

DEVELOPMENTAL PATHWAYS TO CONDUCT DISORDER: IMPLICATIONS FOR SERVING YOUTH WHO SHOW SEVERE AGGRESSIVE AND ANTISOCIAL BEHAVIOR

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Research has uncovered a large number of risk factors that can place a child at risk for showing severe antisocial and aggressive behavior and to be diagnosed with conduct disorder. In this paper, recent research is outlined that has organized these risk factors into distinct pathways, each involving somewhat distinct causal processes, through which children develop this disorder. This body of research has been important for advancing our understanding of the causes of conduct disorder. In addition, it has some important implications for service delivery. The comprehensive and individualized approach to intervention that seems most indicated based on this research is consistent with the way most educators are trained to view service delivery. As a result, this body of research could be very helpful in guiding school personnel in the development of individualized educational plans that meet the needs of children with conduct disorder. © 2004 Wiley Periodicals, Inc.

Conduct disorder refers to a form of childhood psychopathology involving a repetitive and persistent pattern of behavior in which the basic rights of others (e.g., aggression to people and animals, destruction of property, theft) or major age-appropriate societal norms or rules are violated (e.g., running away from home, truant from school) (American Psychiatric Association, 2000). It is a disorder that can affect the school environment in a number of ways. The behavior of children with this disorder can lead to disruptions in the classroom that prevent all students from experiencing an educational setting conducive to learning (Frick, 1998; Zigler, Taussig, & Black, 1992). In addition, the need to serve these children in settings that both include a continuum of restrictiveness and meet all of their educational needs can be difficult and costly (Knoff, 2000). Adding to these social and organizational costs to schools are the monetary costs associated with added security procedures needed to protect the rights and safety of all students (Gottfredson & Gottfredson, 2001) and the costs of repairing schools that have experienced vandalism (Zigler et al., 1992). Given these dramatic effects on the school environment, it is critical to the success of the teaching mission of schools to develop effective programs and services to meet the needs of students with conduct disorder.

Although the need and potential gain for improving services for antisocial and aggressive youth in schools are great, there are a number of very difficult organizational barriers to overcome. First, the behaviors of children with conduct disorder cut across traditional educational, mental health, and juvenile justice boundaries. As a result, serving children with conduct disorder highlights the often arbitrary organizational system that attempts to segment which government agency has primary responsibility for serving children with certain needs and, thus, which agency (or agencies) should be required to devote its scarce resources for providing these services (Lourie & Hernandez, 2003). Second, within the education system, characteristics of these children do not fit neatly into special education categories based on learning, emotional, or behavioral deficits. Therefore, the appropriate organizational structure for educating these children within the constraints mandated by state or federal guidelines is often unclear (Kershaw & Sonuga-Barke, 1998; Mac-Millan, 1998). Third, research has increasingly shown that the causes of conduct disorder typically involve a number of interacting factors and these factors may be different for various groups of children with conduct disorder (Frick & Ellis, 1999). As a result, interventions for children with

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this disorder typically need to be comprehensive and individualized (Frick, 1998, 2001), further complicating the development and implementation of a system of services that meet the educational needs of these children.

This last issue will be the main focus here. My primary goal is to summarize recent research investigating the many different factors that can place a child at risk for developing conduct disorder. Rather than simply listing the many factors that have been related to conduct disorder, I will provide a framework for understanding how these factors may predispose the child to act in an aggressive and antisocial manner. This framework recognizes that there can be many different reasons for why children develop conduct disorder. These distinct developmental pathways each involve unique causal processes. Thus, this framework is quite important for advancing causal theories. However, the unique characteristics of children in these pathways also suggest that there may need to be different approaches to education and treatment for subgroups of children with conduct disorder. Therefore, a secondary goal is to highlight the implications of this framework for designing and implementing better services for these children in schools.

CONDUCT DISORDER: THE RESULT OF MULTIPLE INTERACTING FACTORS

The common theme of recent comprehensive reviews of the research on childhood conduct disorder is that there are a large number of risk factors that have been associated with this disorder (Dodge & Petit, 2003; Frick, 1998; Loeber & Farrington, 2000; Raine, 2002). A summary of some of the more common risk factors is provided in Table 1. This list illustrates both the large number and diversity of factors that have been associated with conduct disorder. Included are dispositional characteristics located within the child (e.g., biological abnormalities, maladaptive personality traits, cognitive deficits), as well as factors involving the child's social context (e.g., inadequate parenting, poor quality schools, peer rejection). The implication of this research is that it is very unlikely that the focus on any single risk factor will adequately account for the development of conduct disorder. As a result, causal theories need to somehow integrate multiple factors in trying to explain this disorder.

The most common method of taking into account the multiple risk factors that can lead to conduct disorder is to consider them from a cumulative risk perspective. From this perspective, the number of risk factors present is more important than the type of risk factor. For example, Loeber

Table 1
Summary of the Major Risk Factors Associated With Conduct Disorder^a

Dispositional risk factors	Contextual risk factors
Neurochemical abnormalities	Pre-natal exposure to toxins
Autonomic irregularity	Early exposure to poor quality child care
Birth complications	Parental psychopathology
Difficult child temperament	Family conflict
Impulsivity	Inadequate parental supervision and discipline
Preference for dangerous and novel activities	Lack of parental involvement and neglect
Reward dominant response style	Peer rejection
Low verbal intelligence	Association with a deviant peer group
Academic underachievement	Impoverished living conditions
Deficits in processing social information	Exposure to violence

Note. The organization into dispositional and contextual factors is not meant to imply a nature–nurture distinction but is used solely as an organizational tool.

^aSee references Dodge & Petit (2003); Frick, (1998); Loeber & Farrington, (2000); Raine, (2002).

and Farrington (2000) demonstrated that the risk for serious antisocial behavior was a function of the number of risk factors present, with risk increasing in a linear manner from the presence of no risk factors to the presence of six or more risk factors. Recent research has also suggested that the accumulation of risk may not only act additively, but also interactively. For example, any one vulnerability as listed in Table 1 (e.g., impulsivity) may convey only moderate risk for a child developing conduct disorder. However, in combination with other risk factors (e.g., inadequate socializing experiences, impoverished living conditions), the risk for antisocial outcomes can be quite high (Lynam et al., 2000).

The importance of considering multiple factors that might be involved in the development of conduct disorder has important implications for serving children with this disorder. Specifically, it makes it unlikely that any intervention that addresses only a single factor will be very successful for a large number of students, a fact that has been supported by a rather extensive body of treatment outcome research. That is, a number of recent reviews of treatment outcome research (Brestan & Eyberg, 1998; Frick, 1998, 2001; Kazdin, 1995) have documented several types of intervention that have proven successful for reducing conduct problems in controlled treatment outcome studies. However, these programs have had only limited success for treating older children with more severe conduct problems and this limited success is likely due to the focus on only single risk factors (e.g., problematic parenting; impulsivity) in these approaches to treatment (see Frick, 2001).

Although the cumulative risk approach has some important implications for serving children with conduct problems in schools, it also has some significant limitations. First, the cumulative risk approach does not specify the causal mechanism(s) through which these risk factors may make a child more susceptible for acting in an aggressive and antisocial manner. That is, it does not specify how these factors can disrupt the normal development of the child (e.g., affecting his or her ability to delay gratification, affecting his or her ability to regulate emotion). Understanding these developmental disruptions could be critical for designing interventions. Specifically, knowledge of how these risk factors may affect the developing child could guide interventions that enhance the child's development and reduce his or her disruptive school behavior, even if the risk factors themselves may not be changeable. Second, the cumulative risk model does not recognize that conduct disorder may come about through many different pathways, each involving somewhat distinct individual causal processes. As a result, the same intervention may not work as well or in the same way for different children with conduct disorder.

DEVELOPMENTAL PATHWAYS BASED ON THE TIMING OF ONSET OF CONDUCT DISORDER SYMPTOMS

Based on the limitations of the cumulative risk approach, there have been a number of attempts to define meaningful subgroups of children with conduct disorder who differ on the causal processes that lead to the child's aggressive and antisocial behavior (see Frick & Ellis, 1999 for a review). One approach that has achieved widespread acceptance, including being incorporated into the most recent versions of the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR; American Psychiatric Association, 2000)*, is the distinction between children who begin showing severe conduct problems in childhood versus those whose onset of severe antisocial behavior coincides with the onset of puberty. Children in the childhood-onset group often begin showing mild conduct problems as early as pre-school or early elementary school, and their behavioral problems tend to increase in rate and severity throughout childhood and into adolescence (Lahey & Loeber, 1994). In contrast, the adolescent-onset group does not show significant behavioral problems in childhood but they begin exhibiting significant antisocial and delinquent behavior coinciding with the onset of adolescence (Hinshaw, Lahey, & Hart, 1993;

Moffitt, 1993). In addition to different patterns of onset, there are important differences in the severity of behavior and outcome between the two groups of antisocial youth. Specifically, the childhood-onset group is more likely to show aggressive behaviors in childhood and adolescence and is more likely to continue to show antisocial and criminal behavior into adulthood (Frick & Loney, 1999; Hinshaw et al., 1993; Moffitt, 1993; Moffitt & Caspi, 2001).

More relevant to causal theory, however, is the findings that the two groups differ on a number of the risk factors related to conduct disorder listed in Table 1 (Moffitt, 2003; Moffitt & Caspi, 2001). Specifically, most of the dispositional (e.g., temperamental risk, low intelligence) and contextual (e.g., family dysfunction, poverty) correlates that have been associated with severe antisocial behavior seem primarily associated with the childhood-onset subtype. In contrast, the youth in the adolescent-onset subtype do not consistently show these same risk factors. If the adolescent-onset group does differ from children without conduct problems, it seems primarily in showing more affiliation with delinquent peers and higher scores on measures of rebelliousness and authority conflict (Moffitt & Caspi, 2001; Moffitt, Caspi, Dickson, Silva, & Stanton, 1996).

The different characteristics of children in the two subtypes of conduct disorder have led to theoretical models that propose very different causal mechanisms operating across the two groups. For example, Moffitt (1993, 2003) has proposed that children in the childhood-onset group develop their problem behavior through a transactional process involving a difficult and vulnerable child (e.g., impulsive, with verbal deficits, with a difficult temperament) who experiences an inadequate rearing environment (e.g., poor parental supervision, poor quality schools) (see also Hinshaw et al., 1993). This dysfunctional transactional process disrupts the child's socialization leading to poor social relations with persons both inside (e.g., parents and siblings) and outside the family (e.g., peers and teachers). These disruptions lead to enduring vulnerabilities that can negatively affect the child's psychosocial adjustment across multiple developmental stages.

In contrast, Moffitt (1993, 2003) has proposed a very different causal model to explain the development of conduct problems for children in the adolescent-onset pathway. Because children in this group are more likely to have their problems limited to the adolescent age group and because they show fewer dispositional and contextual risk factors, this group is conceptualized as showing an exaggeration of the normative process of adolescent rebellion. That is, all adolescents show some level of rebelliousness to parents and other authority figures (e.g., teachers and principals). This is part of a process by which the adolescent begins to develop his or her autonomous sense of self and his or her unique identity. According to Moffitt (1993), the child in the adolescent-onset group engages in antisocial and delinquent behaviors as a misguided attempt to obtain a subjective sense of maturity and adult status in a way that is maladaptive (e.g., breaking societal norms) but encouraged by an antisocial peer group. Given that their behavior is viewed as an exaggeration of a process specific to adolescence, and not due to enduring vulnerabilities, their antisocial behavior is less likely to persist beyond adolescence. However, they may still have impairments that persist into adulthood due to the consequences of their adolescent antisocial behavior (e.g., a criminal record, dropping out of school, substance abuse) (Moffitt & Caspi, 2001).

CALLOUS/UNEMOTIONAL TRAITS AND CONDUCT DISORDER

Although the distinction between childhood-onset and adolescent-onset trajectories has been influential in explaining different pathways through which children may develop conduct disorder, it is important to note that clear differences between the pathways are not always found (Lahey et al., 2000) and the applicability of this model to girls requires further testing (Silverthorn & Frick, 1999). However, it clearly illustrates how the same outcome (i.e., serious conduct problems) can come about through very different developmental processes. Research has begun extending this

conceptualization by exploring whether additional distinctions can be made within children who follow the childhood-onset pathways based on: (a) the severity, type, and stability of conduct problems exhibited, (b) the specific vulnerabilities that can make children more difficult to socialize by parents and teachers, and (c) the specific developmental processes that are disrupted by the transaction process that takes place between a vulnerable child and a nonoptimal socializing environment.

Specifically, there appears to be a subgroup of antisocial youth in juvenile forensic facilities (Caputo, Frick, & Brodsky, 1999; Silverthorn, Frick, & Reynolds, 2001), outpatient mental health clinics (Christian, Frick, Hill, Tyler & Frazer, 1997; Frick, O'Brien, Wootton, & McBurnett, 1994), and school-based samples (Frick, Bodin, & Barry, 2000) who show high rates of callous and unemotional (CU) traits (e.g., lacking empathy and guilt). These youth with conduct disorder who also show CU traits seem to show a more severe and aggressive pattern of conduct problems than other youth with conduct disorder (Christian et al., 1997; Frick, Cornell, Barry, Bodin, & Dane, 2003; Kruh, Frick, & Clements, in press). Even more specifically, they are more likely to show a pattern of behavior that includes reactive (e.g., aggression that is in response to real or perceived provocation) and impulsive aggressive acts, as well as instrumental (e.g., aggression to gain a desired outcome) and premeditated aggressive acts (Caputo et al., 1999; Kruh et al., in press). For example, in a nonreferred sample of school children, children with CU traits and conduct problems showed more aggression overall and more instrumental aggression than other conduct problem children (Frick, Cornell, Barry et al., 2003).

Besides showing a more severe and aggressive pattern of conduct problems, there is evidence that the subgroup of youth with conduct disorder and CU traits also exhibits a distinct temperamental style. For example, children with conduct problems who also show CU traits show a preference for novel, exciting, and dangerous activities in both mental health (Frick, Lilienfeld, Ellis, Loney, & Silverthorn, 1999) and school-based (Frick, Cornell, Bodin et al., 2003) samples. Additionally, children with CU traits and conduct problems have been shown to be less reactive to threatening and emotionally distressing stimuli than other antisocial youth (Blair, 1999; Frick, Cornell, Bodin et al., 2003; Loney, Frick, Clements, Ellis, & Kerlin, 2003). Finally, children with CU traits are less sensitive to cues of punishment, especially when a reward-oriented response set is primed (Barry et al., 2000; Fisher & Blair, 1998; Frick, Cornell, Bodin et al., 2003; O'Brien & Frick, 1996). This reward-oriented response set not only appears in computerized laboratory tests but also in social situations in which these children show a tendency to emphasize the positive aspects (e.g., obtaining rewards, gaining dominance) of solving peer conflicts with aggression and to de-emphasize the negative aspects (e.g., getting punished) (Pardini, Lochman, & Frick, 2003). This reward-oriented response set may make this group of children less responsive to many behavior management plans used in schools that emphasize punishments for misbehavior, rather than incentives for more appropriate behaviors.

The preference for novel and dangerous activities, the lack of emotional responsiveness to negative emotional material, and the lack of sensitivity to cues to punishment are all consistent with a temperamental style that has been variously labeled as low fearfulness (Rothbart & Bates, 1998), low behavioral inhibition (Kagan & Snidman, 1991), low harm avoidance (Cloninger, 1987), or high daring (Lahey & Waldman, 2003). Importantly, several studies of normally developing children have linked this temperament with lower scores on measures of conscience development in both concurrent (Asendorff & Nunner-Winkler, 1992; Kochanska, Gross, Lin, & Nichols, 2002) and prospective studies (Rothbart, Ahadi, & Hershey, 1994). These findings have led to a number of theories as to how this temperament may be involved in conscience development.

For example, some developmental theories suggest that moral socialization and the internalization of parental and societal norms are partly dependent on the negative arousal evoked by the potential punishment for misbehavior (e.g., Kagan, 1998; Kochanska, 1993). If the child has a

temperament in which the negative arousal to cues of punishment is too low, guilt and anxiety associated with actual or anticipated wrongdoing can be impaired (Kagan, 1998; Kochanska, 1993). This temperament also could place a child at risk for missing some of the early precursors to empathetic concern which involves emotional arousal evoked by the misfortune and distress of others (Blair, 1995; Blair, Colledge, Murray, & Mitchel, 2001; Blair, Jones, Clark, & Smith, 1997). Consistent with these theories, children with conduct disorder and CU traits appear less responsive to typical parental socialization practices than other children with conduct problems (Oxford, Cavell, & Hughes, 2003; Wootton, Frick, Shelton, & Silverthorn, 1997), they are less distressed by the negative effects of their behavior on others (Blair et al., 1997; Frick et al., 1999; Pardini et al., 2003), they are more impaired in their moral reasoning and empathic concern towards others (Blair, 1999; Fisher & Blair, 1998; Pardini et al., 2003), and they are less able to recognize expressions of sadness in the faces and vocalizations of other children (Blair et al., 2001; Stevens, Charman, & Blair, 2001).

In summary, children within the childhood-onset pathway to conduct disorder who also show CU traits differ from other children with conduct problems in a number of important ways. They show a more severe and aggressive pattern of behavior. Further, they seem to show a distinct temperamental style involving a lack of fearful inhibitions and they show signs of a deficit in their conscience development. All of these factors suggest that these children have a temperament that can affect the normal development of conscience placing them at risk for an especially severe and aggressive pattern of antisocial behavior (see Frick, 1998; Frick & Morris, 2004 for a more extended discussion of this proposed developmental pathway). It is important to note that this proposed model for understanding children with CU traits is not meant to suggest that development along this pathway is unchangeable. Not all children with a fearless and uninhibited temperament will go on to show deficits in conscience development or CU traits (Kochanska, 1993; 1995) nor will all children with deficits in conscience development go on to show conduct disorder and aggression (Frick, Cornell, Bodin et al., 2003). Further, CU traits, and the associated temperament and deficits in conscience development, only account for a small percentage of children in the childhood-onset subtype of conduct disorder (Christian et al., 1997; Frick, Bodin, & Barry, 2000). Therefore, it is important to consider other vulnerabilities that may underlie the conduct problems in children with the childhood-onset subtype.

EMOTIONAL REGULATION AND CONDUCT DISORDER

The few studies that have distinguished between children within the childhood-onset group who differ on the presence of CU traits provide some clues as to the mechanisms that may be involved in the development of conduct problems in children *without* these traits. Children with conduct problems who are not elevated on CU traits are less aggressive than children high on CU traits and, when they do act aggressively, it is more likely to be reactive in nature (Frick, Cornell, Barry et al., 2003) and in response to real or perceived provocation by others (Frick, Cornell, Bodin et al., 2003). Also, antisocial children *without* CU traits have conduct problems that are more strongly associated with dysfunctional parenting practices (Oxford et al., 2003; Wootton et al., 1997) and with deficits in verbal intelligence (Loney, Frick, Ellis, & McCoy, 1998). Finally, antisocial youth *without* CU traits seem to show problems regulating their emotions. They exhibit high levels of emotional distress (Frick et al., 1999; Frick, Cornell, Bodin et al., 2003), they are more reactive to the distress of others in social situations (Pardini et al., 2003), and they are highly reactive to negative emotional stimuli (Loney et al., 2003).

Overall, these findings suggest that different mechanisms are operating in the development of conduct problems for children who do not show high rates of CU traits compared to those who do. Although there may be a number of different mechanisms operating (Frick & Ellis, 1999), a large

number of children with conduct problems without CU traits seem to have problems regulating their emotions (Frick & Morris, 2004). These problems in emotional regulation can lead to a number of problems in the school setting. It can result in the child committing impulsive and unplanned aggressive and antisocial acts for which the child may be remorseful afterwards but still have difficulty controlling in the future (Pardini et al., 2003). The problems in emotional regulation can also make a child particularly susceptible to becoming angry due to perceived provocations from peers, leading to aggressive acts within the context of high emotional arousal, such as arguments and fights with teachers and classmates (Hubbard et al., 2002; Kruh et al., in press; Loney et al., 2003; Shields & Cicchetti, 1998).

Although problems with regulating emotion can lead directly to conduct problems and aggression, there are a number of mechanisms through which they can have indirect effects on the development of conduct problems. For example, emotional dysregulation can impair the development of social cognitive skills that allow a child to effectively process information and effectively respond to this information in social situations (Dodge & Petit, 2003). In addition, a child who shows intense unregulated displays of negative emotions is more likely to be rejected by his or her classmates (Rubin, Bukowski, & Parker, 1998) and this peer rejection can place the child at risk for school truancy and for associating with other antisocial and aggressive peers (Keenan, Loeber, Zhang, Stouthamer-Loeber, & Van Kammen, 1995).

In addition to disruptions in the peer context, the problems in emotional regulation experienced by children with conduct problems without CU traits can disrupt socialization attempts by both parents and teachers. For example, Kochanska (1993, 1995) has proposed that children who are susceptible to strong negative affect can have difficulties internalizing parental norms because their intense emotional arousal to discipline encounters prevents them effectively processing the parental message. Also, Patterson and colleagues (Patterson, Reid, & Dishion, 1992; Snyder & Patterson, 1995) have proposed that antisocial and aggressive youth often are involved in coercive cycles with their parents in which both parent and child attempt to control each other through increasingly aversive behaviors (e.g., parental harsh discipline, child's display of anger and hostility towards the parent). A child with problems in emotional regulation can be more likely to elicit and maintain such coercive cycles in parent-child interactions and to have this pattern of behavior generalize to other settings, such as at school and with peers (Gauvain & Fagot, 1995).

This research on children without CU traits suggests that a large number of children with childhood-onset conduct disorder show a pattern of impulsive and dysregulated behavior related to deficits in their ability to control their emotions. This pattern of dysregulated emotion can lead to antisocial and aggressive acts that are usually unplanned and impulsive and/or that take place in the context of high emotional arousal (e.g., an argument with a teacher, a fight with a peer). This is a very different causal process than that discussed for children with CU traits and for those with an adolescent-onset to their severe conduct problems. As noted previously, children with a childhood-onset to their antisocial behavior who show CU traits seem to have a temperament that places them at risk for problems in conscience development. In contrast, the adolescent-onset pathways seem to involve an exaggeration of a normal process of rebellion from authority figures. Therefore, research has delineated at least three pathways, each involving somewhat distinct developmental processes that could lead a child to act in an antisocial and aggressive manner and be diagnosed with conduct disorder.

IMPLICATIONS OF DEVELOPMENTAL PATHWAYS TO CONDUCT DISORDER FOR SERVICE DELIVERY

Before discussing some of the implications of this research for serving youth with conduct disorder, it is important to note how this research relates to the organizational barriers to serving

antisocial youth in schools noted previously. This research highlights the fact that youth in each of these categories often show characteristics that may warrant juvenile justice (e.g., illegal activities), mental health (e.g., impulsivity, anxiety), and/or educational (e.g., deficits in verbal intelligence) services. Further, the distinction between behavioral and emotional disturbance, which forms the basis for many special education distinctions, is difficult to apply to many students with conduct disorder. By definition, these children show a behavioral disturbance that impacts their psychological, social, and/or educational functioning in some significant way. However, students in each pathway also show significant problems in their emotional functioning, albeit different problems across the subgroups outlined in this review (e.g., problems in identity formation for the adolescent-onset group, problems in the experience of empathy and guilt for children with CU traits, problems regulating emotion for children in the childhood-onset group without CU traits). Therefore, the organizational structure for providing services within the school system often makes it difficult to determine whether and under what state or federal guidelines a child with conduct disorder should be served (Knoff, 2000).

These institutional barriers aside, this research does suggest at least two general guidelines for how services, whether in the school, in a mental health setting, or in a juvenile justice facility, should be designed in implemented for children with conduct disorder (see Frick, 1998, 2001 for a more extended discussion of these implications). The first guideline is that services for youth with conduct disorder require the availability of an array of services provided in settings that vary along a continuum of restrictiveness. Given the number of factors that can lead to conduct disorder, any single type of intervention is likely to be ineffective for many children with this disorder, no matter how well implemented it may be. Further, as noted throughout the review, there is great variability in the severity and type of conduct problems displayed by children with conduct disorder. Some behaviors may lead to only minor classroom disruptions and others may involve significant disruptions in the school environment and present potential danger of harm to other students.

The second guideline is that some system for determining what services are needed for the individual child with conduct disorder is critical, so that interventions can be tailored to the student's individual needs. This requires a system of assessment by professionals (a) knowledgeable about the developmental pathways through which conduct disorder may develop, and (b) having expertise in the specific methods for assessing the critical processes that may be the target of intervention in each of these pathways (see Kamphaus & Frick, 2002). In mental health and juvenile justice settings, the use of a comprehensive and individualized approach for serving antisocial youth is perhaps the most important factor differentiating the more successful models of intervention from those that are less effective (Frick, 1998, 2001). Although not directly tested, it is likely that such approaches to intervention will also result in the most effective educational services provided within schools. Educators are typically trained to think in terms of individualized educational plans for students with disabilities. However, since conduct disorder has not always been considered a disability and because many educators may not be familiar with the most current research on developmental pathways to conduct disorder, they may not be comfortable in developing individualized plans for these youth. Further, because of the disruptive nature of the child's behavior and concerns about the potential danger to other students in some cases, the focus of many educational decisions is on the most appropriate level of restrictiveness for the child's academic placement, rather than on the most important focus of intervention within a placement.

It is important to note that, providing individualized education plans to students with conduct disorder may not always involve developing new programs or services but may simply involve making multiple programs available in the school and developing a systematic method of determining which children are most likely to benefit from them. For example, there are a number of programs that have been implemented in schools that are designed to help children control their

impulsive or angry behavior (e.g., Lochman, Coie, Underwood, & Terry, 1993), enhance young children's ability recognize distress in others (e.g., Bierman & Greenberg, 1996), or enhance student involvement in structured extracurricular activities with prosocial peers (e.g., Hawkins, Catalano, Kosterman, Abbott, & Hill, 1999). Many of these programs have not always proven to be effective for a large number of children with conduct disorder (Brestan & Eyberg, 1998; Frick, 1998; Kazdin, 1995). However, this may be because they have been implemented in a manner that does not include a systematic method for determining who might benefit most from the intervention. For example, the focus on involvement in extracurricular activities may be more important for children with the adolescent-onset type of conduct disorder, given its potential positive effects on the student's identity development and the focus on increasing contact with prosocial peers in a structure setting. Similarly, interventions designed to inhibit impulsive and angry responses may be particularly useful for children within the childhood-onset pathway who show problems with emotional and behavioral regulation, whereas interventions focusing on increasing empathetic concern may be more useful for children with CU traits.

Also, the focus on developmental pathways does not preclude the use of generic behavioral strategies that can be effective for managing student's behavior in the classroom. Specifically, research has consistently shown that schools with clear rules and structured behavior management plans have lower levels of conduct problems in the classroom (e.g., Conduct Problems Prevention Research Group, 1999; Kellam, Rebok, Ialongo, & Mayer, 1994). It is likely that such good behavior management strategies are important across all of the pathways to conduct disorder outlined above. However, understanding the mechanisms involved in these pathways could help to tailor these strategies for specific groups of children. For example, it could help to identify the most important targets of behavior change (e.g., increase in competent behavior, increase in calm responding to provocation, increase in concern for the feeling of others) or to determine how these programs should be implemented (e.g., emphasizing the goal of self-sufficiency, emphasizing the development of specific skills, emphasizing the potential gain for the student).

In summary, there has been a great deal of research that has started to delineate the many different pathways through which children may develop conduct disorder. Much more work is needed to understand the developmental processes involved in each pathway and to uncover factors that may help children to overcome the risk factors involved in each pathway. This research is obviously important for advancing causal theory. However, it could also prove to be important for guiding how these children should be served in the schools. The comprehensive and individualized approach to intervention that seems most indicated for children with conduct disorder is consistent with the way most educators are trained to view educational services. That is, most educators are trained to develop individualized educational plans that are not solely driven by a child's diagnosis but by the unique needs of the child with the diagnosis. Research on the various developmental pathways to conduct disorder can help in developing such individualized plans. Unfortunately, the dissemination of this research to educators has been slow, with much of the research being published in developmental and clinical journals rather than in outlets for school personnel. Therefore, the purpose of this review was to summarize some recent lines of research on developmental pathways to conduct disorder, so that this research can begin to guide school personnel in developing individualized educational plans that meet the needs of children with conduct disorder.

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