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**Adolescence-Limited and
Life-Course-Persistent Offending:
A Complementary Pair of
Developmental Theories**

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Introduction

There are marked individual differences in the stability of antisocial behavior. Many people behave antisocially, but their antisocial behavior is temporary and situational. By contrast, the antisocial behavior of some people is very stable and persistent. Temporary, situational antisocial behavior is quite common in the population, especially among male and female adolescents. Persistent, stable antisocial behavior is found among a relatively small number of mostly males. The central tenet of this essay 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.

*A Typology that Addresses the Shape
of the Curve of Crime Over Age*

When official rates of crime are plotted against age, the rates for both prevalence and incidence of offending appear highest during adolescence; they peak sharply at about age seventeen and drop precipitously in young

adulthood. With the advent of alternate measurement strategies—most notably self-reports of deviant behavior—we have learned that arrest statistics merely reflect the tip of the deviance iceberg (Hood and Sparks 1970). Actual rates of illegal behavior soar so high during adolescence that participation in delinquency appears to be a normal part of teen life (Elliott, Ageton, Huizinga, Knowles, and Canter 1983). The majority of criminal offenders are teenagers; by the early twenties, the number of active offenders decreases by over 50 percent; by age twenty-eight, almost 85 percent of former delinquents desist from offending (Blumstein and Cohen 1987; Farrington 1986). With slight variations, this general relation between age and crime obtains among males and females, for most types of crimes, during recent historical periods, and in numerous Western nations (Hirschi and Gottfredson 1993).

Until recently, research on age and crime has relied on official data, primarily arrest and conviction records. As a result, the left-hand side of the age-crime curve has been censored. Indeed, in many empirical comparisons between early onset and late onset antisocial behavior, "early" has been artifactually defined as mid-adolescence on the basis of first police arrest or court conviction (Farrington et al. 1990). However, research on childhood conduct disorder has now documented that antisocial behavior begins long before the age when it is first encoded in police data banks. Indeed, we now know that the steep decline in antisocial behavior between ages seventeen and thirty is mirrored by a steep incline in antisocial behavior between ages seven and seventeen (Loeber, Stouthamer-Loeber, Van Kammen, and Farrington 1989; Wolfgang, Figlio, and Sellin 1972). Further, we may extend the left-hand tail of the age-crime curve by adding developmental psychologists' reports of childhood aggression (Pepler and Rubin 1991), and mental health researchers' reports of conduct disorder (Kazdin 1987), to criminologists' studies of self-reported delinquency and official crime. So doing, it becomes obvious that manifestations of antisocial behavior emerge very early in the life course, and remain present thereafter.

Although there is widespread agreement about the curve of crime over age, there are few convincing explanations for the shape of the curve. The typology presented here addresses this issue by drawing attention to two trajectories concealed within the curve of crime over age. Timing and duration of the course of antisocial involvement are the defining features of the two proposed types of offenders.

Evidence for a Life-Course-Persistent Type

In this typology, a small group of persons engages in antisocial behavior of one sort or another at every stage of life; they make up the childhood and adulthood tails of the age-crime curve, and participate during adolescence too. I have labelled these persons *life-course-persistent*, to reflect the continuous course of their antisocial behavior.

Is there any evidence that a small number of persons in the general population show antisocial behavior that is life-course-persistent? To begin, epidemiological research has shown that there is remarkable uniformity in the prevalence rates of different manifestations of severe antisocial behavior: Regardless of their age, fewer than 10 percent of males warrant an official antisocial designation. For example, about 5 percent of preschool boys are considered by their parents or caretakers to be "very difficult to manage" (McCee, Partridge, Williams, and Silva 1991). The prevalence of Conduct Disorder among elementary-school-aged boys has been found to be between 4 percent and 9 percent in several countries (Costello 1989). About 6 percent of boys are first arrested by police as preteens (Moffitt and Silva 1988a; Wolfgang et al. 1972); such early arrest is important because it is the best predictor of long-term recidivistic offending. The rate of conviction for a violent offense in young adult males is between 3 percent and 6 percent (Moffitt, Mednick, and Gabrielli 1989), and about 4 percent of male adolescents self-report sustained careers of serious violence (three or more violent offenses per year for five years; Elliott, Huizinga, and Morse 1986). Finally, the prevalence of adult men with antisocial personality disorder is estimated at about 4 percent to 5 percent (Robins 1985).

It is possible, of course, that the persons who constitute these epidemiological statistics at different ages are all different individuals. But the longitudinal data suggest otherwise: it is more likely that the remarkable constancy of prevalence rates reflects the reoccurrence of the same life-course-persistent individuals in different antisocial categories at different ages. Robins (1966, 1978) has shown that there are virtually no cases of adult antisocial personality disorder that did not also have conduct disorder as children. White, Moffitt, Earls, Robins, and Silva (1990) found notable continuity from disobedient and aggressive behavior at age three to later childhood conduct disorder, and then to arrest by police in the early teen years. Loeber (1982) reviewed research that pinpoints a

first arrest between ages seven and eleven as particularly important for predicting long-term adult offending. Hare and McPherson (1984) have reported that a conviction for violence in the early twenties is characteristic of almost all men who later become diagnosed with antisocial (psychopathic) personality disorder.

In his analysis of a sample of third-grade boys, Patterson (1982) found that the most aggressive 5 percent of the boys constituted the most persistent group as well; 39 percent of them ranked above the ninety-fifth percentile on aggression ten years later, and 100 percent of them were still above the median. Similarly, Loeber (1982) has reviewed research showing that stability of youngsters' antisocial behavior across time is linked with stability across situations, and that both forms of stability are characteristic of a relatively small group of persons with extremely antisocial behavior. This point is illustrated in a longitudinal investigation of a representative cohort of 1037 New Zealand children born in 1972-73. In this sample, I identified a group of boys whose antisocial behavior was rated above average at each of seven biennial assessments (ages three, five, seven, nine, eleven, thirteen, and fifteen). The boys were also rated as very antisocial by three different reporting agents (parents, teachers, and self). Five percent of the boys in the sample met these selection criteria. As a group, their mean antisocial ratings were more than a standard deviation above the norm for boys at every age. A disproportionate amount of the measured stability in the New Zealand sample could be attributed to these few boys; when they were excluded from calculations, the 8-year stability coefficient for teacher ratings was reduced from .28 ($R^2 = .078$) to .16 ($R^2 = .025$), indicating that 5 percent of the sample accounted for 68 percent of the sample's stability. (If antisocial behavior had been a stable characteristic throughout the sample, with most boys retaining their relative standing in the group across time, then excluding the top 5 percent of the sample should not have affected the stability coefficient.)

In a test of this taxonomy conducted recently by Nagin and colleagues (Nagin and Land 1993; Nagin, Farrington, and Moffitt, 1995) a group of males whose history of criminal conviction resembles the life-course-persistent pattern was identified among the 411 members of the sample studied by Farrington and West (1990). The group, which contained 12 percent of this working-class London sample and was labelled "high-rate chronic offenders" by Nagin and Land, showed a distinctive pattern

of the lambda index of individual offending rate that remained high and stable from age ten to thirty-two, with only a small peak near age eighteen.

There are still gaps in the epidemiological data base; each of the above-cited studies connected only two or three points in the life course. Nonetheless, the consistency is impressive: A substantial body of longitudinal research consistently points to a very small group of males who display high rates of antisocial behavior across time and in diverse situations. The professional nomenclature may change, but the faces remain the same as they drift through successive systems aimed at curbing their deviance: schools, juvenile-justice programs, psychiatric-treatment centers, and prisons. The topography of their behavior may change with changing opportunities, but the disposition to act antisocially persists throughout the life course.

Evidence for an Adolescence-Limited Type

In contrast to the small group of life-course-persistent antisocials, a larger group of persons fills out the adolescent peak of the age-crime curve with crime careers of shorter duration. Consistent with this notion, English and American studies have shown that the adolescent peak reflects a temporary increase in the number of people involved in antisocial behavior, not a temporary acceleration in the offense rates of individuals (Farrington 1983; Wolfgang, Thornberry and Figlio 1987). I have labelled these persons *adolescence-limited*, to reflect their more temporary involvement in antisocial behavior. The brief tenure of their delinquent participation should not obscure their prevalence in the population, or the gravity of their crimes.

By 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, while 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 of representative samples have now documented that it is statistically aberrant to refrain from crime during adolescence (Elliott et al. 1983; Hirschi 1969; Moffitt, Lynam and Silva 1994). This tidal wave of adolescent onset has been studied in the aforementioned representative sample of New Zealand boys (Moffitt 1991).

Between ages eleven and fifteen, about one third of the sample joined the delinquent lifestyles of the 5 percent of boys who had shown stable and pervasive antisocial behavior since preschool. As a group, these adolescent newcomers to antisocial ways had not formerly exceeded the normative levels of antisocial behavior for boys at ages three, five, seven, nine, or eleven. Despite their lack of prior experience, by age fifteen, the newcomers equalled their preschool-onset antisocial peers in the variety of laws they had broken, the frequency with which they broke them, and the number of times they appeared in juvenile court (Moffitt 1991). When interviewed at age eighteen, only 7 percent of the New Zealand boys denied all delinquent activities during the past year. By their mid-twenties, at least three-quarters of these new offenders are expected to cease all offending (Farrington 1986).

As implied by the proffered label, discontinuity is the hallmark of teen-aged delinquents who have no notable history of antisocial behavior in childhood and little future for such behavior in adulthood. Compared to 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 (Moffitt 1990a). Adolescence-limited delinquents may also have sporadic, crime-free periods in the midst of their brief crime careers. And, in contrast to 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 and Schmalzing 1985; Loeber, Green, Lahey, and Stouthamer-Loeber 1990).

In the aforementioned test of this taxonomy by Nagin and Land (1993) a group of males whose history of criminal conviction resembles the adolescence-limited pattern was identified among the 411 members of the London sample. The group, which contained 33 percent of this working-class London sample, showed a distinctive pattern of the lambda index of individual offending rate. Lambda began low at age ten, rose to a peak during mid-adolescence, and then fell precipitously. By age twenty-two and thereafter, lambda for this group was effectively zero. Although conviction data do not provide the closest index to actual offending behavior, and although

the study generated a third group of offenders with a chronically low level of lambda that was not anticipated by this taxonomy, the Nagin and Land study is the first to confirm the existence of distinctive individual trajectories concealed within the population-level curve of crime over age.

Implications

If correct, this simple typology can serve a powerful organizing function, with important implications for theory and research on the causes of crime. For delinquents whose criminal activity is confined to the adolescent years, the causal factors may be proximal—specific to the period of adolescent development—and theory must account for the discontinuity in their lives. By 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. If the causal theories are correct, and the causes and correlates of delinquency differ for the two groups, then research that fails to analyze them separately is predestined to generate attenuated findings about both groups. Next, I turn to the causal theories.

An Etiological Theory for Life-Course-Persistent Antisocial Behavior

If some individuals' antisocial behavior is stable from preschool to adulthood as the data imply, then we are compelled to look for its roots early in life, in factors that are present before or soon after birth. I believe that the juxtaposition of a vulnerable and difficult infant with an adverse rearing context initiates risk for the 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). This chain promotes the persistence and unfolding of antisocial behavior problems from infancy to adolescence. 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 (see Moffitt, 1993a, 1993b, or 1994, for a fuller explication of the theory of life-course-persistent development).

Life-Course-Persistent Behavior Begins with Social Interactions Between Problem Children and Problem Parents

Before describing how neuropsychological variation might constitute risk for antisocial behavior, it is useful to define what is meant here by neuropsychological. By combining "neuro" with "psychological" I refer broadly to the extent to which anatomical structures and physiological processes within the nervous system engender differences between children in activity level, emotional reactivity, or self-regulation (temperature), speech, motor coordination, or impulse control (behavioral development), and attention, language, learning, memory, or reasoning (cognitive abilities). 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 (Hertzog 1983; Rutter 1983; Wender 1971). Irritable newborns elicit more negative and less positive parenting behavior from their mothers (van den Boom and Hoeksma 1994).

Parent/child interactions should be most likely to produce lasting antisocial behavior problems if caretaker reactions are more likely to exacerbate than ameliorate children's problem behavior (Sameroff and Chandler 1975). Children with neuropsychological problems evoke a challenge to even the most resourceful, loving, and patient families. Unfortunately, such children are unlikely to find themselves in resourceful, loving and patient 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 parental 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).

Problem children are likely to have problem parents. The intergenerational transmission of severe antisocial behavior has been carefully documented in a study of three generations (Huesmann, Eron, Lefkowitz, and Walder 1984). In that study of 600 subjects, the stability of individuals' aggressive behavior from age eight to age thirty was exceeded by the stability of aggression across the generations: from grandparent to parent to child.

Because intergenerational transmission is so common, parents of children who are difficult to manage often lack the necessary psychological and physical resources to cope constructively with a difficult child (Snyder and Patterson 1987). For example, parents and children are similar to each other on temperament and personality (Plomin, Chipuet, 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 are impatient and irritable too. Parents and children also resemble each other on cognitive ability (Bouchard and McGue 1981). This implies that children who are most in need of remedial schooling and professional therapy will have parents who may be least able to provide it because the parents' low cognitive abilities set limits on their own educational and occupational success (Barrett and Depinet 1991). This perverse compounding of children's vulnerabilities with their families' imperfections sets the stage for the development of life-course-persistent antisocial behavior. If both poor parenting and child risk characteristics combine to lay the foundation for persistent antisocial behavior, then we would expect to find that interaction effects between parent and child measures significantly predict later serious antisocial outcomes. Such effects have been reported for the New Zealand sample: child cognitive ability interacts with family adversity to predict adolescent aggression (Moffitt 1990a) and preschool temperament interacts with parenting to predict convictions for violence (Henry, Moffitt, Caspi and Silva 1994).

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 intellectual impairment and antisocial outcomes is one of the most robust effects in the study of antisocial behavior (Moffitt 1990b, 1993b; 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 antisocial children are pervasive, affecting receptive listening and reading, problem solving, expressive speech and writing, and memory. In addition, brain dysfunction can produce what is sometimes referred to as a "executive deficits" or a "comportmental learning disability" (Price, Daffner, Slowe, and Mesulam 1990), including symptoms such as inattention, impulsivity, aggression, and poor judgment. 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 1988b).

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 1988c; Moffitt, Lynam and Silva 1994), I have shown that poor verbal and executive functions are associated with antisocial behavior, *if* the behavior is extreme and persistent. In these studies, adolescent New Zealand boys who exhibited both conduct problems and attention-deficit disorder (ADD) scored very poorly on neuropsychological tests of verbal and executive functions, and had histories of extreme antisocial behavior that persisted from age three to age fifteen. Apparently, their neuropsychological deficits were as longstanding as their antisocial behavior: at ages three and five 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. Later, when the New Zealand sample was followed to age eighteen, prospective neuropsychological scores predicted the early onset of arrest by police and conviction in criminal court, as well as the stability of self-reports of serious delinquency across ages thirteen, fifteen, and eighteen (Moffitt et al. 1994).

In a study designed to improve on measurement of executive functions (White, Moffitt, Caspi, Jørgensen, Needles and Stouthamer-Loeber 1994), we gathered data on self-control and impulsivity for 430 Pittsburgh youths. Twelve measures were taken from multiple sources (mother, teacher, self, observer) via 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 three-year longevity of antisocial behavior, even after controlling for IQ, race, and social class. Boys who were very delinquent from ages ten to thirteen 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 symp-

toms of attention deficit disorder, are linked with the early, childhood emergence of aggressive antisocial behavior, and with its subsequent persistence.

Why the Antisocial Youngsters' Style Persists into Adulthood

If the child who steps off on the wrong foot remains on his 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: 121) summarizes: "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." But inauspicious beginnings do not complete the story. The theory must explain why life-course-persistent people continue their antisocial style into adulthood. Transactions between the person and environment can produce two kinds of consequences for the adult life course: *contemporary consequences* and *cumulative consequences* (Caspi and Bem 1990).

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 evidence that these particular traits remain stable well into mid-life is strong (see Conley 1984, for a review). Because such individual differences themselves persist into adulthood, they may continue to increase the probability of adult antisocial behavior in a proximal contemporary fashion. Pennington and Bennett (1993) present evidence for contemporary effects of neuropsychological deficit on antisocial behavior in adulthood. In another report of contemporary continuity, Caspi, Bem, and Elder (1989; Caspi et al. 1987), using data from the longitudinal Berkeley Guidance Study, identified men who had a history of temper tantrums during late childhood (when tantrums are *not* developmentally normative). Then, they traced the consequences of this personality style across the subsequent thirty years of the subjects' lives. Contemporary consequences were implied by the strong direct link between hot temper and occupational stability.

Men with childhood tantrums continued to be hot-tempered in adulthood, where it got them into trouble. They had more erratic work and home lives, changing jobs more frequently, experiencing more unemployment between ages eighteen and forty, and being twice as likely as other men to get divorced.

Cumulative consequences for crime ensue if early individual differences set in motion a downhill snowball of cumulative problems that increase the probability of offending. In the aforementioned study by Caspi et al. (1987, 1989), cumulative consequences were implied by the indirect effect of childhood temper on occupational status at mid-life. Tantrums predicted lower educational attainment, and educational attainment, in turn, predicted lower occupational status. Two sources of cumulative continuity deserve emphasis here because they 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. They limit the options for change. These processes are (1) failing to learn conventional prosocial alternatives to antisocial behavior, and (2) becoming ensnared in a deviant lifestyle by crime's consequences.

Life-course-persistents have 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). In turn, children who have learned to expect rejection are likely in later settings to withdraw or strike out preemptively, precluding opportunities to affiliate with prosocial peers (Dodge and Frame 1982; Nasby, Hayden, and dePaulo 1979). Such children are robbed of chances to practice conventional so-

cial skills. Or 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 alternatives to the underground economy (Farrington, Gallagher, Morley, Ledger, and West 1986; Maughan, Gray, and Rutter 1985). Simply put, if social and academic skills are not learned in childhood, it is very difficult to later recover lost opportunities.

Life-course-persistents become ensnared by the consequences of their 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 drop-out, disabling or disfiguring injuries, patchy work histories, and time spent incarcerated, are *szares* that diminish the probabilities of later success by eliminating opportunities for breaking the chain of cumulative continuity (Wilson and Herrnstein 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). In short, the behavior of life-course-persistent antisocial persons is increasingly maintained and supported by narrowing options for any sort of conventional behavior. I have described how developmental processes of contemporary and cumulative continuity can conspire to construct an antisocial personality and criminal lifestyle. This analysis suggests the hypothesis that opportunities for change will often be actively transformed by life-course-persistents into opportunities for continuity: residential corrections programs provide a chance to learn from criminal peers, a new job furnishes a new opportunity to steal, and new romantic partner provides a new victim for assault. 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.

Life-Course-Persistent Antisocial Behavior is a Form of Individual Psychopathology

The life-course-persistent antisocial pattern, as described here, has many characteristics that, taken together, suggest psychopathology (for

a detailed explication, see Raine 1993). First, the pattern is *statistically unusual*; much research converges to suggest that it is characteristic of about 5 percent of males. Its rarity is thus consistent with a simple statistical definition of abnormality. Second, the pattern is *maladaptive*, in the sense that it fails to change in response to changing circumstances. Life-course-persistent antisocial behavior is tenacious across time and in diverse circumstances, implying that this high-probability response style is relied upon even in situations where it is clearly inappropriate or disadvantageous, especially if there is a very limited repertoire of alternative conventional behaviors. Third, the pattern of life-course-persistent antisocial behavior has a theoretical *biological basis* in subtle dysfunctions of the nervous system. Fourth, the pattern is *associated with other mental disorders*. An impressive body of research documents an overlap between persistent trajectories of antisocial behavior and other conditions of childhood such as learning disabilities and hyperactivity (Moffitt 1990a). Three studies (Elliott, Huizinga, and Menard 1989; Farrington, Loeber, and Van Kammen 1990; Moffitt 1990a) have now shown that the presence of multiple behavioral disorders predicts persistence of illegal behavior over the course of years. This proliferation of mental disorders is common among life-course-persistent antisocial persons. For example, in the Epidemiological Catchment Area (ECA) study of mental disorders among 19,000 adults, over 90 percent of the cases with persistent antisocial personality disorder had at least one additional psychiatric diagnosis (Robins and Regier 1991).

Of course, no one or two of these parameters is enough to warrant the classification of life-course-persistent antisocial behavior as psychopathology. Nonetheless, when taken together they form a more persuasive argument that persons whose antisocial behavior is stable and pervasive over the life course may constitute a category that is qualitatively distinct from persons whose antisocial behavior is short-term and situational.

An Etiological Theory for Adolescence-Limited Antisocial Behavior

A theory of adolescence-limited delinquency must account for several empirical observations: modal onset in early adolescence, widespread prevalence, lack of continuity, and recovery by young adulthood. Why do youngsters who have little or no history of behavior problems in child-

hood 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 lifestyle within a few short years? Just as the childhood onset of life-course-persistent persons compelled us to look for causal factors early in their lives, the coincidence of puberty with the rise in the prevalence of delinquent behavior compels us 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.

Adolescence-Limited Delinquency is Motivated, Mimicked, and Reinforced

Why do adolescence-limited delinquents begin delinquency? The answer advanced here is that their delinquency is *social mimicry* of the antisocial style of life-course-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 in order to obtain access to the valuable resource. 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 tyrannid flycatchers, whose superior avian capacities in flight and distance vision better equip them to discover bearing trees. If social mimicry is to explain why adolescence-limited delinquents begin to mimic the antisocial behavior of their life-course-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 (Fanner 1978; Wyszak and Frisch 1982). Simultaneously, modernization of work has delayed the age of labor-force participation to ever later points in development (Horan and Hargis 1991; Panel on Youth 1974). Thus, secular changes in health and work have lengthened the duration of adolescence. The ensuing gap leaves modern teenagers in a five-to-ten-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. In most American states, teens are not allowed to work or get a driver's license before sixteen, marry or vote before eighteen, or buy alcohol before twenty-one, and they are admonished to delay having children and establishing their own private dwellings until their education is completed at twenty-two, sometimes more than ten 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; Marwell 1966; see Buchanan, Eccles and Becker 1992 for a review of studies of the compelling influence of pubertal hormones on teens' behavior). 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 ten and fifteen, a dramatic increase in youngster's 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 teenaged society where they become aware of the delinquent behavior of older teens, especially life-course-persistent ones. Thus, just as teens begin to feel the discomfort of the maturity gap, they are exposed to a social reference group that has already perfected delinquent ways. Indeed, several researchers have dem-

onstrated that exposure to delinquent 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).

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 percent, we might expect a handful of such very experienced delinquents in every junior high school. Life-course-persistent boys appear relatively free of the apron strings 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; they have fathered children (Weiter, Huizinga, Lizoite, and Van Kammen 1991). 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 (cars, clothes, drugs, entry to "adults-only" leisure settings). Life-course-persistent boys are more sexually experienced and have already initiated relations with the opposite sex. Consistent with my contention that life-course-persistent members of a young adolescent population corner the market on sexual resources, several longitudinal studies have shown that a history of antisocial behavior predicts early sexual experience for males relative to their age peers (Elliott and Morse 1987; Jessor, Costa, Jessor and Donovan 1983; Weiter et al. 1991). Specifically, almost all of the sexual experience of an early-adolescent cohort is concentrated among the most seriously delinquent 5 percent of its boys (Elliott and Morse 1987). As advertising agencies know, a behavior that is linked with the implied availability of sex is extremely likely to be mimicked, especially by postpubertal males. Runored or real, the life-course-persistents' success in the sexual arena may be a powerful inducement to other adolescents to mimic their behavioral style.

Viewed from within contemporary adolescent culture, the antisocial precocity of life-course-persistent youths becomes a coveted social asset (Finnegan 1990a and 1990b; Jessor and Jessor 1977; Silbertsen and Noack 1988). Like the aforementioned bird calls that were mimicked by hungry tamarin monkeys, antisocial behavior becomes a valuable tech-

nique that is demonstrated by life-course-persistents and initiated care-fully by adolescence-limiteds. The effect of peer-delinquency on the on-set of delinquency is among the most robust facts in criminology research (Elliot and Menard in press; Reiss 1986; Samecki 1986). Indeed, Warr (1993) has shown that shifts in peer relations during the adolescent pe-riod can account for the increase in delinquent offending during that pe-riod. But is there evidence consistent with a social mimicry interpretation of the effect?

Social Mimicry and the Relations Between Life-Course-Persistent and Adolescence-Limited Delinquents

One hypothesized by-product of the maturity gap is a shift during early adolescence by life-course-persistent antisocial youth from periph-eral to more influential positions in the peer social structure. This shift should occur as aspects of their antisocial style become more interesting to other teens. 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 (ex-cepting family members). But 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. Elliot and Menard (in press) have analyzed change in peer group membership from age eleven to twenty-four in a national probability sample. Their data show a gradual population drift from membership in nondelinquent peer groups to membership in delinquent peer groups up to age seventeen; the trend reverses thereafter. For example, 78 percent of eleven-year-olds reported no or minimal delinquency among the their friends. By contrast, 66 percent of seventeen-year-olds reported substan-tial delinquency on the part of the friends in their group.

The word "friends" in the previous sentence seems to imply a per-sonal 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). After adolescence has passed, life-course-persistent adults are often described as incapable of loyalty or friendship, and lacking bonds to friends or family (Cleckley 1976; Robins 1985). At first, these obser-

vations may seem contrary to my assertion that life-course-persistents assume social influence over youths who admire and emulate their style during adolescence. However, it is important to recall that social mir-rory required no exchange of affection, nor even any communication, 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 life-course-persistent teens should regard themselves as *mimics* for other teens. Neither perception need involve reciprocal lik-ing between individuals.

A modelling role would imply that measures of exposure to delinquent peers (e.g., knowledge of their delinquent behavior or time spent in prox-imity to them) should be better predictors of self-delinquency than mea-sures of relationship quality (e.g., shared attitudes or attachment to delinquent peers). Few studies have parsed peer-delinquency effects into separate components, but two findings consistent with this prediction have been reported from the National Youth Survey, a representative sample of over 1500 teens. Agnew (1991) examined relationship charac-teristics 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 inter-action 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 five times more important for self-delin-quency than friends' attitudes about delinquency. (This pattern has been replicated in another sample by Nagin and Paternoster 1991.) Moreover, the effect of peer delinquency was direct; it was not mediated via influ-encing the respondents' attitudes to be more like those of deviant peers. These findings are not consistent with the notion that teens take up delin-quency 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 lifestyle. A longitudinal test of this hypothesis is needed: definitive sociometric research must follow up aggressive/rejected children into adolescence to test whether they develop relationships *de novo* that include late-onset delinquents. However, some research is consistent with the interpretation, if one assumes that very aggressive children exemplify Life-Course-Persistent cases. 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 Garlepy 1988). In their review of peer-relationships studies, Cole, Dodge, and Kupermidt (1990) noted that the relation between overt aggression and peer rejection is strong in child samples, but weaker, or absent, in adolescent samples. Findings such as these suggest that although life-course-persistents are rejected isolates in elementary school, in high school they do experience regular interactions with peers. Similarly, in the Oregon Youth Study, rejection by peers at age ten was prognostic of greater involvement with delinquent peers two 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 interpretation that experienced delinquents begin to serve as a magnet for novice delinquents during early adolescence.

Researchers from the Carolina Longitudinal Study have carefully documented that boys with an aggressive history do participate in peer networks in adolescence, but that the networks are not very stable (Cairns et al. 1988). Consistent with a social mimicry hypothesis, delinquent groups have frequent membership turnover. In addition, the interchanges between network members are characterized by much reciprocal antisocial behavior (Cairns et al. 1988). Reiss and Farrington (1991) have shown that the most experienced high-rate young offenders tend to recruit different co-offenders for each offense. Life-course-persistents serve as core members of revolving networks, by virtue of being role models or trainers for new recruits (Reiss, 1986). They exploit peers as drug customers, as fences, as lookouts, or as sexual partners. Such interactions among

life-course-persistent and adolescence-limited delinquents may represent a symbiosis of mutual exploitation. Alternatively, life-course-persistent offenders need not even be aware of all of the adolescence-limited youngsters who imitate their style. Unlike adolescence-limited offenders, who appear to need peer support for crime, life-course-persistent offenders should theoretically be willing to offend alone (Knight and West 1975). The point is that the phenomena of "delinquent peer networks" and "co-offending" during the adolescent period do not necessarily connote supportive friendships based on intimacy, trust, and loyalty, as is sometimes assumed. Social mimicry of delinquency can take place if experienced offenders actively educate new recruits. However, it can also take place if motivated learners merely observe antisocial models from afar.

One empirical test of the social mimicry hypothesis would require that differential pathways via peers to offending be found for life-course-persistent (childhood-onset) versus adolescence-limited (teen-onset) delinquents. Such a finding has been reported in two samples (Caspi et al. 1993; Simons, Wu, Conger, and Lorenz 1994). In these studies, early-onset cases showed a direct relation between early behavior problems and later delinquency that did not require mediation via peers. In contrast adolescent-onset cases' pathway to delinquency was a direct effect of peer delinquency.

Reinforcement of Delinquency by its Negative Consequences

For teens who become adolescence-limited delinquents, antisocial behavior is an effective means of knifing-off childhood apron strings and of proving that they can act independently to conquer new challenges (Erikson 1960). I suggest that every curfew violated, car stolen, drug taken, and baby conceived is a statement that one has left childhood behind, and thus is a reinforcer for delinquent involvement. Delinquent acts hold symbolic value as evidence that teens have the ability to resist adult demands and the capacity to act without adult permission (Marwell 1966). Ethnographic interviews with delinquents reveal that proving maturity and autonomy are strong personal motives for offending (e.g. Goldstein, 1990). Compelling epidemiological studies have confirmed that adolescent initiation of tobacco, alcohol, and drug abuse are reinforced because they symbolize independence and maturity to youth (Kandel 1980; Mauser and Platt 1971).

A longitudinal analysis by Agnew (1984) has documented a link between autonomy needs and delinquency. Using data for 1,886 representative American boys from the Youth in Transition survey, Agnew found that an autonomy scale endorsed by the boys in tenth grade significantly and positively predicted delinquency two years later. The scale was made up of items such as "One of my goals in life is to be free of the control of others." The link between the boys' wish for autonomy and their offending did not depend on low social class or weak social controls at home and at school (factors that should characterize life-course-persistents, but not necessarily adolescence-limiteds). Agnew's findings are important for two reasons: (a) The study locates the phenomenon at the precise point of development suggested by this theory; need for autonomy measured near the peak age for male puberty predicted boys' subsequent delinquent participation at the peak age for offending; and (b) Agnew's study suggests that the effect of autonomy on delinquency applies broadly to delinquents, which is essential if we are to infer that autonomy wishes motivate the widespread adolescence-limited offender type.

Why Doesn't Every Teenager Become Delinquent?

The proffered theory of adolescence-limited delinquency regards this sort of delinquency as a reasonable adaptation to untoward contextual circumstances. As a consequence, the theory seems to predict that every teen will engage in delinquency. Indeed, the theory does predict that total abstinence from delinquency will be very unusual among contemporary adolescents. Data from epidemiological studies using the self-report method suggest that almost all adolescents do commit some illegal acts (Elliott et al. 1983, Moffitt et al. 1993). And even studies using official records of arrest by police find prevalence rates that seem surprisingly high (for a review see Farrington et al. 1986). Nevertheless, some youths high (for a review see Farrington et al. 1986). Nevertheless, some youths commit less delinquency than others, and a small minority abstains completely. Unfortunately, very little research sheds light on the characteristics of teens who abstain from antisocial behavior altogether. Because most offenders evade detection, lack of an official record cannot be used to designate abstainers for research; self-report data are required. Speculations are thus ill-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 anti-social role models. Some youths may skip the maturity gap because of late puberty or early initiation into adult roles. Others may be excluded from 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. Some abstainers experience very late puberty, so that the gap between biological and social adulthood is not signalled to them early in adolescence. For example, Caspi and Moffitt (1991) have shown that girls who do not menstruate by age fifteen tend not to become involved in delinquency; in fact they evidence fewer than normal behavior problems as teens. 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, Anderson (1990) described how "old heads" in a poor black neighborhood drew certain teens 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 antisocial peers. For instance, school structures may 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 via 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.

The explanation most central to this theory is that abstainers are excluded from opportunities to mimic antisocial peers because of some personal characteristics that cause them to be excluded from the delinquent peer groups, which ascend to importance during adolescence. 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. Surprisingly, the abstainers were problem teens; they were "relatively tense, overcontrolled, emo-

tionally restricted...somewhat socially isolated and lacking in interpersonal skills" (pg. 618). This personality style was an enduring personality configuration. At age seven, these abstainers had been prospectively described by raters as "overcontrolled, timid, fearful and morose...; they were not warm and responsive, not curious and open to new experience, not active, not vital, and not cheerful" (pp. 619-620).

In the New Zealand birth cohort, we studied the personal styles of the males who said they had engaged in no delinquency between age seven and eighteen, an age when delinquent participation had become normative for the sample. On a personality inventory, these abstainers had described themselves as overconstrained, passive, submissive, not fond of leadership roles, lacking capacity to influence others, and preferring conventionality (Krueger, Schmutte, Caspi, Moffitt, Campbell, and Silva 1994). 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 relation to its normative context. During adolescence, when delinquent behavior becomes the norm, nondelinquents warrant our scientific scrutiny. Research is beginning to suggest that abstaining from delinquency is not necessarily a sign of good adolescent adjustment.

Adolescence-Limiteds Desist from Crime Because They can Respond 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 made earlier in this essay 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 to changing contingencies. If motivational and learning mechanisms initiate and maintain their delinquency, then, likewise, changing contingencies will extinguish it.

Preoccupied with explaining the origins of crime, most theories of delinquency have neglected to address the massive shift in the prevalence of criminal involvement between adolescence and adulthood. Gove (1985) reviewed six of the most influential theories of deviance: labelling theory,

conflict theory, differential association theory, control theory, anomie theory, and functional theory. He concluded, "All of these theoretical perspectives either explicitly or implicitly suggest that deviant behavior is an amplifying process that leads to further and more serious deviance" (118). A general application of an amplifying process to all delinquency is inconsistent with the empirical observation that desistance from crime is the normative pattern.

In contrast to amplifying theories, the present maturity gap theory does anticipate desistance. 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*. They realize that continued participation in crime could threaten their newfound and long-awaited autonomy. Important for this theory, research shows that "commitment costs" (defined as a person's judgement that past accomplishments will be jeopardized or that future goals will be foreclosed) are among the factors weighed by young adults when they decide to discontinue offending (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). Unlike life-course-persistents, adolescence-limiteds have something to lose if they persist in crime beyond the teen years: they have family ties and career opportunities. Paternoster and colleagues have tested the proposed effects of commitment costs in a follow-up study of 300 young adults. They found that criminal offending one 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, Waido and Chiricos 1983). The Paternoster et al. study is important for this theory because it locates the phenomenon at the developmental point specified by the theory, during the peak rate of the desistance process. It also shows that commitment costs influence participation among college students, who are more likely to be exemplars of the adolescence-limited pattern than the life-course-persistent pattern.

Adolescence-Limited Delinquents Have Good 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 (Elliot and Voss 1974), join the army (Elder 1986, Matlick 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 unaddressed 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, while 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) contemporary and (b) cumulative continuity.

First, in stark contrast to 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; they do well at self-control, and they retain the good intelligence they had when they entered adolescence. These characteristics make them eligible for postsecondary education, good marriages and desirable jobs. One study has illustrated that individual differences influence which adolescents are able to attain prosocial outcomes in young adulthood (Quinton and Rutter 1988, Quinton, Pickles, Maughan and Rutter 1993). In that study, some girls reared in institutions were able to escape adversity for advantage via marriage to a supportive husband, but a constellation of individual psychological gifts determined *which* girls were able to marry well.

Second, 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. Prior to taking up delinquency, adolescence-limited offenders had ample years to develop an accomplished repertoire of prosocial behaviors and basic academic skills, as well as

good relationships with others. Delaying onset of deviance for the first ten to fifteen years of life precludes the accumulation of life problems that contribute to continuity.

Differential accumulation of the consequences of crime may explain why some adolescence-limited delinquents desist later than others. The desistance portion of the age-crime curve slopes more gradually than the abrupt criminal initiation portion, suggesting that some adolescence-limiteds desist a few years after the end of adolescence. 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. In the New Zealand sample, males who exemplified life-course-persistent and adolescence-limited trajectories from age three to eighteen showed elevated rates of snares at age 18 such as unemployment, sex with multiple partners without a condom, drunk driving without a seatbelt, and dependence on alcohol or drugs. However, relative to their life-course-persistent counterparts, adolescence-limited males had avoided snares such as early school-leaving and broken family bonds (Moffitt et al. 1996). 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 lifestyle.

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 antisocial path. To test this hypothesis, research must examine conditional effects of individual histories on opportunities for desistance from crime.

Adolescence-Limited Delinquency and Secular Change

I have suggested that adolescence-limited delinquency is a by-product of modernization, an adolescent adaptation to a maturity gap engendered by the opposing social forces of improved health and a smaller, better-

educated work force. If this theory is correct, then secular changes should have rendered the age-crime curve relatively steeper with increasing modernization. The theory predicts that, in contemporary preindustrial nations and in earlier historical periods, the age-crime curve should have a flatter kurtosis; in other words, it will lack the characteristic sharp peak between the ages of fifteen–eighteen.

Empirical data support this prediction. Greenberg (1985) compared crime statistics from the mid-1800s to 1980s in the United States, France, Norway, and Holland. He also made cross-cultural comparisons between India and Uganda and more industrialized nations. The results show that the steepness of the age-crime curve is indeed greatest during recent times, and among modern nations. Farrington (1986) compared the relation between age and crime for English males using British Home Office statistics from 1938, 1961, and 1983. His results show that the rate of offending by adolescents increased considerably over this historical period.

Diverse factors may be influential in accounting for the changing nature of the age-crime curve (Wilson 1983). But I suggest that many of these factors are the very features of modernization and modernity invoked in this theory of adolescence-limited delinquency: the earlier age of puberty and the extension of the period of childhood.

Important for this theory, additional data suggest that secular changes may have influenced the age-pattern of some crimes, but not all. A comparison of the age-crime curve for data from the FBI's *Uniform Crime Reports* for 1940, 1960, and 1980 showed that the adolescent peakedness of the curves for most crimes increased in a linear fashion over the forty-year period (Steffensmeier, Allan, Harer, and Streifel 1989). However, the authors noted that "the shift toward more peaked distributions is greater for some types of offenses than for others. The shifts are comparatively small for the person crimes and for those property offenses primarily involving older offenders (e.g., fraud and forgery), while the shifts are moderate to substantial for the youth-oriented, low-yield property offenses (e.g., robbery and burglary), public order offenses, and the substance-abuse offenses" (823). Steffensmeier's finding of different curves for different offenses is consistent with the distinction I have made between two hypothetical types of offenders. Life-course-persistent offenders (with mild neuropsychological impairment, poor self-control, pathological interpersonal relationships, weak connections to other people, and a life-long antisocial personality configuration) should account for violence against persons as well as for crimes committed in late life. In

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contrast, adolescence-limited offenders should account primarily for crimes that serve to meet adolescents' lust for acknowledgement and privilege: theft, vandalism, public order, and substance abuse.

Adolescence-Limited Antisocial Behavior is not Pathological, and Will not be Predicted by Individual Characteristics

In an earlier section it was contended that life-course-persistent antisocial behavior represented an especially pernicious and tenacious form of individual psychopathology. My view of adolescence-limited delinquency is strikingly different. Its prevalence is so great that it is normative, rather than abnormal. It is flexible and adaptable rather than rigid and stable; most delinquent careers are of relatively short duration because the consequences of crime—while reinforcing for youths caught inside the maturity gap—become punishing to youths as soon as they age out of it. Instead of a biological basis in the nervous system, the origins of adolescence-limited delinquency lie in normal teens' best efforts to cope with the widening gap between biological and social maturity. Moreover, neither this theory nor the empirical evidence suggests that there are any links between mental disorders and short-term adolescent delinquency. In fact, studies of teens who abstain from delinquency are beginning to suggest that at least some participation may be a sign of a healthy personality.

According to this theory of adolescence-limited delinquency, the behavior of youths who make the transition to delinquent groups near adolescence is readily understood as a group social phenomenon, it does not represent individual-level deviance. Quay (1987: 131) concurs: "A second pattern... involves behavior of a less overtly aggressive and interpersonally alienated nature. In fact, good peer relations in the context of delinquency are at the core of this pattern.... There is little, if any, reason to ascribe psychopathology to youths manifesting this pattern; it may well represent an adjustive response to environmental circumstances."

Strategies for Research

Epidemiological Predictions

According to the theory, natural histories of antisocial behavior should be found at predictable prevalence rates in samples followed from child-

hood until adolescence. Under ten percent of males should show extreme antisocial behavior that begins during early childhood and is thereafter sustained at a high level across time and across circumstances, throughout childhood and adolescence. A much larger number of males should show similar levels of antisocial behavior during the adolescent age period, but should fail to meet research criteria for a childhood history of stable and pervasive problem behavior. Teenaged males who abstain from any and all delinquency should be relatively rare. False-positive cases, who meet criteria for a stable and pervasive antisocial childhood history, yet recover (eschew delinquency) after puberty, should be extremely rare.

A specific research design is needed to evaluate whether these epidemiological parameters will be borne out. Samples should be representative, to tap the population range of natural histories. The same individuals should be studied longitudinally, to describe the trajectories of individuals, as opposed to population shifts. Reports of antisocial behavior should be gathered from multiple sources, to tap pervasiveness across circumstances. Antisocial behavior should be assessed repeatedly from childhood through adulthood, to capture stability and change across time. Measures of antisocial behavior should be sensitive to developmental heterogeneity, to tap individual differences while allowing for the emergence of new forms of antisocial behavior (e.g., automobile theft), or the forsaking of old forms (e.g., tantrums). If appropriate research designs fail to yield the predicted individual natural histories (or growth curves), at or near the predicted base rates, then the theory is wrong. But, if subjects are found who match the natural histories of this taxonomy, then the following hypotheses may be tested about differential predictors and outcomes.

Predictions About Types of Offenses

According to the theory, the two types will tend to engage in different patterns of offending. Adolescence-limited offenders should engage in proportionately more crimes that symbolize adult privilege or that demonstrate autonomy from parental control: vandalism, public order offenses, substance abuse, "status" crimes such as running away, and theft. Life-course-persistent offenders should spawn a wider variety of offenses, including types of crimes that are often committed by lone offenders. Thus, in addition to all of the aforementioned crime types, they should

commit proportionately more of the victim-oriented offenses, such as violence and fraud. If groups of life-course-persistent and adolescence-limited delinquents, defined on the basis of their natural histories, do not show the predicted differential patterns of antisocial behaviors, then that part of the theory is wrong.

Predictions About Desistence from Crime

According to this theory, transition events in the life-course are *not* unconditional determinants of desistence from crime. Indeed, events such as marriage, employment, or military service can provide opportunities for desistence, but such events can also provide opportunities for continuity. According to this theory, individuals' reactions to life transition events will vary predictably, depending on their personal antisocial histories. Adolescence-limited delinquents can profit from opportunities for desistence because they retain the option of successfully resuming a conventional lifestyle. Life-course-persistent delinquents may make transitions into marriage or work, but their injurious childhoods make it less likely that they can leave their past behind; they should select jobs and spouses that support their antisocial style, and they should express antisocial behavior at home and at work. If life-course-persistent and adolescence-limited delinquents, defined on the basis of their natural histories, do not show the predicted differential responses to young-adulthood transitions, then that part of the theory is wrong.

Predictions About Teenagers Who Abstain from Delinquency

I have proposed that adolescence-limited delinquency does not constitute pathology. Rather, it is social activity that is normative as well as understandable from the perspective of contemporary teens. If this assertion is true, the existence of people (however few) who abstain from all delinquency during their adolescent years requires explanation. Earlier, I suggested that adolescents who commit no antisocial behavior have either (a) pathological characteristics that exclude them from peer networks; (b) structural barriers that prevent them from learning about delinquency; or (c) no experience of the maturity gap (because of late puberty, or early access to accountable, respected adult roles). If adolescence-limited delinquents and abstainers, defined on the basis of their

natural histories, do not differ in these predicted ways, then that part of the theory is wrong.

Predictions About the Longitudinal Stability of Antisocial Behavior

I have proposed that most adults who behave in an antisocial fashion are the same individuals who began antisocial behavior in early childhood. During the peak participation period of adolescence, those persistent individuals will be masked by the noise of their more numerous mimics. Following from this observation, estimates of the individual stability of antisocial behavior are expected to violate the "longitudinal law," that relations between variables become weaker as the time interval between them grows longer (Clarke and Clarke 1984). One study has found evidence that the longitudinal law is violated in this way when antisocial behavior is studied in the same individuals over time. Stattin and Magnusson (1984) reported that adult crime was predicted more strongly by behavior at age ten than by behavior between ages fifteen and seventeen. This prediction awaits additional corroboration.

Predictions About Differential Correlates of Life-Course-Persistent and Adolescence-Limited Antisocial Behavior

According to the theory, the life-course-persistent type has its origins in neuropsychological problems that assume measurable influence when difficult children interact with criminogenic home environments. Beginning in childhood, discipline problems and academic failures accumulate increasing momentum, cutting off opportunities to practice prosocial behavior. As time passes, recovery is precluded by maladaptive individual dispositions and narrowing life options, and delinquents are channeled into antisocial adult lifestyles. Thus, the strongest prospective predictors of persistent antisocial behavior are anticipated to be measures of individual and family characteristics. These measures include health, gender, temperament, cognitive abilities, school achievement, personality traits, mental disorders (e.g., hyperactivity), family attachment bonds, child-rearing practices, parent and sibling deviance, and socioeconomic status, *but not age*.

According to the description of adolescence-limited delinquency, youths with little risk from personal or environmental disadvantage encounter

motivation for crime for the first time when they enter adolescence. For them, an emerging appreciation of desirable adult privileges is met with an awareness that those privileges are yet forbidden. After observing their antisocial peers' effective solution to the modern dilemma of the maturity gap, youths mimic that delinquent solution. Perversely, the consequences of delinquency reinforce and sustain their efforts, but only until aging brings a subjective shift in the valence of the consequences of crime. Then, such youths readily desist from crime, substituting the prosocial skills they practiced before they entered adolescence. This narrative suggests a direct contrast to the predictions made for persistent antisocial behavior. Individual differences should play little or no role in the prediction of short-term adolescent offending careers. Instead, the strongest prospective predictors of short-term offending should be knowledge of peer delinquency, attitudes toward adulthood and autonomy, cultural and historical context, *and age*. If life-course-persistent and adolescence-limited delinquents, defined on the basis of their natural histories, do not show the predicted differential patterns of correlates, then that part of the theory is wrong.

Comparing This Taxonomy with General Theories: Implications for Explanatory Power

Students of antisocial behavior have been blessed with a number of thoughtful theories. As a group, the theories have tended to be "general" theories of crime; each extends its causal explanation to all offenders. I find general theories unsatisfying because they do not account very well for the epidemiological facts about antisocial behavior.

General theories that summon sociological processes to explain crime and delinquency have provided valuable insights about the proximal mechanisms that promote juvenile delinquency (e.g., Becker 1968; Cloward and Ohlin 1960; Hagan 1987; Hirschi 1969; Lemert 1967; Sutherland and Cressey 1978). However, sociologists have trained their lenses on the adolescent age period, when the peak prevalence of criminal involvement occurs, and when antisocial behavior is most easily studied with survey methods (Hagan, Gillis, and Simpson 1985; Sampson and Laub 1990). Historically, reliance on legal definitions of antisocial behavior and record sources of data kept delinquency researchers focused on the adolescent onset of illegal behavior. Consequently, many

delinquency theories have failed to address the stability of antisocial behavior that begins *before* adolescence, during early childhood. And most sociological theories invoke amplifying causal mechanisms that seem to ignore the empirical facts about the enormous amount of desistance from crime that happens soon *after* adolescence (Gove 1985). Causal factors such as low social class, unemployment, cultural approval for violence, and deviant labels do not seem to wane contemporaneously with that undeniable downward shift in the prevalence of offenders during early adulthood.

General theories that invoke causal variables from personality psychology or psychobiology have taught us much about how individual differences predispose toward crime (e.g., Bowlby 1988; Cloninger 1987; Eysenck 1977; Gorenstein and Newman 1980; Gottfredson and Hirschi 1990; Mednick 1977). But these theories, too, fail to provide a satisfying account. Because such theorists have trained their lenses on early childhood and adulthood (often to the neglect of adolescence), they have failed to anticipate the enormous surge in the prevalence of antisocial involvement that occurs *during* adolescence. Such theories typically rely on the stability of individual differences in traits such as impulsivity, neuroticism, autonomic nervous system reactivity, or low intelligence. Psychological theories cannot explain the onset and desistance of adolescent delinquency, without positing compelling reasons for a sudden and dramatic population shift in criminogenic traits, followed by return to baseline a few years later.

Implications for the Explanatory Power of Correlates of Crime

If the taxonomy introduced here has merit then all past research that has failed to analyze the two groups separately has probably reported attenuated effect sizes. What is the rationale for this assertion? First, in samples of delinquent teens, adolescence-limited subjects will far outnumber their life-course-persistent peers. The New Zealand and London samples yield prevalence rates near 10 percent for life-course-persistents versus 33 percent for adolescence-limiteds.

Second, if the two complementary etiological theories are correct, then measures of personal characteristics and social background are related to delinquency primarily among life-course-persistents. Measures of autonomy needs, commitment costs, and biological age are related to delin-

quency primarily among adolescence-limiteds. Only measures of peer delinquency should apply to both types of offenders (which may explain why the peer delinquency effect is such a large one).

Third, commonly used measures of delinquency will yield similar scores for adolescence-limited and life-course-persistent members of adolescent samples. This assertion may surprise readers who incorrectly presume that the two patterns can be easily distinguished using a cross-sectional measure of the frequency or severity of their offending. Again, the New Zealand sample provides an example: At age fifteen, both the childhood-persistent and adolescent-onset groups had members who scored more than five standard deviations above the mean on self-report delinquency, and by age nineteen both groups had some members with more than fifty convictions for crimes in the New Zealand courts. Based on commonly used indices of adolescent delinquency, the two delinquent groups were practically indistinguishable. In the analysis of conviction trajectories conducted by Nagin and Land (1993) in the London longitudinal sample, the adolescence-limited group resembled the high-level chronics more closely than they resembled unconvicted males on several self-report measures of offending taken during adolescence (e.g., marijuana smoking, frequent gambling, and violence). Elliott and Huizinga (1984) report similarly poor classification in a representative sample of American teens. They attempted to discriminate, at the time of first arrest, individual future career offenders from adolescence-limited offenders. Discrimination could not be improved beyond chance by entering the kinds of information typically available to officials: type of current offense, age, sex, race, class, involvement with delinquent peers, and attitudes toward deviance. Addition of measures of the extremity of self-reported delinquency and emotional problems improved prediction only seven percent beyond chance. In three large samples from three nations, persistent and temporary offenders could not be discriminated using cross-sectional deviance data during the period of adolescence.

If scores on correlates differ between two groups while their delinquency scores are similar, but the two groups are treated as one for statistical analysis, then correlations between delinquency and correlate variables will be attenuated. As an example, in the New Zealand sample, comparison of delinquents with nondelinquents replicates the oft-reported eight-point IQ difference, and the cross-sectional correlation between age-fifteen self-report delinquency and IQ in the full sample of boys is .22.

Effects of this size are common in delinquency research, and are usually viewed as interesting but not very conclusive. However, when prospective longitudinal data were used to divide the New Zealand delinquents into life-course-persistent and adolescence-limited subgroups, the finding emerged that the overall IQ effect is the pooled result of a one-point mean deficit for adolescence-onset delinquents and a seventeen-point mean deficit for childhood-onset delinquents. The same pattern obtains for measures of reading achievement, impulsivity, and neuropsychological deficit (Moffitt 1990a; White et al. in press; Moffitt et al. 1993). Thus, research that fails to attend to the heterogeneity of delinquents obscures some potential causal factors from view, and produces underestimates of the strength of others. Such research particularly underestimates the strength of correlates and predictors of persistent criminal offending because the data for persistent cases are washed out by the larger number of adolescence-limited offenders.

More evidence that treating delinquents as homogeneous can obscure the correlates of persistent antisocial behavior comes from the phenomenon of effects that appear, disappear, and reappear as a function of the age of research subjects. Some correlates show strong relations to antisocial behavior measured in childhood and adulthood (when life-course-persistents predominate), but only weak relations to antisocial behavior measured during adolescence (when adolescence-limiteds predominate). Behavior-genetic studies have shown that childhood aggression and adult crime are heritable whereas juvenile delinquency is much less so (D'Ala and Gottesman 1989). Such age-related fluctuations in effect size have also been noticed for the associations between antisocial behavior and social class (Elliott and Huizinga 1983), gender (Smith and Visher 1980), and reading problems (Murray 1976).

I am suggesting the possibility that past research on the causes of delinquency may have been misguided by the assumption that the relation between delinquency and causal variables is linear. This linear assumption is inherent in general theories of crime. It ought not be accepted uncritically before research tests whether linear models fit the data better than categorical models.

Despite the imperfect fit of many existing theories of crime to the epidemiological facts, data in partial support of each theory abound. The resulting stalemate has engendered among students of crime a gentlemen's agreement to disagree. This agreement is all very cordial within academia,

but it is not very helpful to policy makers who seek guidance for preventing crime. The dual taxonomy described in this essay argues that this compromise may be needless. The competing theories may all be correct, but the processes they describe may fit better for different types of delinquents, or may operate at different developmental stages in the natural history of antisocial behavior. Almost all of the many causal mechanisms invoked in this complementary pair of developmental theories is already under investigation by researchers. In our past efforts to uncover the causes of persistent predatory crime, we have been studying many of the right variables, but in the wrong subjects at the wrong point in the life course. If the taxonomy is shown to have useful application, crime researchers may be able to explain crime much better than anyone thought possible.

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Life-Course Contingencies in the Development of Adolescent Antisocial Behavior: A Matching Law Approach

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Almost twenty years ago, Conger (1976) proposed that delinquent behavior could be explained, at least in part, by the multiple contingencies of reinforcement and punishment that characterize the social environments of children and adolescents. This perspective involves the application of social learning principles to the operation of multiple environmental influences, a view that can be linked to the Matching Law in operant psychology (Conger and Killien 1974; McDowell 1988). Conger (1980) also suggested that individual differences in temperament and in the ability to process social information should influence the ways in which these environmental contingencies affect specific individuals. Accumulating empirical evidence and theoretical developments during the past fifteen years are consistent with these earlier ideas. In the present chapter, we first review several elements of contemporary thought regarding social deviance during childhood and adolescence. Based on this review, we then propose a revised explanatory model derived from a Matching Law approach to understanding the development of antisocial behavior. The chapter concludes by considering the empirical evidence

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