

Moffitt (1993) - Pathways in the Life Course

to Crime



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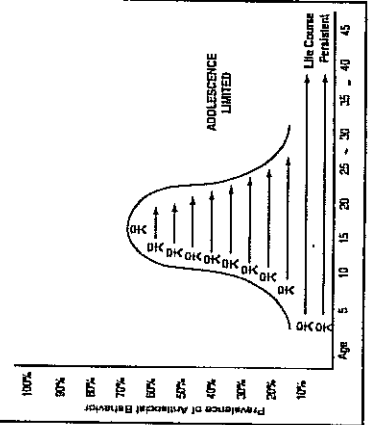
causal factors may be proximal, specific to the period of adolescent development, and theory must account for the discontinuity in their lives. In contrast, for persons whose adolescent delinquency is merely one inflection in a continuous lifelong antisocial course, a theory of antisocial behavior must locate its causal factors early in their childhoods and must explain the continuity in their troubled lives. . . .

Figure 42.1 depicts the typological thesis to be argued here. A small group of persons is shown engaging in antisocial behavior of one sort or another at every stage of life. I have labeled these persons *life-course-persistent* to reflect the continuous course of their antisocial behavior. A larger group of persons fills out the age-crime curve with crime careers of shorter duration. I have labeled these persons *adolescence-limited* to reflect their more temporary involvement in antisocial behavior. Thus, timing and duration of the course of antisocial involvement are the defining features in the natural histories of the two proposed types of offenders. . . .

There are marked individual differences in the stability of antisocial behavior. Many people behave antisocially, but their antisocial behavior is temporary and situational. In contrast, the antisocial behavior of some people is very stable and persistent. Temporary, situational antisocial behavior is quite common in the population, especially among adolescents. Persistent, stable antisocial behavior is found among a relatively small number of males whose behavior problems are also quite extreme. The central tenet of this article is that temporary versus persistent antisocial persons constitute two qualitatively distinct types of persons. In particular, I suggest that juvenile delinquency conceals two qualitatively distinct categories of individuals, each in need of its own distinct theoretical explanation. . . .

For delinquents whose criminal activity is confined to the adolescent years, the

Figure 42.1  
Hypothetical Illustration of the Changing Prevalence of Participation in Antisocial Behavior Across the Life Course (The solid line represents the known curve of crime over age. The arrows represent the duration of participation in antisocial behavior by individuals.)



antisocial personality traits (Fogel, Mednick, and Michelson, 1985; E. Kandel, Brennan, and Mednick, 1989; Paulhus and Martin, 1986). Neural development may be disrupted by maternal drug abuse, poor prenatal nutrition, or pre or postnatal exposure to toxic agents (Needleman and Berger, 1981; Rodning, Beckwith, and Howard, 1989; Stewart, 1983). Even brain insult suffered because of complications during delivery has been empirically linked to later violence and antisocial behavior in carefully designed longitudinal studies (E. Kandel and Mednick, 1991; Szatmari, Reitsma-Street, and Offord, 1986). In addition, some individual differences in neuro-psychological health are heritable in origin (Borecki and Ashton, 1984; Martin, Jardine, and Eaves, 1984; Plomin, Nitz, and Rowe, 1990; Tams, Sundet, and Magnus, 1984; Vandenberg, 1969). Just as parents and children share facial resemblances, they share some structural and functional similarities within their nervous systems. After birth, neural development may be disrupted by neonatal deprivation of nutrition, stimulation, and even affection (Cravioto and Arrieta, 1983; Kraemer, 1988; Meany, Aitken, van Berkel, Bhatnagar, and Sapolsky, 1988). Some studies have pointed to child abuse and neglect as possible sources of brain injury in the histories of delinquents with neuropsychological impairment (Lewis, Shanok, Pincus, and Glaser, 1979; Milner and McCaune, 1991; Tarter, Hegedus, Winsten, and Alterman, 1984).

There is good evidence that children who ultimately become persistently antisocial do suffer from deficits in neuropsychological abilities. I have elsewhere reviewed the available empirical and theoretical literatures: the link between neuropsychological impairment and antisocial outcomes is one of the most robust effects in the study of antisocial behavior (Moffitt, 1990b; Moffitt and Henry, 1991; see also Hirschi and Hindelang, 1977). Two sorts of neuropsychological deficits are empirically associated with antisocial behavior: verbal and "executive" functions. The verbal deficits of anti-

solving, expressive speech and writing, and memory. In addition, executive deficits produce what is sometimes referred to as a compartmental learning disability (Price, Daffner, Stowe, and Mesulam, 1990), including symptoms such as inattention and impulsivity. These cognitive deficits and antisocial behavior share variance that is independent of social class, race, test motivation, and academic attainment (Moffitt, 1990b; Lynam, Moffitt, and Stouthamer-Loeber, 1993). In addition, the relation is not an artifact of slow witted delinquents' greater susceptibility to detection by police; undetected delinquents have weak cognitive skills too (Moffitt and Silva, 1988a).

The evidence is strong that neuropsychological deficits are linked to the kind of antisocial behavior that begins in childhood and is sustained for lengthy periods. In a series of articles (Moffitt, 1990a; Moffitt and Henry, 1989; Moffitt and Silva, 1988b), I have shown that poor verbal and executive functions are associated with antisocial behavior, if it is extreme and persistent. In these studies, adolescent New Zealand boys who exhibited symptoms of both conduct disorder and attention-deficit disorder with hyperactivity (ADHD) scored very poorly on neuropsychological tests of verbal and executive functions and had histories of extreme antisocial behavior that persisted from age 3 to age 15. Apparently, their neuropsychological deficits were as long standing as their antisocial behavior; at ages 3 and 5 these boys had scored more than a standard deviation below the age norm for boys on the Bayley and McCarthy tests of motor coordination and on the Stanford-Binet test of cognitive performance. Contrast groups of boys with single diagnoses of either conduct disorder or ADHD did not have neuropsychological deficits or cognitive-motor delays, but neither were their behavior problems stable over time.

In a study designed to improve on measurement of executive functions (White, Moffitt, Caspi, Jeglum, Needles, and Stouthamer-Loeber, in press), we gathered data

taken from multiple sources (mother, teacher, self, and observer) by using multiple methods (rating scales, performance tests, computer games, Q sorts, and videotaped observations). A linear composite of the impulsivity measures was strongly related to the 3-year longevity of antisocial behavior, even after controlling for IQ, race, and social class. Boys who were very delinquent from ages 10 to 13 scored significantly higher on impulsivity than both their nondelinquent and temporarily delinquent age-mates. Taken together, the New Zealand and Pittsburgh longitudinal studies suggest that neuropsychological dysfunction that manifest themselves as poor scores on tests of language and self-control—and as the inattentive, overactive, and impulsive symptoms of ADHD—are linked with the early childhood emergence of aggressive antisocial behavior and with its subsequent persistence.

**Neuropsychological variation and the 'difficult' infant.** Before describing how neuropsychological variation might constitute risk for antisocial behavior, it is useful to define what is meant here by neuropsychological. I refer broadly to the extent to which anatomical structures and physiological processes within the nervous system influence psychological characteristics such as temperament, behavioral development, cognitive abilities, or all three. For example, individual variation in brain function may engender differences between children in activity level, emotional reactivity, or self-regulation (temperament); speech, motor coordination, or impulse control (behavioral development); and attention, language, learning, memory, or reasoning (cognitive abilities).

Children with neurological difficulties severe enough to constitute autism, severe physical handicap, or profound mental retardation are usually identified and specially treated by parents and professionals. However, other infants have subclinical levels of problems that affect the difficulty of

## Life-Course-Persistent Antisocial Behavior

### Continuity of Antisocial Behavior Defined

As implied by the label, continuity is the hallmark of the small group of life-course-persistent antisocial persons. Across the life course, these individuals exhibit changing manifestations of antisocial behavior: biting and hitting at age 4, shoplifting and truancy at age 10, selling drugs and stealing cars at age 16, robbery and rape at age 22, and fraud and child abuse at age 30; the underlying disposition remains the same, but its expression changes form as new social opportunities arise at different points in development. This pattern of continuity across age is matched also by cross-situational consistency: life-course-persistent antisocial persons lie at home, steal from shops, cheat at school, fight in bars, and embezzle at work (Farrington, 1991; Loeber, 1982; Loeber and Baicker-McKee, 1989; Robins, 1966, 1978; White et al., 1990). . . .

### Beginnings: Neuropsychological Risk for Difficult Temperament and Behavioral Problems

If some individuals' antisocial behavior is stable from preschool to adulthood as the data imply, then investigators are compelled to look for its roots early in life, in factors that are present before or soon after birth. It is possible that the etiological chain begins with some factor capable of producing individual differences in the neuropsychological functions of the infant nervous system. Factors that influence infant neural development are myriad, and many of them have been empirically linked to antisocial outcomes.

One possible source of neuropsychological variation that is linked to problem behavior is disruption in the ontogenesis of the fetal brain. Minor physical anomalies, which are thought to be observable markers

lays, or mild cognitive deficits. Compromised neuropsychological functions are associated with a variety of consequences for infants' cognitive and motor development as well as for their personality development (Rothbart and Derryberry, 1981). Toddlers with subtle neuropsychological deficits may be clumsy and awkward, overactive, inattentive, irritable, impulsive, hard to keep on schedule, delayed in reaching developmental milestones, poor at verbal comprehension, deficient at expressing themselves, or slow at learning new things (Rutter, 1977, 1983; Thomas and Chess, 1977; Wender, 1971).

Hertzig (1983) has described an empirical test of the proposed relationship between neurological damage and difficult behavior in infancy. She studied a sample of 66 low-birth-weight infants from intact middle-class families. Symptoms of brain dysfunction detected during neurological examinations were significantly related to an index of difficult temperament taken at ages 1, 2 and 3 (Thomas and Chess, 1977; the index comprised rhythmicity, adaptability, approach-withdrawal, intensity, and mood). The parents of the children with neurological impairment and difficult temperament more often sought help from child psychiatrists as their children grew up, and the most frequent presenting complaints were immaturity, overactivity, temper tantrums, poor attention, and poor school performance. Each of these childhood problems has been linked by research to later antisocial outcomes (cf. Moffitt, 1990a, 1990b). Importantly, the impairments of the children with neural damage were not massive; their mean IQ score was 96 (only 4 points below the population mean). Hertzig's study showed that even subtle neurological deficits can influence an infant's temperament and behavior, the difficulty of rearing the infant, and behavioral problems in later childhood.

**Child-environment covariation in nature: A source of interactional continuity.** Up to this point, I have emphasized in this article the characteristics of the developing child as if environments were held con-

stant. Unfortunately, children with cognitive and temperamental disadvantages are not generally born into supportive environments, nor do they even get a fair chance of being randomly assigned to good or bad environments. Unlike the aforementioned infants in Hertzig's (1983) study of temperament and neurological symptoms, most low-birthweight infants are not born into intact, middle-class families. Vulnerable infants are disproportionately found in environments that will not be ameliorative because many sources of neural maldevelopment co-occur with family disadvantage or deviance.

Indeed, because some characteristics of parents and children tend to be correlated, parents of children who are at risk for antisocial behavior often inadvertently provide their children with criminogenic environments (Sameroff and Chandler, 1975). The intergenerational transmission of severe antisocial behavior has been carefully documented in a study of three generations (Huesmann et al., 1984). In that study of 600 subjects, the stability of individuals' aggressive behavior from age 8 to age 30 was exceeded by the stability of aggression across the generations: from grandparent to parent to child. Thus, with regard to risk for antisocial behavior, nature does not follow a 2 x 2 design with equal cell sizes.

Parents and children resemble each other on temperament and personality. Thus, parents of children who are difficult to manage often lack the necessary psychological and physical resources to cope constructively with a difficult child (Scarr and McCartney, 1983; Snyder and Patterson, 1987). For example, temperamental traits such as activity level and irritability are known to be partly heritable (Plomin, Chipuer, and Loehlin, 1990). This suggests that children whose hyperactivity and angry outbursts might be curbed by firm discipline will tend to have parents who are inconsistent disciplinarians; the parents tend to be impatient and irritable too. The converse is also true. Empirical evidence has been found for a relationship between variations in parents' warmth and infants' easiness (Plomin, Chipuer, and Loehlin, 1990).

Parents and children also resemble each other on cognitive ability. The known heritability of measured intelligence (Plomin, 1990; Loehlin, 1989) implies that children who are most in need of remedial cognitive stimulation will have parents who may be least able to provide it. Moreover, parents' cognitive abilities set limits on their own educational and occupational attainment (Barrett and Depinet, 1991). As one consequence, families whose members have below-average cognitive capacities will be at least able financially to obtain professional interventions or optimal remedial schooling for their at-risk children.

Even the social and structural aspects of the environment may be stacked against children who enter the world at risk. Plomin and Bergeman (1990) have shown that there are genetic components to measures that are commonly used by developmental psychologists to assess socialization environments. For example, the Home Observation for Measurement of the Environment scale, the Moos Family Environment scales, and the Holmes and Rahe scales of stressful life events all revealed the influence of heritable factors when they were examined with behavior genetic research designs (Plomin and Bergeman, 1990). Vulnerable children are often subject to adverse homes and neighborhoods because their parents are vulnerable to problems too (cf. Lahey et al., 1990).

Importantly, although examples from behavior genetics research have been cited in the previous three paragraphs, the perverse compounding of children's vulnerabilities with their families' imperfections does not require that the child's neuropsychological risk arise from any genetic disposition. In fact, for my purposes, it is immaterial whether parent-child similarities arise from shared genes or shared homes. A home environment wherein prenatal care is haphazard, drugs are used during pregnancy, and infants' nutritional needs are neglected is a setting where sources of children's neuropsychological dysfunction that are clearly environmental coexist with a criminogenic social environment.

**Problems remain: The emergence of antisocial behaviors.** I believe that the juxtaposition of a vulnerable and difficult infant with an adverse rearing context initiates risk for a life-course-persistent pattern of antisocial behavior. The ensuing process is a transactional one in which the challenge of coping with a difficult child evokes a chain of failed parent-child encounters (Sameroff and Chandler, 1975). The assertion that children exert important effects on their social environments is useful in understanding this hypothetical process (Bell and Chapman, 1986). It is now widely acknowledged that personality and behavior are shaped in large measure by interactions between the person and the environment (cf. Buss, 1987; Plomin, DeFries, and Loehlin, 1977; Scarr and McCartney, 1983). One form of interaction may play a particularly important role both in promoting an antisocial style and in maintaining its continuity across the life course: *Evocative* interaction occurs when a child's behavior evokes distinctive responses from others (Caspi et al., 1987).

Children with neuropsychological problems evoke a challenge to even the most resourceful, loving, and patient families. For example, Tinsley and Parke (1983) have reviewed literature showing that low-birth-weight, premature infants negatively influence the behavior of their caretakers; they arrive before parents are prepared, their crying patterns are rated as more disturbing and irritating, and parents report that they are less satisfying to feed, less pleasant to hold, and more demanding to care for than healthy babies. Many parents of preterm infants hold unrealistic expectations about their children's attainment of developmental milestones, and these may contribute to later dysfunctional parent-child relationships (Tinsley and Parke, 1983). More disturbing, an infant's neurological health status has been shown to be related to risk for maltreatment and neglect (Friedrich and Boriskin, 1976; Frodi et al., 1978; Hunter, Kilstrom, Kraybill, and Loda, 1978; Milowe and Lowrie, 1964; Sandgrund, Gaines, and Green, 1974).

Numerous studies have shown that a toddler's problem behaviors may affect the parents' disciplinary strategies as well as subsequent interactions with adults and peers (Bell and Chapman, 1986; Chess and Thomas, 1987). For example, children characterized by a difficult temperament in infancy are more likely to resist their mothers' efforts to control them in early childhood (Lee and Bates, 1985). Similarly, mothers of difficult boys experience more problems in their efforts to socialize their children. MacCoby and Jacklin (1983) showed that over time these mothers reduce their efforts to actively guide and direct their children's behavior and become increasingly less involved in the teaching process. In a study of unrelated mothers and children, K. E. Anderson, Lytton, and Romney (1986) observed conduct-disordered and nonproblem boys interacting with mothers of conduct-disordered and nonproblem sons in unrelated pairs. The conduct-disordered boys evoked more negative reactions from both types of mothers than did normal boys, but the two types of mothers did not differ from each other in their negative reactions. It may well be that early behavioral difficulties contribute to the development of persistent antisocial behavior by evoking responses from the interpersonal social environment, responses that exacerbate the child's tendencies (Goldsmith, Bradshaw, and Rieser-Danner, 1986; Lytton, 1990). "The child acts; the environment reacts; and the child reacts back in mutually interlocking evocative interaction" (Caspi et al., 1987, p. 308).

Such a sequence of interactions would be most likely to produce lasting antisocial behavior problems if caretaker reactions were more likely to exacerbate than to ameliorate children's problem behavior. To my knowledge, students of child effects have not yet tested for interactions between child behavior and parental deviance or poor parenting, perhaps because very disadvantaged families are seldom studied with such designs. Nonetheless, some data suggest that children's predispositions toward antisocial behavior may be exacerbated under deviant rearing conditions. In the New Zealand lon-

gitudinal study, there was a significant interaction effect between children's neuropsychological deficit and family adversity on one type of delinquent act: aggressive confrontation with a victim or adversary. Among the 536 boys in the sample, the 75 boys who had both low neuropsychological test scores and adverse home environments earned a mean aggression score more than four times greater than that of boys with either neuropsychological problems or adverse homes (Moffitt, 1990b). The index of family adversity included parental characteristics such as poor mental health and low intelligence as well as socioeconomic status. Behavior-genetic adoption studies of antisocial behavior often report a similar pattern of findings, wherein the highest rates of criminal outcomes are found for adoptees whose foster parents, as well as their biological parents, were deviant (e.g., Mednick, Gabrielli, and Hutchings, 1984). Thus, children's predispositions may evoke exacerbating responses from the environment and may also render them more vulnerable to criminogenic environments.

If the child who "steps off on the wrong foot" remains on an ill-starred path, subsequent stepping-stone experiences may culminate in life-course-persistent antisocial behavior. For life-course-persistent antisocial individuals, deviant behavior patterns later in life may thus reflect early individual differences that are perpetuated or exacerbated by interactions with the social environment: first at home, and later at school. Quay (1987) summarized this as

this youth is likely to be at odds with everyone in the environment, and most particularly with those who must interact with him on a daily basis to raise, educate, or otherwise control him. . . . This pattern is the most troublesome to society, seems least amenable to change, and has the most pessimistic prognosis for adult adjustment. (p. 121)

However, inauspicious beginnings do not complete the story. In the New Zealand study, for example, a combination of pre-school measures of antisocial behavior and cognitive ability was able to predict 70% of

the cases of conduct disorder at age 11 but at the cost of a high false-positive rate (White et al., 1990). The next section explores the specific interactional processes that nourish and augment the life-course-persistent antisocial style beyond childhood.

### Maintenance and Elaboration Over the Life Course: Cumulative Continuity, Contemporary Continuity, and Narrowing Options for Change

In the previous section, the concept of evocative person-environment interaction was called on to describe how children's difficult behaviors might affect encounters with their parents. Two additional types of interaction may help to explain how the life-course-persistent individuals' problem behavior, once initiated, might promote its own continuity and pervasiveness. *Reactive* interaction occurs when different youngsters exposed to the same environment experience it, interpret it, and react to it in accordance with their particular style. For example, in interpersonal situations where cues are ambiguous, aggressive children are likely to mistakenly attribute harmful intent to others and then act accordingly (Dodge and Frame, 1982). *Proactive* interaction occurs when people select or create environments that support their styles. For example, antisocial individuals appear to be likely to affiliate selectively with antisocial others, even when selecting a mate. Some evidence points to nonrandom mating along personality traits related to antisocial behavior (Buss, 1984), and there are significant spouse correlations on conviction for crimes (e.g., Baker, Mack, Moffitt, and Mednick, 1989).

The three types of person-environment interactions can produce two kinds of consequences in the life course: *cumulative consequences* and *contemporary consequences* (Caspi and Bem, 1990). Early individual differences may set in motion a downhill snowball of cumulative continuities. In addition, individual differences may themselves persist from infancy to adulthood, continuing to influence adolescent

and adult behavior in a proximal contemporary fashion. Contemporary continuity arises if the life-course-persistent person continues to carry into adulthood the same underlying constellation of traits that got him into trouble as a child, such as high activity level, irritability, poor self-control, and low cognitive ability.

The roles of cumulative and contemporary continuities in antisocial behavior have been explored by Caspi, Bem, and Elder (1989; Caspi et al., 1987), using data from the longitudinal Berkeley Guidance Study. They identified men who had a history of temper tantrums during late childhood (when tantrums are not developmentally normative). Then they traced the continuities and consequences of this personality style across the subsequent 30 years of the subjects' lives and into multiple diverse life domains: education, employment, and marriage. A major finding was that hot-tempered boys who came from middle-class homes suffered a progressive deterioration of socioeconomic status as they moved through the life course. By age 40, their occupational status was indistinguishable from that of men born into the working class. A majority of them held jobs of lower occupational status than those held by their fathers at a comparable age. Did these men fail occupationally because their earlier ill-temperedness started them down a particular path (cumulative consequences) or because their current ill-temperedness handicapped them in the world of work (contemporary consequences)?

Cumulative consequences were implied by the effect of childhood temper on occupational status at midlife. Tantrums predicted lower educational attainment, and educational attainment, in turn, predicted lower occupational status. Contemporary consequences were implied by the strong direct link between ill-temperedness and occupational stability. Men with childhood tantrums continued to be hot-tempered in adulthood, where it got them into trouble in the world of work. They had more erratic work lives, changing jobs more frequently and experiencing more unemployment between ages 18 and 40. Ill-temperedness also

children's difficult temperaments and developmental deficits. In nurturing environments, toddlers' problems are often corrected. However, in disadvantaged homes, schools, and neighborhoods, the responses are more likely to exacerbate than amend. Under such detrimental circumstances, difficult behavior is gradually elaborated into conduct problems and a dearth of prosocial skills. Thus, over the years, an antisocial personality is slowly and insidiously constructed. Likewise, deficits in language and reasoning are incrementally elaborated into academic failure and a dearth of job skills. Over time, accumulating consequences of the youngster's personality problems and academic problems prune away the options for change.

This theory of life-course-persistent antisocial behavior emphasizes the constant process of reciprocal interaction between personal traits and environmental reactions to them. The original attribute is thus elaborated on during development, to become a syndrome that remains conceptually consistent, but that gains new behavioral components (Caspi and Bem, 1990). Through that process, relatively subtle childhood variations in neuropsychological health can be transformed into an antisocial style that pervades all domains of adolescent and adult behavior. It is this infiltration of the antisocial disposition into the multiple domains of a life that diminishes the likelihood of change.

When in the life course does the potential for change dwindle to nil? How many person-environment interactions must accumulate before the life-course-persistent pattern becomes set? I have argued that a person-environment interaction process is needed to predict emerging antisocial behavior, but after some age will the "person" main effect predict adult outcomes alone? An answer to these questions is critical for prevention efforts. The well-documented resistance of antisocial personality disorder to treatments of all kinds seems to suggest that the life-course-persistent style is fixed sometime before age 18 (Suedfeld and Landon, 1978). Studies of crime careers reveal that it is very unusual for males to first

late in the chain of cumulative continuity. The forces of continuity are formidable foes (Caspi and Moffitt, in press-a). After a protracted deficient learning history, and after efforts for change have been eliminated, not to automatically bring prosocial behavior to the surface in its place. Now-classic research on learning shows conclusively that efforts to extinguish undesirable behavior will fail unless alternative behaviors are available that will attract reinforcement (Azrin and Holz, 1966). My analysis of increasingly restricted behavioral options suggests the hypothesis that opportunities for change will often be actively transformed by life-course-persistents into opportunities for continuity: Residential treatment programs provide a chance to learn from criminal peers, a new job furnishes the chance to steal, and new romance provides a partner for abuse. This analysis of life-course-persistent antisocial behavior anticipates disappointing outcomes when such antisocial persons are thrust into new situations that purportedly offer the chance "to turn over a new leaf."

### The Reason for Persistence: Traits, Environments, and Developmental Processes

According to some accounts of behavioral continuity, an ever present underlying trait generates antisocial outcomes at every point in the life span (e.g., Gottfredson and Hirschi, 1990). By other accounts, antisocial behavior is sustained by environmental barriers to change (e.g., Bandura, 1979, pp. 217-224). In this theory of life-course-persistent antisocial behavior, neither traits nor environments account for continuity.

True, the theory begins with a trait: variation between individuals in neuropsychological health. The trait is truly underlying in that it seldom comes to anyone's attention unless an infant is challenged by formal examinations; it is manifested behaviorally as variability in infant temperament, developmental milestones, and cognitive abilities.

Next, the theory brings environments into play. Parents and other people respond to

tion are likely in later settings to withdraw or strike out preemptively, precluding opportunities to affiliate with prosocial peers (Dodge and Newman, 1981; Dodge and Frame, 1982; LaFrenier and Sroufe, 1985; Nasby, Hayden, and DePaulo, 1980). Such children are robbed of chances to practice conventional social skills. Alternatively, consider this sequence of narrowing options: Behavior problems at school and failure to attain basic math and reading skills place a limit on the variety of job skills that can be acquired and thereby cut off options to pursue legitimate employment as an alternative to the underground economy (Farrington, Gallagher, Morley, Ledger, and West, 1986; Maughan, Gray, and Rutter, 1985; Moffitt, 1990a). Simply put, if social and academic skills are not mastered in childhood, it is very difficult to later recover lost opportunities.

**Becoming ensnared by consequences of antisocial behavior.** Personal characteristics such as poor self-control, impulsivity, and inability to delay gratification increase the risk that antisocial youngsters will make irrevocable decisions that close the doors of opportunity. Teenaged parenthood, addiction to drugs or alcohol, school dropout, disabling or disfiguring injuries, patchy work histories, and time spent incarcerated are *swares* that diminish the probabilities of later success by eliminating opportunities for breaking the chain of cumulative continuity (Cairns and Cairns, 1991; J. Q. Wilson and Hernstein, 1985). Similarly, labels accrued early in life can foreclose later opportunities; an early arrest record or a "bad" reputation may rule out lucrative jobs, higher education, or an advantageous marriage (Farrington, 1977; Klein, 1986; West, 1982). In short, the behavior of life-course-persistent antisocial persons is increasingly maintained and supported by narrowing options for conventional behavior.

Interventions with life-course-persistent persons have met with dismal results (Lipton, Martinson, and Wilks, 1975; Palmer, 1984; Sechrest, White, and Brown, 1979). This is not surprising, considering that most interventions are begun relatively

had a contemporary effect on marital stability. Almost half (46%) of the men with histories of childhood tantrums had divorced by age 40 compared with only 22% of other men.

Elsewhere, I describe in detail some of the patterns of interaction between persons and their social environments that may promote antisocial continuity across time and across life domains (Caspi and Moffitt, in press-b). Two sources of continuity deserve emphasis here because they narrow the options for change. These processes are (a) failing to learn conventional prosocial alternatives to antisocial behavior and (b) becoming ensnared in a deviant life-style by crime's consequences. These concepts have special implications for the questions of why life-course-persistent individuals fail to desist from delinquency as young adults and why they are so impervious to intervention.

**A restricted behavioral repertoire.** This theory of life-course-persistent antisocial behavior asserts that the causal sequence begins very early and the formative years are dominated by chains of cumulative and contemporary continuity. As a consequence, little opportunity is afforded for the life-course-persistent antisocial individual to learn a behavioral repertoire of prosocial alternatives. Thus, one overlooked and pernicious source of continuity in antisocial behavior is simply a lack of recourse to any other options. In keeping with this prediction, Vitaro, Gagnon, and Tremblay (1990) have shown that aggressive children whose behavioral repertoires consist almost solely of antisocial behaviors are less likely to change over years than are aggressive children whose repertoires comprise some prosocial behaviors as well.

Life course-persistent persons miss out on opportunities to acquire and practice prosocial alternatives at each stage of development. Children with poor self-control and aggressive behavior are often rejected by peers and adults (Coie, Belding, and Underwood, 1988; Dodge, Coie, and Brakke, 1982; Vitaro et al., 1990). In turn, children who have learned to expect reject-



pecting parent birds, learn to behave like the parent birds' own true chicks and thus stimulate the parents to drop food their way. Social mimicry may also allow some species to safely pass among a more successful group and thus share access to desired resources. For example, some monkey species have learned to mimic bird calls. One such species of monkeys, rufous-naped tamarins, is able to share the delights of ripe fruit after a tree has been located by tyrant flycatchers, whose superior avian capacities in flight and distance vision better equip them to discover bearing trees. Similarly, zebras are sensitive to the social signals of impalas and gazelles and thus benefit from the latter species' superior sensitivity to approaching predators (E. O. Wilson, 1975).

If social mimicry is to explain why adolescence-limited delinquents begin to mimic the antisocial behavior of their lifecourse-persistent peers, then, logically, delinquency must be a social behavior that allows access to some desirable resource. I suggest that the resource is mature status, with its consequent power and privilege.

Before modernization, biological maturity came at a later age, social adult status arrived at an earlier age, and rites of passage more clearly delineated the point at which youths assumed new roles and responsibilities. In the past century, improved nutrition and health care have decreased the age of biological maturity at the rate of three tenths of a year per decade (Tanner, 1978; Wysbak and Frisch, 1982). Simultaneously, modernization of work has delayed the age of labor-force participation to ever later points in development (Empay, 1978; Horan and Hargis, 1991; Panel on Youth of the President's Science Advisory Committee, 1974). Thus, secular changes in health and work have lengthened the duration of adolescence. The ensuing gap leaves modern teenagers in a 5- to 10-year role vacuum (Erikson, 1960). They are biologically capable and compelled to be sexual beings, yet they are asked to delay most of the positive aspects of adult life (see Buchanan, Eccles, and Becker, 1992, for a review of studies of the compelling influence of pubertal hor-

social behavior only in situations where it may serve an instrumental function. Thus, principles of learning theory will be important for this theory of the cause of adolescence-limited delinquency.

A theory of adolescence-limited delinquency must account for several empirical observations: modal onset in early adolescence, recovery by young adulthood, widespread prevalence, and lack of continuity. Why do youngsters with no history of behavior problems in childhood suddenly become antisocial in adolescence? Why do they develop antisocial problems rather than other difficulties? Why is delinquency so common among teens? How are they able to spontaneously recover from an antisocial life-style within a few short years?

Just as the childhood onset of life-course-persistent persons compelled me to look for causal factors early in their lives, the coincidence of puberty with the rise in the prevalence of delinquent behavior compels me to look for clues in adolescent development. Critical features of this developmental period are variability in biological age, the increasing importance of peer relationships, and the budding of teenagers' self-conscious values, attitudes, and aspirations. These developmental tasks form the building blocks for a theory of adolescence-limited delinquency.

### Beginnings: Motivation, Mimicry, and Reinforcement

Why do adolescence-limited delinquents begin delinquency? The answer advanced here is that their delinquency is "social mimicry" of the antisocial style of lifecourse-persistent youths. The concept of social mimicry is borrowed from ethology. Social mimicry occurs when two animal species share a single niche and one of the species has cornered the market on a resource that is needed to promote fitness (Moynihan, 1968). In such circumstances, the "mimic" species adopts the social behavior of the more successful species to obtain access to the valuable resource. For example, cowbird chicks, who are left by their mothers to be reared in the nests of unsus-

age 11. Between age 11 and age 13, they changed from below the sample average to 1.5 standard deviations above average on self-reported delinquency (Moffitt, 1990a). By age 15, another 20% of this sample of boys had joined the newcomers to delinquency despite having no prior history of antisocial behavior (Moffitt, 1991). Barely into mid-adolescence, the prevalence rate of markedly antisocial boys had swollen from 5% at age 11 to 32% at age 15. When interviewed at age 18, only 7% of the boys denied all delinquent activities. By their mid-20s, at least three fourths of these new offenders are expected to cease all offending (Farrington, 1986).

Adolescence-limited delinquents may also have sporadic, crime-free periods in the midst of their brief crime "careers." Also, in contrast with the life-course-persistent type, they lack consistency in their antisocial behavior across situations. For example, they may shoplift in stores and use drugs with friends but continue to obey the rules at school. Because of the chimeric nature of their delinquency, different reporters (such as self, parent, and teacher) are less likely to agree about their behavior problems when asked to complete rating scales or clinical interviews (Loeber, Green, Lahey, and Stouthamer-Loeber, 1990; Loeber and Schumaling, 1985).

These observations about temporal instability and cross-situational inconsistency are more than merely descriptive. They have implications for a theory of the etiology of adolescence-limited delinquency. Indeed, the flexibility of most delinquent behavior suggests that their engagement in deviant life-styles may be under the control of reinforcement and punishment contingencies.

Unlike their life-course-persistent peers, whose behavior was described as inflexible and refractory to changing circumstances, adolescence-limited delinquents are likely to engage in antisocial behavior in situations where such responses seem profitable to them, but they are also able to abandon antisocial behavior when prosocial styles are more rewarding. They maintain control over their antisocial responses and use anti-

initiate crime after adolescence, suggesting that if an adult is going to be antisocial, the pattern must be established by late adolescence (Elliott, Huizinga, and Menard, 1989).<sup>1</sup> At the same time, efforts to predict antisocial outcomes from childhood conduct problems yield many errors (e.g., White et al., 1990). These errors seem to suggest that antisocial styles become set sometime after childhood. . . .

## Adolescence-Limited Antisocial Behavior

### Discontinuity: The Most Common Course of Antisocial Behavior

As implied by the proffered label, discontinuity is the hallmark of teenaged delinquents who have no notable history of antisocial behavior in childhood and little future for such behavior in adulthood. However, the brief tenure of their delinquency should not obscure their prevalence in the population or the gravity of their crimes. In contrast with the rare life-course-persistent type, adolescence-limited delinquency is ubiquitous. Several studies have shown that about one third of males are arrested during their lifetime for a serious criminal offense, whereas fully four fifths of males have police contact for some minor infringement (Farrington, Ohlin, and Wilson, 1986). Most of these police contacts are made during the adolescent years. Indeed, numerous rigorous self-report studies have now documented that it is statistically aberrant to refrain from crime during adolescence (Elliott et al., 1983; Hirschi, 1969; Moffitt and Silva, 1988c).

Compared with the life-course-persistent type, adolescence-limited delinquents show relatively little continuity in their antisocial behavior. Across age, change in delinquent involvement is often abrupt, especially during the periods of onset and desistance. For example, in my aforementioned longitudinal study of a representative sample of boys, 12% of the youngsters were classified as new delinquents at age 13; they had no prior history of antisocial behavior from age 5 to

mones on teens' behavior and personality). In most American states, teens are not allowed to work or get a driver's license before age 16, marry or vote before age 18, or buy alcohol before age 21, and they are admonished to delay having children and establishing their own private dwellings until their education is completed at age 22, sometimes more than 10 years after they attain sexual maturity. They remain financially and socially dependent on their families of origin and are allowed few decisions of any real import. Yet they want desperately to establish intimate bonds with the opposite sex, to accrue material belongings, to make their own decisions, and to be regarded as consequential by adults (Csikszentmihalyi and Larson, 1984). Contemporary adolescents are thus trapped in a *maturity gap*, chronological hostages of a time warp between biological age and social age.

This emergent phenomenology begins to color the world for most teens in the first years of adolescence. Steinberg has shown that, between ages 10 and 15, a dramatic shift in youngsters' self-perceptions of autonomy and self-reliance takes place. Moreover, the timing of the shift for individuals is connected with their pubertal maturation (Steinberg, 1987; Steinberg and Silverberg, 1986; Udry, 1988). At the time of biological maturity, salient pubertal changes make the remoteness of ascribed social maturity painfully apparent to teens. This new awareness coincides with their promotion into a high school society that is numerically dominated by older youth. Thus, just as teens begin to feel the discomfort of the maturity gap, they enter a social reference group that has endured the gap for 3 to 4 years and has already perfected some delinquent ways of coping with it. Indeed, several researchers have noted that this life course transition into high school society may place teens at risk for antisocial behavior. In particular, exposure to peer models, when coupled with puberty, is an important determinant of adolescence-onset cases of delinquency (Caspi, Lynam, Moffitt, and Silva, 1993; Magnusson, 1988; Simmons and Blyth, 1987).

Life course-persistent youngsters are the vanguard of this transition. Healthy adolescents are capable of noticing that the few life-course-persistent youths in their midst do not seem to suffer much from the maturity gap. (At a prevalence rate of about 5%, one or two such experienced delinquents in every classroom might be expected.) Already adept at deviance, life-course-persistent youths are able to obtain possessions by theft or vice that are otherwise inaccessible to teens who have no independent incomes (e.g., cars, clothes, drugs, or entry into adults-only leisure settings). Life course-persistent boys are more sexually experienced and have already initiated relationships with the opposite sex. Life course-persistent boys appear relatively free of their families of origin; they seem to go their own way, making their own rules. As evidence that they make their own decisions, they take risks and do dangerous things that parents could not possibly endorse. As evidence that they have social consequence in the adult world, they have personal attorneys, social workers, and probation officers; they operate small businesses in the underground economy; and they have favored children (Weiher, Huizinga, Lizoite, and Van Kammen, 1991). Viewed from within contemporary adolescent culture, the antisocial precocity of life-course-persistent youths becomes a coveted social asset (cf. Finnegan, 1990a, 1990b; Jessor and Jessor, 1977; Silbereisen and Noack, 1988). Like the aforementioned bird calls that were mimicked by hungry tamarin monkeys, antisocial behavior becomes a valuable technique that is demonstrated by life-course-persistents and imitated carefully by adolescence-limiteds. The effect of peer delinquency on the onset of delinquency is among the most robust facts in criminology research (Elliott and Menard, in press; Jessor and Jessor, 1977; Reiss, 1986; Sarnacki, 1986). However, is there evidence consistent with a social mimicry interpretation? I describe the evidence in the next section.

*Social mimicry and the relationships between life-course-persistent and adoles-*

*cence-limited delinquents.* One hypothesized by-product of the maturity gap is a shift during early adolescence by persistent antisocial youth from peripheral to more influential positions in the peer social structure. This shift should occur as aspects of the antisocial style become more interesting to other teens. In terms of its epidemiology, delinquent participation shifts from being primarily an individual psychopathology in childhood to a normative group social behavior during adolescence and then back to psychopathology in adulthood. Consider that the behavior problems of the few pioneering antisocial children in an age cohort must develop on an individual basis; such early childhood pioneers lack the influence of delinquent peers (excepting family members). However, near adolescence, a few boys join the life-course-persistent ones, then a few more, until a critical mass is reached when almost all adolescents are involved in some delinquency with age peers. Elliott and Menard (in press) have analyzed change in peer group membership from age 11 to age 24 in a national probability sample. Their data show a gradual population drift from membership in nondelinquent peer groups up to age 17; the trend reverses thereafter. For example, 78% of 11-year-olds reported no or minimal delinquency among their friends. In contrast, 66% of 17-year-olds reported substantial delinquency on the part of the friends in their group.

The word *friends* in the previous sentence seems to imply a personal relationship between life-course-persistents and adolescence-limiteds that is implausible. Much evidence suggests that, before adolescence, life-course-persistent antisocial children are ignored and rejected by other children because of their unpredictable, aggressive behavior (Coie et al., 1988; Dodge et al., 1982). After adolescence has passed, life-course-persistent adults are often described as lacking the capacity for loyalty or friendship (Cleckley, 1976; Robins, 1985). At first, these observations may seem contrary to my assertion that life-course-persistents as-

sume social influence over youths who admire and emulate their style during adolescence. However, it is important to recall that social mimicry required no exchange of affection between the successful birds and their monkey mimics. In this theory, adolescents who wish to prove their maturity need only notice that the style of life-course-persistents resembles adulthood more than it resembles childhood. Then they need only observe antisocial behavior closely enough and long enough to imitate it successfully. What is contended is that adolescence-limited youths should regard life-course-persistent youths as models, and themselves as magnets for other teens. Neither perception need involve reciprocal liking between individuals.

A modeling role would imply that measures of exposure to delinquent peers (e.g., knowledge of their delinquent behavior or time spent in proximity to them) should be better predictors of self-delinquency than measures of relationship quality (e.g., shared attitudes or attachment to delinquent peers). Few studies have parsed delinquency effects into separate components, but two findings consistent with this prediction have been reported from the National Youth Survey, a representative sample of more than 500 teens. Agnew (1991) examined relationship characteristics in interaction with levels of peer delinquency. He argued that attachment to peers should encourage deviance if peers are delinquent but discourage it if they are not. Agnew's results showed that such interaction terms were good predictors. However, the results also showed that time spent with delinquent peers was a stronger unique predictor of self-delinquency than the interaction between peer attachment and peer crime. Warr and Stafford (1991) found that the knowledge of friends' delinquent behavior was 2.5 to 5 times more important for self-delinquency than friends' attitudes about delinquency. (This pattern has been replicated in another sample by Nagin and Pateroster, 1991.) Moreover, the effect of peer delinquency was direct; it was not mediated by influencing the respondents' atti-

tudes to be more like those of deviant peers. These findings are not consistent with the notion that teens take up delinquency after pro-delinquency attitudes are transferred in the context of intimate social relations. Rather, Warr and Stafford concluded that the data on peer effects are best interpreted in terms of imitation or vicarious reinforcement.

A magnet role would imply that children who were rejected and ignored by others should experience newfound "popularity" as teens, relative to their former rejected status. That is, life-course-persistent youth should encounter more contacts with peers during adolescence when other adolescents draw near so as to imitate their life-style. Some research is consistent with this interpretation. For example, in a study of 450 students in middle school, aggressive youths who were rejected by their peers reported that they did not feel lonely, whereas submissive rejected youths did feel lonely (Parkhurst and Asher, 1992). Similarly, aggressive seventh-graders in the Carolina Longitudinal Study were rated as popular as often as nonaggressive youths by both teachers and themselves and were as likely as other youths to be nuclear members of peer groups (Cairns, Cairns, Neckerman, Gest, and Garipey, 1988). In their review of peer-relationship studies, Coie, Dodge, and Kupersmidt (1990) noted that the relationship between overt aggression and peer rejection is weaker or absent in adolescent samples compared with child samples. Findings such as these suggest that aggressive teens experience regular contacts with peers, however short-lived. Similarly, in the Oregon Youth Study, rejection by peers at age 10 was prognostic of greater involvement with delinquent peers 2 years later (Dishion, Patterson, Stoolmiller, and Skinner, 1991). Although the Oregon researchers interpreted their results as suggesting that aggressive children seek delinquent friends, their data are equally consistent with my interpretation that aggressive youths begin to serve as a magnet for novice delinquents during early adolescence. Definitive sociometric research must follow

knifing-off childhood apron strings and of proving that they can act independently to conquer new challenges (Erikson, 1960). Hypothetical reinforcers for delinquency include damaging the quality of intimacy and communication with parents, provoking responses from adults in positions of authority, finding ways to look older (such as by smoking cigarettes, being tattooed, playing the big spender with ill-gotten gains), and tempting fate (risking pregnancy, driving while intoxicated, or shoplifting under the noses of clerks). None of these putative reinforcers may seem very pleasurable to the middle-aged academic, but each of the aforementioned consequences is a precious resource to the teenager and can serve to reinforce delinquency. Bloch and Niederhoffer (1958) have offered an anthropological perspective:

It is almost as if the contemporary young person, in the absence of puberty rituals and ordeals, is moved to exclaim: If you don't care to test us, then we will test ourselves! (p. 28)

I suggest that every curfew violated, car stolen, drug taken, and baby conceived is a statement of personal independence and thus a reinforcer for delinquent involvement. Ethnographic interviews with delinquents reveal that proving maturity and autonomy are strong personal motives for offending (e.g., Goldstein, 1990). Such hypothetical reinforcing properties have not been systematically tested for most types of delinquent acts. However, epidemiological studies have confirmed that adolescent initiation of tobacco, alcohol, and drug abuse are reinforced because they symbolize independence and maturity to youth (D. Kandel, 1980; Mausner and Platt, 1971).

In summary, in this narrative account of the etiology of adolescent-onset delinquency I have emphasized three conditions: motivation, mimicry, and reinforcement. I have suggested that a secular change in the duration of adolescence has generated an age-dependent motivational state. In addition, life-course-persistent antisocial models must be available so that their delin-

quent behaviors can be imitated. Finally, adolescents' fledgling attempts to mimic antisocial styles will continue if they are socially reinforced by the "negative consequences" of crime.

### Why Doesn't Every Teenager Become Delinquent?

The proffered theory of adolescence-limited delinquency regards this sort of delinquency as an adaptive response to contextual circumstances. As a consequence, the theory seems to predict that every teen will engage in delinquency. Data from epidemiological studies using the self-report method suggest that almost all adolescents do commit some illegal acts (Elliott et al., 1983). In addition, even studies using official records of arrest by police find surprisingly high prevalence rates (for a review see Farrington, Ohlin, and Wilson, 1986). Nevertheless, some youths commit less delinquency than others, and a small minority abstains completely. Unfortunately, almost no research sheds light on the characteristics of teens who abstain from antisocial behavior altogether. Speculations are thus informed by empirical observations. However, some predictions may be derived from the present theory of adolescence-limited delinquency. The predictions center on two theoretical prerequisites for adolescent-onset delinquency: the motivating maturity gap and antisocial role models. Some youths may skip the maturity gap because of late puberty or early initiation into adult roles. Others may find few opportunities for mimicking life-course-persistent delinquent models.

Some youths who refrain from antisocial behavior may, for some reason, not sense the maturity gap and therefore lack the hypothesized motivation for experimenting with crime. Perhaps such teens experience very late puberty so that the gap between biological and social adulthood is not signaled to them early in adolescence. For example, Caspi and Moffitt (1991) have shown that girls who do not menstruate by age 15 tend not to become involved in delin-

*Reinforcement of delinquency by its 'negative' consequences.* For teens who become adolescence-limited delinquents, antisocial behavior is an effective means of



quency; in fact they evidence fewer than normal behavior problems as teens. Perhaps other abstainers belong to cultural or religious subgroups in which adolescents are given legitimate access to adult privileges and accountability. In his vivid ethnographic account of "old heads" and teen-aged boys in a poor black neighborhood, Anderson (1990) described how mature community leaders drew certain boys into their own work and social lives, deliberately and publicly initiating the boys into manhood (and preventing delinquent involvement).

Some nondelinquent teens may lack structural opportunities for modeling anti-social peers. Adolescent crime rates are generally lower in rural areas than in inner-city areas (Skogan, 1979, 1990). Teens in urban areas are surrounded by a greater density of age peers (and have readier unsupervised access to them through public transportation and meeting venues such as parks and shopping malls) than are teens in relatively isolated rural areas. For instance, Sampson and Groves (1989) determined that the strongest community-level correlate of local rates of robbery and violence was the presence of "unsupervised groups of teenagers hanging out and making a nuisance" (p. 789). In that study, more traditional community correlates of crime, such as socioeconomic status, residential mobility, and ethnicity, were mediated by the teenaged social scene. School structures may also constrain or facilitate access to life-course-persistent models. Caspi et al. (1993) found that early puberty was associated with delinquency in girls but only if they had access to boys through attending coed high schools. Girls who were enrolled in girls' schools did not engage in delinquency. In that study, the difference in delinquent involvement between coed and single-sex school settings could not be explained by any personal or family characteristics that may have influenced how the girls came to be enrolled in their schools; access to delinquent role models was clearly the best explanation for the girls' behavior problems.

Youths may also be excluded from opportunities to mimic antisocial peers because of some personal characteristics that make them unattractive to other teens or that leave them reluctant to seek entry to newly popular delinquent groups. Shedler and Block (1990) found such an effect on the use of illegal drugs. They compared the personality styles of three adolescent groups: teens who abstained from trying any drug, teens who experimented with drugs, and teens who were frequent heavy drug users. Adolescents who experimented were the best adjusted teens in the sample. As expected, frequent users were troubled teens, who were alienated and antisocial. However, the abstainers were also problem teens: They were "relatively tense, overcontrolled, emotionally constricted. . . somewhat socially isolated and lacking in interpersonal skills" (p. 618). This personality style was not a consequence of failing to try drugs. Rather, it was an enduring personality configuration. At age 7, these abstainers had been prospectively described by raters as overcontrolled, timid, fearful and mo-rose. . . they were not warm and responsive, not curious and open to new experience, not active, not vital, and not cheerful. (pp. 619-620)

Similarly, Farrington and West (1990) reported that boys from criminogenic circumstances who did not become delinquent seemed nervous and withdrawn and had few or no friends. These provocative findings remind us that deviance is defined in relationship to its normative context. During adolescence, when delinquent behavior becomes the norm, nondelinquents warrant our scientific scrutiny.

In summary, this theory of adolescence-limited delinquency suggests that adolescents who commit no antisocial behavior at all have either (a) delayed puberty, (b) access to roles that are respected by adults, (c) environments that limit opportunities for learning about delinquency, (d) personal characteristics that exclude them from anti-social peer networks, or (e) all four. Research is needed to determine whether or not abstaining from delinquency is neces-

sarily a sign of good adolescent adjustment. . . .

### Desistance From Crime: Adolescence-Limiteds Are Responsive to Shifting Reinforcement Contingencies

By definition, adolescence-limited delinquents generally do not maintain their delinquent behavior into adulthood. The account of life-course-persistent persons I made earlier in this article required an analysis of maintenance factors. In contrast, this account of adolescence-limited delinquents demands an analysis of desistance: Why do adolescence-limited delinquents desist from delinquency? This theory's answer: Healthy youths respond adaptively to changing contingencies. If motivational and learning mechanisms initiate and maintain their delinquency, then, likewise, changing contingencies can extinguish it. . . .

With the inevitable progression of chronological age, more legitimate and tangible adult roles become available to teens. Adolescence-limited delinquents gradually experience a loss of motivation for delinquency as they exit the maturity gap. Moreover, when aging delinquents attain some of the privileges they coveted as teens, the consequences of illegal behavior shift from rewarding to punishing, in their perception. An adult arrest record will limit their job opportunities, drug abuse keeps them from getting to work on time, drunk driving is costly, and bar fights lead to accusations of unfit parenthood. Adolescence-limited delinquents have something to lose by persisting in their antisocial behavior beyond the teen years.

There is some evidence that many young adult offenders weigh the relative rewards from illegal and conventional activities when they contemplate future offending. In a study of three samples, the effect of age on criminal participation was mediated by young men's expectations about whether legal earnings would exceed earnings from a straight job (Pillavin, Thornton, Garner, and Matuseda, 1986). Important for this theory, research shows that "commitment costs" are among the factors weighed by

young adults when they decide to discontinue offending. In the criminological subfield of perceptual deterrence research, commitment costs are defined as a person's judgment that past accomplishments will be jeopardized or that future goals will be foreclosed (Williams and Hawkins, 1986). Criminal behavior incurs commitment costs if it risks informal sanctions (disapproval by family, community, or employer) as well as formal sanctions (arrest or conviction penalty). Given that very few delinquent acts culminate in formal sanctions, perceptual deterrence theories consider informal sanctions as keys to deterrence. Paternoster and colleagues have tested the proposed effects of commitment costs and informal sanctions in a follow-up study of 300 young adults. They found that criminal offending 1 year later was best predicted by prospective indexes of commitment costs ( $r = -.23$ ) and informal sanctions ( $r = -.40$ ). Those variables outdid gender, perceived risk of arrest, grade point average, and peer attachment (Paternoster, Saltzman, Waldo, and Chircos, 1983).

**Options for change.** Consistent with this motivational analysis, the antisocial behavior of many delinquent teens has been found to decline after they leave high school (Elliott and Voss, 1974), join the army (Eider, 1986; Mattick, 1960), marry a prosocial spouse (Sampson and Laub, 1990), move away from the old neighborhood (West, 1982), or get a full-time job (Sampson and Laub, 1990). As these citations show, links between the assumption of adult roles and criminal desistance have been observed before. The issue left undressed by theory is why are some delinquents able to desist when others are not? What enables adolescence-limited delinquents to make these (often abrupt) transitions away from crime? Why do adolescence-limited delinquents come to realize that they have something to lose, whereas life-course-persistent delinquents remain undeterred? Here, two positions are advanced: Unlike their life-course-persistent counterparts, adolescence-limited delinquents are relatively exempt from the forces

of (a) cumulative and (b) contemporary continuity.

First, without a lifelong history of antisocial behavior, the forces of cumulative continuity have had fewer years in which to gather the momentum of a downhill snowball. Before taking up delinquency, adolescence-limited offenders had ample years to develop an accomplished repertoire of prosocial behaviors and basic academic skills. These social skills and academic achievements make them eligible for postsecondary education, good marriages, and desirable jobs.

The availability of alternatives to crime may explain why some adolescence-limited delinquents desist later than others. (As shown in Figure 42.1, the desistance portion of the age-crime curve slopes more gradually than the abrupt criminal initiation portion.) Although the forces of cumulative continuity build up less momentum over the course of their relatively short crime careers, many adolescence-limited youths will fall prey to many of the same snares that maintain continuity among life-course-persistent persons. Those whose teen forays into delinquency inadvertently attracted damaging consequences may have more difficulty desisting. A drug habit, an incarceration, interrupted education, or a teen pregnancy are snares that require extra effort and time from which to escape. Thus, this theory predicts that variability in age at desistance from crime should be accounted for by the cumulative number and type of ensnaring life events that entangle persons in a deviant life-style.

Second, in stark contrast with the earlier account of life-course-persistent offenders, personality disorder and cognitive deficits play no part in the delinquency of adolescence-limited offenders. As a result, they are exempt from the sources of contemporary continuity that plague their life-course-persistent counterparts. In general, these young adults have adequate social skills, they have a record of average or better academic achievement, their mental health is sturdy, they still possess the capacity to forge close attachment relationships, and then, retain the good intelligence they

had when they entered adolescence. One study of girls who grew up in institutional care has illustrated that individual differences influence which adolescents are able to attain prosocial outcomes in young adulthood (Quinton and Rutter, 1988). In that study, some girls reared in institutions were able to escape adversity for advantage through marriage to a supportive husband, but a constellation of individual psychological attributes determined which girls were able to marry well.

At the crossroads of young adulthood, adolescence-limited and life-course-persistent delinquents go different ways. This happens because the developmental histories and personal traits of adolescence-limiteds allow them the option of exploring new life pathways. The histories and traits of life-course-persistents have foreclosed their options, entrenching them in the anti-social path. To test this hypothesis, research must examine conditional effects of individual histories on opportunities for desistance from crime. . . .

### Endnote

1. Between 9 percent and 22 percent of males not arrested as juveniles are arrested as adults, suggesting that adult-onset offenders constitute between 5 percent and 15 percent of all males (for a review see Farrington, Ohlin, & Wilson, 1986). However, estimates that are based on such official data are too high because most offenders engage in crime for some time before they are first arrested. Longitudinal studies of self-report delinquency show that only 1 percent to 4 percent of males commit their first criminal offense after age 17 (Elliott, Huizinga, and Menard, 1989). Adult-onset crime is not only very unusual, but it tends to be low rate, nonviolent (Blumstein and Cohen, 1987), and generally not accompanied by the many complications that attend a persistent and pervasive antisocial lifestyle (Farrington, Loeber, Elliott, et al., 1990).

Moffitt? Why do these traits increase the likelihood of antisocial behavior?

3. Describe Moffitt's theory of adolescence-limited antisocial behavior. Why is it that individuals in the "adolescence-limited" group are able to desist from crime in early adulthood while individuals in the "adolescence-persistent" group are not?
4. Why does Moffitt state that adolescence-limited antisocial behavior is *not pathological* while adolescence-persistent antisocial behavior is *pathological*?

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### Discussion Questions

1. Describe the different ways in which individual traits and environmental factors interact with (or influence) one another to produce persistent antisocial behavior.
2. What types of individual traits foster antisocial behavior, according to