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## Childhood Aggression and Adult Criminality

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The sociological/criminological literature for many years has emphasized the existence of an association between prevalence and/or incidence of criminal behavior and certain sociological variables. (e.g., Hirschi 1969). It is undeniable that there are positive correlations between criminal convictions and race (Hawkins 1985; Matsueda and Heine 1987), gender (Hindelang 1979; Jensen and Eve 1976), age (Farrington 1986; Hirschi and Gottfredson 1983), place of residence (Messner and Tardiff 1986; Reiss and Tonry 1986) family structure (McCord 1982; Kolvin, Miller, Fleeting, and Kolvin 1988), socio-economic status (Miethe, Stafford, and Long 1987; Cohen, Klugel, and Land 1981) and ethnic group (Hagedorn 1988; Rieder 1985). However, the correlations at best are in the moderate range, and the underlying causes of these correlations remain uncertain. A number of these researchers have gone beyond the simple correlations to show that the relations of social context with criminality are often a product of third variables or are indicative of complex interactions with other behaviors also related to social context (e.g., Farrington 1986; McCord 1982; Reiss and Tonry 1986).

But others have argued for the explanatory value of social context by itself (e.g., Hirschi 1969; Hirschi and Gottfredson 1983). Yet, not every African-American male in late adolescence, raised in a single parent family of low socio-economic status and living in a disorganized, high-crime neighborhood in the inner city engages

in criminal behavior. Probably only a minority of them do. In order to understand why some youngsters in these circumstances develop criminal behavior and others do not, we must understand the processes by which this type of behavior develops. Why do youngsters growing up under these ecological/environmental conditions develop differing norms, expectations and attitudes about behaving and responding towards others? Why within each of the narrow segments of society defined by social conditions are there wide variations in propensities for antisocial and criminal behavior? The answers to these questions become clearer when one examines them within the context of a comprehensive model of the psychological processes that underlie the development of both normal social behavior and aberrant antisocial behavior.

#### Early Predictors of Adult Criminality

One of the clearest findings concerning adolescent and adult criminal behavior is that such behavior is predictable statistically from early antisocial, aggressive, and hyperactive behavior (Ensminger, Kellam, and Rubin 1983; Farrington 1982, 1991; Huesmann, Eron, Lefkowitz, and Walder 1984; Moffitt 1990; Loeber and Dishion 1983; Magnusson, Duner, and Zetterblom 1975; Olweus 1979; Robins and Ratcliff 1980; Spivack 1983). The more aggressive child is likely to become both the more aggressive adult and the more antisocial and criminal adult. No other factor measured in childhood, whether physiological, cognitive, environmental, or familial, has been shown to predict more of the variation in adult antisocial behavior than does early aggression. For example, in a study conducted in New York State, we and our colleagues found that peer-nominations of a child's aggression and antisocial behavior measured at age eight predicted a whole variety of aggressive and antisocial behaviors displayed twenty-two years later at age thirty including officially tallied criminal convictions (See table 7.1).

Does that mean, as some have suggested, that we believe that all criminal behavior is aggressive behavior? No, of course not. What it does suggest is that the developmental psychological processes underlying aggressive behavior also underlie other forms of antisocial and criminal behavior. Furthermore, aggression is a behavior

TABLE 7.1  
Correlations of Peer-Nominated Aggression at Age 8 with Antisocial Behavior at Age 30

Age 30 Antisocial Behaviors	Age 8 Peer-Nominated Aggression			
	Males		Females	
	n	r	n	r
Scales F+4+9 of MMPI	190	0.30****	209	0.20**
Abuse of Spouse	88	0.27***	74	ns
Harsh Physical Punishment of Own Child	63	0.24*	96	0.24**
Criminal Justice Convictions	335	0.24****	207	0.10+
Seriousness of Arrests	332	0.21****	207	0.15**
Moving Traffic Violations	322	0.21****	201	ns
Driving While Intoxicated	322	0.24****	201	ns
Self-reported Violent Aggression	193	0.29****	209	ns

\*p<.10 \*\*p<.05 \*\*\*p<.01 \*\*\*\*p<.001

that occurs frequently among even very young children and therefore is amenable to study as part of a developmental process.

#### What Is Aggressive Behavior?

An aggressive behavior is a behavior that is intended to injure or irritate another person. This commonly accepted definition includes both behavior motivated primarily by a desire for tangible rewards and behavior motivated primarily by hostility. However, it does not include many commonplace meanings of the word including assertive behaviors, for example, an aggressive salesperson. As with many definitions in psychology, there are numerous grey areas in which the classification of behaviors as aggressive or nonaggressive is problematic. For some of these areas, for example, contact sports and war, the key distinction may be whether the behavior is under specific discriminative stimulus control and sanctioned by society. In war, for example, one might argue that most individual acts of killing derive from prosocial rather than antisocial motives. Suffice it to say that the aggressive behavior of concern in children as a precursor of adult criminality is antisocial aggressive behavior.

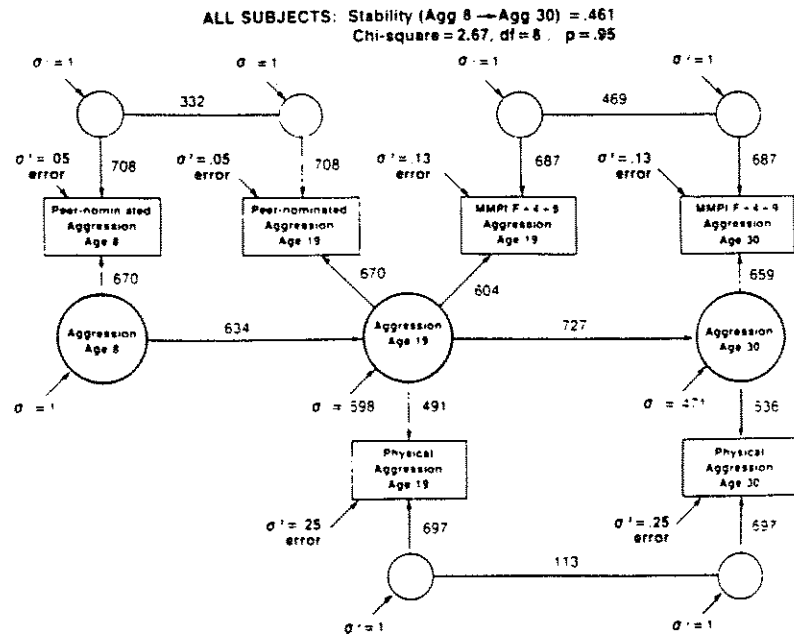
#### Early Development of Aggressive Behavior

Individual differences in social behavior related to aggression (e.g., early temperament) have been detected before age two (Ka-

gan 1988), and it has been shown that at least by age six, a number of children have adopted aggressive patterns of behavior in their interactions with others (Parke and Slaby 1983). The extent of aggressive behavior in children tends to increase into adolescence. However, by age eight, children are characteristically more or less aggressive over a variety of situations, and aggression becomes a stable characteristic of the individual youngster (Huesmann et al. 1984; Olweus 1979). Further, investigations have found long-term stability of aggression originally measured when the subjects were eight years of age. The more aggressive child becomes the more aggressive adult. In figure 7.1, for example, a structural model is displayed showing the stability of aggression over the twenty-two years from age eight to thirty for a sample of 409 New York State subjects (Huesmann et al. 1984).

FIGURE 7.1

A structural model showing the stability of an hypothesized latent trait of aggression within all subjects over 22 years.



The implications of this stability and the relation between adult criminality and child aggression are notable for interventions aimed at preventing criminal behavior. As aggression is already apparent with wide individual differences by age six and becomes a stable characteristic of the individual by age eight, that leaves just a brief period of developmental years during which preventive action must begin by parents, teachers, and other socializing agents. How these persons respond to the first indications of aggression will probably be more important in determining subsequent development or inhibition of such behaviors than any organized efforts of the criminal justice establishment at later ages.

### Causes of Early Aggression

The observed developmental trends for aggressive behavior are not inconsistent with aggression being a product of a number of interacting factors: genetic, perinatal, physiological, familial, and learning. In fact, it seems most likely that severe antisocial aggressive behavior occurs only when there is a convergence of many of these factors.

The evidence for a heritable predisposition to aggression has mounted in recent years with the advance of experimental behavior genetics. Adoption studies in Scandinavia, where subjects are easily tracked for years, show more concordance between adults' antisocial and aggressive behavior and their natural parents' behaviors than with their foster parents' behaviors (Cloninger and Gottesman 1987; Mednick, Gabrielli and Hutchings 1984). In fact, both twin and adoption studies now provide compelling evidence that many personality characteristics tied to social behavior are influenced by heredity (Bouchard 1984; Loehlin, Willerman, and Horn 1985; Rowe 1987; Rushton, Fulker, Neale, Nias, and Eysenck 1986). While the methodologies of many studies in these areas are necessarily complex and open to criticism, the evidence that there is a substantial heritable predisposition to aggression now seems compelling. However, that does not mean that situational and environmental variables are unimportant. On the basis of extrapolations from the animal literature, it seems quite probable that a heritable predisposition to aggression manifests itself in characteristic early social interactions. The animal literature also suggests that early

interactions of an appropriate type can greatly mitigate the genetic predisposition to aggression. Lagerspetz and Lagerspetz (1971), for example, have shown that selective breeding for aggression can produce highly aggressive strains of mice in just a few generations. However, the extent to which even mice from the most aggressive strain (after thirty generations) will evidence aggression as adults depends on their early social interactions with other mice (Lagerspetz and Sandnabba 1982). Mice who are predisposed to be aggressive but who are raised in an environment in which "prosocial" behavior is rewarded do not evidence such strong aggressive tendencies. Genetic predispositions interact with an organism's early learning experiences.

It also seems likely that the effects of specific chronic neurophysiological deficits that promote aggression and the effects of neurotoxins (such as lead) interact with early environment to affect adult aggressive behavior. The evidence for the involvement of neurophysiological abnormalities in many cases of severe aggression is strong (Lewis, Moy, Jackson, Aaronson, Restifo, Serra, and Simos 1985; Moyer 1976; Nachson and Denno 1987; Pontius 1984). Less extreme individual differences in aggression sometimes seem to be related to naturally occurring variations in hormones, for example, testosterone, estrogen, and progesterone (Dalton 1977; Olweus, Mattsson, Schalling, and Low 1980; Olweus 1988). Individual differences in characteristic heart rates have also been linked to individual differences in adolescent aggression (Raine and Jones 1987) and also to the differences in early childhood temperament that are related to aggression. Specifically, low heart-rate children are more at risk for aggression. What does seem clear is that the effects on social behavior of individual differences in neurophysiology are exacerbated and mitigated by both a child's early learning experiences and situational factors in the person's environment. For example, Olweus's (Olweus et al. 1980) data suggest that a high testosterone adolescent would only be prone to behave aggressively in situations in which he were strongly provoked. Similarly, in many cases of extreme aggressive reactions linked to neurophysiological deficits, the responses have been triggered by situational factors producing stress and/or early experiences that promoted aggression.

Our theme is that severe early aggression, which is clearly a predictor of adult antisocial and aggressive behavior, is multiply

determined. Seldom does a single factor explain why a child becomes aggressive; there must be a convergence of several factors. While genetic and neurophysiological factors may predispose a child toward aggression, children's early interactions with their environment play a major role in the development of the children's habitual styles of social behavior, whether aggressive or prosocial. How the adolescent responds to provocations, environmental deprivations, and frustrations is influenced by these early interactions. Early learning experiences that promote affection and prosocial behavior (e.g., McCord 1983) can block the slide from childhood aggression to adult antisocial behavior. The goal of a developmental theory for the explanation of adult aggression, antisocial behavior, and criminal behavior should be to explain the mechanism through which this occurs.

#### Cognitive Processes and Learning of Aggression

Because of the malleability of behavior in young children and the relative intractability of aggressive and violent dispositions once they have been developed, it is important that theories of criminality focus on aggression and antisocial behavior in preadolescent children. As we have argued above, individual differences during this period are influenced, of course, by factors with earlier loci of affect, for example, genetics; but the major issue of interest is how during early childhood individual differences in the propensity for aggressive behavior develop as a consequence of the child's interaction with his or her environment. What are the dimensions and parameters of the social learning processes that lead to these enhanced individual differences? How do they interact with the predisposing factors? In recent years a number of theories have been offered which all implicate the child's cognitions in the learning and maintenance of aggressive habits during this period. Growing out of Bandura's formulation of social learning theory and drawing on recent theorizing in cognitive psychology, these models put the stress primarily on cognitive processes and the steps through which a child must proceed to react appropriately, competently and nonaggressively to a social situation or stimulus. Among the most influential of these have been the revised formulation of Bandura (1986), the neo-associationist perspective of Berkowitz

(1984, 1988), the social-cognitive formulation of Dodge (1980), and the information processing theory put forth by Huesmann (1988; Huesmann and Eron 1984).

### Recent Theoretical Formulations

According to Bandura's (1986) recent formulation, social behavior comes under the control of internal self-regulating processes. What is important is the cognitive evaluation of events taking place in the child's environment, how the child interprets these events and how competent he feels in responding in different ways. These cognitions provide a basis for stability of behavior tendencies across a variety of situations. Berkowitz, on the other hand, has emphasized the importance of enduring associations in explaining stable behavioral tendencies. Aggression is an aversively stimulated behavior. An aversive event produces negative affect which is associated in most people with "expressive-motor reactions, feelings, thoughts, and memories that are associated with both flight and fight tendencies" (Berkowitz 1988, 8). A variety of factors—genetic, learned, and situational—affects the strengths of the flight and fight tendencies. The stronger tendency wins out, and, if it is fight, the emotional experience is interpreted as anger. Attributions about the behavior may occur later as a "controlled" cognitive process, but the generation of the behavior and the associated anger is relatively "automatic." Dodge (1980), on the other hand, emphasizes the importance of enduring attributional biases in affecting the stability of aggressive behavior across situations. Aggressive children are viewed as possessing defective cognitive processes for the interpretation of others' behaviors and the selection of their own behavior from a previously learned repertoire. Huesmann (1988; Huesmann and Eron 1984) has viewed the child as a processor of information who develops programs called "scripts" to guide social behavior. The aggressive child is one who has developed more aggressive scripts.

All of these approaches have the common theme that the child's cognitions play a key role in maintaining the stability of aggressive behavior over time and situation. The various predisposing and precipitating factors can influence behavior over time by affecting these cognitions. In turn, the direct effect of any predisposing

factor may well be moderated by cognitions that the child has developed.

### Script Theory and Prediction of Criminality

Of all these cognitive approaches, the information processing script theory developed by Huesmann (1988) is most directly intended to explain the stability of aggressive tendencies over time and the predictability of even "nonviolent" crime from early aggression. Huesmann's theory adopts the premise that social behavior is controlled to a great extent by programs for behavior that are established during a person's early development. These programs can be described as cognitive scripts (Abelson 1981) that are stored in a person's memory and are used as guides for behavior and social problem solving. A script suggests what events are to happen in the environment, how the person should behave in response to these events, and what the likely outcome of those behaviors would be. It is presumed that while scripts are first being established they influence the child's behavior through "controlled" mental processes (Schneider and Shriffrin 1977. See note 1), but that these processes become "automatic" as the child matures. Correspondingly scripts that persist in a child's repertoire, as they are rehearsed, enacted, and generate consequences, become increasingly more resistant to modification and change. According to Huesmann, the primary process through which scripts are formed is a learning process involving both observational and enactive components. However, the outcome of this process is heavily influenced by the child's environment and the predisposing factors discussed earlier. Furthermore, through a process of cognitive abstraction, subsets of learned scripts are converted into more general scripts that provide overall guiding principles for social behavior. Thus, the scripts that guide the child into "childish" aggressive behavior form the basis for a set of more general scripts guiding the adult into antisocial behavior.

Huesmann's full theory casts scripts as the central cognitive component of a complex psychological process that generates social behavior. However, a person's affective response to a situation and that person's concomitant cognitive interpretations also play a role in the process. It is assumed that a child enters any

social interaction with a preexisting emotional state. The state consists of both a physiological arousal component and a cognitive component. This emotional state is determined to some extent by physiological predispositions that may be relatively stable, for example, neuroanatomy, or relatively transient such as dietary factors. The cognitive component of the emotional state will be influenced heavily by the child's past reinforcement history and the attributions the child has made about those reinforcements. For example, a child who is exposed repeatedly to frustrating situations and who attributes the goal blocking to the actions of other individuals may enter a social interaction in an aroused state with hostile feelings toward others. Recent environmental stimuli may also directly trigger conditioned emotional reactions and thus cue the retrieval from memory of cognitions that define the current emotional state. For example, to a child the sight of an "enemy" may provoke both instantaneous arousal and the recall of thoughts about the "enemy" that give meaning to the aroused state as anger.

Because emotional states may persist for some time beyond the exciting event, a child may enter a social interaction in an emotional state that is unrelated to the current situational cues. Nevertheless, that emotional state may influence both which cues the child attends to and how the child evaluates those cues. A highly aroused, angry child may focus on just a few highly salient cues and ignore others that convey equally important information about the social situation. Further, the angry child's evaluation of these cues may be biased toward perceiving hostility when none is present. In any case, as emotional states in children are transient and heavily situationally dependent, one outcome of the child's evaluation of the current cues would usually be a revised emotional state. This new emotional state, coupled with both the objective properties of the current stimulus situation and the evaluative cognitions cued by the stimulus situation, determine which scripts for behavior will be retrieved from memory.

Huesmann proposes, however, that not all scripts that occur to the child, that are retrieved, will be employed. Before acting out the script, the child reevaluates the appropriateness of the script in light of existing internalized social norms and examines the likely consequences. There may be great individual differences in the extent of this evaluation. Some children may not have the cognitive

capacity to engage in a thorough evaluation. Even among children with similar capacities differing reinforcement histories and differing perceptions of social norms may lead to quite different evaluations. It is hypothesized that these evaluations of potential scripts for behavior are comprised of three related components.

First, the child needs to be able to predict the consequences of utilizing such a script. Children may differ in their capacities to think about the future and in their concern with the future. Generally, the more a child focuses on immediate consequences and the less the child is concerned with the future, the more palatable an aggressive solution to a social problem may seem. Children may also misperceive the likely consequences of an aggressive act because of a defective reinforcement history or because of biases in the sample of scenes of others behaving aggressively that they have observed. A second evaluative component is the extent to which a child judges him or herself capable of executing the script. A child with low perceived self-efficacy for prosocial behaviors may turn to aggressive scripts by default. But perhaps the most important component of a script's evaluation is the third component: the extent to which the script is perceived as congruent with the child's self-regulating internal standards. Scripts that violate the social norms that a child has internalized are unlikely to be utilized. On the other hand, a child with weak or nonexistent internalized prohibitions against aggression or who believes that everyone behaves aggressively is much more likely to adopt new aggressive scripts for behavior.

### Encoding and Rehearsal of Scripts

So far we have examined how existing scripts may be accessed and used to guide behavior, and how certain individual and environmental factors could promote the use of aggressive scripts. Within this framework an habitually aggressive child is one who regularly retrieves and employs scripts (for social behavior) that emphasize aggressive responding. We have noted a number of factors that might promote the retrieval and utilization of aggressive scripts. It may be, for example, that the cues present in the environment trigger the recall only of aggressive scripts. However, the regular retrieval and use of aggressive scripts would suggest above all that

a large number of aggressive scripts have been stored in memory. Thus, we must examine the process through which scripts are learned.

Learning is hypothesized to occur both as a result of one's own behaviors (enactive learning) and as a result of viewing others behave (observational learning). Scripts are initially stored in memory in much the same way as are programs and strategies for intellectual behavior—through a two-component process involving an initial “encoding” of observed behaviors followed by repeated rehearsals. By “encoding” we mean the “formation of a representation of an external stimulus in the memory system” (Kintsch 1977, 485). A script may be closely associated with specific cues in the encoding context, or may be an abstraction unconnected to specific cues.<sup>3</sup> To encode an observed sequence of behaviors as a script, a child must first attend to the sequence. Thus, scripts with particularly salient cues for the child are more likely to be encoded. However, many observed sequences might never be encoded because the child perceives them as inappropriate. Here, again, the child's current emotional state and current memory contents may exert some influence. When highly aroused and angry, for example, children may view a physically active sequence of behaviors as more appropriate than they would otherwise. Similarly, a young boy who has watched peers solve their social problems aggressively all afternoon is more likely to encode a newly observed “aggressive script” into his own repertoire than is a boy who has watched his peers solve their problems in a prosocial manner.

To maintain a script in memory, a child would need to rehearse it from time to time.<sup>4</sup> The rehearsal may take several different forms from simple recall of the original scene, to fantasizing about it, to play acting. The more elaborative, ruminative type of rehearsal characteristic of children's fantasizing is likely to generate greater connectedness for the script, thereby increasing its accessibility in memory. Also, through such elaborative rehearsal the child may abstract higher-order scripts representing more general strategies for behavior than the ones initially stored. Of course, rehearsal also provides another opportunity for reevaluation of any script. It may be that some scripts initially accepted as appropriate (under specific emotional and memory states) may be judged as inappropriate during rehearsal.

In order for a script to influence future behavior, it must not only be encoded and maintained in memory, it must be retrieved and utilized when the child faces a social problem. A key element at this point is the extent to which specific cues are present in the current situation that mirror cues present when the script was encoded. A script would be much more likely to be utilized if the same specific cues were present in the environment at retrieval time as were present at encoding time. This is true even if the cues are irrelevant to the behaviors in question, for example, colors, sounds, smells, physical setting.

### Enactive Learning

The transformation of a child's initial aggressive behavior into habitual aggressive behavior may depend as much on the responses of the child's environment to the child's aggression as on other causal factors. It is quite likely that for some young children aggressive behavior can be very rewarding. Their family and peer environment may both provide aggressive models and reward aggressive behavior. For these children, the encoding, retrieval, and utilization of aggressive scripts are heavily reinforced at a young age. Yet sooner or later these children emerge into environments (e.g., school, teams, clubs) where aggressive behavior has strong negative consequences. One of the puzzling aspects of habitual aggressive behavior is why it persists in the face of so many apparently negative consequences. The answer must rest in the failure of the child to unlearn encoded aggressive scripts through enactive learning. Several types of deficient information processing might contribute to this failure.

Children might misperceive the consequences of their actions either because they focus on the wrong dimension of feedback or because they do not look far enough ahead. For example, a boy who knocks another child down in order to grab a ball that he wants may focus on the immediate fact that he has obtained the ball and not attend to the longer term social ostracization that follows his act. By the time such ostracization becomes salient, the precipitating act may be removed so far in time that no connection can be made. However, even the child who perceives the immediate negative consequences of an aggressive act may fail to learn alternative

scripts. Generally, prosocial solutions to social problems are less direct and more complex than aggressive solutions. If a child cannot think of any such solutions, as might be the case with a child of low intellectual competence, the child may have no alternative to a direct aggressive solution.

For the more intellectually able child, another possibility exists, however, in addition to learning a new script. Rather than change his aggressive behaviors, which perhaps provide immediate gratification in some dimensions, the child alters his internal self-regulatory standards to provide less negative feedback. One way to accomplish such a change is by incorporating some of the readily available aphorisms about aggression into one's regulatory schemata. The boy who is told he is bad because he pushed others out of the way may shrug his shoulders and think, "Nice guys finish last." The boy who shoves a child who bumped into him may think, "An eye for an eye." Internalized norms against aggression may also be reduced when many others are observed behaving aggressively, either in person or in the media.

Finally, a child may mitigate society's negative reinforcements for aggressive behavior by choosing environments in which aggression is more acceptable. Thus, the more aggressive boy may spend more time interacting with other aggressive children who accept his behaviors as a way of life. Not only do such social networks provide a child with an environment in which aggression is not discouraged, such social networks promote the internalization of social norms favoring aggression.

### The Emergence of Criminal Behavior

Huesmann's theory suggests that childhood aggressive behavior develops early through the interaction of predisposing and precipitating individual and environmental factors with learning conditions that promote the formation of scripts for aggressive behavior. A child's initial observations of others behaving aggressively combine with learning conditions that reinforce aggression to establish aggressive scripts in the child's memory at a young age. Cognitive rehearsal of these scripts through fantasy, positive reinforcements for the aggressive behaviors suggested by these scripts, and behavioral strategies that allow the child to escape the negative conse-

quences of aggression combine to cement these scripts in place. These cognitive scripts become increasingly unchangeable as the child grows up. Furthermore, the effect of the reinforcement may generalize to scripts that are abstractions of the specific script, promoting a generalized disinhibition of aggression. The boy who solves a social problem successfully by hitting will be more likely in the future not just to hit, but to kick, punch, or push.

As the child grows up, both the child's social goals and the situational constraints on the child's behavior change. It would be difficult to see how specific cue-behavior connections could promote stability of behavior across such boundaries. However, just as approaches to more adult intellectual problem solving grow out of abstractions of programs for earlier problem solving, so, Huesmann hypothesizes, would the programs for adult social problem solving be built on abstractions of the programs learned in childhood. Children who adopt scripts for childhood social behavior that violate societal rules and constraints would also be more likely to adopt specific scripts for adult behavior that violate societal rules. Thus, one would expect childhood aggressive behavior to be predictive of adult antisocial behavior whether such behavior is violent or nonviolent.

### The Environment and Criminal Behavior

We opened this chapter by arguing that the theories that have attempted to explain criminal and antisocial behavior simply as a consequence of economic and social deprivation and stressful environments have missed the mark. Habitual criminal behavior requires a specific psychological orientation that develops only when a number of predisposing and precipitating factors converge with an environment that is conducive to the learning of aggression. Environment interacts with predisposing factors in the young child to promote the development of cognitions that guide social behavior not only in childhood but throughout life. Whether one views these cognitive structures as scripts, cue-behavior connections, self-regulating internal standards, or attributional biases, these structures seem remarkably resistant to change as the child moves into adolescence and young adulthood. The major conclusion one must draw about interventions aimed at reducing criminal behavior seems



unambiguous. Interventions need to be directed at the young child. The adolescent's and young adult's environment may provide the precipitating factors that engender crime and reinforcing consequences for crime, but the psychological basis of the antisocial behavior was developed much earlier.

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### Notes

1. The terms *controlled* and *automatic* are technical terms developed by cognitive psychologists to describe different modes of mental processing (Schneider and Shriffrin 1977). Automatic processes are mental processes that operate very rapidly with a person having little awareness of the mental operations involved, e.g., reading. Controlled processes operate much more slowly, and a person is much more aware that they are "controlling" the mental operations, e.g., mental arithmetic.
2. It is beyond the scope of this paper to elaborate the encoding processes in detail. A great deal of research in cognitive psychology has been devoted to understanding how humans encode and retrieve information from their memory system. The presumption is that the encoding and retrieval of scripts obey the same laws that regulate the encoding and retrieval of other information.
3. It is presumed that the processes identified by cognitive psychologists to explain how people form abstract cognitive concepts would apply to the derivation of more abstract scripts. A child who has utilized many different specific types of scripts with aggressive components to solve social problems would form a more abstract script connecting the general elements of social problems to the general characteristics of aggressive solutions, e.g., harm to others.
4. Again this presumption is based on a long line of research by cognitive psychologists (e.g., Kintsch 1977).

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## 8

## The Sociogenesis of Aggressive and Antisocial Behaviors

*Robert B. Cairns and Beverley D. Cairns*

Beliefs about the nature of personality development and social behavior have been prominent in the working assumptions of juvenile courts over the past century. There has been, however, considerable ambiguity about (a) what constitutes a developmental perspective and (b) what may be its distinctive contribution to understanding deviant behavior and antisocial behavior. In this chapter, we describe a longitudinal study and the fresh information that it provides on the development of aggressive and antisocial behavior. We then examine some implications for design and theory.

### Why Longitudinal Investigation?

Ten years ago we initiated a prospective longitudinal study of social development, with a particular focus on the organization and emergence of antisocial patterns.<sup>1</sup> This project was the direct outgrowth of earlier investigations in which we had participated, beginning with a study of adolescent aggression (Bandura and Walters 1959). The prior studies, though diverse in method, were linked by a common focus upon aggressive behaviors and the processes by which they are regulated. These investigations were successful, for the most part, in achieving their limited goals. But