; no ESL classes; 81% participation rate</td>
<td>1,021</td>
<td>7th &amp; 8th gr</td>
<td>52%</td>
<td>Low-middle</td>
<td>M = 12.7 yrs</td>
<td>Parental monitoring had a direct negative effect on delinquency for Mexican-American youth. Susceptibility to antisocial peer pressure mediated the relationship between youths' reports of parental monitoring &amp; delinquency for Caucasian &amp; Mexican-American youths. Mexican-American youths reported greater susceptibility to antisocial peer pressure &amp; more delinquency than Caucasian youths; reports of parental monitoring did not differ. When acculturation was examined, parental monitoring was higher for recent immigrants than for acculturated Mexican-American youths. Only acculturated Mexican-American youths reported more delinquency than Caucasian youths. <em>Acculturated</em>: parents born in U.S., speak English; Unacculturated by Choice, parents born in U.S., speak Spanish; Unacculturated Recent Immigrant: parents born in Mexico, speak Spanish.</td>
</tr>
</tbody>
</table>

### Key Statistics

- **Caucasian**: $R^2 = .50$
- **Mexican-American, Acculturated**: $R^2 = .66$
- **Mexican-American, Unacculturated Recent Immigrant**: $R^2 = .37$
- **Mexican-American, Unacc**: $R^2 = .28$

### Ethnic Group Differences

- Parent monitoring: M's = 15.3 acc, 17.2 imm
- Parent monitoring—delinquency: M's = 10.9 Mex-Am, 10.2 Cauc
- Parent monitoring—susceptibility ASP: M's = 1.14, 1.94, 1.69, 1.70

### African-American, Montgomery, AL

- $p = .35$, unique $R^2 = .12$
- $p = .31$, unique $R^2 = .07$

### African-American, Bronx, NY

- $p = .17$, unique $R^2 = .03$
- $p = .23$, unique $R^2 = .04$
- $p = .11$, unique $R^2 = .06$
- $p = .20$, unique $R^2 = .04$
- $p = .29$, unique $R^2 = .06$

### Hispanic, San Juan, PR

- $p = .33$, unique $R^2 = .11$
- $p = .20$, unique $R^2 = .04$
- $p = .29$, unique $R^2 = .06$
- $p = .20$, unique $R^2 = .04$

### Hispanic, Bronx, NY

- $p = .33$, unique $R^2 = .11$
- $p = .20$, unique $R^2 = .04$
- $p = .29$, unique $R^2 = .06$

### Ethnic Group & Antisocial Peer Pressure

- $R^2 = .68$, unique $R^2 = .60$
- $R^2 = .67$, unique $R^2 = .60$
- $R^2 = .59$, unique $R^2 = .59$

### Ethnic Group & Parental Monitoring

- $R^2 = .53$, unique $R^2 = .53$
- $R^2 = .59$, unique $R^2 = .59$
- $R^2 = .59$, unique $R^2 = .59$

### Ethnic Group & Delinquency

- $R^2 = .68$, unique $R^2 = .60$
- $R^2 = .67$, unique $R^2 = .60$
- $R^2 = .59$, unique $R^2 = .59$

### Ethnic Group & Susceptibility ASP

- $R^2 = .53$, unique $R^2 = .53$
- $R^2 = .59$, unique $R^2 = .59$
- $R^2 = .59$, unique $R^2 = .59$
<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>Olds, Henderson, et al.</td>
<td>1998</td>
<td>Intervention random assignment</td>
<td>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%</td>
<td>Low-middle</td>
<td>88% Gauc, 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>
</tr>
<tr>
<td>Henderson, random recruited pregnant mothers</td>
<td>1998</td>
<td>Random assignment</td>
<td>Recruited mothers of children with difficult temperaments who were having difficulties with parenting; recruited mothers by (1) fliers in preschools (selected for proximity &amp; range of SES) &amp; (2) ads in in local publications, screened out for stress reaction, psychopathology, mother or child receiving treatment</td>
<td>40</td>
<td>3-5 yrs</td>
<td>60%</td>
<td>Middle</td>
<td>N/R% Gauc</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>
</tr>
<tr>
<td>Sheeber &amp; Johnson</td>
<td>1994</td>
<td>Intervention random assignment</td>
<td>Recruited mothers of children with difficult temperaments who were having difficulties with parenting; recruited mothers by (1) fliers in preschools (selected for proximity &amp; range of SES) &amp; (2) ads in in local publications, screened out for stress reaction, psychopathology, mother or child receiving treatment</td>
<td>869</td>
<td>Prenatal-18 mths &gt; 5 mths &gt; 2 yrs</td>
<td>N/R</td>
<td>Low-middle</td>
<td>1 Afr &amp; His, 3 Dutch, 1 Hisp, 7 N/R</td>
<td>Interventions aimed at changing parental sensitivity to infants were moderately successful while interventions aimed at changing children's attachment insecurity had small effects.</td>
</tr>
<tr>
<td>van Ijzendoorn, Juffer, &amp; Duyvestyn</td>
<td>1995</td>
<td>Meta-analysis interventions</td>
<td>Recruited mothers of children with difficult temperaments who were having difficulties with parenting; recruited mothers by (1) fliers in preschools (selected for proximity &amp; range of SES) &amp; (2) ads in in local publications, screened out for stress reaction, psychopathology, mother or child receiving treatment</td>
<td>869</td>
<td>Prenatal-18 mths &gt; 5 mths &gt; 2 yrs</td>
<td>N/R</td>
<td>Low-middle</td>
<td>1 Afr &amp; His, 3 Dutch, 1 Hisp, 7 N/R</td>
<td>Interventions aimed at changing parental sensitivity to infants were moderately successful while interventions aimed at changing children's attachment insecurity had small effects.</td>
</tr>
</tbody>
</table>

Webster-Stratton (1998) & Webster-Stratton, Kopcacoff, & Hollinsworth (1988); see "Validation, Treatment & Preventative Interventions"
Bank et al. (1991), Borduin et al. (1995), Chamberlain & Reid (1998), Patterson et al. (1982), Tremblay et al. (1991), and Walker 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</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>Wendland- Caro,</td>
<td>1999</td>
<td>Intervention</td>
<td>Convenience</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>Pocinini &amp; Milbar</td>
<td></td>
<td>random assignment</td>
<td>volunteer mothers &amp; their newborns, Porto Alegre, Brazil</td>
<td></td>
<td></td>
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</tbody>
</table>

### Validation/Invalidation - Ages 0–3

<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>Belsky, Hsieh, &amp; Crnic</td>
<td>1998</td>
<td>Prospective longitudinal recruit</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% Low–upper M = $40k (age $50k–$100k)</td>
<td>100% Cau</td>
<td></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>
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</tbody>
</table>

### Key Statistics

<table>
<thead>
<tr>
<th>Wilks’s λ</th>
<th>F (2, 30)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>.356</td>
<td>27.08</td>
<td>&lt; .01</td>
</tr>
</tbody>
</table>

Infant vocalizes, mother vocalizes

- F (1, 31) = 19.15, p < .001
- 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
- M’s = .35 tx, 2.37 ctrl free-play
- M’s = 1.70 tx, 4.53 ctrl bathing

See study for additional significant effects

### Treatment & Preventative Intervention

- Validation/Invalidation—Ages 0–3

- Aggression, Teacher Ratings, Boys
  - R² = .33, F (9, 65) = 3.62
  - R² = .17, F (4, 91) = 4.69, p < .001

- Maternal hostility set
  - R² = .19, F (2, 97) = 11.73, p < .001

- Life stress set
  - R² = .18, F = ns, F (3, 74) = 5.28, p < .01

- Aggression, Teacher Ratings, Girls
  - R² = .25, F (9, 54) = 2.05, p = .05
  - Developmental history set (attachment & affect)
    - R² = .06, F (4, 70) = 1.60, p = .18

- Maternal hostility set
  - R² = .11, F = .40, F (2, 77) = 4.83, p < .01

- Life stress set
  - R² = .17, F = ns, F (3, 66) = 3.01, p < .03

- attachment = avoidant, affect = negative affect (multiple regressions with sets)
## Family Characteristics—Validation/Invalidation
### Ages 0–3

<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>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
<th>Key Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shaw, Winslow, et al.</td>
<td>1998</td>
<td>Prospective</td>
<td>Conveniences: high-risk mothers in WIC Nutritional Supplement Program Pittsburgh, PA, cohort 2</td>
<td>103</td>
<td>12 mths &gt; 3.5 yrs</td>
<td>59%</td>
<td></td>
<td></td>
<td>9% AEA, 4% AEA</td>
<td>Positive maternal affection was Externalizing &amp; Positive Maternal Affection = 52) N/2 = .46, &lt; .05 for boys, age 2 maternal rejection predicted age 3.5 mother reports of child externalizing. For boys, age 2 maternal rejection &amp; child noncompliance predicted mother-rated externalizing at 3.5 yrs, accounting for age 2 noncompliance, higher levels of maternal stress, &amp; number of siblings.</td>
<td>Overall F (7, 76) = 3.57, p &lt; .003 R² = .25, ΔR² = .06, β = -.90 t = -2.54, ΔF = p &lt; .01 Mdh = 59 high response, high rejection, boy Mdh = 44 high response, low rejection, boy Externalizing Age 3.5, Girls, Mother Report R² = .62, ΔR² = .03, p = 1.33 t = 2.78, ΔF = p &lt; .007 Mdh = 57.5 high noncomp, hi rejection, boy Mdh = 45 low noncomp, hi rejection, boy Mdh = 52 low noncomp, low rejection, girl ( hierarchial multiple regressions)</td>
</tr>
</tbody>
</table>

### Ages 4–6

<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>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
<th>Key Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Campbell, Breaux, et al.</td>
<td>1986</td>
<td>Prospective</td>
<td>Source specific/ conveniences: recruited parents of children with behavior problems &amp; nonsymptomatic controls from doctor’s offices &amp; child groups</td>
<td>51–63</td>
<td>M = 36 &gt; M = 48 &gt; M = 73 &gt; mths</td>
<td>60%</td>
<td>Low-upper</td>
<td>N/R</td>
<td>N/R</td>
<td>Negative &amp; directive maternal behavior at age 3 showed increasing correlation with maternal ratings of child aggression at ages 3, 4, &amp; 6 after controlling for SES, family stress, &amp; number of siblings.</td>
<td>Child Aggression Predicted by Maternal Behavior Age 3 (n = 63) R = .55, ΔR² = .06, F = 5.02, p &lt; .05 Age 4 (n = 51) R = .58, ΔR² = .14, F = 9.61, p &lt; .05 Age 6 (n = 52) R = .46, ΔR² = .16, F = 9.79, p &lt; .05 (order of variable entry: SES, family stress, # of siblings, maternal behavior) ( hierarchial multiple regressions)</td>
</tr>
</tbody>
</table>

### 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>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
<th>Key Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conger, Ge, et al.</td>
<td>1994</td>
<td>Prospective</td>
<td>Recruited from all 7th graders in all public &amp; private schools in all towns: 6,500, 8 adjacent rural counties, Iowa, 1989; region had experienced economic decline</td>
<td>378</td>
<td>M = 12.6 yrs</td>
<td>48%</td>
<td>Low-middle</td>
<td>100% Gauc</td>
<td>11% under poverty line</td>
<td>Maternal &amp; paternal hostility toward the adolescent mediated the relationship between parent-adolescent financial conflict &amp; adolescent externalizing for boys &amp; girls.</td>
<td>Mother Model: x² (138) = 261.5, GFI = .932 R² = .35 parent hostility—externalizing Father Model: x² (138) = 227.6, GFI = .941 R² = .35 parent hostility—externalizing Father Model: x² (138) = 227.6, GFI = .941 R² = .45 financial conflict—parent hostility (β's &lt; .05; p's &lt; ns: financial stress, financial conflict—externalizing) (structural equation models)</td>
</tr>
</tbody>
</table>
### Family Characteristics—Validation/Invalidation

#### Ages 7–13

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year Design</th>
<th>Population/Methodology</th>
<th>Size</th>
<th>Age (Range)</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
<th>Key Statistics</th>
</tr>
</thead>
</table>
| Jang & Smith             | 1997 Prospective longitudinal 1.5 yrs 3 waves | Recruited from all 7th & 8th graders in public schools, Rochester, NY; over-sampled high-risk youth (male, high crime areas) | 838  | 8th-9th gr > 9th-10th gr M's = 14 > 15 yrs | 75% | N/R | N/R | ns affective ties T1—delinquency T1 < .05 associated with child-reported family functioning T1—delinquency T2 < .05 | $ r = .53, p < .05 $ | Positive Family Relations & positive reinforcement by parents (latent variables based on 3 child reports, *trust, warmth, fun, togetherness*)<br>Positive Reinforcement & Antisocial Behavior<br>Positive Parenting Model<br>Positive Family Relations & Antisocial Behavior<br>Positive Parenting Model |}

#### Ages 14–19

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year Design</th>
<th>Population/Methodology</th>
<th>Size</th>
<th>Age (Range)</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
<th>Key Statistics</th>
</tr>
</thead>
</table>
| Metzler, Biglan, et al.  | 1998 Prospective longitudinal 6 mths | Recruited from 21% < poverty mid-adolescence. Mother parents in 7th/8th grade were other in 6th grade were associated with hostility by the mother or father r < .05 hostility T1 > delinquency T1 N/R% AfrA parenting (consistent, nonaversive, nonrejecting) & observations/mediational analyses, effective parenting & father's family parenting indirectly influence delinquency, through boys' positive self-restraint. For mother's parenting, positive family functioning exerted a direct negative influence on delinquency. Positive Family Relations & Antisocial Behavior<br>Positive Parenting Model<br>Positive Family Relations & Antisocial Behavior<br>Positive Parenting Model | 174  | 5th-7th gr | 53% | Low-middle | 2% | N/R | N/R | ns affective ties T2—delinquency T2 | $ r = .53, p < .05 $ | Positive Family Relations & positive reinforcement by parents (latent variables based on 3 child reports, *trust, warmth, fun, togetherness*)<br>Positive Reinforcement & Antisocial Behavior<br>Positive Parenting Model<br>Positive Family Relations & Antisocial Behavior<br>Positive Parenting Model |}

| Conger & Conger          | 1994 Prospective longitudinal 2 yrs | Recruited from all 7th-grade students, 34 public & private schools, communities < 6,500, 8 counties in north central Iowa, 1989; all 2-parent families | 359  | 7th > 9th gr & sibling pairs | 48% | Low-middle | 100% | Cau | The sibling treated with the most hostility by the mother or father reported the greatest increase in delinquency from early to mid-adolescence. Positive Family Relations & positive reinforcement by parents (latent variables based on 3 child reports, *trust, warmth, fun, togetherness*)<br>Positive Reinforcement & Antisocial Behavior<br>Positive Parenting Model | $ r = .15, t = 2.01 $ | Positive Family Relations & positive reinforcement by parents (latent variables based on 3 child reports, *trust, warmth, fun, togetherness*)<br>Positive Reinforcement & Antisocial Behavior<br>Positive Parenting Model |}

| Conger & Conger          | 1994 Prospective longitudinal 2 yrs | Recruited from all 7th-grade students, 34 public & private schools, communities < 6,500, 8 counties in north central Iowa, 1989; all 2-parent families | 359  | 7th > 9th gr & sibling pairs | 48% | Low-middle | 100% | Cau | The sibling treated with the most hostility by the mother or father reported the greatest increase in delinquency from early to mid-adolescence. Positive Family Relations & positive reinforcement by parents (latent variables based on 3 child reports, *trust, warmth, fun, togetherness*)<br>Positive Reinforcement & Antisocial Behavior<br>Positive Parenting Model | $ r = .15, t = 2.01 $ | Positive Family Relations & positive reinforcement by parents (latent variables based on 3 child reports, *trust, warmth, fun, togetherness*)<br>Positive Reinforcement & Antisocial Behavior<br>Positive Parenting Model |}

| Feldman & Weinberger     | 1994 Prospective longitudinal 4 yrs | Recruited from 2 school districts, San Francisco, CA, area | 81  | 6th > 10th gr | 100% | Middle | 5% | Cau | Parent/child reports of effective parenting (consistent, nonaversive, nonrejecting) & observations/reports of positive family functioning in 6th grade were associated with lower parent/child reports of delinquency in 10th grade. In<br>positive self-restraint. For mother's parenting, positive family functioning exerted a direct negative influence on delinquency. Positive Family Relations & positive reinforcement by parents (latent variables based on 3 child reports, *trust, warmth, fun, togetherness*)<br>Positive Reinforcement & Antisocial Behavior<br>Positive Parenting Model | $ r = .22, p < .05 $ | Positive Family Relations & positive reinforcement by parents (latent variables based on 3 child reports, *trust, warmth, fun, togetherness*)<br>Positive Reinforcement & Antisocial Behavior<br>Positive Parenting Model |}
Family Characteristics—Validation/Invalidation

Ages 14–19

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Population Characteristics</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>
<tbody>
<tr>
<td>Scaramella, Conger, &amp; Simons</td>
<td>1999</td>
<td>Prospective longitudinal 5 yrs</td>
<td>Recruited from all 7th-grade students in 34 public &amp; private schools in communities ≤6,500, 8 counties in north central Iowa, 1989, 2-parent families</td>
<td>319</td>
<td>7th-8th &gt; 8th-12th gr</td>
<td>47%</td>
<td>Low-upper Mdh = $33.7k M = 13 yrs parents ed</td>
<td>100% Cau</td>
<td>Adolescents whose parents were above the median on warmth &amp; hostility reported lower levels of externalizing each year from 8th to 12th grades &amp; lower rates of growth in externalizing over this time than adolescents of parents below the median.</td>
<td>β = –.30 SES &amp; child behavior problem</td>
</tr>
</tbody>
</table>
## Family Characteristics—Validation/Invalidation

### Ethnic Minority Populations

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
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<th>Size</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Knight, Vinidin, &amp; Roosa</td>
<td>1994</td>
<td>Concurrent</td>
<td>Convenience: recruited children &amp; 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 drinking problem; Hispanic sample spoke English</td>
<td>231</td>
<td>9–13 yrs</td>
<td>70% Cau</td>
<td>30% Hisp (Mexican Am)</td>
<td>Mother &amp; child (M/Ch) reports of maternal acceptance were associated with lower mother &amp; 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 &amp; Hispanic children, regardless of level of acculturation. There were ethnic differences in reported levels of maternal acceptance &amp; rejection. Anglo-American mothers reported less rejection, and their children reported less rejection &amp; more acceptance than Hispanic children. Acculturated Hispanic mothers reported less rejection &amp; less acceptance. No ethnic or acculturation differences were found for mother or child reports of conduct disorder.</td>
<td>Acceptance &amp; Conduct Disorder</td>
<td></td>
</tr>
<tr>
<td>Lindahl</td>
<td>1998</td>
<td>Concurrent group comparisons</td>
<td>Convenience: recruited 2-parent families via flyers from 1st to 4th grades of 20 schools in Miami, FL area; only couples married or living together; 2 yrs; 3–5% participation rate</td>
<td>110</td>
<td>7–11 yrs</td>
<td>100%</td>
<td>Low-upper</td>
<td>7% M/ABIA</td>
<td>Ethnic groups were represented equally across diagnostic &amp; control groups. According to parent reports &amp; observation, family cohesiveness was lowest for families of children diagnosed with oppositional defiant disorder (ODD), followed by those diagnosed with both ODD and ADHD, followed by those diagnosed with ADHD alone, then by control families. Parental support (parents’ reports &amp; observations) was lower for families of children with ODD and ADHD than controls. Parental rejection-coercion was higher for the 3 clinical groups than control group families. Analyses controlled for family income.</td>
<td>Ethnic Group by Diagnostic Category</td>
</tr>
</tbody>
</table>

### Key Statistics

- **Acceptance & Conduct Disorder**
  - $r's = - .44$ Anglo, $- .30$ Mex Am M/M
  - $r's = ns$ Anglo, M/Ch
  - $r's = - .19$ Anglo, $- .44$ Mex Am M/Ch

- **Rejection & Conduct Disorder**
  - $r's = .50$ Anglo, $.31$ Mex Am M/M
  - $r's = ns$ Anglo, $.40$ Mex Am M/Ch
  - $r's = .28$ Anglo, $.32$ Mex Am Ch/M

- **Ethnic Group, Rejection, Mother Report**
  - $F = 8.00$, $p < .001$, $M's = 1.49$ Anglo, $1.65$ Mex Am

- **Ethnic Group, Acceptance, Child Report**
  - $F = 5.20$, $p < .05$, $M's = 2.73$ Anglo, $2.61$ Mex Am

- **Ethnic Group by Diagnostic Category**
  - $\chi^2 (5, N = 110) = 4.44$, $p = ns$

- **Cohesiveness**
  - $F (1, 105) = 37.76$, $p < .001$
  - $M's = 3.44^{ab}$, $3.31^{ac}$, $3.24^{bc}$

- **Parental support**
  - $F (3, 105) = 8.05$, $p < .001$
  - $M's = 3.33^{a}$, $2.14^{b}$, $2.34^{c}$

- **Parental rejection-coercion**
  - $F (3, 105) = 25.27$, $p < .001$
  - $M's = 3.46^{ab}$, $3.42^{ac}$, $3.03^{bc}$, $3.05^{cd}$

- **MANCOVA, family income covariate, univariate tests with Bonferroni correction, chi-square**
Family Characteristics—Validation/Invalidation
Treatment & Preventative Interventions

<table>
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<tr>
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<th>Age</th>
<th>% Male</th>
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<th>Key Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>McNeil, Byberg, et al.</td>
<td>1991</td>
<td>Intervention not random</td>
<td>27</td>
<td>30–86 mths</td>
<td>77%</td>
<td>Low-middle</td>
<td>20% AEA</td>
<td>Children who participated in a 14-week parent-child interaction intervention (no direct classroom intervention) had fewer teacher-reported behavior problems &amp; more compliance to teacher requests than did deviant &amp; normal classroom controls, accounting for level of pre-tx problem behaviors. Treated children also showed improved behavior at home according to observations &amp; mother reports.</td>
<td>Problem Behavior, Classroom, Teacher Report (MANOVA, ANOVA, F(1, 15) = 5.03, p &lt; .05 (pre-, post-IV))</td>
</tr>
<tr>
<td>Webster-Stratton</td>
<td>1998</td>
<td>Intervention random assignment 1 yr followup</td>
<td>296</td>
<td>M = 56.5 mths</td>
<td>M = $10k</td>
<td>Low</td>
<td>17% AFA</td>
<td>Families who attended a parent-training intervention in addition to Head Start showed greater improvements in maternal parenting &amp; child behavior than families in Head Start alone. During home observations, intervention group mothers were less negative, harsh &amp; critical, &amp; displayed more positive affect than control mothers, while intervention group children had a greater reduction of problem behaviors, negativity, &amp; noncompliance than control children. All improvements were maintained after 1 yr.</td>
<td>Mother, Harsh or Critical Style, Observed (F = 7.85, p &lt; .01 (pre-, post-IV)) M's = 1.52, 1.30 IV; 1.38, 1.33 control (pre-, post-IV) M's = 14.5, 8.99 IV; 9.75, 9.43 control (pre-, post-IV) F = 11.69, p &lt; .001 GD vs. Ctrl (pre-, post-IV) F = 14.25, 9.84 IV; 9.66, 7.24 control (Pre-vs-followup) F = 13.91, p &lt; .001 (pre-, post-IV) F = 16.3, 8.99 IV; 9.75, 9.43 control (pre-, post-IV) F = 4.73, p &lt; .05 (pre-tx vs. followup) (p's &lt; .05 – .001, MANOVA, ANOVA, F's for IV)</td>
</tr>
<tr>
<td>Webster-Stratton, Kolpacoff, &amp; Hollinsworth</td>
<td>1988</td>
<td>Intervention random assignment with primary problem 1) JVM: individ. or professionally modeling referred for treatment</td>
<td>114</td>
<td>M = 4.5 yrs (3–8 yrs)</td>
<td>69%</td>
<td>Low-upper N/R</td>
<td>N/R</td>
<td>Each of the three treatment groups, JVM, GD, &amp; GDVM, showed improvements in mother &amp; father parenting (observed) &amp; child behavior (observed, mother &amp; father reports) compared to wait list controls. The few outcome differences among treatment groups favored GDVM treatment.</td>
<td>Externalizing, Mother Report (F = 4.05, JVM vs. GDVM, p's &lt; .001 F = 2.21, p &lt; .05 GD vs. Ctrl (pre-, post-IV) M's = 61.1, 37.96 JVM; 53.20, 31.07 GDVM M's = 88.5, 43.40 GD; 53.77, 48.48 control (pre-, post-IV) Father Criticisms, Observed (p's &lt; .05 – .001, MANOVA, ANOVA, F's for IV)</td>
</tr>
</tbody>
</table>
## Family Characteristics—Discipline and Conflict
### Ages 0–3

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year Design</th>
<th>Representativeness</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
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<th>Result</th>
<th>Key Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crockenberg &amp; Lourie</td>
<td>1996 Prospective longitudinal 4 yrs</td>
<td>Convenience: N/R</td>
<td>42</td>
<td>2 yrs</td>
<td>&gt; 6 yrs</td>
<td>48%</td>
<td>81% Cau</td>
<td>Age 6 externalizing (father report) was highest for boys with behavior problems (parent &amp; new teacher reports of behavior)</td>
<td>Age 6 Externalizing, Father Report: r (12) = .68, p &lt; .01 paternal coercion, boys r (22) = .57, p &lt; .03 maternal coercion, girls</td>
</tr>
<tr>
<td>Fagot &amp; Leve</td>
<td>1998 Prospective longitudinal 3.5 yrs</td>
<td>Convenience: from metro area of midsize OR city, sampling method N/R</td>
<td>122</td>
<td>18 yrs</td>
<td>60 mths</td>
<td>53%</td>
<td>2% AFA</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>
<td>Externalizing, Age 5, Teacher Ratings: Step 4: R² = .39, R² adj = .34, F = 3.41, p &lt; .0001 p = .86, p &lt; .01 parent coercion home p = .28, p &lt; .05 marital status p = .23, p &lt; .05 child negative beh, play group (p's = ns: sex, agency use, police contact, income, home behavior, temperament, attachment, external—parent rep) (stepwise hierarchical regression, step 1: gender, step 2: demographics, step 3: child, 4: observed coercive parenting)</td>
</tr>
<tr>
<td>Fagot &amp; Leve</td>
<td>1998 Prospective longitudinal 3.5 yrs</td>
<td>Convenience: from metro area of midsize OR city, sampling method N/R</td>
<td>118</td>
<td>18 yrs</td>
<td>60 mths</td>
<td>53%</td>
<td>2% AFA</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>
<td>Externalizing, Age 5, Teacher Ratings: Step 4: R² = .39, R² adj = .34, F = 3.41, p &lt; .0001 p = .86, p &lt; .01 parent coercion home p = .28, p &lt; .05 marital status p = .23, p &lt; .05 child negative beh, play group (p's = ns: sex, agency use, police contact, income, home behavior, temperament, attachment, external—parent rep) (stepwise hierarchical regression, step 1: gender, step 2: demographics, step 3: child, 4: observed coercive parenting)</td>
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<td>Fagot &amp; Leve</td>
<td>1998 Prospective longitudinal 3.5 yrs</td>
<td>Convenience: from metro area of midsize OR city, sampling method N/R</td>
<td>122</td>
<td>18 yrs</td>
<td>60 mths</td>
<td>53%</td>
<td>2% AFA</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>
<td>Externalizing, Age 5, Teacher Ratings: Step 4: R² = .39, R² adj = .34, F = 3.41, p &lt; .0001 p = .86, p &lt; .01 parent coercion home p = .28, p &lt; .05 marital status p = .23, p &lt; .05 child negative beh, play group (p's = ns: sex, agency use, police contact, income, home behavior, temperament, attachment, external—parent rep) (stepwise hierarchical regression, step 1: gender, step 2: demographics, step 3: child, 4: observed coercive parenting)</td>
</tr>
<tr>
<td>Campbell</td>
<td>1994 Prospective longitudinal 2 yrs group comparisons</td>
<td>Convenience: from metro area of midsize OR city, sampling method N/R</td>
<td>105</td>
<td>4 yrs</td>
<td>&gt; 6 yrs</td>
<td>100%</td>
<td>100% Cau</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>
<td>Maternal Negative Control, Time 1: F (1, 102) = 9.73, p &lt; .001 (N = 105) M = 1.30 continuing problems (n = 18) M = .088 not continuing (n = 47) M = –1.17 control group (n = 40) (M's with different subscripts differ p &lt; .05) (ANOVA, statistical test not reported)</td>
</tr>
<tr>
<td>Campbell, March, et al.</td>
<td>1991 Prospective longitudinal 1 yr</td>
<td>Convenience: from metro area of midsize OR city, sampling method N/R</td>
<td>108</td>
<td>4 yrs</td>
<td>&gt; 6 yrs</td>
<td>100%</td>
<td>100% Cau</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 predict maternal control at age 9.</td>
<td>Negative Maternal Control &amp; Externalizing: r (24) = .63, p &lt; .01 parent referred r (80) = .22, p &lt; .05 preschool recruits Externalizing, Parent Refered (n = 25) Step 2: R = .76, F (4, 19) = 6.62, p = .002 model R = .70, r² = .20, s² = 18.18, p &lt; .01 neg ctrl Externalizing, Preschool Recruited (n = 80) Step 2: R = .499, F (3, 76) = 8.42, p = .002 model R = .47, r² = .01, s² &lt; 1, p = ns neg mat ctrl (Hierarchical multiple regressions, step 1: initial symptom level, step 2: negative mat control, step 3: depression)</td>
</tr>
<tr>
<td>Campbell, March, et al.</td>
<td>1996 Prospective longitudinal 5–6 yrs</td>
<td>Convenience: from metro area of midsize OR city, sampling method N/R</td>
<td>94</td>
<td>4 yrs</td>
<td>&gt; 9 yrs</td>
<td>100%</td>
<td>100% Cau</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 predict maternal control at age 9.</td>
<td>Negative Maternal Control, Age 4; Externalizing, Age 9: p = .25, p &lt; .01 negative control 4—externalizing 9 p = .14, p = ns externalizing 4—negative control 9 p = .41, p &lt; .001 negative control 4—externalizing 4 p = .06, p = ns negative control 4—negative ctrl 9 p = .21, p &lt; .05 negative control 9—externalizing 9 p = .40, p &lt; .001 externalizing 4—externalizing 9 (cross-legged regression)</td>
</tr>
</tbody>
</table>
Family Characteristics—Discipline and Conflict

Age 4–6

Authors: Kingston & Prior
Year: 1995
Design: Prospective longitudinal
Size: 175
Age: 2–3 yrs > 7–8 yrs
% Male: 61%
SES: N/R
Ethnicity: N/R

Key Statistics:
$\chi^2(14) = 35.05, p < .001 (84\% F1, 14.2\% F2)$

Nonphysical discipline
$r^2 = .41 F1, -.12 F2$

M's = 4.01 stable agg, 3.01 non agg
Parental control, guilt
$r^2 = .31 F1, -.10 F2$

M's = 3.50 stable agg, 2.77 non agg
Sibling interaction, hostile
$r^2 = .56 F1, .27 F2$

M's = 4.31 stable agg, 2.95 non agg
Child temperament F1, F2
$r^2 = .34, .35 (2–3 yr); .49, .40 (3–4 yr); .62, .25 (5–6 yr); .59, .20 (7–8 yr)$
Mother perception F1, F2
$r^2 = .47, .26 (2–3 yr); .62, -.26 (5–6 yr); .75, -.45 (7–8 yr)$

F1 = function 1, F2 = function 2
(stepwise discriminant function analysis)

Design Representativeness
Convenience/size
source specific: sampled at ages 7–8 from 1,721 ongoing participants of the Australian Temperament Project; selected children with high scores on aggression, & random sample of nonaggressive children

Result:
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 children temperament at ages 2–3, 3–4, 5–6, & 7–8, & mother's overall perception of child at ages 2–3, 3–4, 5–6, & 7–8.

Key Statistics:
Wilks's $\lambda = .61, F (27, 354) = 2.39, p < .001$

Restrictive discipline
$F (3, 100) = 3.32, p < .05$

M = 3.4 aggressive victims
M = 2.8 passive victims
M = 2.7 nonvictim aggressors
M = 2.7 controls

(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 ($n = 723$
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 T3—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
($p's = ns$: beh T1 — punish T2, punish T1—beh T2)
(cross-legged correlations)

Design Representativeness
Convenience/size
source specific: sampled at ages 7–8 from 1,721 ongoing participants of the Australian Temperament Project; selected children with high scores on aggression, & random sample of nonaggressive children

Result:
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. For children under 6 at T1, punishment & conduct disorder had a reciprocal relationship from early to late childhood, & unidirectional effect (punishment predicting conduct disorder) from late childhood to early adolescence. There were no cross-lagged effects for children older than 6 at T1.

Design Representativeness
Convenience/size
source specific: sampled at ages 7–8 from 1,721 ongoing participants of the Australian Temperament Project; selected children with high scores on aggression, & random sample of nonaggressive children

Result:
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. For children under 6 at T1, punishment & conduct disorder had a reciprocal relationship from early to late childhood, & unidirectional effect (punishment predicting conduct disorder) from late childhood to early adolescence. There were no cross-lagged effects for children older than 6 at T1.
### Family Characteristics—Discipline and Conflict

#### Ages 7–13

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<th>SES</th>
<th>Ethnicity</th>
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<tbody>
<tr>
<td>Feehan, McGee, et al.</td>
<td>1991 Prospective longitudinal 6–8 yrs</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 (lax or neutral) discipline, accounting for gender &amp; early behavior problems.</td>
<td>849</td>
<td>7–9 yrs &gt; 15 yrs</td>
<td>N/R</td>
<td>N/R</td>
<td>N/R% Caucl</td>
<td>849</td>
<td>7–9 yrs &gt; 15 yrs</td>
<td>N/R</td>
<td>N/R</td>
<td>N/R% Caucl</td>
</tr>
<tr>
<td>Shumow, Vandell, &amp; Posner</td>
<td>1998 Prospective longitudinal concurrent 2 yrs</td>
<td>Parenting variables did not predict child behavior problems over time. Harsh parenting was concurrently associated with 3rd &amp; 5th-grade behavior problems (parent report), &amp; misconduct in 5th grade (child report) &amp; lower adjustment in 5th grade (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>
<td>184</td>
<td>3rd &gt; 5th grade</td>
<td>47% Low</td>
<td>M = $15,365</td>
<td>48%</td>
<td>3rd &gt; 5th grade</td>
<td>47% Low</td>
<td>M = $15,365</td>
<td>48%</td>
<td>3rd &gt; 5th grade</td>
</tr>
<tr>
<td>Patterson, Forgatch, et al.</td>
<td>1998 Prospective longitudinal 10 yrs</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>
<td>206</td>
<td>9–10 yrs &gt; 18 yrs</td>
<td>100% Low-middle</td>
<td>Mthr = $15k</td>
<td>N/R% Caucl</td>
<td>206</td>
<td>9–10 yrs &gt; 18 yrs</td>
<td>100% Low-middle</td>
<td>Mthr = $15k</td>
<td>N/R% Caucl</td>
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</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 (controlling for gender) (multivariate logistic regression analyses)

**Antisocial Behavior ($n = 103$)**
- Exp $p = .46, p = .78, p = .008$ effective discipline
- $p = 53, p = .003$ parental monitoring
  - ($p's = ns$: social disadvantage, marital transitions)

**Early Onset ($n = 53$)**
- Exp $p = .62, p = .48, p = .008$ effective discipline
- $p = .46, p = .033$ social disadvantage
- $p = .50, p = .006$ marital transitions
- $p = .31, p = .097$ parental monitoring

**Chronic Offending ($n = 51$)**
- Exp $p = .65, p = .44, p < .02$ effective discipline
- $p = .48, p = .027$ social disadvantage
- $p = .42, p = .019$ marital transitions
- $p = .32, p = .083$ parental monitoring (multivariate logistic regression analyses)
## Family Characteristics—Discipline and Conflict

### Ages 7–13

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year Design</th>
<th>Representative(s)</th>
<th>Design/Recruited/Recruited</th>
<th>Ages</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wasserman, Miller et al.</td>
<td>1996 Prospective</td>
<td>Convenience, 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>T1 112</td>
<td>M = 8.9 yrs</td>
<td>100%</td>
<td>Male</td>
<td>Low</td>
<td>M = 11 yrs</td>
<td>caregiver ed</td>
<td>Less parent-reported punishment &amp; monitoring, &amp; more parent-child fighting predicted 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>longitudinal recruited 6–10-yr-old</td>
<td>T1 = 11 yrs</td>
<td>2% Cau</td>
<td>44% His</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>
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</tbody>
</table>

### Ages 14–19

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year Design</th>
<th>Representative(s)</th>
<th>Design/Recruited/Recruited</th>
<th>Ages</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neighbors, Forehand, &amp; Bau</td>
<td>1997 Prospective</td>
<td>Convenience, 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>T1 = 243</td>
<td>M = 13.1 yrs</td>
<td>47%</td>
<td>Middle</td>
<td>M = 32</td>
<td>11 N=77 Low</td>
<td>Cau</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 interpersonal 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>Source specific, reanalysis of Glueck's 1950 data; delinquents in correctional schools; matched controls (age, neighborhood, social disadvantage, ethnicity, &amp; IQ) from public schools, Boston, MA, 1939–1948</td>
<td>T1 = 1,000</td>
<td>M = 14.7 yrs</td>
<td>100%</td>
<td>Low</td>
<td>100%</td>
<td>Cau</td>
<td>Erratic/harsh discipline, low maternal supervision, &amp; weak parent-child attachment were associated with delinquency, accounting for retrospective reports of child antisocial behavior, poverty, mobility, family disruption &amp; size, parental deviance &amp; instability, foreign birth, &amp; maternal employment.</td>
<td></td>
</tr>
<tr>
<td>Steinberg, Lamborn, et al.</td>
<td>1994 Prospective</td>
<td>Convenience, 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>T1 = 1,084</td>
<td>9th-11th gr</td>
<td>48%</td>
<td>Low-upper</td>
<td>M = 16 yrs</td>
<td>15%</td>
<td>AfrA</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

<table>
<thead>
<tr>
<th>Externalizing F (8, 94) = 11.05, p = .0001, R² = .51</th>
</tr>
</thead>
<tbody>
<tr>
<td>p = –.23, p = .009 punishment; parent report</td>
</tr>
<tr>
<td>p = .21, p = .03 fighting</td>
</tr>
<tr>
<td>p = –.23, p = .009 monitoring; parent report</td>
</tr>
<tr>
<td>p = -.20, p = .02 parent communication</td>
</tr>
<tr>
<td>(p’s = ns: parent involvement—emotional support, conflict—reject, child report—punish &amp; monitoring)</td>
</tr>
</tbody>
</table>

## Antisocial Behavior, Young Adulthood, Self-Report

<table>
<thead>
<tr>
<th>Boys: R² = .06, F = 2.20, p &lt; .05</th>
</tr>
</thead>
<tbody>
<tr>
<td>p = –.23, F = 4.96, p &lt; .05 relationship with father</td>
</tr>
<tr>
<td>p = -.35, F = 8.05, p &lt; .01 parent conflict</td>
</tr>
<tr>
<td>Girls R² = .11, F = 3.50, p &lt; .01 relationship with father</td>
</tr>
<tr>
<td>(controls: early adolescent behavior, age, parental marital status, adolescent interparental conflict)</td>
</tr>
</tbody>
</table>

## Delinquency, Self-Report

<table>
<thead>
<tr>
<th>Delinquency R² = .52</th>
</tr>
</thead>
<tbody>
<tr>
<td>(p’s &lt; .05: supervision, parent-child attachment, family size &amp; disruption, mobility, &amp; child behavior)</td>
</tr>
</tbody>
</table>

## Family Characteristics—Discipline and Conflict

<table>
<thead>
<tr>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<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 interpersonal conflict (mother report), controlling for age, behavior problems, marital status, &amp; interparental conflict in adolescence. (multiple regression analyses)</td>
</tr>
</tbody>
</table>

## Offical Delinquency Status

<table>
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<tr>
<th>Result</th>
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<tbody>
<tr>
<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. (OLS regression)</td>
</tr>
</tbody>
</table>

## Delinquency, Self-Report

<table>
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<tr>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<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. (maximum-likelihood logistic regression)</td>
</tr>
</tbody>
</table>

## Self-Parent-Teacher Report Delinquency

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<tr>
<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. (maximum-likelihood logistic regression)</td>
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## Family Characteristics—Discipline and Conflict

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<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. (maximum-likelihood logistic regression)</td>
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## Delinquency, Self-Report

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<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. (maximum-likelihood logistic regression)</td>
</tr>
<tr>
<td>Authors</td>
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<tr>
<td>Deater et al.</td>
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</table>

**Family Characteristics—Discipline and Conflict Ethnic Minority Populations**

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Convenience</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>
<tbody>
<tr>
<td>Kniffen</td>
<td>1994</td>
<td>Concurrent</td>
<td>N/R 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 alcoholics; 50% of sample had 1 parent with a drinking problem</td>
<td>231</td>
<td>9–13 yrs</td>
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<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.</td>
<td>Control &amp; Conduct Disorder</td>
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<td>For Anglo children, control &amp; conduct disorder (maternal report), hostile control &amp; conduct disorder (child report), &amp; hostile control (maternal report), &amp; conduct disorder (child report), were also 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>
<td>$r’s = .26$ Anglo, ns Hip M/Ch</td>
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<td>Control &amp; Conduct Disorder</td>
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<td>$r’s = .39$ Anglo, .28 Mex Am M/M</td>
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<td>Hostile Control &amp; Conduct Disorder</td>
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<td>$r’s = .32$ Anglo, .25 Mex Am M/Ch</td>
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<td>Inconsistent Discipline &amp; Conduct Disorder</td>
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<td>$r’s = .34$ Anglo, ns Mex Am M/Ch</td>
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<td></td>
<td>($^<em>$ steps differ p &lt; .05; $^</em>$ intercepts differ p &lt; .10)</td>
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<td>(M = mother, Ch = Child report of (1) Family, (2) conduct) (p’s &lt; .05; r’s for analyses with acculturation as first step in hierarchical MR not reported, p’s &lt; .05 as well)</td>
<td>Hostile Control, Ethnic Group (mother report)</td>
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<td></td>
<td>$F = 25.3, p &lt; .001, M’s = 1.54 Anglo, 1.81 Mex Am Hostile Control, Ethnic Group (child report) F = 14.1, p &lt; .001, M’s = 1.83 Anglo, 2.04 Mex Am Inconsistent Discipline, Ethnic Group (child report) F = 15.6, p &lt; .001, M’s = 1.32 Anglo, 1.54 Mex Am</td>
<td>$r = -.25, p &lt; .05 child; -.37, p &lt; .01 mother</td>
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<td>Accluaratation—Hostile Control</td>
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<td>$r = -.30, p &lt; .01 mother</td>
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</tr>
</tbody>
</table>

*(see study for gender, control results) (ethnicity x gender ANOVA)*
Family Characteristics—Discipline and Conflict

Ethnic Minority Populations

<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>Lancon, Dornbusch, &amp; Steinberg</td>
<td>1996</td>
<td>Prospective longitudinal</td>
<td>Convenience: recruited from 6 CA high schools</td>
<td>3,397</td>
<td>9th-11th</td>
<td>95%</td>
<td>Low-middle</td>
<td>5% ARA</td>
<td>Unilateral adolescent decision making predicted an increase in deviant behavior after 1 yr for African-, Asian-, European-, &amp; Hispanic-American adolescents. A decrease in deviance after 1 yr was predicted by unilateral parental decision making for African-American adolescents, &amp; joint decision making for African-, European-, &amp; Hispanic-American adolescents.</td>
</tr>
</tbody>
</table>

Lindahl 1998 Concurrent group comparisons

Convenience: recruited 2-parent families w/ flyers from 1st to 4th grades of 20 schools in Miami, FL area; couples married or living together ≤ 2 yrs were eligible; 3-5% participation

Size = 110 Age = 7-11 yrs % Male = 100% Low-upper SES = 7% ARA* 36% Cauc 57% Hig* Caribbean Am included

Ethnic groups were equally represented in diagnostic & control groups. Tax-inconsistent parenting was highest for families of children diagnosed with oppositional defiant disorder (ODD) followed by ODD and ADHD, ADHD, & control families. Family conflict was higher for the ADHD/ODD group than the ADHD or control groups & higher for the ODD group. Parental rejection-coercion was higher for the 3 clinical groups than the control group. Family income was controlled in the analyses, & parenting measures included self-report & observational data.

Treatment & Preventative Interventions

Bank, Marwitz, et al. 1991 Intervention random Assignment 3-yr followup

Source specific: repeat offenders, 16 yrs & younger, referred by juvenile court, OR county; resided near tx center

Size = 55 M = 14 yrs all ≤ 16 yrs % Male = 100% Low-middle M = 12 yrs ed M = 2.8 maternal occ M = 36 paternal occ Hollingshead

Adolescents in the parent training (monitoring & discipline) treatment group spent less time in institutions during tx & 2 yr followup than youth who took part in traditional tx (family therapy, monitoring of school attendance/performance, group drug counseling).

Rate of nonstatus offending declined for both tx groups* but youth in the parent training group showed reductions during the bx year, while controls showed reductions during yr 1 followup. The prevalence rate of nonstatus offenses declined for both groups; however, youth in the parent training group had fewer nonstatus offenses at yr 3 followup.

Key Statistics

Unilateral Adult Decision Making—Deviant Beh

δ0 = .09, p < .05, δ0 = .23 (n = 682) ARA-Asn
δ0 = .17, p < .05, δ0 = .46 (n = 180) ARA-Afr
δ0 = .07, p < .001, δ0 = .25 (n = 2,246) Eur-Am
δ0 = .10, p < .05, δ0 = .33 (n = 537) Hisp-Am

Unilateral Parent Decision Making—Deviant Beh

δ0 = .20, p < .01, δ0 = .11 (n = 180) Afr-Am

Joint Decision Making—Deviant Behavior

δ0 = .08, p < .05, δ0 = .22 (n = 682) ARA-Asn
δ0 = .06, p < .01, δ0 = .19 (n = 2,246) Eur-Am
δ0 = .08, p < .05, δ0 = .25 (n = 537) Hisp-Am

(regression analyses, control for 1987 decision making)

Ethnic Group by Diagnostic Category

Lindahl 1998 Concurrent group comparisons

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

Lax-inconsistent F (3, 105) = 28.0, p < .001

M's = .54** control, -30** ADHD, M’s = 1.23*** ODD, -52** ADHD/ODD

Conflict F (3, 105) = 17.31, p < .001

M’s = .56** control, -07 ADHD, M’s = .34** ODD, -76** ADHD/ODD

Parental rejection-coercion F (3, 105) = 25.27, p < .001

M’s = 1.45*** control, 2.39 ADHD, M’s = 3.03*** ODD, 3.46** ADHD/ODD

(controlling for family income)

(Adding letters differ p < .05)

(MANOVA, univariate tests, Bonferroni correction)

Institution Time, Tx, Followup 1, Followup 2, Followup 3

U = 264.5, p < .05; M’s = 28.5 PT, 4.54 CC

U = 264.0, p < .03; M’s = 33.9 PT, 69.3 CC

U = 250.5, p < .01; M = 34.4 PT, 37.7 CC

Nonstatus Offense Rates Wilk’s Λ = .73

Baseline – Tx F (1, 53) = 8.21, p < .01

M’s = 3.6, 1.1 PT, 3.9, 2.5 CC

Tx – Followup 1 F (1, 53) = 2.12, p = .15

M’s = 1.1, 1.4 PT, 2.5, 1.1 CC

(δ’s = ns: followup yrs 2 & 3)

Nonstatus Prevalence Rates Wilk’s Λ = .72

Followup Yr 3 F (1, 53) = 4.25, p < .05

M’s = 10 PT, 17 CC

Overall Offense Rates p = ns: group, p < .01: year

Status Offense Rates p = ns: group, p < .01: year

*no treatment effects for status offenses

(MANOVA, status, nonstatus, & overall offense rates)

PT = parent training, CC = community control
Family Characteristics—Discipline and Conflict
Treatment & Preventative Interventions

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<tr>
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<tbody>
<tr>
<td>Borduin et al.</td>
<td>1995 Intervention assignment 4-yr followup</td>
<td>Source specific: detained youth &amp; their families were referred by juvenile services; youth had 2+ arrests &amp; lived with at least 1 parent; Missouri Delinquency Project</td>
<td>126</td>
<td>12-17 yrs</td>
<td>68%</td>
<td>Low-middle</td>
<td>69% lower</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 MST 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 completer recidivists.</td>
</tr>
<tr>
<td>Chamberlin &amp; Reid</td>
<td>1998 Intervention random assignment 1-yr followup</td>
<td>Source specific: 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>6% AFA</td>
<td>85% Cauc, 6% Hisp, 3% NaA Boys who participated in multidimensional treatment foster care (MTFC) showed a greater reduction in rate of official criminal referrals &amp; reported less delinquency, index offenses, &amp; felony assaults in the year following treatment than boys who received group care (GC). Participation in MTFC predicted official referral rates &amp; self-reports of delinquency, index offenses, &amp; felony assaults, even after accounting for pretreatment offense rates, age at first offense, &amp; age at baseline.</td>
</tr>
</tbody>
</table>

Key Statistics

Supporthiveness, Pre – Post Intervention

F (1, 123) = 6.42, \(p < .01\) gr \(x\) tx mother-youth
M's = .09, .23 MST; .10, .14 IT
F (1, 64) = 9.18, \(p < .01\) gr \(x\) tx father-youth
M's = .06, 1.06 MST; .07, .23 IT
Conflict & Hostility, Pre – Post Intervention

F (1, 123) = 5.30, \(p < .01\) gr \(x\) tx mother-youth
M's = .09, .54 MST; .11, .22 IT
F (1, 64) = 6.66, \(p < .01\) gr \(x\) tx father-youth
M's = .15, .63 MST; .18, .27 IT

Behavior Problems, Mother Report, Pre – Post

F (1, 125) = 4.97, \(p < .05\) gr \(x\) tx
M's = .06, 1.06 MST; –.07, .23 IT

Conflict, Pre – Post Intervention

F (1, 125) = 5.30, \(p < .01\) gr \(x\) tx mother-youth
M's = .09, .54 MST; .11, .22 IT
F (1, 64) = 6.66, \(p < .01\) gr \(x\) tx father-youth
M's = .15, .63 MST; .18, .27 IT

Rate of Official Criminal Referrals

F (1, 77) = 3.93, \(p = .03\) gr \(x\) time
M's = 8.5 pre-tx, 2.6 post-tx MTFC
R² = .19, \(p = .23\), \(t = 3.22\), \(p = .01\) tx group
Delinquency, Self-Report, 1-Yr Followup

F (1, 77) = 6.50, \(p = .01\)
M's = 12.8 MTFC, 28.9 GC
R² = .24, \(p = .23\), \(t = .24\), \(p = .04\) bx group
Index Offenses, Self-Report, 1-Yr Followup

F (1, 77) = 5.30, \(p = .03\)
M's = 3.2 MTFC, 8.6 GC
R² = .15, \(p = .23\), \(t = 2.05\), \(p = .04\) bx group
Felony Assaults, Self-Report, 1-Year Followup

F (1, 77) = 4.10, \(p = .05\)
M's = 1.2 MTFC, 2.7 GC
R² = .20, \(p = .27\), \(t = 2.33\), \(p = .02\) bx group

(ANOVA, stepwise hierarchical multiple regression)
### Family Characteristics—Discipline and Conflict Treatment & Preventative Interventions

<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>
<th>Key Statistics</th>
</tr>
</thead>
</table>
| Patterson, Chamberlin, & Reid | 1982 | Intervention random assignment | Source specific referred by medical/school personnel or parents for primary problem of social aggression, Pacific NW | 19   | 3–11 yrs  | 68%    | Low  | N/R        | Children in the parent training group (monitoring, effective discipline, & 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. | Deviant Behavior, Observed  
  F (1, 17) = 4.63, p < .01 group by tx phase  
  F (1, 17) = 3.61, p < .08 group  
  F (1, 17) = 12.81, p < .003 trial  
  M's = .92 baseline, .32 termination tx group  
  M's = .89 baseline, .74 termination control  
  Reduction: 63% tx group, 17% control  
  (ANOVA)  |
| Tremblay, McCord, et al.  | 1991 | Intervention random assignment | Population: boys in 53 public schools, low-SES areas, Montreal; Canada were rated by kindergarten teachers; disruptive boys (>70%) with Canadian-born, French-speaking parents, < 15 yrs of school, were eligible | 172  | 6 > 12 yrs | 100%   | Low  | 100% Gauc (French Canadian) | Boys who participated in a 4–yr preventative treatment program of parent training (monitoring, effective discipline, & positive reinforcement) & boys' social skills training reported less theft in the home & less fighting both inside & outside the home 2 yrs after treatment; however, there were no group differences for disruptive behavior after 1 yr, nor for fighting after 2 yrs. | Misbehavior, % Children Reporting 1 (+) Incident  
  F(1, 17) = 5.81, p = .03; 40% tx, 55% ctrl, 64% obsv  
  Fighting in the home  
  F(1, 17) = 4.58, p = .03; 28% tx, 43% ctrl, 49% obsv  
  Theft in the home  
  F(1, 17) = 5.50, p = .02; 7% tx, 24% ctrl, 23% obsv  
  Mothers' Ratings  
  Child disruptive behavior  
  F = 5.32, p = .02 post-tx  
  M's = 13.3 tx, 10.4 ctrl, 11.0 obsv  
  (p's = ns, followup yrs 1 & 2)  
  Fighting  
  F = 6.59, p = .004 post-tx  
  M's = 2.8 tx, 1.8 ctrl, 1.9 obsv  
  F = 5.61, p = .02 followup 1  
  M's = 2.3 tx, 1.7 ctrl, 2.0 obsv  
  F = 3.39, p = .07 followup 2  
  M's = 1.8 tx, 1.3 ctrl, 1.8 obsv  
  Teacher Ratings  
  p's = ns, F's & M's not reported  
  (chi-square, ANOVA)  |
| Wahler, Carter, et al.    | 1993 | Intervention random assignment & followups | Source specific: children referred to clinic from social service agency for oppositional/aggressive behavior at home & school; mothers had multiple stressors | 29   | 7–13 yrs  | 79%    | Low-middle | 83% Gauc | Mothers who attended a parent training intervention (monitoring, discipline, & 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 & child aggressive behavior than mothers in the parent training/problem discussion group. No reductions were found in the clinic setting immediately following the 9-mth intervention; however, reductions were found in the home setting 6 & 12 mths following tx. | Maternal Indiscriminate Reactions, Home  
  F (3, 81) = 5.55, p < .01 group by tx phase  
  F (1, 27) = 5.24, p < .05 group followup 1  
  F (1, 27) = 9.48, p < .01 group followup 2  
  Apnx M's = 10 bl, 14 fu, 13 fu2, 13 syn-parent  
  Apnx M's = 15 bl, .05 fu1 & .2 fu2, syn+parent  
  Child Averse Behavior, Home  
  F (3, 81) = 5.50, p < .01 group by tx phase  
  F (1, 27) = 9.80, p < .01 group followup 2  
  Apnx M's = 10 bl, .11 fu2 parent training  
  Apnx M's = 10 bl, .02 fu2, syn+parent  
  Apnx = approximate M's from figure  
  (Note: synthesis teaching was conducted during baseline; no group differences were found at baseline)  
  (ANOVA)  |
Families who took part in a Harsh Maternal Discipline, Self-Report (IV < .001 IV)

IV's = 6.83,

M = 10.34,

F = –7.25, p < .001 IV

Pre–followup t = –6.35, p < .001 IV

M's = 1.39, 1.13 IV

Appropriate Limit Setting, Self-Report

Pre–Post t = 10.34, p < .001 IV

M's = 3.39, p < .05 control

M's = 4.33, 6.02 IV; 3.67, 4.38 control

Pre–followup t = 8.30, p < .001 IV

M's = 4.32, 6.26, 5.75 IV

Discipline Competence, Observed

Pre–Post t's = 6.83, p < .001 IV

M's = 2.20, 2.42 IV

Pre–followup t's = 4.24, p < .001 IV

M's = 2.22, 2.4, 2.39 IV

(\(p's = ns: control group, unless otherwise noted)\

(see Webster-Stratton, 1998 in "Validation" section for results of child behavior change)

(MANOVA's, group x time ANOVAs (p's < .05 – .001), paired t-tests, pre vs. post & pre vs. followup)

Key Statistics

Harsh Maternal Discipline, Self-Report

Pre–Post t = –4.41, p < .001 IV (n = 394)

M's = 1.28 pre, 1.18 post IV

Pre–followup t = –6.04, p < .001 IV (n = 296)

M's = 1.26 pre, 1.16 post IV, 1.09 followup IV

Inconsistent Maternal Discipline, Self-Report

Pre–Post t = –7.25, p < .001 IV

M's = 1.39, 1.13 IV

Appropriate Limit Setting, Self-Report

Pre–Post t = 10.34, p < .001 IV

M's = 3.39, 6.02 IV; 3.67, 4.38 control

Pre–followup t = 8.30, p < .001 IV

M's = 4.32, 6.26, 5.75 IV

Discipline Competence, Observed

Pre–Post t's = 6.83, p < .001 IV

M's = 2.20, 2.42 IV

Pre–followup t's = 4.24, p < .001 IV

M's = 2.22, 2.4, 2.39 IV

(\(p's = ns: control group, unless otherwise noted)\

(see Webster-Stratton, 1998 in "Validation" section for results of child behavior change)

(MANOVA's, group x time ANOVAs (p's < .05 – .001), paired t-tests, pre vs. post & pre vs. followup)

Problemsolving, Ages 0–3

Zahn-Waxler, Iannotti, et al.

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

Maternal diagnosis

R = 0.45

R = 0.27

R = 0.22

R = 0.58

R = 0.56

R = 0.71

R = 0.35

R = 0.46

R = 0.44

R = 0.44

(IVs = ns: children in control group, unless otherwise noted)

(MANOVA's, group x time ANOVAs (p's < .05 – .001), paired t-tests, pre vs. post & pre vs. followup)

Child Rearing Practice, Age 2—Externalizing, Age 5

1: maternal diagnosis R = 0.26

β = 0.49, t(3, 94) = 3.83, p < .001

2: sex of child R = 0.15

β = 0.37, t(2, 7) = 3.71, p < .001

3: prior play aggression R = 0.49

β = 0.37, t(3, 94) = 2.88, p < .01

4: maternal guidance R = 0.58

β = 0.28, t(6, 33) = 4.40, p < .001

5: dyreg aggr x maternal diagnosis R = 0.65

β = 0.26, t(7, 31) = 6.99, p < .001

6: guidance x maternal diagnosis R = 0.71

β = 0.25, t(6, 33) = 6.62, p < .001

7: dyreg aggr x maternal diagnosis x maternal diagnosis R = 0.44

β = 0.44, t(8, 31) = 5.17, p < .001

(IVs = ns: control group, unless otherwise noted)

(MANOVA's, group x time ANOVAs (p's < .05 – .001), paired t-tests, pre vs. post & pre vs. followup)
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| Hooven, Gottman, & Katz | 1995  | Prospective longitudinal 3 yrs | Recruited non-clinical sample from Champaign-Urbana, IL, community through newspaper ads; screened for range of marital satisfaction | 56   | 4-5 yrs > 8 yrs | 56% Low-middle | N/R          | Mother's coaching of child's anger at age 3 predicted lower mother-rated oppositional behaviors (age 5), fewer behavior problems (age 8), & lower teacher ratings of internalizing (age 8). Coaching of child's anger by other parent was associated with less negative play with peers (age 5). | Mother Coaching, Age 5  
|                  |       |                       |                                                                                   |      |     |        |                           |                        | r = -.27, p < .001 mother CBCL, age 8  
|                  |       |                       |                                                                                   |      |     |        |                           |                        | r = -.36, p < .05 teacher internalizing, 8  
|                  |       |                       |                                                                                   |      |     |        |                           |                        | r = -.32, p < .05 opposition, age 5  
|                  |       |                       |                                                                                   |      |     |        |                           |                        | r = -.31, p < .05 negative play, age 5 |
| Coughlin, 1996  | Prospective longitudinal 7 yrs | Recruited from schools in neighborhoods with high delinquency rates, metro area of midsize OR city | 194  | 10 > 17 yrs | 100% Low M = $16k \(\$3k-\$35k\) T1 | 98.5% Gucc 1.5% Mix | N/R          | Better family problem solving at age 10 predicted fewer arrests by age 17 for boys from stepfamilies, taking into account success in peer relations & child's antisocial traits (child, parent, & teacher reports of antisocial acts). Better family problem solving was associated with more arrests in single-mother families. | Stepfamilies (n = 59) 75% correct prediction  
|                  |       |                       |                                                                                   |      |     |        |                           |                        | OR = 0.47, p < .05 family problem solving  
|                  |       |                       |                                                                                   |      |     |        |                           |                        | OR = 0.23, p < .001 peer relations  
|                  |       |                       |                                                                                   |      |     |        |                           |                        | OR = 2.09, p = ns antisocial trait |
| Vuchinich, 1994 | Concurrent group & Vuchinich | Recruited from schools in neighborhoods with high delinquency rates, metro area of midsize OR city | 188  | 8-13 yrs | 69% Low-middle | N/R          | N/R          | Better family problem solving was related to lower levels of externalizing. Children referred for behavioral problems had the lowest levels of family problem solving, followed by children in the at-risk group, followed by the comparison group. | Family Problem Solving—Externalizing  
|                  |       |                       |                                                                                   |      |     |        |                           |                        | r = -.31, p < .001 |
|                  |       |                       |                                                                                   |      |     |        |                           |                        | Family Problem Solving  
|                  |       |                       |                                                                                   |      |     |        |                           |                        | F(2, 185) = 23.0, p < .05  
|                  |       |                       |                                                                                   |      |     |        |                           |                        | MS = 11.9 referred, 13.9 at risk, 16.4 comparison |
|                  |       |                       |                                                                                   |      |     |        |                           |                        | (all M's different, p < .05) (ANOVA, Scheffe test) |
| Sayger, Home, 1988 Intervention random assignment | Convenience: recruited from referrals to tx by school personnel; most aggressive students in classroom, midsize Midwestern city | Convenience: recruited from referrals to tx by school personnel; most aggressive students in classroom, midsize Midwestern city | 37   | 2nd-6th gr | 100% N/R | N/R          | N/R          | Children & families in the intervention group showed improved problem solving abilities (more positive & fewer negative solutions) compared to controls. Reductions in parent reports of aggression & externalizing, & teacher reports of deviant classroom behavior were greater for children in the intervention group compared to controls. These changes were maintained at 9–12 mth followup. | Externalizing, Parent Report  
|                  |       |                       |                                                                                   |      |     |        |                           |                        | p = .001, MS = –10.90 bv, –.76 ctrl  
|                  |       |                       |                                                                                   |      |     |        |                           |                        | Aggressive Behavior, Parent Report  
|                  |       |                       |                                                                                   |      |     |        |                           |                        | p = .001, MS = –11.75 bv, –.12 ctrl  
|                  |       |                       |                                                                                   |      |     |        |                           |                        | – Solutions, Obsvd p = .02, M's = –12.2 bx, –522 ctrl  
|                  |       |                       |                                                                                   |      |     |        |                           |                        | – Solutions, Obsvd p = .005, M's = –10.4 bx, 9.67 ctrl (ANOVA on gain scores, P's not reported)  
|                  |       |                       |                                                                                   |      |     |        |                           |                        | Reduction, Deviant Classroom Behavior, Teacher Report 48% p = .002 tb; 18% p = .70 control  
|                  |       |                       |                                                                                   |      |     |        |                           |                        | Followup, 9–12 mths (n = 20)  
|                  |       |                       |                                                                                   |      |     |        |                           |                        | Externalizing F = 7.48, p < .001  
|                  |       |                       |                                                                                   |      |     |        |                           |                        | MS = 73.4 pre, 62.3 post, 62.3 followup  
|                  |       |                       |                                                                                   |      |     |        |                           |                        | Aggressive behavior F = 7.35, p < .001  
|                  |       |                       |                                                                                   |      |     |        |                           |                        | MS = 12.9 pre, 6.3 post, 8.7 followup (repeated measures ANOVA) |
Family Characteristics—Structuring of the Learning Environment
Ages 7–13

<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>
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</tr>
</thead>
</table>
| Jenkins       | 1997  | Concurrent      | Convenience:       | 754  | 7th & 8th gr | 50%    | Low-middle| 22% AFA | 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:
|               |       | correlational   | recruited from middle school in DE, students from urban & suburban areas; 83% participation |      | 11–15 yrs |        | free/reduced-price lunch | 66% Caucasian | $R^2 = .32, p < .05$ |
|               |       |                 |                    |      |              |        |           | 3% Asian | $r = .15$ parent involvement—belief |
|               |       |                 |                    |      |              |        |           | 5% Hispanic | $r = .23$ belief—school crime |
|               |       |                 |                    |      |              |        |           | 4% Other | $r = .11$ parent involvement—commitment |
|               |       |                 |                    |      |              |        |           |          | $r = .35$ commitment—school crime |
| Ketsetzis, et al. | 1998 | Concurrent      | Convenience:       | 312  | 4th & 7th gr | 48%    | Middle    | 48%       | 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:
|               |       | correlational   | recruited from Catholic elementary schools in southern Ontario, Canada, 52–55% response |      | 4th, 9–13 yrs |        | Middle    | 20% | $\chi^2(12) = 18.80, p = .09; AGFI = .92; R^2 = .65$ |
|               |       |                 |                    |      | 7th, 12–15 yrs |       | 60% > 12 yrs |       | $r = .10$ support—externalizing |
|               |       |                 |                    |      |              |        |           |       | $r's = –.20, –.83$ pressure—frust, frust—ext |
|               |       |                 |                    |      |              |        |           |       | $r's = –.33, –.22$ pressure—int eff, int eff—ext |
|               |       |                 |                    |      |              |        |           |       | $r's = –.20, –.54$ pressure—assert, assert—ext |
|               |       |                 |                    |      |              |        |           |       | $r's = –.19, –.83$ support—frust, frust—ext |
|               |       |                 |                    |      |              |        |           |       | $r's = –.12, –.22$ support—int eff, int eff—ext |
|               |       |                 |                    |      |              |        |           |       | $r = .19$ support—assert, assert—ext |
|               |       |                 |                    |      |              |        |           |       | $r's = –.17, –.79$ pressure—frust, frust—ext |
|               |       |                 |                    |      |              |        |           |       | $r's = –.14, –.79$ pressure—int eff, int eff—ext |
|               |       |                 |                    |      |              |        |           |       | $r's = .13, .58$ support—assert, assert—ext |
|               |       |                 |                    |      |              |        |           |       | $r's = .16, –1.03$ support—frust, frust—ext |
|               |       |                 |                    |      |              |        |           |       | $r = .14$ support—assert, assert—ext |
|               |       |                 |                    |      |              |        |           |       | $r = .15$ support—parental support |
|               |       |                 |                    |      |              |        |           |       | ($p's < .05$) |
|               |       |                 |                    |      |              |        |           |       | (structural equation models) |

Path analysis:

$R^2 = .65$

$\chi^2(8) = 11.90, p = .16; AGFI = .98$
### Family Characteristics—Structuring of the Learning Environment

**Ages 14–19**

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Recruitment</th>
<th>Sample Size</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
<th>Key Statistics</th>
</tr>
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<tbody>
<tr>
<td>Asdtine et al.</td>
<td>1995</td>
<td>Prospective</td>
<td>Convenience; recruited from 3 high schools in middle-class neighbor-hoods, metro areas, Boston, MA</td>
<td>435</td>
<td>43%</td>
<td>Middle</td>
<td>African-American</td>
<td>Adolescents' perception of parental authoritativeness (home authoritativeness) 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>
<td>$\chi^2(60) = 50.91$, $p = .05$ for gender, age, living status, parent education, &amp; family type (covariance structure models)</td>
</tr>
<tr>
<td>Fletcher, Darling, et al.</td>
<td>1995</td>
<td>Concurrent correlational</td>
<td>Convenience; 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 11,100 participants had missing data on questions about friends</td>
<td>4,431</td>
<td>43%</td>
<td>Low-middle</td>
<td>African-American</td>
<td>Adolescents' perception of parental authoritativeness (home authoritativeness) 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>
<td>$r's = .12$ boys', .15 girls', $p's &lt; .01$ Home &amp; Network Authoritativeness</td>
</tr>
<tr>
<td>Murphy, et al.</td>
<td>1991</td>
<td>Concurrent correlational</td>
<td>Convenience; Study 1: recruited mothers in intact families from pre-schools, public records, &amp; birth announcements; suburban Suffolk County, NY</td>
<td>200</td>
<td>100%</td>
<td>Lower-middle</td>
<td>African-American</td>
<td>Adolescents' perception of parental authoritativeness (home authoritativeness) 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>
<td>$R = .15$, $\Delta R^2 = .02$, $F = 4.57$, $p &lt; .05$ Behavior Problems Age 3 Step 1: General marital disagreement</td>
</tr>
<tr>
<td>Xurrata et al.</td>
<td>1991</td>
<td>Concurrent correlational</td>
<td>Convenience; Study 1: recruited mothers in intact families from pre-schools, public records, &amp; birth announcements; suburban Suffolk County, NY</td>
<td>39 mths</td>
<td>100%</td>
<td>Lower-middle</td>
<td>African-American</td>
<td>Adolescents' perception of parental authoritativeness (home authoritativeness) 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>
<td>$R = .15$, $\Delta R^2 = .02$, $F = 4.57$, $p &lt; .05$ Behavior Problems Age 3 Step 1: General marital disagreement</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Conventional; Study 2: recruited intact families from nursery schools &amp; through newspaper ads; suburban Harris County, TX</td>
<td>61 mths</td>
<td>100%</td>
<td>Lower-middle</td>
<td>African-American</td>
<td>Adolescents' perception of parental authoritativeness (home authoritativeness) 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>
<td>$R = .15$, $\Delta R^2 = .02$, $F = 4.57$, $p &lt; .05$ Behavior Problems Age 3 Step 1: General marital disagreement</td>
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</table>

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

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<tr>
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<td>Convenience; Study 1: recruited mothers in intact families from pre-schools, public records, &amp; birth announcements; suburban Suffolk County, NY</td>
<td>200</td>
<td>100%</td>
<td>Lower-middle</td>
<td>African-American</td>
<td>Child-rearing disagreements were associated with boys' behavior problems at age 3, after accounting for general marital disagreements or exposure to marital conflict.</td>
<td>$R = .15$, $\Delta R^2 = .02$, $F = 4.57$, $p &lt; .05$ Behavior Problems Age 3 Step 1: General marital disagreement</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Conventional; Study 2: recruited intact families from nursery schools &amp; through newspaper ads; suburban Harris County, TX</td>
<td>61 mths</td>
<td>100%</td>
<td>Lower-middle</td>
<td>African-American</td>
<td>Child-rearing disagreements were associated with boys' behavior problems at age 3, after accounting for general marital disagreements or exposure to marital conflict.</td>
<td>$R = .15$, $\Delta R^2 = .02$, $F = 4.57$, $p &lt; .05$ Behavior Problems Age 3 Step 1: General marital disagreement</td>
</tr>
</tbody>
</table>

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*Note: The key statistics and key results are illustrative examples and should be interpreted in the context of the actual research.*
### Family Characteristics—Modeling Antisocial/Norm-Maintaining Behaviors

#### Ages 4–6

<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>Schwartz, Dodge, et al.</td>
<td>1997 Prospective longitudinal 5 yrs</td>
<td>Convergent: 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% AEA 77% Cau</td>
<td>2% Other</td>
<td>According to mother reports, boys who were both aggressive &amp; bullied (aggressive victims) in middle childhood had experienced more marital &amp; parental aggression at home in early childhood than passive victims, nonvictim aggressors, &amp; controls, &amp; more marital conflict than passive victims or controls. Nonvictimized aggressors had been exposed to more violence than control boys.</td>
</tr>
</tbody>
</table>

### Key Statistics

- **Home Environment & Aggressor/Victim Status**
  - Wilks's $\lambda = .61, F(27, 354) = 2.39, p < .001$
  - M's = 1.2", aggressive victim
  - 0.1", passive victim
  - 0.2", nonvictim aggressor 0.1" ctrl

- **Dyadic marital aggression**
  - M's = 1.2", aggressive victim
  - 0.4", passive victim
  - 0.1", nonvictim aggressor - 0.1" ctrl

- **Parental use of aggressive strategies**
  - M's = 1.2", aggressive victim
  - 0.4", passive victim
  - 0.1", nonvictim aggressor - 0.1" ctrl

- **Exposure to violence**
  - M's = 2.3", nonvictim aggressor 1.7" ctrl
  - (M's with same superscript differ $p < .05$)

#### Ages 7–13

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year Design</th>
<th>Population: sampled all boys ages 8–9 from 6 state primary schools &amp; 1 special ed school, working-class area of London, 1961–1962</th>
<th>Size</th>
<th>Age</th>
<th>% Low</th>
<th>% High</th>
<th>Convictions between ages 10 and 20 were predicted by having a convicted parent, accounting for child troublesomeness from ages 8–10. Having a delinquent older sibling predicted convictions between ages 10 and 20, once parent conviction, child troublesomeness, daringness, &amp; low school attainment were taken into account.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farrington, Hawkins</td>
<td>1991 Prospective longitudinal 24 yrs</td>
<td>411 8–9 &gt; 32 yrs 100% Low 90% Cau 23% &lt; 15 30% &gt; 20 income/week</td>
<td>512</td>
<td>11–15 &gt; 15–18 yrs 100% Low 74% &lt; $20k 48% &lt; $10k</td>
<td>411 8–9 &gt; 32 yrs 100% Low 90% Cau 23% &lt; 15 30% &gt; 20 income/week</td>
<td>Convictions between ages 10 and 20 were predicted by having a convicted parent, accounting for child troublesomeness from ages 8–10. Having a delinquent older sibling predicted convictions between ages 10 and 20, once parent conviction, child troublesomeness, daringness, &amp; low school attainment were taken into account.</td>
<td></td>
</tr>
</tbody>
</table>

### Key Statistics

- **Family Pattern & Delinquency Pathways—**
  - M's = 2.9", aggressive victim
  - 0.1", passive victim
  - 0.1", nonvictim aggressor - 0.1" ctrl

- **Family Environment & Aggressor/Victim Status**
  - Wilks's $\lambda = .61, F(27, 354) = 2.39, p < .001$
  - M's = 1.2", aggressive victim
  - 0.1", passive victim
  - 0.2", nonvictim aggressor 0.1" ctrl

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year Design</th>
<th>Population: recruited 5th &amp; 7th grade boys in 17 public inner-city schools, Chicago, IL</th>
<th>Size</th>
<th>Age</th>
<th>% Low</th>
<th>% High</th>
<th>Compared to nondelinquent adolescents, serious chronic offenders were more likely to come from families characterized by deviant behaviors &amp; attitudes (parental antisocial or criminal behavior) &amp; multiple problems (disruption-conflict &amp; low parental involvement). Chronic minor offenders were less likely to come from deviant families, &amp; escalating or late onset offenders were more likely to come from families with disruption &amp; conflict than nondelinquent adolescents.</th>
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<tbody>
<tr>
<td>Gorman-Smith, Tolan, et al.</td>
<td>1998 Prospective longitudinal 4 yrs</td>
<td>288 11–15 &gt; 15–18 yrs 100% Low 74% &lt; $20k 48% &lt; $10k</td>
<td>512</td>
<td>11–15 &gt; 15–18 yrs 100% Low 74% &lt; $20k 48% &lt; $10k</td>
<td>288 11–15 &gt; 15–18 yrs 100% Low 74% &lt; $20k 48% &lt; $10k</td>
<td>Compared to nondelinquent adolescents, serious chronic offenders were more likely to come from families characterized by deviant behaviors &amp; attitudes (parental antisocial or criminal behavior) &amp; multiple problems (disruption-conflict &amp; low parental involvement). Chronic minor offenders were less likely to come from deviant families, &amp; escalating or late onset offenders were more likely to come from families with disruption &amp; conflict than nondelinquent adolescents.</td>
<td></td>
</tr>
</tbody>
</table>

### Key Statistics

- **Family Pattern & Delinquency Pathways—**
  - M's = 2.3", nonvictim aggressor 1.7" ctrl
  - (M's with same superscript differ $p < .05$)

- **Family Environment & Aggressor/Victim Status**
  - Wilks's $\lambda = .61, F(27, 354) = 2.39, p < .001$
  - M's = 1.2", aggressive victim
  - 0.1", passive victim
  - 0.2", nonvictim aggressor 0.1" ctrl

<table>
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<tr>
<th>Authors</th>
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<td>512</td>
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</table>
### Family Characteristics—Modeling Antisocial/Norm Maintaining Behaviors

**Ages 14–19**

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year Design</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>
<th>Key Statistics</th>
</tr>
</thead>
</table>
| Davies & Windle          | 1997        | 2 yrs | Prospective longitudinal       | Recruited 10th & 11th grade students & primary caregiver from 3 suburban high schools, western NY | 443    | M = 15.5 yrs | 61%    | Middle  | 0.5% Asian     | Family discord (marital discord & low levels of family intimacy) mediated the relationship between maternal depressive symptoms & delinquency for girls. For boys, delinquency was associated with low levels of family intimacy. | Delinquency, Boys & Low Family Intimacy  
  \( R^2 = .20, p < .01 \) (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  
  \( R^2 = .03, p < .05 \) maternal discord  
  \( R^2 = .09, p = .33, p < .005 \) low family intimacy  
  \( \beta \)'s = ns: parental impairment, stressful events, maternal depressive symptoms  
  (Hierarchical multiple regression, family discord items entered 1st, followed by maternal depressive symptoms) |
| Mekos, Hetherington, & Reiss | 1996 |      | Concurrent                     | Recruited national sample from random dialing, market survey; same-sex siblings, twin & nontwin, from nondivorced & remarried families | 516    | 11–18 yrs    | N/R    | Middle−upper middle | 94% Cauc | Sibling differences in exposure to marital conflict (average mother, father, & adolescent report) were associated with differences in self-reported sibling delinquency. Siblings exposed to more marital conflict were at higher risk for delinquency.* | Exposure to Conflict & Delinquency  
  \( z(31) = 35.44, p = .27 \) GFI = .957  
  \( \beta = .24, \beta < .20 \) mother/sibling  
  \( \beta = .23, \beta < .20 \) father/sibling  
  (*results similar across 3 sibling groups: both bio siblings, nondivorced family; both step-siblings, remarried; 1 biological/1 step-sibling, remarried) (latent variable structural equation models) |
| Neighbors, Forehand, & Bau | 1997 | 6 yrs | Prospective longitudinal       | Recruited divorced families from court records & nondivorced families by ads & fliers; midsize college town & metro area of large city in the Southeast | 243    | M = 13.1 > M = 19.6 yrs | 100%   | Middle | 94% Cauc | Boys’ self-reported antisocial behavior in young adulthood was associated with current interpersonal conflict (mother report) & quality of relationship with father (adolescent perception), accounting for early adolescent problem behavior, age, earlier marital conflict, & parents’ marital status. For girls, antisocial behavior in young adulthood was associated with perceived quality of their relationship with father. | Antisocial Behavior, Boys, Self-Report  
  \( R^2 = .06, F = 3.20, p < .05 \)  
  \( \beta = -.35, F = 8.05, p < .01 \) interparent conflict  
  \( \beta = -.23, F = 4.96, p < .05 \) relationship with father (\( \beta \)'s = ns: age, early adolescent behavior, parents’ marital status, early parent conflict)  
  Antisocial Behavior, Girls, Self-Report  
  \( R^2 = .11, F = 3.50, p < .01 \)  
  \( \beta = -.24, F = 14.8, p < .01 \) relationship with father (\( \beta \)'s = ns: age, early adolescent behavior, early & current parent conflict, parents’ marital status) (multiple regression analyses) |
| Ethnic Minority Populations | 1996 |      | Concurrent                     | Recruited 2-parent families with firstborn children ages 9–12 were recruited from schools, churches, & community contacts in rural (population under 2,500) GA & SC | 90     | 9–12 yrs     | 47%    | Low-middle | 100% AfA | Exposure to parental conflict (parent reports) had an indirect positive effect on mother & teacher ratings of externalizing through lower youth self-regulation, after accounting for per capita income, parental religiosity, & family cohesion. | Exposure to Parent Conflict & Externalizing  
  Maternal model \( R^2 = .50, F(5, 87) = 17.21, p < .01 \)  
  \( \beta = -.26 \) interparental conflict−self-regulation  
  \( \beta = -.27 \) family cohesion−self-regulation  
  \( \beta = -.65 \) self-regulation−externalizing  
  Paternal Model \( R^2 = .47, F(5, 87) = 15.25, p < .01 \)  
  \( \beta = -.26 \) interparental conflict−self-regulation  
  \( \beta = -.27 \) family cohesion−self-regulation  
  \( \beta = -.65 \) self-regulation−externalizing  
  \( \beta = -.15 \) religiosity−externalizing (latent variable path analysis) |
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 (Cole, 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, Coie, 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 & Grotpeter, 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


pairing and continuities in conduct disorder. 
*Development and Psychopathology, 5*, 763–783.


### 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>
<th>Key Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bierman, Smoot, &amp; Aumiller</td>
<td>1993</td>
<td>Concurrent group comparisons</td>
<td>Convenience: 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, 6.4-13 yrs</td>
<td>100%</td>
<td>&quot;Mixed&quot;</td>
<td>96% Cauc 4% N/R</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>
<td>Argumentative-Disruptive</td>
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<td>F (3, 84) = 16.45, p &lt; .001</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>M = –36* aggressive</td>
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<td>M = –12* rejected</td>
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<td>M = –58* comparison</td>
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<td>F (3, 84) = 44.31, p &lt; .001</td>
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<td>M = –65* aggressive-rejected</td>
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<td>M = –45* aggressive</td>
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<td>M = –39* rejected</td>
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<td>M = 1.14* comparison</td>
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<td>(M's with different superscripts, differ p &lt; .05)</td>
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<td>(ANOVA)</td>
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</table>

| Bierman & Wargo  | 1995 | Prospective longitudinal 2 yrs | Convenience: followup study of 95 schoolchildren selected from sample of 415 students in rural area; included aggressive, rejected, aggressive-rejected, & comparison children | 81   | 1/2, 3/4, 5/6 > 3/4, 5/6, 6-7 yrs | 100%   | "Mixed" | 96% Cauc 4% N/R | 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 & hyperactive-disruptive by peers & teachers than comparison children, taking into account T1 behavioral differences, & 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. | Agg/Rej Group Time 1 & Behavior Time 2 |
|                   |      |                        |                    |      |      |        |        |           |        | F (3, 69) = 16.30, p < .05 |
|                   |      |                        |                    |      |      |        |        |           |        | Disruptive-hyperactive |
|                   |      |                        |                    |      |      |        |        |           |        | F (3, 69) = 18.34, p < .05 |
|                   |      |                        |                    |      |      |        |        |           |        | Social preference: F (3, 69) = 7.45, p < .05 |
|                   |      |                        |                    |      |      |        |        |           |        | (p's = Group x Grade, grade & interactions) |
|                   |      |                        |                    |      |      |        |        |           |        | (ANCOVA, control for T1 behavior differences, means & post hoc tests not reported) |
|                   |      |                        |                    |      |      |        |        |           |        | No problem at Time 2 |
|                   |      |                        |                    |      |      |        |        |           |        | $\chi^2(9) = 24.83, p < .01$ |
|                   |      |                        |                    |      |      |        |        |           |        | 28% aggressive-rejected |
|                   |      |                        |                    |      |      |        |        |           |        | 58% aggressive |
|                   |      |                        |                    |      |      |        |        |           |        | 46% rejected |
|                   |      |                        |                    |      |      |        |        |           |        | 83% comparison |
|                   |      |                        |                    |      |      |        |        |           |        | (chi-square) |

| Coie, Terry, et al. | 1995 | Prospective longitudinal 8 yrs | Convenience: stratified random sample from 1,147 3rd graders from 28 schools, Durham, NC selected according to peer nominations of aggression & rejection | 407  | 3rd > 5th, 6th, 7th, 8th, 10th gr | 50%   | Low-middle | 100% Afri | Self-reported externalizing behavior increased from grade 6 to grade 10 for boys nominated as rejected & 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, & was consistent from 6th to 8th grades. Analyses of parent reports found that externalizing was higher for rejected than nonrejected girls. Aggressive boys showed an increase in externalizing from 6th to 10th grades, while nonaggressive boys showed a decrease. | Boys, Self-Report |
|                   |      |                        |                    |      |      |        |        |           |        | F (1, 477) = 4.12, p < .04 |
|                   |      |                        |                    |      |      |        |        |           |        | y's = 6.40 nonaggressive, aggressive |
|                   |      |                        |                    |      |      |        |        |           |        | \| = 1.53 rejected-aggressive |
|                   |      |                        |                    |      |      |        |        |           |        | \| = -1.2 all others |
|                   |      |                        |                    |      |      |        |        |           |        | Girls, Self-Report |
|                   |      |                        |                    |      |      |        |        |           |        | F (1, 470) = 6.04, p < .01 |
|                   |      |                        |                    |      |      |        |        |           |        | y's = 4.95 nonagg, 7.37 aggressive |
|                   |      |                        |                    |      |      |        |        |           |        | Boys, Parent-Report |
|                   |      |                        |                    |      |      |        |        |           |        | F (1, 473) = 8.48, p < .004 |
|                   |      |                        |                    |      |      |        |        |           |        | y's = 15.4 nonrejected, 19.4 rejected |
|                   |      |                        |                    |      |      |        |        |           |        | F (1, 473) = 4.55, p < .03 |
|                   |      |                        |                    |      |      |        |        |           |        | \|'s = -0.09 nonagg, .51 aggressive |
|                   |      |                        |                    |      |      |        |        |           |        | (growth curve analysis, mixed model ANOVA) |

---

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

** Unless otherwise indicated, income is reported in yearly amounts.
**Peer Influences—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>
<th>Key Statistics</th>
</tr>
</thead>
</table>
| Dishion, Duncan, et al. | 1994 | Concurrent | Convenience: recruited students from schools in at-risk (low SES & high delinquency rates) neighborhoods | 374  | 1st & 5th gr | 48%    | Low-middle | 84% Cauc | Coercive child-parent & child-peer interactions were associated with each other & with higher parent & teacher ratings of antisocial behavior. | Coercive Interactions & Antisocial Behavior
|                  |      |             |                                                                                   |      |          |        |        |           |                                                                        |                                                                                   |
| Lochman, Cole, et al. | 1993 | Intervention | Convenience: recruited 3rd graders from 28 classrooms, inner-city school system; selected peer-rated rejected children from pool of 602 students; 4 groups: aggressive/rejected IV & controls, & rejected IV & controls | 52   | 3rd > 5th gr | 52%    | Low-middle | 100% AfrA | Boys rated by their peers as aggressive & rejected (AR) who took part in a school-based social relations intervention had lower teacher ratings of aggression & rejection, & higher peer ratings of social acceptance post-intervention than children in the control group. At 1-yr followup, AR children in the intervention group continued to have lower teacher ratings of aggression than AR controls, & received higher teacher ratings for prosocial behavior. Children who were rejected but not aggressive showed no intervention effects post-intervention or at followup. | Rejection, Post-IV, Teacher Ratings
|                  |      |             |                                                                                   |      |          |        |        |           |                                                                        |                                                                                   |

---

**Authors**
- Dishion, Duncan, et al.

**Year**
- 1994
- 1993

**Design**
- Concurrent
- Intervention

**Representativeness**
- Convenience: selected children who were at risk based on teacher & parent ratings of behavior; schools in high-risk areas (crime & poverty)

**Size**
- 891 spring K > summer 1st gr
- 374 1st & 5th gr
- 52 3rd > 5th gr

**Age**
- spring K
- summer 1st gr
- 1st & 5th gr
- 3rd > 5th gr
- T1
- F-up

**% Male**
- 69%
- 48%
- 52%

**SES**
- Low-middle
- 35% low
- 76% low

**Ethnicity**
- 51% AfrA
- 47% Cauc
- 100% AfrA

**Result**
- Children in the Fast Track prevention intervention showed intervention effects in the areas of aggressive-disruptive behavior, social cognition, & peer relations. The intervention group spent more time in positive peer interactions, had higher peer social preference scores, higher parent & teacher ratings of behavior change, less observed aggression at school, greater improvement in social problem solving, & greater reductions in aggressive retaliation than children in the control group. *Fast Track IV: (1) universal school-based interventions designed to teach emotional, friendship, self-control, & social problem-solving skills and (2) selected interventions including parent groups, child social skills groups, academic tutoring, home visits, child peer pairing, & parent-child sharing.**

**Key Statistics**
- Child: Observed Aggression, School
  - $d = .31, F (356) = 8.76, p < .004$
  - $M's = 1.95 IV, 1.92 control$
- Child: Behavior Change, Parent
  - $d = .50, F (245) = 15.55, p < .0001$
  - $M's = 1.33 IV, 1.00 control$
- 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
  - $d = .23, F (1, 359) = 4.57, p < .04$
  - $M's = .43 K, .31 gr 1 IV, .42 k, .35 gr 1 ctrl$
- Peer: Positive Peer Interaction
  - $d = .27, F (356) = 6.30, p < .02$
  - $M's = .50 IV, .46 control$
- Peer: Peer Social Preference
  - $d = .28, F (356) = 6.38, p < .02$
  - $M's = .47 IV, .63 control$

*ANOVA*
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<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lochman &amp; Wayland</td>
<td>1994</td>
<td>Prospective</td>
<td>Convenience:</td>
<td>114</td>
<td>11 yrs</td>
<td>100%</td>
<td>Low middle</td>
<td>26% AfA</td>
<td>Peer-rated low social status &amp; aggression in 4th-6th grade predicted higher composite externalizing scores (teacher/peer/observer ratings) 4 years later. Self-reports of crimes against persons were predicted by higher composite peer-rated aggression but not social status.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>longitudinal</td>
<td>sub-sample of boys</td>
<td></td>
<td>15 yrs</td>
<td></td>
<td>middle-male</td>
<td>74% Cauc</td>
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<tr>
<td></td>
<td></td>
<td>4 yrs</td>
<td>from 8 rural, suburban,</td>
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<td>4th-6th</td>
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<td></td>
<td>&amp; urban elementary schools in Durham, NC</td>
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<td>7th-10th</td>
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<td>boys rated by peers as</td>
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<td>gr</td>
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<td></td>
<td>agg &amp; random sample of nonagg boys were selected from pool of 624 students, randomly assigned to tx or ctrl; present sample part of (n = 273) ctrl group</td>
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<tr>
<td>Crick, Casas, &amp; Ku</td>
<td>1999</td>
<td>Concurrent</td>
<td>Convenience:</td>
<td>129</td>
<td>4.5 yrs</td>
<td>52%</td>
<td>N/R</td>
<td>44% AfA</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>
</tr>
<tr>
<td></td>
<td></td>
<td>group comparisons</td>
<td>recruited children</td>
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<td></td>
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<td></td>
<td>10% AmA</td>
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<td>&amp; teachers from 9 classrooms in 3 preschools, moderate-size Midwestern town</td>
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<td>44% Cauc</td>
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<td></td>
<td></td>
<td></td>
<td>2% Other</td>
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</tr>
<tr>
<td>Crick &amp; Grotpeter</td>
<td>1996</td>
<td>Concurrent</td>
<td>Convenience:</td>
<td>474</td>
<td>3rd–6th gr</td>
<td>52%</td>
<td>Low-middle</td>
<td>38% AfA</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>
<tr>
<td></td>
<td></td>
<td>group comparisons</td>
<td>students from 4 public schools in moderate-size Midwestern town</td>
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<td></td>
<td></td>
<td>60% Cauc</td>
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<td></td>
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<td></td>
<td>2% Other</td>
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Schwartz et al., 1997: see "Family Characteristics, Conflict-Discipline"

<table>
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<tr>
<th>Key Statistics</th>
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<tbody>
<tr>
<td>Peer Influences—Peer Rejection</td>
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<tr>
<td>Crick, Casas, &amp; Ku</td>
<td></td>
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<tr>
<td>Crick &amp; Grotpeter</td>
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<thead>
<tr>
<th>Peer Victimization</th>
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<tbody>
<tr>
<td>Crick, Casas, &amp; Ku</td>
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<tr>
<td>Crick &amp; Grotpeter</td>
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<th>Key Statistics</th>
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<td>Relational Victimization, Peer Rejection</td>
<td></td>
</tr>
<tr>
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<tr>
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<thead>
<tr>
<th>Key Statistics</th>
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<tbody>
<tr>
<td>Treatment by Peers &amp; Status</td>
<td></td>
</tr>
<tr>
<td>Multivariate F (12, 921) = 3.0, p &lt; .001</td>
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<thead>
<tr>
<th>Key Statistics</th>
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<tbody>
<tr>
<td>Relational victimization</td>
<td></td>
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<tr>
<td>Crick, Casas, &amp; Ku</td>
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<tr>
<td>Crick &amp; Grotpeter</td>
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<th>Key Statistics</th>
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<tr>
<td>Overt victimization</td>
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<tr>
<td>Crick, Casas, &amp; Ku</td>
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<tr>
<td>Crick &amp; Grotpeter</td>
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<tr>
<th>Key Statistics</th>
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<tr>
<td>Target of prosocial acts</td>
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</tr>
<tr>
<td>Crick, Casas, &amp; Ku</td>
<td></td>
</tr>
<tr>
<td>Crick &amp; Grotpeter</td>
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<tr>
<td>(M's w/different superscripts, differ p &lt; .05)</td>
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### Peer Influences—Peer Victimization

#### Peer Attribution

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<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
<th>Key Statistics</th>
</tr>
</thead>
</table>
| Dodge         | 1980 | Concurrent group comparisons | Source specific: selected boys rated by teachers' ratings on aggression & by peer's lowest on liking (rejected) & matched by race sample rated lowest on aggression & highest on prosocial behavior; semi-rural school | 90   | 2nd, 4th, 6th gr | 100%   | Low-middle | 3% AfrA 67% Cauc | 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 & retaliate aggressively toward aggressive than nonaggressive instigators. | Behavior, Agg Status, Intent, Retaliation  
  $F (2, 72) = 6.56, p < .02$ (agg × intent)  
  $M's = 2.3^a$ agg, 1.5$^b$ nonagg; ambiguous  
  $M's = 1.7^a$ agg, 1.9$^b$ nonagg; benign  
  $M's = 2.7^a$ agg, 2.5$^b$ 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  
  $M's = 1.48$ 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, 1.30 nonagg  
  Nonaggressive subjects  
  $M's = 1.39$ agg peers, 1.20 nonagg  
 (ANOVAs) |
| Dodge & Frame | 1982 | Concurrent group comparisons | Source specific: studies 1 & 2, recruited boys rated by peers & teachers high on aggression, low on prosocial/liking, & matched (race & classroom) non-aggressive/prosocial peers; 2 public elementary schools | 81   | K-5th gr | 100%   | N/R       | 20% “minority” | Boys attributed more hostile intentions for instigating the same outcomes & 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 stories than nonaggressive boys. | 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**

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<th>Authors</th>
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<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dodge &amp; Frame</td>
<td>1982</td>
<td>Concurrent group</td>
<td>Convenience study 3, recruited volunteers from 8 schools in small Midwestern town</td>
<td>48</td>
<td>2nd gr</td>
<td>100%</td>
<td>Low-middle</td>
<td>90% Cauc</td>
<td>Aggressive boys initiated &amp; received more acts of physical or verbal unprovoked aggression than average or nonaggressive boys. Overall, aggressive boys initiated 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>
</tbody>
</table>

#### Key Statistics

- Study 3: Agg Status by Initiator on Agg
  - $F(2, 34) = 2.95$, $p < .06$ (agg × initiate)
  - $F(2, 45) = 6.93$, $p < .01$ (aggression)
  - $F(2, 34) = 2.95$, $p < .06$ (agg × initiate)
  - $F(2, 45) = 7.93$, $p < .01$ (aggression)

#### Peer Influences—Peer Victimization

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<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perry, Kusel, &amp; Perry</td>
<td>1988</td>
<td>Prospective longitudinal</td>
<td>Convenience children from university school in middle-class school district</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>

#### Key Statistics

- Variance & Rejection, Acceptance
  - $r's = .57$ 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, $p's < .05$)

### Victimization & Criminal Offending

<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>Esbensen &amp; Huizinga</td>
<td>1991</td>
<td>Retrospective group</td>
<td>Recruited youth from households with 7, 9, 11, 13, &amp; 15 yr olds; stratified probability sample from socially disorganized high-crime neighborhoods; Denver, CO; Denver Youth Survey</td>
<td>877</td>
<td>11, 13, &amp; 15 yrs</td>
<td>100%</td>
<td>Low</td>
<td>33% A/VA</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 delinquent youth. 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

- Lifetime Prevalence of Personal & Property Victimization & Delinquency
  - 24%, 35% no delinquent acts
  - 37%, 44% 1 type of delinquent act
  - 45%, 49% 2 types of delinquent acts
  - 51%, 67% 3–5 types of delinquent acts
  - 68%, 68% ≥ 6 types of delinquent acts
  (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 tests, F's not reported, $p's < .05$)
### Peer Influences—Peer Victimization

**Victimization & Criminal Offending**

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Sampson &amp; Lauritsen</td>
<td>1990</td>
<td>Concurrent Replication correlations</td>
<td>Population: randomly selected an age 16+ person from households in 238 (1982) &amp; 300 (1986) electoral districts, England &amp; Wales, for a national representative sample; British Crime Survey</td>
<td>21,935 (10,905)</td>
<td>16+ yrs</td>
<td>N/R</td>
<td>Low</td>
<td>2% AfrA</td>
<td>Risk of self-reported personal &amp; household victimization (assault, theft, or vandalism) was related to self-reported offending (violence, theft, or vandalism), area crime rate, male gender, &amp; age, taking into account college education, single marital status, &amp; lifestyle (drinking behavior &amp; number of nights out per week). In a modified replication study, risk of victimization was related to minor self-reported deviance, taking into account the above-mentioned variables.</td>
</tr>
<tr>
<td>Singer</td>
<td>1986</td>
<td>Retrospective correlation</td>
<td>Convenience randomly sampled 10% of participants from earlier study of males born in 1945, Philadelphia, PA</td>
<td>567</td>
<td>26</td>
<td>100%</td>
<td>Low-middle</td>
<td>N/R% AfrA</td>
<td>The probability of committing a serious assault was related to retrospective reports of victimization (confined here to serious assault with a weapon—shooting or stabbing), gang membership, &amp; weapon use. Victims were more likely to have an adult arrest record than nonvictims.</td>
</tr>
</tbody>
</table>

**Key Statistics**

- 1982 Cohort: Victimization & Offending
  \[ \chi^2 (8) = 395.01 \]
  \[ \beta = .23, \ p < .001 \] offending
  \[ \beta = .43, \ p < .001 \] high crime
  \[ \beta = .23, \ p < .01 \] male
  \[ \beta = .02, \ p < .001 \] age
  \[ (\beta's = ns: college education, drinking, nights out, single) \]

- 1984 Coh: Victimization & Minor Deviance
  \[ \chi^2 (8) = 369.46 \]
  \[ \beta = .21, \ p < .05 \] minor deviance
  \[ \beta = .12, \ p < .001 \] high crime
  \[ \beta = .26, \ p < .01 \] male
  \[ \beta = .03, \ p < .001 \] age
  \[ \beta = .37, \ p < .001 \] single
  \[ \beta = .06, \ p < .01 \] nights out
  \[ (p = ns: college education) \]

**Peer Enhancement—Peer Selection**

<table>
<thead>
<tr>
<th>Authors</th>
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<tbody>
<tr>
<td>Cairns, et al.</td>
<td>1988</td>
<td>Concurrent group comparisons</td>
<td>Convenience recruited 695 children from 4 elementary &amp; 3 middle schools in suburban &amp; rural areas of 2 counties; selected 40 children rated as highly aggressive by school personnel &amp; nonaggressive controls matched on gender, race, SES, age, size, classroom</td>
<td>80</td>
<td>4th &amp; 7th gr</td>
<td>50%</td>
<td>Low-upper</td>
<td>75% Cauc</td>
</tr>
</tbody>
</table>

**Key Statistics**

- 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, 8% ctrl
  Reciprocal Best Friend: 43% agg, ctrl
  \[ (\chi^2 \text{ not reported}, \beta's = ns) \]

- Popularity, Teacher Ratings
  \[ F (1, 36) = 21.08, \ p < .001 \]
  \[ M's = 4.12 agg, 2.73 nonagg 4th boys \]
  \[ M's = 4.32 agg, 3.03 nonagg 4th girls \]
  \[ M's = 4.23 agg, 3.73 nonagg 7th boys \]
  \[ M's = 4.53 agg, 3.13 nonagg 7th girls \]

- 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
  \[ (\text{ANOVA, correlations}) \]
### Peer Influences—Peer Enhancement

#### Peer Selection

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<tr>
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</tr>
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<tbody>
<tr>
<td>Farver et al.</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 55% Hisp</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>
<td>Aggression &amp; Reciprocal Friends: ( \chi^2(4) = 18.75, p = .000 ) No reciprocal friends 1% no ag, 8% few, 6% many One reciprocal friend 2% no ag, 12% few, 28% many More than 2 reciprocal friends 20% no ag, 14% few, 8% many (aggressive incidents: few 1–4, many &gt; 7) Aggression Within 12 Cliques: ( r^2 = .73 ) to .98, p's &lt; .001–.05 (9 cliques) ( r^2 = .50, .54, .59, ) p's = 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 (chi-square, correlations, ANOVA)</td>
</tr>
<tr>
<td>Giordano, Cernkovich, &amp; Pugh</td>
<td>1986</td>
<td>Concurrent</td>
<td>Population: youth from private households, large north central SMSA;* multistage modified probability sampling stratified by race, average housing value, then by gender &amp; race</td>
<td>884</td>
<td>12–19 yrs</td>
<td>49%</td>
<td>Low-middle</td>
<td>53% AfrA 47% Cauc</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>
<td>Stability of Friendships: ( F = 54, p = ns ) M = 4.75 nonoffender M = 5.42 low-frequency minor del M = 5.37 high-frequency major del M = 4.52 low-frequency major del (ANOVA, age controlled)</td>
</tr>
<tr>
<td>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% Cauc 10% Other* (Dutch)</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>
<td>Fights: ( F(1, 188) = 9.73, p &lt; .01 ) M's = 28 girls, .76 boys friends M's = 43 girls, 1.09 boys nonfriends Disrupts: ( F(1, 188) = 7.22, p &lt; .01 ) M's = .37 girls, .86 boys friends M's = .50 girls, 1.15 boys nonfriends Bullies: ( F(1, 188) = 6.14, p &lt; .01 ) M's = 24 girls, .80 boys friends M's = .33 girls, 1.07 boys nonfriends (gender p's &lt; .001, social accept p's = ns) (2 x 2 x 2 ANOVA on difference scores)</td>
</tr>
<tr>
<td>Kupersmidt, Burchinal, &amp; Patterson</td>
<td>1995</td>
<td>Prospective</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 &gt; 5th–7th gr</td>
<td>48%</td>
<td>Low-N/R</td>
<td>40% Low 60% N/R</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>
<td>Cumulative Risk Model: Delinquency: ( | = 31, p &lt; .001 ) peer rejection ( | = 27, p &lt; .001 ) conflict with friend ( | = 21, p &lt; .001 ) aggressive friend (backward logistic regression analysis)</td>
</tr>
</tbody>
</table>

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*SMSA: Standard Metropolitan Statistical Area*
### Peer Selection

<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>Tremblay, et al.</td>
<td>1995</td>
<td>Concurrent</td>
<td>Population: recruited 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>1,034</td>
<td>10, 11, &amp; 12 yrs</td>
<td>100%</td>
<td>Low</td>
<td>100% Cauc (French Canadian)</td>
<td>Peer ratings of aggression were similar for boys &amp; their friends at ages 10, 11, &amp; 12. Boys &amp; friends' likeability at ages 10, 11, &amp; 12 were taken into account.</td>
<td>Boys' &amp; Friends' Aggressiveness</td>
</tr>
<tr>
<td>Masse, et al.</td>
<td>1995</td>
<td>Correlational</td>
<td>Recruited boys in 53 &amp; 12 yrs (French were similar for boys &amp; their peers).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></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>
<td>Asymptotic Maternal &amp; Antisocial Behavior</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Recruited at age 21</td>
<td>from Dunedin study participants &amp; their partners of 6 mths or more; original sample: consecutive births, spring, 1972–1973, Dunedin, New Zealand</td>
<td>360</td>
<td>21 yrs</td>
<td>50%</td>
<td>N/R</td>
<td>N/R Cauc (Pac Is)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Krueger, et al.</td>
<td>1998</td>
<td>Concurrent</td>
<td>Recruited 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>
<td></td>
<td></td>
<td></td>
<td></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>
<td>Asymptotic Maternal &amp; Antisocial Behavior</td>
</tr>
<tr>
<td>Quinton, et al.</td>
<td>1993</td>
<td>Prospective</td>
<td>Recruited 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>150–352</td>
<td>10 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>
<td>Continuity of Conduct Disorder &amp; Partner</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Longitudinal</td>
<td>Recruited 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>
<td></td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Yamaguchi &amp; Kandel</td>
<td>1993</td>
<td>Retrospective</td>
<td>Recruited 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>545</td>
<td>26–31 yrs</td>
<td>50%</td>
<td>N/R</td>
<td>N/R</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>
<td>Concordance of Drug Behavior, Partners</td>
</tr>
</tbody>
</table>

**Key Statistics**
- Boys' & Friends' Aggressiveness
  - $\beta = .168$, $p < .05$, age 10
  - $\beta = .268$, $p < .05$, age 11
- Asymptotic Maternal & Antisocial Behavior
  - $\beta = .54$, AGFI = .90 variety of offenses
  - $\beta = .34$, AGFI = .99 peer delinquency
- Asymptotic Maternal & Attitudes
  - $\beta = .21$, AGFI = .91 risk of being caught
  - $\beta = .20$, AGFI = .97 sanctioned by job
  - $\beta = .41$, AGFI = .99 sanctioned by partner
  - $\beta = .38$, AGFI = .99 sanctioned by family
  - $\beta = .42$, AGFI = .99 sanctioned by friends
  - $\beta$ = assortative mating coefficient
  - AGFI = 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
  - $K = .34$ ever lifetime
  - $K = .34$ ever prior marriage
  - $K = .43$ last 12 mths
  - (all $p’s < .01$)
  - (see study for log-linear models)
  - (weighted kappas)
**Peer Influences—Peer Enhancement**

**Peer Reinforcement**

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
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<th>Size</th>
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<th>SES</th>
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<th>Key Statistics</th>
</tr>
</thead>
</table>
| Snyder & Brown   | 1983 | Prospective    | Source specific: recruited children rated 5 highest & lowest on conduct disorder scale from daycare center in Kansas | 20   | 3-5 yrs | 50%    | Low | M = $11k income/yr | Oppositional children observed in a day care setting were more likely than children rated by teachers as nonoppositional to initiate oppositional behavior (respond averagely to a positive antecedent); reciprocate oppositional behavior (respond averagely to a positive consequence), & continue aversive behavior once begun. Oppositional children were also more likely to receive aversive stimuli. | Initiate: Positive Antecedent: 
U = 2, p < .001; Pr = .07 opp, .02 non 
z = .45 opp, 1.1 nonopp p < .001  
Reciprocate: Aversive Antecedent 
U = 13, p < .001; Pr = .37 opp, .27 non 
z = 23.9 opp, 24.9 nonopp p < .001  
Continue: Oppositional at T + 2 
U = 5, p < .001 T opp 
z = 24.6 opp, 19.4 nonopp p < .001  
Pr = .611 opp, .378 nonopp T + 1 opp 
Pr = .509 opp, .526 nonopp aversive  
Pr = .681 opp, .003 nonopp T + 2  
Pr = conditional probability, behavior/antecedent 
(Mann-Whitney U tests) |
| Snyder, Horsch, & Childs | 1997 | Prospective longitudinal 4 mths | Convenience: recruited from 4 preschool classrooms, high-crime area, Denver, CO | 72   | 49-62 mths | 50% | Low | 100% AfrA | Aggressive behavior increased over a 4-mth period for children who associated a substantial amount (teacher ratings & observations) or a moderate amount (teacher ratings) of time with aggressive peers. | Aggression, Teacher Ratings  
F (2, 69) = 13.50, p < .001  
Aprx M's = 1.12, 1.40 substantial > 30%  
Aprx M's = 0.70, 1.00 moderate 15-30%  
Aggression, Observed  
F (2, 69) = 5.02, p < .01  
Aprx M's = 0.70, 1.1 substantial > 30%  
aprx = approximate M's T1 & T2 from figure (ANOVAs) |

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**Bullying**

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Populations: sampled boys ages 8–9 yrs from 6 state primary &amp; 1 special education school in working-class area of London, 1961–1962; Cambridge Study in Delinquent Development</th>
<th>Size</th>
<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
<th>Key Statistics</th>
</tr>
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</table>
| Farrington        | 1993 | Prospective longitudinal 5, 18 yrs | Bullying at age 14 predicted bullying at age 32, independent of aggression at age 14 or 32. Self-reports of bullying at age 32 were almost twice as likely for boys who had reported bullying at age 14, & 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. | 378  | 14 > 18-19 yrs, 32 yrs | 100% Low | 90% Cauc | < 10% W Ind | < 10% Crystopt  
Bullying Segment  
F (1, 120) = 6.5, p < .02  
OR = .90, G^2 = 28.3, p = .0001  
Bullying Age 32 & Violent Crimes by 32  
OR = 2.18, G^2 = 4.31, p = .019  
(logistic regressions) |
| O'Connell, Pepler, & Craig | 1999 | Concurrent group correlations, 120 hrs videotape, 2 times a year over 3 yrs; 53 of 185 bullying segments were good quality & had 1 bully & 2 more peers | Videotape of playground behaviors showed peers’ influence on bullying: the duration of a bullying episode increased as the number of peers present increased, peers actively & passively reinforced bullying episodes, & peers intervened in bullying episodes. Older boys were more likely than older girls or younger boys to join the bully, while younger & older girls were more likely to support the victim than older boys. | 219  | 5-12 yrs | N/R | N/R | N/R  
Videotape of playground behaviors showed peers’ influence on bullying: the duration of a bullying episode increased as the number of peers present increased, peers actively & passively reinforced bullying episodes, & peers intervened in bullying episodes. Older boys were more likely than older girls or younger boys to join the bully, while younger & older girls were more likely to support the victim than older boys. | 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 < .02  
Aprx M's = 17.8b, 36.8b, 25.8g, 10.0g  
Gender, Grade on Victim Support  
F (1, 120) = 4.7, p < .04  
Aprx M's = 28.8b, 11.0b, 26.8g, 34.8g  
γ = younger, o = older, b = boys, g = girls  
aprx = approximate M's from figures (correlations, ANOVAs) |
### Chamberlin & Reid (1998)
**Design:** Intervention random assignment, 1 yr followup

- **Representativeness:** Source specific: chronic delinquents referred by juvenile justice system for community placement, metro area of midsized Pacific NW city

- **Size:** 79
- **Age:** 12–17 yrs
- **% Male:** 100%
- **SES:** N/R
- **Ethnicity:** 6% Afro, 85% Cauc, 3% Nat A

**Result:** Boys who participated in multidimensional tx foster care (MTFC) showed a greater reduction in rate of official criminal referrals & reported 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**
  - $F(1, 77) = 3.93$, $p = .003$ (group × time)
  - $R^2 = .19$, $G^2 = –2.1$, $t = –3.22$, $p = .002$ (tx)
  - 1 yr followup

- **Rate of Felony Assaults**
  - $F(1, 77) = 5.3$, $p = .03$ (tx)
  - $R^2 = .24$, $G^2 = –.23$, $t = –2.05$, $p = .04$ (tx)
  - 1 yr followup

- **Self-reported Delinquency**
  - $F(1, 77) = 4.10$, $p = .05$ (regression, step 1: age 1st criminal referral, step 2: age at baseline, step 3: pretreatment offense rates)

### Dishion & Andrews (1995)
**Design:** Intervention random assignment, 1 yr followup

- **Representativeness:** 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%
- **SES:** Low Mdn = $15k–$20k
- **Ethnicity:** 95% Cauc, 5% Other

**Result:** 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**
- **Post-tx** $F(1, 125) = 3.44$, $p < .06$
  - $M's = 13.3$ pre, $12.2$ post parental discipline
  - 1 yr followup $F(1, 125) = 3.94$, $p < .05$
  - $M's = 10.5$ pre, $11.3$ post treatment group

### Dishion, Eddy, et al. (1997)
**Design:** Prospective longitudinal, 8-9 yrs

- **Representativeness:** 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
- **% Male:** 100%
- **SES:** Low-middle
- **Ethnicity:** N/R/Cauc, N/R/Other (predominately Caucasian)

**Result:** Adolescent peer deviance 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).

**Key Statistics**
- **Police contact, violent arrests**
  - $X^2 (191) = 176.9$, $p = .76$
  - $G^2 = .78$, OR $= 2.14$

- **Violence, self-report**
  - Multiple $R^2 = .57$
  - $R^2 = .32$, $F = 31.02$, $p < .001$

**Notes:**
- *Peer deviance 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.
<table>
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<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>
<th>Key Statistics</th>
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</table>
| Dishion       | 1999 | Intervention            | 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    | M = 10.5 > M = 47 yrs | 100%   | Low      | N/R       | 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. (The treatment intervention focused on boys' aggression, family high-crime & impoverished areas of eastern MA; counseling with a social worker (M = 2x/mth) but could also include academic tutoring, family assistance, medical & psychiatric care, encouragement to join community groups, & recreational activities.) No statistics reported. | Risk Ratio—Bad Outcomes  
1 never attend summer camp  
1 attend 1 summer (n = 59)  
10 attend 2+ summers (n = 66)  
(Adolescent Transitions Program results.) |
| McCord, & Poulin |     | random assignment, 5.5 yrs of bx pairs matched on aggression, family stability, family hx crime & substance abuse, acceptance of authority, parent discipline |                                                    |        |              |        |          |           |                                                                                                                     |                                                                                 |
| Elliott, Huizinga, & Menard | 1989 | Prospective longitudinal | 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 | 50%    | Low-upper | N/R% Aft/A 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 paths for male gender) (path analysis, OLS regression) | General Delinquency Offending  
R^2 = .31 1977 analyses  
β = .505, dav = .27 deviant peers  
R^2 = .31 1978 analyses  
β = .515, dav = .27 deviant peers  
Index Offending Rates  
R^2 = .15 1977 analyses  
β = .344, dav = .13 deviant peers  
R^2 = .14 1978 analyses  
β = .334, dav = .12 deviant peers  
β = directly attributable variance |
| Keenan, Loeb & 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 | 57% Aft/A 43% Cauc | Boys who reported that all or most of their peers had conflicts with authority were twice as likely to have conflicts with authority themselves. Similarly, boys with peers involved in overt or covert delinquency were 3 & 4 times more likely to also be involved. Predictive findings indicate that boys previously exposed to peers engaged in authority conflicts were 1.5 times more likely to have conflicts with authorities later on, while boys previously exposed to peers who 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. | Concurrent, Peers, Conflict With Authority  
χ^2 = 38.33, p < .001  
β = .80, OR = 2.2, p = .000  
Concurrent, Peers, Covert Behavior  
χ^2 = 112.30, p < .001  
β = 1.45, OR = 4.3, p = .000  
Predictive, Peers, Conflict With Authority  
χ^2 = 19.79, p < .001  
β = .35, OR = 1.4, p < .05 peers  
β = .31, OR = 1.4, p < .05 supervision  
β = .40, OR = 1.5, p < .05 warmth  
Predictive, Peers, Covert Behavior  
χ^2 = n/r  
β = .68, OR = 2.0, p = .000 peers  
β = .36, OR = 1.4, p = .065 supervision  
Predictive, Peers, Overt Behavior  
χ^2 = 10.20, p < .05  
β = .60, OR = 1.8, p = .006 peers  
(logistic regressions) |
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<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Representativeness</th>
<th>Size</th>
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<th>% Male</th>
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<th>Ethnicity</th>
<th>Result</th>
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<tbody>
<tr>
<td>Patterson</td>
<td>1993</td>
<td>Prospective</td>
<td>Population:</td>
<td>206</td>
<td>4th &gt; 8th</td>
<td>100%</td>
<td>Low-mid</td>
<td>N/R</td>
<td>Initial level of antisocial behavior in grade 4 (intercept, parent/child self-report) was associated with ineffective parental discipline &amp; monitoring. Growth in antisocial behavior from 4th to 8th grade (slope) was related to increased deviant peer involvement &amp; wandering. Deviant peer involvement continued to predict increased antisocial behavior, after controlling for wandering.</td>
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<tr>
<td>Vitaro, Tremblay, et al.</td>
<td>1997</td>
<td>Prospective</td>
<td>Population:</td>
<td>868</td>
<td>11–12 &gt; 13 yrs</td>
<td>100%</td>
<td>Low</td>
<td>100% Cauc (French Canadian)</td>
<td>Modestly 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 &amp; 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.</td>
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<tr>
<td>Bjerringaard &amp; Smith</td>
<td>1993</td>
<td>Concurrent</td>
<td>Population:</td>
<td>969</td>
<td>13–15.5 yrs</td>
<td>73%</td>
<td>N/R</td>
<td>68% AfA 15% Cauc 17% HISP</td>
<td>Male &amp; female adolescent gang members reported higher prevalence &amp; incidence rates of serious, moderate, &amp; minor delinquency than adolescents who were not affiliated with a gang. Male gang members reported higher prevalence &amp; incidence of serious delinquency &amp; higher incidence of moderate &amp; minor delinquency than female gang members.</td>
</tr>
<tr>
<td>Authors</td>
<td>Year</td>
<td>Design</td>
<td>Representativeness</td>
<td>Size</td>
<td>Age</td>
<td>% Male</td>
<td>SES</td>
<td>Ethnicity</td>
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<tr>
<td>Esbensen &amp; Huizinga</td>
<td>1993</td>
<td>Prospective</td>
<td>Population: recruited from households with age 7, 9, 11, 13, 15 yrs; stratified probability sample from socially disorganized high-crime neighborhoods; Denver, CO; Denver Youth Survey</td>
<td>1,134</td>
<td>up to 4 yrs</td>
<td>52%</td>
<td>N/R</td>
<td>33% AfrA</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, and after active gang membership.</td>
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<td>longitudinal</td>
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<td>10% Cauc</td>
<td>Yr 1: 43.4 gang, .13 nongang (n = 799)</td>
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<td>4 yrs</td>
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<td>45% Hisp</td>
<td>Yr 2: .55 gang, .14 nongang (n = 765)</td>
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<td>12% Other</td>
<td>Yr 3: .90 gang, .15 nongang (n = 1,091)</td>
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<td></td>
<td>(AsnA, NatA)</td>
<td>Yr 4: .77 gang, .15 nongang (n = 1,091)</td>
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<td>Individual, street offending—Yr 3</td>
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<td>Yr 1: 13.9 gang, 2.0 nongang</td>
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<td>Yr 2: 20.9 gang, 2.0 nongang</td>
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<td>Yr 3: 34.5 gang, 5.7 nongang</td>
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<td>Yr 4: 22.9 gang, 4.2 nongang</td>
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<td>(see study for additional results)</td>
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Thornberry, Krohn, et al. 1993 | Prospective | longitudinal | 6-3rd intervals, waves 2–7 | 987 | 8th & 9th gr. fall > 10th & 11th gr. spring | 100% | Low-upper | 64% AfrA | Transient (1 yr) & stable gang members reported more general delinquency & crimes against persons than nongang members. Stable gang members reported higher rates of delinquency than transient & nongang members before, during, and after active status but reported more crimes against persons only while active members of the gang. Transient gang members reported more delinquency & crimes against persons than nongang members only when an active gang member. Crimes against property showed no consistent cross-time or cross-group differences. | General Delinquency: Transient (n = 53) vs. nongang |

Cross-time: p's = .01, .003, ns
Cross-group: ** p's = .002, .047, ns
Stable T1 & T2: p's = .24 vs. nongang
Cross-time: p's = .001, .08
Cross-group: p's = .002, .047, ns
M's = 4.7, 3.7, 5.1 nongang
M's = 18.9, 7.7, 6.8 transient
M's = 26.7, 37, 13.3 stable

Crimes Against Persons
Transient vs. nongang members
Cross-time: p's = .007, .003, ns
Cross-group: p's = .001, ns, ns
Stable T1 & T2 vs. nongang members
Cross-time: p's = .004, .001
Cross-group: p's = .002, .001, ns
M's = 2.7, 2.3, 3.4 nongang
M's = 13.4, 5.6, 5.1 transient
M's = 17.3, 12.6, 3.7 stable
*order of p's, cross-time
T1 vs. T2, T2 vs. T3, T3 vs. T3
**order of p's, cross-group: T1, T2, T3
(see study for additional results) (t tests)
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 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,
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, Wotrub, & 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
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

<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>
<th>Key Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hartz</td>
<td>1995</td>
<td>Concurrent</td>
<td>Convenience: recruited students from university lab school, Honolulu, HI; school representative of Hawaii on ethnicity, SES, &amp; achievement</td>
<td>96</td>
<td>11th–12th gr</td>
<td>N/R</td>
<td>N/R</td>
<td>27% Cauc &amp; Filip</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>$R^2 = .28$, $F$ (6, 129) = 8.17, $p &lt; .0001$</td>
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<td></td>
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<td>comparisons</td>
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<td></td>
<td>$F = 4.83, p &lt; .05$ mothers</td>
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<td>$F = 4.55, p &lt; .05$ Polynesian-Am parents</td>
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<td>$F = 10.45, p &lt; .01$ Polynesian × parent (mother)</td>
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<td>$Rs = 10.8 J, 28.9 F, father$</td>
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<td></td>
<td>$Rs = 12.8 F, 31.5 E, 11.2 J, 26.0 F, mother$</td>
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<td>Teens' aggression toward parent</td>
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<td></td>
<td>$R^2 = .38$, $F$ (3, 173) = 35.43, $p &lt; .0001$</td>
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<td>$F = 21.5, p &lt; .0001$ CTS × EuroAm (means not reported; multiple regressions)</td>
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<tr>
<td></td>
<td></td>
<td>longitudinal</td>
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<td>Violent delinquency 1979 $R^2 = .30$</td>
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<td></td>
<td></td>
<td>3 yrs</td>
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<td>$β = .20, p &lt; .01$ definitions favor violence 1978</td>
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<td>$β = .32, p &lt; .01$ violent delinquency 1978</td>
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<td>$β = .11, p &lt; .05$ urban residence</td>
</tr>
<tr>
<td>Kumagai</td>
<td>1983</td>
<td>Concurrent</td>
<td>Convenience: recruited students: 391 I M = 17.4 J 66% J 49% mid J 12% U.S. parents used husband &amp; wife in 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%</td>
<td>Low-upper</td>
<td>33.5% India</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>$L^2 = 380.83$, $df = 164$, AGFI = .94</td>
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<tr>
<td>&amp; Straus</td>
<td></td>
<td>correlational</td>
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<td>(see other Heimer entries for full model)</td>
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<td>(structural equation models)</td>
</tr>
</tbody>
</table>


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

** Unless otherwise indicated, income is reported in yearly amounts.
<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Population/Methods</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>
<tbody>
<tr>
<td>Almgren, Guest,</td>
<td>1998</td>
<td>Prospective</td>
<td>Population: census data from 75 community areas with populations over 2,500, Chicago, IL, 1970 &amp; 1990</td>
<td>75</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>
<td>Black Homicide Rates, Age-Standardized</td>
</tr>
<tr>
<td></td>
<td></td>
<td>longitudinal 20 yrs</td>
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<td></td>
<td>61% Black</td>
<td></td>
<td>Men adj $R^2 = .72$, $F = 26.36$, $p &lt; .01$</td>
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<td></td>
<td>Nonblack Homicide Rates, Age-Standardized</td>
<td></td>
<td>Women adj $R^2 = .46$, $F = 9.59$, $p &lt; .01$</td>
</tr>
<tr>
<td>Guest et al.</td>
<td>20 yrs</td>
<td>Longitudinal</td>
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<td></td>
<td>62% Other</td>
<td></td>
<td>$\beta = .46$, $p &lt; .05$ 1990 unemployment</td>
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<td>$\beta = -.49$, $p &lt; .05$ 1970 unemployment</td>
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<td>$\beta = -.98$, $p &lt; .01$ 1990 unemployment</td>
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<tr>
<td>Catalano, Novaco,</td>
<td>1997</td>
<td>Concurrent</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>$R^2 = .72$, $F = 26.36$, $p &lt; .01$</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>McConnell</td>
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<td>longitudinal over 1 yr</td>
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<td>$\beta = .46$, $p &lt; .05$ 1990 unemployment</td>
</tr>
<tr>
<td>Heimer</td>
<td>1997</td>
<td>Prospective</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</td>
<td>45%</td>
<td>N/R</td>
<td>AfrA N/R</td>
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<tr>
<td></td>
<td></td>
<td>longitudinal 3 yrs</td>
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<td>52% Cauc N/R</td>
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<td>48% Other</td>
<td></td>
<td>(OLS regressions)</td>
</tr>
</tbody>
</table>

*variable from the World Handbook of Political & Social Indicators, 1983*
Broader Social Environment, Communities, and Schools—Broader Social Environment

<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>Sampson</td>
<td>1986</td>
<td>Concurrent/retrospective</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% Afr/A 69% Cauc</td>
<td>Neighborhood SES, self-reported delinquency, &amp; race predicted lifetime history of major police contact for adolescents in a model that included gang membership &amp; family structure. Individual SES &amp; delinquent peers were also significant predictors for male youth. Neighborhood SES &amp; delinquency predicted police contact during the past year, with race &amp; delinquent peers additional predictors for male youth. Major court referrals by police were predicted by individual SES &amp; major police contact.</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>JV gun crimes</td>
<td>98%</td>
<td>Low-upper locations</td>
<td>91.6% Afr/A 8.1% Cauc</td>
<td>Spatial &amp; temporal analyses of juvenile gun crimes between 1980 &amp; 1990 in Baltimore, MD, found that most incidents clustered in high social stress (HSS) census tracts. Patterns varied by age, race, &amp; location. For example, crimes by black juveniles on black victims clustered in HSS areas, particularly crimes against other juveniles; crimes on white victims occurred all over, with boundary effects along the edges of HSS areas. Crimes by white juveniles on black &amp; white victims were committed outside of HSS areas. These patterns showed stability over time.</td>
</tr>
</tbody>
</table>

Key Statistics
- Police Contacts Ever, Male Youth $R^2 = .27, p < .01$
  - $\beta = -0.05, p < .10$ Individual SES
  - $\beta = -0.11$ neighborhood SES
  - $\beta's = -.27$ serious, .14 family/school delinquency
  - $\beta = .14$ delinquent peers
  - $\beta = .11$ black
- Police Ever, Female Youth $R^2 = .21, p < .01$
  - $\beta = -0.15$ neighborhood SES
  - $\beta = .25$ black
  - $\beta's = .15$ family/school, .28 drug/alcohol delinquency
- Major Court Referrals $R^2 = .34 m, .32 f, p's < .01$
  - $\beta = -0.04$ individual SES
  - $\beta = .11$ male, .28 female major police contacts
  - (OLS regressions)
- Police Contact Past Year, Male Youth $\chi^2(9) = 76.8$
  - $\beta = -0.55$ neighborhood SES
  - $\beta = -20$ serious delinquency
  - $\beta = -28$ delinquent peers
  - $\beta = .57$ black
- Police Contact Past Year, Female Youth $\chi^2(9) = 28.2$
  - $\beta = -1.56$ neighborhood SES
  - $\beta = .68$ family/school delinquency
  - (p's < .05 unless noted, for unreported b's, $p = ns$; models included family/school, drug/alcohol, & serious delinquency; individual & neighborhood SES, race, broken home, delinquent peers & gang membership)
  - (logistic regressions)

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)
  - (geocoding & spatial analysis)
## Broader Social Environment, Communities, and Schools—Communities & Neighborhoods

### Housing

<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>
<th>Key Statistics</th>
</tr>
</thead>
</table>
| Smith & Jarjoura | 1988 | Concurrent    | Population: random sample of 200 households in 57 neighborhoods (defined by census blocks & police beats) from 3 SMSAs: Tampa-St. Pete, FL, St. Louis, MO, & Rochester, NY, 1977; data aggregated by neighborhood | 57 niches | 11.419 residents | 11 | N/R | N/R | N/R | 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. | β = .02, t = 2.70 mobility x low income
β = .02, t = 1.89 % single-parent household
β = .06, t = 2.64 population density
β = .05, t = 2.91 % ages 12-20
(β's = ns: % low income, residential mobility, city, racial heterogeneity, % nonwhite, % living alone)
(see study for burglary rate results)
(OLS regressions) |
| Spelman       | 1993 | Concurrent group comparisons | 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 | 59 blocks | N/R | N/R | Low | 66% A/F | Residential blocks with unsecured abandoned buildings (entered without force) had higher drug & property crime rates than control blocks or blocks with secured abandoned buildings. Unsecured illegally used abandoned building presence correlated with property & drug crime rates* after controlling for number of vacant buildings, physical condition of block, block location, & demographics (race/ethnicity, age, % owned/rented, & % single parents). Building type did not predict rate of violent crime. | Crime Rates Unsecured (n = 16) vs. Other (n = 43)
Property crimes/block, Ratio 1.8
\( t = 1.99, p < .05 \), 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
\( \Delta R^2 = .07, F(1, 57) = 4.32, p < .05 \)
Drug crimes
\( \Delta R^2 = .10, F(1, 57) = 5.36, p < .05 \)
(β's = ns for vacancy status, building condition, block location & demographics; *rates based on calls for police service resulting in an official police report) (t tests, multiple regressions) |
| Wallace       | 1990 | Concurrent correlational data from 2 time periods; T1 not used to predict T2 | 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 | 62 health areas | N/R | N/R | Low | 66% A/F or Hisp | Low birthweight rate (LOB) and an index of poverty & overcrowding accounted for 78% (1970-1973) & 79% (1978-1992) of the variance in number of intentional violent deaths (homicide & suicide). | β = .12, p = ns constant
β = .02, p = .000 SES x crowding*
β = .02, p = .010 low birthweight**
*SES (citywide SES rank) x % white%
**LOB babies/100k live births x pop/100,000 (MANCOVA) |

### Key Statistics

- Violent Crime Rates\( R^2 = .63 \)
- β = .02, \( t = 2.70 \) mobility x low income
- β = .02, \( t = 1.89 \) % single-parent household
- β = .06, \( t = 2.64 \) population density
- β = .05, \( t = 2.91 \) % ages 12-20

(β's = ns: % low income, residential mobility, city, racial heterogeneity, % nonwhite, % living alone)

(see study for burglary rate results)

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

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Representativeness</th>
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<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
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</thead>
</table>
| Aneshensel & Sucoff | 1996 | Concurrent | Population: 3-stage probability sample of Los Angeles County, CA—census tract, blocks, & households; screened households for 12–17-yd/old permanent residents; Latino youth over-represented, non-Hispanic whites under-represented | 877  | 12–17 yrs | 54%    | Low-upper | 11% AFR   | Adolescents who reported more ambient hazards in their neighborhood 
  (violent crime, property damage, drug use, gangs, & graffiti) reported more symptoms of conduct disorder (CD) & oppositional defiant disorder (ODD). 
  CD symptoms were also associated with being male, older, & Latino, except for Latino youth in working-class Latino neighborhoods. ODD* was also associated with middle class Latino & non-Hispanic white neighborhoods, high SES, older youth, & single-parent families. Ambient hazards were highest for youth from African-American & Latino neighborhoods. |
| Gorman-Smith & Tolan | 1998 | Prospective longitudinal 1yr | Convenience: screened youth from 17 Chicago, IL, public schools in low-SES inner-city neighborhoods; selected youth rated high risk for aggression by teachers, & random sample of remaining students; Chicago Youth Development Study | 245  | 5th & 7th grade > 7th & 9th grade | 100%   | Low-middle | N/R% AFR | Exposure to violence in the past year (65% of students), family structure (mothers' & sons' combined ratings of family support, intolerance of antisocial values, & organization), & the interaction of exposure × family structure predicted change in aggression over 1 yr (combined child/parent/teacher ratings), taking into account exposure to other stresses, family beliefs, cohesion, parental monitoring, & discipline. |
| Greenberg, Lengua, et al. | 1999 | Prospective longitudinal 1yr | Convenience: selected normative sample of kindergarten students based on gender, race, & teacher-rated behavior problems; high-risk schools in 1) Durham, NC, 2) Nashville, TN, 3) Central PA 4) Seattle, WA | 337  | K > 1st grade M = 6.4 yrs | 52%    | Low-middle | 43% AFR | Neighborhood risk (interviewer report of neighborhood environment, & parent report of neighborhood safety) along with SES (parental occupation), maternal depression, & family life stress predicted parent's reports of externalizing 1 yr later, controlling for family factors (family expressiveness, social support, marital distress, & home environment), maternal age, # of siblings, single-parent status, parental education, race, & study site. Neighborhood risk, life stress, & less family expressiveness predicted teacher reports of authority acceptance. |

**Key Statistics**

- Conduct Disorder $R^2 = .11$, $F(17, 857) = 6.19$
  - $\beta = .21, p < .001$ percept nbhood, ambient hazards
  - $\beta = -.13, p < .05$ poverty-working class neighborhood, Lat (p's < .05 – .01: Latino, age, female)

- ODD $R^2 = .14$, $F(17, 857) = 7.84$
  - $\beta = .22, p < .001$ percept nbhood, ambient hazards
  - $\beta = -.17, p < .001$ working-class nbhood, Afr Am
  - $\beta = .14, p < .05$ middle-class nbhood, Wh & Lat (p's < .05–.01: age, single parent, income)

*Models included: neighborhood clusters (SES, % AFR, % Lat);nbhood stability; perceptions of nbhood; ambient hazards & social cohesion; adolescent attributes: same house 5+ yrs, AFR, Lat, per capita income, age, female; & family structure: intact nuclear, single parent (multiple regression)
### Broader Social Environment, Communities, and Schools—Communities & Neighborhoods

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
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<th>Age</th>
<th>% Male</th>
<th>SES</th>
<th>Ethnicity</th>
<th>Result</th>
<th>Key Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Griffin, Scheier, et al.</td>
<td>1999</td>
<td>Concurrent</td>
<td>Convenience: recruited students from 2 New York, NY, classrooms; schools had higher % AfrAm &amp; immigrant &amp; lower reading level than city average</td>
<td>452</td>
<td>6th gr</td>
<td>51%</td>
<td>Low-Middle</td>
<td>47% free lunch program</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>$\chi^2(263, N = 452) = 708.9,$ $p &lt; .001,$ CFI = .90</td>
</tr>
<tr>
<td>Scheier, et al.</td>
<td>1999</td>
<td>Correlational</td>
<td>Recruited students 47% free lunch program 1% Cauc neighborhood risk—gang activity &amp; delinquency &amp; toughness necessary in neighborhood, friends' delinquency &amp; aggression, while anger control skills</td>
<td>47%</td>
<td>yrs 84%</td>
<td>8%</td>
<td>Low-Middle</td>
<td>84% 12 yrs ed 3% Other</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>$R^2 = .47$</td>
</tr>
<tr>
<td>Dent, Susman</td>
<td>1997</td>
<td>Concurrent</td>
<td>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>504</td>
<td>M = 15.6 yrs 57%</td>
<td>Low-Middle 84%</td>
<td>Low-Middle 84%</td>
<td>12 yrs ed 1 parent</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>$\phi = .26,$ $p &lt; .001$ current weapon carrying ($\phi = .26$ for gender, age, school)</td>
</tr>
<tr>
<td>Simon, Simon, Dent, &amp; Susman</td>
<td>1997</td>
<td>Conventional</td>
<td>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>504</td>
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<td>Low-Middle 84%</td>
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<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>
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<td>$\phi = .26,$ $p &lt; .001$ current weapon carrying ($\phi = .26$ for gender, age, school)</td>
</tr>
</tbody>
</table>

**Adolescent Weapon Carrying**

- General perceived vulnerability
  - Adj OR = 1.79, 95% CI = 0.84 – 3.82 medium
  - Adj OR = 3.14, 95% CI = 1.40 – 7.02 high
- Perceived vulnerability in school
  - Adj OR = 0.93, 95% CI = 0.46 – 1.90 medium
  - Adj OR = 0.55, 95% CI = 0.22 – 1.36 high
- Perceived vulnerability to/from school
  - Adj OR = 0.94, 95% CI = 0.46 – 1.90 medium
  - Adj OR = 1.58, 95% CI = 0.63 – 3.94 high
- Peer weapon carrying
  - Adj OR = 2.34, 95% CI = 1.03 – 5.28 knife
  - Adj OR = 2.11, 95% CI = 1.16 – 3.85 gun
- Affiliation with gangs/taggers
  - Adj OR = 2.57, 95% CI = 1.49 – 4.43 yes (simultaneous logistic regression)

**Ever Witnessed Violence (yes/no)**

- $\phi = .26,$ $p < .001$ current weapon carrying ($\phi = .26$ for gender, age, school)

**Ever Victimized—Violence (yes/no)**

- $\phi = .22,$ $p < .001$ current weapon carrying
  - $\phi = .21,$ $p < .001$ school attended
  - $\phi = .14,$ $p < .01$ age range
  - $\phi = .07,$ $p < .05$ gender

**Ever Perpetrated—Violence (yes/no)**

- $\phi = .37,$ $p < .001$ current weapon carrying
  - $\phi = .25,$ $p < .001$ school attended
  - $\phi = .17,$ $p < .001$ age range
  - $\phi = .10,$ $p < .001$ gender

(Chi-square, $\phi$ phi coefficient)
Broader Social Environment, Communities, and Schools—Communities & Neighborhoods

<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>Bursik &amp; Grammick</td>
<td>1993</td>
<td>Concurrent correlational</td>
<td>Population: census data &amp; juvenile court referral records for 74 neighborhoods, Chicago, IL, 1960 &amp; 1980</td>
<td>74 nbhoods</td>
<td>N/R</td>
<td>N/R</td>
<td>N/R</td>
<td>20% A/A</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, et al.</td>
<td>1996</td>
<td>Concurrent correlational</td>
<td>Population: Chicago identified households with age-eligible youth in 2 census tracts: 546 hh 1) high poverty: 887 yth 20% under poverty Denver line, 50+% A/A; 33 BG 2) low poverty: med 662 fam $30k, 30+% A/A; 820 yth Denver, CO; stratified multistage probability sample of households with age-eligible youth, census block groups (BGs)</td>
<td>91 nbhoods</td>
<td>N/R</td>
<td>10, 12, 14, yrs</td>
<td>N/R</td>
<td>15% A/A</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: \( R^2 = 0.66 \)
- \( \beta = 0.71, t = 7.87 \) economic deprivation
- \( \beta = -0.79, t = -9.19 \) economic deprivation
- Regulatory Capacity 1960: \( R^2 = 0.69 \)
- \( \beta = -0.85, t = -8.03 \) economic deprivation
- Regulatory Capacity Mediating 1960: \( R^2 = 0.73 \)
- \( \beta = -0.72, t = -9.18 \) economic deprivation
- Regulatory Capacity Mediating 1980: \( R^2 = 0.64 \)
- \( \beta = -0.72, t = -9.18 \) economic deprivation
- Education:
- \( \beta = -0.39, C \) informal control—problem behavior
- \( \beta = -0.28, D \) informal control—problem behavior
- Youth Problem Behavior:
- \( \beta = -0.39, C \) informal control—problem behavior
- \( \beta = -0.85, D \) informal control—problem behavior
- Youth Prosocial Competence:
- \( \beta = -0.39, C \) informal control—problem behavior
- \( \beta = -0.85, D \) informal control—problem behavior
- Youth Involvement With Conventional Friends:
- \( \beta = -0.39, C \) informal control—problem behavior
- \( \beta = -0.85, D \) informal control—problem behavior
- Reduction in Variance, Neighborhood Effects
  - \( 2\% \text{ C, } 1\% \text{ D) problem behavior} \)
  - \( 5\% \text{ C, } 3\% \text{ D) prosocial} \)
  - \( 6\% \text{ C, } 2\% \text{ D) conventional friends} \)
### Broader Social Environment, Communities, and Schools—Communities & Neighborhoods

#### Community-Level Processes & Social Control

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design Description</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>Sampson &amp; Groves</td>
<td>1989</td>
<td>Concurrent replication correlational</td>
<td>Population:</td>
<td>21,935 residents</td>
<td>16+ yrs</td>
<td>N/R</td>
<td>N/R</td>
<td>N/R</td>
<td>Af/W In</td>
</tr>
<tr>
<td>Sampson, Raudenbush, &amp; Earls</td>
<td>1997</td>
<td>Concurrent correlational</td>
<td>Population:</td>
<td>8,782 residents</td>
<td>N/R</td>
<td>N/R</td>
<td>All</td>
<td>N/R</td>
<td>AfA</td>
</tr>
</tbody>
</table>

#### Key Statistics

- **Social Disorganization & Collective Social Control**
  \[ R^2 = .56 \]
  - \[ \beta = -.36 \] structural disadvantage
  - \[ \beta = -.44 \] ethnicity/immigration
  - \[ \beta = .33 \] structural disorganization
  - \[ \beta = .03 \] lagged crime rate
  - \[ \beta = .09 \] residential stability
- **Collective Social Control & Delinquency**
  \[ R^2 = .75 \]
  - \[ \beta = -.18 \] collective social control
  - \[ \beta = -.64 \] ethnicity/immigration
  - \[ \beta = .05 \] lagged crime rate
  - \[ \beta = .93 \] residential stability
- **Social Disorganization & Delinquency**
  \[ R^2 = .30 \] (weighted least squares regressions; all p's < .05)

#### Structure & Unsupervised Peer Groups

- **Structure & Unsupervised Peer Groups**
  \[ R^2 = .30 \] (1982); \[ R^2 = .12 \] (1984)
  - \[ \beta = -.34 \] (1982); -.17 (1984) SES
  - \[ \beta = .13 \] (1982); -.11, p < .10 ethnicity/immigration
  - \[ \beta = .12 \] (1982); p < .10 residential stability
  - \[ \beta = .22 \] (1982); .19 family disruption
  - \[ \beta = .15 \] (1982) urbanization
  - \[ \beta = -.16 \] (1982) & .19 SES
  - \[ \beta = -.15 \] (1982) & .19 unsupervised peer

#### Structure, Social Disorganization, & Delinquency

- **Structure, Social Disorganization, & Delinquency**
  \[ R^2 = .21 \] (1982); \[ R^2 = .19 \] (1984)
  - \[ \beta = -.38 \] (1982); -.35 (1984) SES
  - \[ \beta = -.16 \] (1982) & .19 SES
  - \[ \beta = -.15 \] (1982) & .19 unsupervised peer
  - \[ \beta = -.05 \] (1982) & .19 residential stability

#### Perceived Neighborhood Violence

- **Perceived Neighborhood Violence**
  - \[ \beta = -.59 \] (t = -5.53) collective efficacy
  - \[ \beta = .16 \] (t = 6.38) concentrated disadvantage
  - \[ \beta = -.05 \] (t = -3.39) residential stability

#### Collective Efficacy

- **Collective Efficacy**
  - \[ \beta = .28 \] (t = 13.30) concentrated disadvantage
  - \[ \beta = .04 \] (t = 2.44) immigration concentration
  - \[ \beta = -.10 \] (t = -6.95) residential stability

#### Violence Scale (All 3 Violence Measures)

- **Violence Scale (All 3 Violence Measures)**
  - \[ \beta = -.53 \] (t = -8.59) collective efficacy
  - (controls: prior homicide, disadvantage, 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 & Childre

#### 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>
</tr>
</thead>
<tbody>
<tr>
<td>Conger, 1992</td>
<td></td>
<td>Concurrent correlational</td>
<td>Convenience: recruited 7th grade students from 34 public &amp; private schools in towns of less than 6,500 in 8 counties, north central Iowa (1989); only families with 2 parents &amp; a sibling within 4 yrs of age included; area had experienced recent economic decline</td>
<td>205</td>
<td>7th gr</td>
<td>100%</td>
<td>Low-middle</td>
<td>11% poverty</td>
<td>Family economic pressure mediated the relationship between economic conditions (per capita income, unstable work, &amp; debt-to-asset ratio) &amp; father's &amp; mother's depressed mood. In turn, mother's depressed mood was associated with marital conflict &amp; less maternal nurturance/involved parenting. Father's depressed mood was associated with less paternal nurturance/involved parenting. Both maternal &amp; paternal parenting mediated the relationship between mother's/father's depressed mood &amp; adolescent adjustment problems.</td>
</tr>
<tr>
<td>Heimer, 1997</td>
<td></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 &gt; 13–19 yrs</td>
<td>100%</td>
<td>Low-upper</td>
<td>N/R% A/A</td>
<td>N/R% Cauc</td>
</tr>
</tbody>
</table>

#### Key Statistics

<table>
<thead>
<tr>
<th>Economic Condition, Pressure, &amp; Depressed Mood</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\chi^2(53) = 70.53, \ p = .054, \ GFI = .952$</td>
</tr>
<tr>
<td>$\beta = -.47 \ \text{per capita income—family econ pressure}$</td>
</tr>
<tr>
<td>$\beta = .14 \ \text{unstable work—family econ pressure}$</td>
</tr>
<tr>
<td>$\beta = .25 \ \text{debt: asset ratio—family econ pressure}$</td>
</tr>
<tr>
<td>$\beta = .58 \ \text{econ pressure—father depressed mood}$</td>
</tr>
<tr>
<td>$\beta = .68 \ \text{econ pressure—mother depressed mood}$</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>$\chi^2(62) = 75.89, \ p = .11, \ GFI = .951$</td>
</tr>
<tr>
<td>$\beta = -.47 \ \text{mother depression—marital conflict}$</td>
</tr>
<tr>
<td>$\beta = -.31 \ \text{marital conflict—mother parenting}$</td>
</tr>
<tr>
<td>$\beta = -.48 \ \text{mother parenting—adjustment problems}$</td>
</tr>
</tbody>
</table>

<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>$\beta = -.20, \ p &lt; .01$ 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>
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</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>$\beta = .11, \ p &lt; .01$ 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>
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</tbody>
</table>

(see other Heimer entries for full model) (structural equation model)
<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Representative Structure</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 et al.</td>
<td>1988</td>
<td>Concurrent</td>
<td>Recruited children in 3 federally funded &amp; 2 middle-class preschools in medium-size town; ratio of children to teachers &amp; physical facilities was similar across school types</td>
<td>94</td>
<td>3.2-5.7 yrs</td>
<td>50%</td>
<td>Low-middle</td>
<td>90% Cauc</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, but not low-SES children. Low-SES children were rated lower on social competence by teachers than middle-SES children.</td>
</tr>
<tr>
<td>Burns, Costello, et al.</td>
<td>1995</td>
<td>Concurrent</td>
<td>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</td>
<td>1,015</td>
<td>9, 11, &amp; 13 yrs</td>
<td>56%</td>
<td>Low-middle</td>
<td>9% AfrA</td>
<td>16% of a sample of school-age children received services from any service sector (mental health, education, child welfare, juvenile justice, or health) in the past 3 mths. 4% were served in the specialty mental health sector. The majority of children were served, &amp; solely served, in the education setting. 40% of children with SED (serious emotional disturbances) (diagnosis &amp; impairment) were served, 22% in the mental health sector.</td>
</tr>
<tr>
<td>Farmer, Stangl, et al.</td>
<td>1999</td>
<td>Prospective</td>
<td>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</td>
<td>1,007</td>
<td>9, 11, 13 yrs</td>
<td>51%</td>
<td>Low-middle</td>
<td>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 an education setting &amp; with a school counselor. Treated children averaged 3.3 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>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>SES &amp; Social Strategies</td>
</tr>
<tr>
<td>$F(1, 90) = 11.13, \ p &lt; .001$ aggressive $M's = 26$ low, 16 middle $F(1, 90) = 6.64, \ p &lt; .05$ reassurances $M's = 30$ low, 12.7 middle $F(1, 90) = 4.82, \ p &lt; .05$ sharing $M's = 37$ low, 62 middle</td>
</tr>
<tr>
<td>% SED Children Receiving Services by Sector (n = 68)</td>
</tr>
<tr>
<td>71.9% 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</td>
</tr>
<tr>
<td>(see study for similar results with diagnosed only, impaired only, or nonproblem children)</td>
</tr>
<tr>
<td>(no statistics reported)</td>
</tr>
<tr>
<td>% of SED Children Receiving Services by Sector (n = 68)</td>
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<tr>
<td>(see study for similar results with diagnosed only, impaired only, or nonproblem children)</td>
</tr>
<tr>
<td>(no statistics reported)</td>
</tr>
<tr>
<td>Use of Education Service $\chi^2(3) = 9.5$</td>
</tr>
<tr>
<td>OR = 0.77 age (younger) OR = 1.63 poverty OR = 1.21, p &lt; .001 # child symptoms Use of Specialty Mental Health $\chi^2 = 5.0$</td>
</tr>
<tr>
<td>OR = 1.50 parent education OR = 1.63 poverty OR = 1.20, p &lt; .001 # child symptoms Use of Specialty Mental Health $\chi^2 = 5.0$</td>
</tr>
<tr>
<td>OR = 1.50 parent education OR = 1.63 poverty OR = 1.20, p &lt; .001 # child symptoms Use of Specialty Mental Health $\chi^2 = 5.0$</td>
</tr>
<tr>
<td>OR = 0.41 male OR = 2.99 impact on family (all $p's &lt; .05$ unless noted; *models include male, age, poverty, parent ed &amp; parent psychiatric history, # child symptoms, impairment, insurance, impact, &amp; tx barriers)</td>
</tr>
<tr>
<td>Authors</td>
</tr>
<tr>
<td>------------------</td>
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<tr>
<td>Costenbader</td>
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<tr>
<td>Farmer, Rodkin,</td>
</tr>
<tr>
<td>et al.</td>
</tr>
<tr>
<td>Mattison, Morales, &amp; Bauer</td>
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<tr>
<td></td>
</tr>
</tbody>
</table>

**Key Statistics**

<table>
<thead>
<tr>
<th>DT/CEP Scale</th>
<th>Emotional disturbance</th>
<th>14% SM, 21% ED</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>t = 1.64, p = ns</td>
<td>M's = 4.47 SM, 6.01 ED</td>
</tr>
<tr>
<td>Conduct Problems</td>
<td>61% SM, 65% ED</td>
<td></td>
</tr>
<tr>
<td></td>
<td>t = 0.89, p = ns</td>
<td>M's = 16.75 SM, 18.37 ED</td>
</tr>
<tr>
<td>ESPS Scale</td>
<td>Interpersonal relations</td>
<td>44% SM, 65% ED</td>
</tr>
<tr>
<td></td>
<td>t = 2.83, p &lt; .01</td>
<td>M's = 16.75 SM, 18.37 ED</td>
</tr>
<tr>
<td>Discriminant analysis</td>
<td>11% SM, 89% ED</td>
<td></td>
</tr>
<tr>
<td>Physical symptoms/fears</td>
<td>44% SM, 65% ED</td>
<td></td>
</tr>
<tr>
<td></td>
<td>t = 3.03, p &lt; .01</td>
<td>M's = 8.83 SM, 6.88 ED</td>
</tr>
<tr>
<td>Discriminant analysis</td>
<td>13% SM, 87% ED</td>
<td></td>
</tr>
</tbody>
</table>

(χ² tests, discriminant function analyses)

**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 < .05 SES*
- 71% SED, 53% non-SED, p < .01 broken home
- 86% SED, 72% non-SED, p < .05 par psych hx
- 61% SED, 41% non-SED, p < .05 abuse
- 2.40 SED, 1.80 non-SED, p < .05 stressors

*p's = ns: broken home, parent psychiatric illness (logistic regression)
Broader Social Environment, Communities, and Schools—Schools Classroom Placement

<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>Stage &amp; Quiroz</td>
<td>1997</td>
<td>Meta-analysis</td>
<td>Convenience: PsyCINFO search; selected studies in public school settings, with control group or baseline measures</td>
<td>99 studies</td>
<td>K–12th gr</td>
<td>N/R</td>
<td>N/R</td>
<td>N/R% AfA</td>
<td>On average, 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>
</tr>
<tr>
<td>Vitaro,</td>
<td>1999</td>
<td>Intervention</td>
<td>Population: 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 (&gt; 70% disruptive) took part in intervention; 42% not included because of parent refusal or missing data</td>
<td>149</td>
<td>6 &gt; 17 yrs</td>
<td>100% Low</td>
<td>M = 10.5 yrs</td>
<td>100% Cauc</td>
<td>Participation in a dropout prevention intervention program (social skills training for boys &amp; parent training) predicted lower average disruptiveness from ages 9 to 11, controlling for age 6 disruptive behavior, family configuration, IQ, &amp; parent education. Post-intervention disruptiveness 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>
</tr>
</tbody>
</table>

Key Statistics

- Mean Effect Size ($\Delta_e$) = −.78, sd = .58, N = 223
- Effect Size by Setting, Teacher Ratings, & Observed $F (2, 220) = 1.63, p < .001, t = −5.39, p < .05$
- $ES = −.65$ regular
- $ES = −.86$ resource room
- $ES = −.97$ self-contained
- Effect Size by Setting, Behavioral Observation $F (2, 197) = 4.13, p < .05, t = −4.12, p < .05$
- $ES = −.71$ regular
- $ES = −.97$ self-contained
- Effect Size by Instrument $F (1, 221) = 13.67, p < .001$
- $ES = −.37$ teacher rating
- $ES = −.83$ behavioral observation

Post-IV Disruptiveness

- $R^2 = 0.07, p < .05$
- $\beta = 0.20, p < .05$ age 6 disruptiveness
- $\beta = −0.16, p < .10$ program participation
- $p < .05, M's = 8.74 IV, 10.72 ctrl$
- ($p's = ns: family configuration, IQ, parent ed)

Post-IV Disruptiveness Mediating IV & Non-AARC*

- Step 1: $\Delta \chi^2 = 49.72, p < .001$
- Step 2: $\Delta \chi^2 = 3.25, p < .10$
- OR = 0.44, p < .10 program participation
- Step 3: $\Delta \chi^2 = 9.54, p < .01$
- OR = 0.54, p = ns program participation
- OR = 1.13, p < .01 post-IV disruption

Non-AARC Mediating IV & Dropout*

- Step 1: $\Delta \chi^2 = 24.56, p < .005$
- Step 2: $\Delta \chi^2 = 1.85, p = ns$
- OR = 0.43, p < .05 program participation
- Step 3: $\Delta \chi^2 = 1.72, p = ns$
- ($p's = ns: program participation, post-IV disruption)

Post-IV Disruptiveness Mediating IV & Non-AARC*

- Step 4: $\Delta \chi^2 = 5.39, p < .05$
- OR = 4.75, p < .05 non-AARC
- ($p's = ns: program participation, post-IV disruption)

Note: (*p's < .05: family configuration, IQ, parent education, p = ns: age 6 disruptiveness) (hierarchical logistic regression)
### Broader Social Environment, Communities, and Schools—Schools

#### Student Mobility

<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>
<th>Key Statistics</th>
</tr>
</thead>
</table>
| Rumberger & Larson | 1998 | Prospective  | Population: national representative sample of students from public & private schools; National Education Longitudinal Study, NELS:88 | 11,671| 8th gr > 12th gr | 50%    | N/R       | N/R% AfrA | The relative odds of changing schools or dropping out of school between 8th & 12th grades were higher for students who had moved between 8th & 12th grades & who had low school engagement in 8th grade (absenteeism, misbehavior, lower educational attainment), controlling for student, family, & school characteristics. | Changes in Behavioral Problems, 10th–12th Grade  
Change Schools 8th–12th Grade  
OR = 1.29 low absenteeism  
OR = 1.22 misbehavior  
OR = 7.18 move  
OR = 0.78 grades  
OR = 0.91 preparation for class  
OR = 1.29, p < .05 low educational expectations  
(*p's < .05: Asian, Black, Hispanic, school change by gr 8, SES, stepfamily, urban, Catholic, private, teach quality)  
School Dropout, 8th–12th Grade  
OR = 4.53 move  
OR = 2.53 high absenteeism  
OR = 1.30 misbehavior  
OR = 1.75 low educational expectations  
OR = 0.65 grades  
(*p's < .05: female, Hispanic, school change/held back by grade 8, SES, stepfamily, urban, discipline, test scores)  
(all p's < .01 unless noted)  
(logistic regressions) |
| Swanson & Schneider| 1999 | Prospective  | Population: national representative sample of students from public & private schools, 1988–1994; National Education Longitudinal Study | 9,976–12,578| 8th gr > 12th gr | 50%    | N/R       | N/R% AfrA | Late school changing (changing schools but not residences, 10th–12th grade) was associated with greater increases in behavioral problems & lower gains in math achievement.  
In contrast, early moving (change of residence, not schools, grades 8–10) & early changing had no effect on behavioral problems & was associated with increased math achievement from grades 10 to 12.  
Students with histories of early moving, changing, or leaving (moving & changing schools) were at increased risk for early dropout. Early or late moving increased the risk of late dropout. Students who experienced early changing or leaving, however, had a decreased risk of late dropout. Early & 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 & behavioral status, mobility, gender, race, family background, & educational history. | Changes in Behavioral Problems, 10th–12th Grade  
Adj $R^2 = .31$ ($n = 12,478$), b = .19, $p < .001$ late chgr  
Gains in Math Achievement, 10th-12th Grade  
Adj $R^2 = .67$, $n = 9,956$  
$\beta = .37$, $p < .05$ early mover  
$\beta = .38$, $p < .05$ early changer  
$\beta = -.30$, $p < .05$ late changer  
(OLS regressions; see below for full model)  
High School Dropout, 8th–10th grade  
$\chi^2 (23) = 814.4$ ($n = 12,518$)  
$\beta = .36$, $p < .05$ early mover  
$\beta = .55$, $p < .05$ early changer  
$\beta = .94$ late changer  
$\beta = .17$ # school changes prior to 8th grade  
(All p's < .05 unless noted)  
(logistic regressions)  
High School Dropout, 10th–12th Grade  
$\chi^2 (26) = 1,496.4$ ($n = 12,578$)  
$\beta = .25$ early mover  
$\beta = .36$ early changer  
$\beta = .15$ early leaver  
$\beta = .55$ late mover  
$\beta = .15$ # school changes prior to 8th grade  
($p's < .001$ unless noted)  
(Model included prior behavior & math scores, mobility, race, gender, GPA, behavior problems, teen parent, athletics, urban school, private school, dropout, family background, income, structure, change in composition, parent ed, ed aspirations, & ed involvement.)  
(logistic regressions) |
### Broader Social Environment, Communities, and Schools—Schools

#### Student Mobility

<table>
<thead>
<tr>
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</tr>
</thead>
</table>
| Tucker, Marx, & Long | 1998| Concurrent/retrospective correlational design | N/R | N/R | N/R | N/R | AfrA | 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 & distance of last move, family type, & number of moves. |}

#### School Discipline

<table>
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<th>SES</th>
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<th>Result</th>
</tr>
</thead>
</table>
| Costenbader & Markson | 1998| Concurrent group comparisons | N/R | N/R | N/R | N/R | AfrA | 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, & Cohn | 1998| Intervention nonrandom school based | N/R | N/R | N/R | N/R | AfrA | A school-based proactive intervention designed to reduce problem behavior through social skill instruction & direct intervention demonstrated modest sustainable reductions in the overall level of problem behavior during recess, during transitions, & in the cafeteria. Examples of rules & positive behaviors included Be Safe (walk, keep food on tray) & Be Respectful (follow adult directions, use polite language). Group contingencies were used for recess & the cafeteria, preconnection & active supervision during transitions. Changes were maintained 1–3 mths post-IV. |}

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### Key Statistics

- **Structural Variables & Times Moved, by Family Type, Academic or Behavioral School Problems**
  - $\chi^2$ = not reported
  - Both biological parents
    - $\beta = .34$, $p < .05$, OR = 2.28 8+ moves
  - All other family types
    - $\beta = .21$, $p < .001$, OR = 2.05 1 move
    - $\beta = .18$, $p < .001$, OR = 2.84 2–3 moves
    - $\beta = .20$, $p < .001$, OR = 2.39 4–5 moves
    - $\beta = .24$, $p < .001$, OR = 2.38 6–7 moves
    - $\beta = .27$, $p < .01$, OR = 2.24 8+ moves
  - All other family types & 0 moves
    - $\beta = .21$, $p < .001$, OR = 2.05 1 move
    - $\beta = .20$, $p < .001$, OR = 2.39 4–5 moves
    - $\beta = .24$, $p < .001$, OR = 2.38 6–7 moves
    - $\beta = .27$, $p < .01$, OR = 2.24 8+ moves
  - All other family types & 0 moves
    - $\beta = .21$, $p < .001$, OR = 2.05 1 move
    - $\beta = .20$, $p < .001$, OR = 2.39 4–5 moves
    - $\beta = .24$, $p < .001$, OR = 2.38 6–7 moves
    - $\beta = .27$, $p < .01$, OR = 2.24 8+ moves

- **School Discipline**
  - Internal (int), External (ext) Suspension Helpful
    - 31% int, 33% ext: not at all
    - 45% int, 31% ext: a little
    - 13% int, 11% ext: a lot
    - 12% int, 25% ext: learned something

- **Average Rate of Problem Behavior per Minute**
  - Cafeteria
    - 3.40 baseline (BL)
    - 4.17 social skills training (SS)
    - 2.15 direct intervention (DI)
    - 1.57 followup (FU)
  - PND = % of nonoverlapping data points: BL-DI, FU
  - Recess
    - 1.42 BL, 1.39 SS, 0.61 DI, 0.68 FU
    - PND = 63% DI, 50% FU (2 mths)
  - Transition
    - 6.08 BL, 5.74 SS, 3.82 DI, 2.5 FU (1 mth)
    - PND: 20% 1st half, 60% 2nd half; DI, 100 FU
    - *2nd half: followed a change in strategy (no other statistics reported)*
<table>
<thead>
<tr>
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<th>Key Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmer</td>
<td>1993</td>
<td>Prospective longitudinal</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 10% 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>
<td>Track Placement, Externalizing: $p &lt; .0001$ $M's = .22$ ext., .47 nonext. high-ability group $M's = .40$ ext., .18 nonext. low-ability group (model included academic ability, family background &amp; difficulties, parent interest in ed, special ed hx) (no other statistics reported; OLS regressions)</td>
</tr>
<tr>
<td>Gamoran, Nystrand, et al.</td>
<td>1995</td>
<td>Concurrent correlational</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>19% Afr, or Hisp</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>Class Level Off-Task Classroom Behavior: $M's = 2.04$ honors, 4.08 regular, 6.84 remedial Class Level % Reading Completed: $M's = 87.8$ 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 $p's &lt; .05$) Achievement: $\chi^2 = 55.89^*$ vs. 66.32** = 10.73, $p &lt; .01$ intercepts $= -1.71$ hon, $-2.55$ reg, $-3.70$ remedial *background effects constrained to be equal across class, sex, minority, SES, fall reading &amp; writing scores, ability **intercepts constrained to be equal (structural equation models)</td>
</tr>
<tr>
<td>Jones, Vanfossen, &amp; Breminger</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>
<td>Predictors of Academic vs. General Track: $\beta = .30$, 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 = 10.20 female ($p's &lt; .001$) (model included school electivity, inclusiveness, individual × organizational interactions) (multinomial logistic regression)</td>
</tr>
<tr>
<td>Authors</td>
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<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% approx</td>
<td>Low-upper</td>
<td>N/R% AfrA</td>
<td>Larger class size was associated with higher 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>
<td></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% Low-upper</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 (&amp; &gt; 1,800—math; &gt; 1,500—reading) schools.</td>
<td></td>
</tr>
<tr>
<td>McGiverin, Gilman, &amp; Tillitski</td>
<td>1980</td>
<td>Meta-analysis</td>
<td>nationally representative sample of students from randomly selected school districts, IN; IV led to reduced class size for 6 of 9 schools</td>
<td>24</td>
<td>1st–2nd gr</td>
<td>N/R</td>
<td>Low-middle</td>
<td>N/R% Cauc</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></td>
</tr>
</tbody>
</table>

**Key Statistics**

**Achievement Scores**

Math: $F = 74, R^2 = .18 (n = 4,741)$

$\beta = .12, t = 6.25, p < .05, M = 24.2$ class size

English: $F = 71, R^2 = .17 (n = 4,973)$

$\beta = .08, t = 7.71, p < .05, M = 24.3$ class size

History: $\beta = .03, t = 1.91, p < .10 (n = 4,850)$

**(p = ns: science)**

**Low Ability & Class Size**

Math: $t = 13.20, M's = 24.8$ nonlow, 21.4 low

Science: $F = 50, R^2 = .13$

$\beta = –0.08, t = –5.40 (n = 4,850)$

Decreases in class size contributed to small increases in test scores.
### Broader Social Environment, Communities, and Schools—Schools

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<th>Key Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rodkin, et al.</td>
<td>2000</td>
<td>Concurrent</td>
<td>Convenience: recruited children from 31 Chicago classrooms (inner-city to suburban) &amp; 28 North Carolina classrooms (rural &amp; small city); classrooms were chosen to include students with disabilities</td>
<td>452</td>
<td>4th-6th gr</td>
<td>100%</td>
<td>N/R</td>
<td>40% AfrA</td>
<td>Teacher ratings of interpersonal competence yielded configurations of popular (Toughs) &amp; unpopular (Average-Academic, Troubled) aggressive boys. Configurations of nonaggressive boys included Model (popular-prosocial), Low Academic, &amp; Resilient (average popular). Tough &amp; Model boys received the highest peer nominations for “cool” &amp; “athletic”, 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>
<td>Teacher ratings: Wilkes Λ = .45</td>
</tr>
<tr>
<td>Farmer, et al.</td>
<td>1999</td>
<td>Concurrent</td>
<td>Convenience: 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, 10-16 yrs</td>
<td>42%</td>
<td>1/3 of families in school district below poverty line</td>
<td>100% AfrA</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>
<td>Peer Ratings: Wilkes Λ = .70</td>
</tr>
</tbody>
</table>

**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

**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**

- Mantel-Haenszel χ²'s not reported, p's < .05
- F (2, 209) = 5.14, p < .01
- \( M^2 = 4.43 \) high central, 3.55 med, 3.27 low

**Popularity & Social Network Status, Girls**

- Mantel-Haenszel χ²'s not reported, p's < .05
- F (2, 277) = 11.00, p < .001
- \( M^2 = 5.12 \) high central, 4.72 med, 4.21 low (ANOVA, no post hoc tests)
<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>
<th>Key Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kellam, Ling, et al.</td>
<td>1998</td>
<td>Prospective longitudinal 5 yrs</td>
<td>Population: children from 18 public elementary schools in 5 areas of E. Baltimore; schools &amp; teachers were randomly assigned to 4V/control classrooms; students were assigned sequentially to 1st-gr classroom balanced for kindergarten age &amp; remained in classroom 1st &amp; 2nd grades</td>
<td>403</td>
<td>1st &gt; 6th gr</td>
<td>50%</td>
<td>Low-middle 46% in school lunch program</td>
<td>T1</td>
<td>64% AfA 29% Cauc 7% Other</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 behavior in 6th grade. Highly aggressive 1st-grade boys in high-aggression classrooms were 2.7 times more likely to be rated as 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, Ysseldyke, et al.</td>
<td>1993</td>
<td>Concurrent correlational students observed 1 time over 1 yr</td>
<td>Source specific: students in special education &amp; regular services, 27 schools, 8 school districts; 114 learning disabled, 19 emotional/ behaviorly disturbed, &amp; 6 educable mentally retarded students</td>
<td>139</td>
<td>1st–6th gr</td>
<td>66%</td>
<td>N/R</td>
<td>N/R</td>
<td>Qualitative &amp; quantitative aspects of instruction in special education classrooms showed improvements with smaller student-teacher ratios. Observations of teacher instruction found that relevance of assigned tasks, feedback from teachers, &amp; checking for student understanding were greater in classes with smaller ratios. Similarly, students in classes with smaller student-teacher ratios had higher academic responding &amp; engaged times, &amp; they spent less time on task management &amp; teacher tasks.</td>
<td></td>
</tr>
<tr>
<td>Van Acker, Grant, &amp; Henry</td>
<td>1996</td>
<td>Concurrent group comparisons</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</td>
<td>59%</td>
<td>N/R</td>
<td>N/R</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></td>
</tr>
<tr>
<td>Wehby, Dodge, &amp; Valente</td>
<td>1993</td>
<td>Prospective longitudinal 15 mths observed 30 mins, 4x, over 2 mths</td>
<td>Convenience: students chosen from larger study, Southeast, 3-stage screening for risk: school, class, parents</td>
<td>82</td>
<td>K &gt; 1st gr</td>
<td>57%</td>
<td>N/R</td>
<td>N/R</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></td>
</tr>
</tbody>
</table>

* Classroom aggression: Mean aggression score of children in classroom (teacher-rated). Classroom poverty: % of students in the classroom who receive a free lunch (hierarchical linear regressions)
## Broader Social Environment, Communities, and Schools—School Bonding & Attachment

<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>
<th>Key Statistics</th>
</tr>
</thead>
</table>
| Abbott et al.                 | 1998 | Intervention    | Convenience: consenting 5th grade students (76%) in 18 public schools, high-crime areas, part of a longitudinal study of 1st-6th intervention; 20 classrooms in 10 schools IV, 18 classrooms in 8 schools controls; 1985-1987 | 808  | spr 4th > spr 6th gr | 51%   | Low-middle | 52% eligible for school lunch program | 24% AfA, 46% Cauc, 21% AsmA, 9% Other; Greater implementation of targeted teaching strategies, classroom management, interactive teaching, cooperative learning, and increased student-reported bonding to school, involvement in the classroom, and opportunity for reinforcement of classroom involvement. III 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. | Academic Achievement—CAT: $\chi^2 = 6.33$ (df = 36), $p < .05$; $t = 2.69, p < .05$
Bonding to School—Implementation Score: $\chi^2 = 222.7$ (df = 41), $p < .05$; $t = 2.23, p < .05$
Opportunity for Involvement—Implementation: $\chi^2 = 2.29$ (df = 36), $p < .05$; $t = 3.14, p < .05$
Actual Involvement—Implementation: $\chi^2 = 106.5$ (df = 41), $p < .05$; $t = 2.49, p < .05$
Reinforcement Involvement—Implementation: $\chi^2 = 2.44$ (df = 41), $p < .05$; $t = 2.36, p < .05$
(M's not reported for high & low implementation: controlling for 5th-grade baseline scores: $t$ test, hierarchical linear modeling, Bayes estimation) |
| O'Donnell et al.              | 1998 | Intervention    | Convenience: consenting 5th-gr students (76%) in 18 public schools, high-crime areas, Seattle; 1/3 received IV since 1st-grade, 1/3 5th-6th grade; 1/3 controls; 1985-1993 | 598  | 5th gr > 17/18 yrs | 50%   | Low-middle | 57% eligible for school lunch program | 26% AfA, 22% AsmA, 44% Cauc, 5% NaA, 3% Other; High school seniors in preventative intervention classrooms during 1st-6th grades reported more commitment to and attachment to school; less school misbehavior, heaving drinking, or repeating a grade; and less lifetime violence, sexual activity, or pregnancy; there was no difference in achievement between 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, fewer working-/middle-class IV students were born to a woman pregnant than controls. The late IV (5th & 6th grade only) showed no treatment effects. | 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 = 13 IV, 30 control poverty
School Misbehavior, Self-Report, Past Year (n = 529): $p = .02$, M's = 6.66 IV, 6.77 control
Alcohol Use (10+ past yr): $p = .02$, 15% IV, 25% control
Lifetime Violence: $p = .04$, 48% IV, 60% control
Lifetime Sexual Activity: $p = .02$, 72% IV, 83% control
Lifetime Been/Got Woman Pregnant: $p = .02$
M's = 2.7% IV, 30% control poverty
M's = 5% IV, 21% control working/middle
(student t tests for means, c2 for prevalence rates) |
| Catalano et al.               | 1999 | Intervention    | Convenience: consenting 5th-gr students (76%) in 18 public schools, high-crime areas; 6-yr followup; age 17: CAT achievement, court records; age 18: self-report | 598  | T2, 17/18 yrs | 50%   | Low-middle | 57% eligible for school lunch program | 26% AfA, 22% AsmA, 44% Cauc, 5% NaA, 3% Other; High school seniors in preventative intervention classrooms during 1st-6th grades reported more commitment to and attachment to school; less school misbehavior, heaving drinking, or repeating a grade; and less lifetime violence, sexual activity, or pregnancy; there was no difference in achievement between 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, fewer working-/middle-class IV students were born to a woman pregnant than controls. The late IV (5th & 6th grade only) showed no treatment effects. | Bonding to School, School Commitment: $p = .03$, M's = 2.65 IV, 2.50 control
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M's = 2.7% IV, 30% control poverty
M's = 5% IV, 21% control working/middle
(student t tests for means, c2 for prevalence rates) |
| Jenkins, Hawkins et al.       | 1997 | Concurrent     | Conocrrentional: recruited students from middle school in DC; urban & suburban areas; 83% participation | 754  | 7th & 8th gr | 50%   | Low-middle | 20% eligible for school lunch program | 22% AfA, 66% Cauc, 3% AsmA, 5% Hisp, 4% Other; Components of the school social bond predicted self-reported school delinquency. Educational commitment & belief in school rules directly predicted school crime (drug use, vandalism), school misconduct (cheating, talking in class) & school nonattendance (cutting or tardiness, class or school). Attachment to school directly predicted misconduct & nonattendance. Involvement in school activities was an indirect predictor of school delinquency, through the school social bond. | School Crime: $R^2 = .32$, $p < .05$
$r = -.35$ educational commitment
$r = -.23$ belief in school rules
$r's = .13$ sibling at school, .14 male
School Misconduct: $R^2 = .29$, $p < .05$
$r's = -.26$ ed comm, -.15 belief, -.26 attach
$r's = .07$ family size, .18 male
$r's = -.06$ 8th grade, .10 single-parent family
School Nonattendance: $R^2 = .25$, $p < .05$
$r's = -.36$ ed comm, -.12 belief, -.16 attach
$r = .08$ family size
(see study for results with indirect predictors: parental involvement in school, mother's education, grade, ethnicity, male, math ability, living with step-parent) (path analysis) |
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


