BIOSOCIAL INTERACTIONS AND VIOLENCE

A Focus on Perinatal Factors

Patricia A. Brennan,1 Sarnoff A. Mednick,2 and Adrian Raine2

1Department of Psychology
Emory University
Atlanta, Georgia 30322
2Department of Psychology
University of Southern California
Los Angeles, California 90089-1061

1. INTRODUCTION

In this chapter, we will be examining data within the framework of the biosocial model developed by Adrian Raine and presented earlier in this volume. In this model, the differential effects of biological and social factors on violence are considered in a systemic fashion. As outlined in the model, biological and social factors can act alone or in a variety of combinations to increase the risk for violent outcome. One of the neglected areas of biosocial research on violence is the examination of statistical interactions between biological and social factors (Brennan & Raine, in press). This chapter will focus on such interactions and on the role of perinatal factors in the outcome of early-onset aggression and persistent criminal violence.

1.1. Developmental Psychopathology Perspective

Examination of the persistent or violent offender fits in well with a developmental psychopathology perspective. Current theories suggest that the persistent or violent criminal offender may be distinct from other offenders (Loeber, Wung, Keenan, Giroux, Stouthamer-Loeber, Van Kammen & Maughan, 1993; Moffitt, 1993). Our past research has shown that individuals arrested previously for a violent offense are significantly more likely than other criminal offenders to be arrested for violence in the future (Brennan, Mednick & John, 1989). These persistent and violent offenders may be behaviorally distinct from other individuals at a young age. Aggressive behavior has been found to be quite stable from age three to adulthood (Olweus, 1979). Persistent offenders have a young age of onset for crime—they are aggressive as children, delinquent in adolescence and continue to commit criminal offenses, including violence, in adulthood (Farrington, 1991).
In developmental psychopathology, one focuses on cumulative risk and protective factors that result in negative behavioral or emotional outcomes. When focusing on persistent or violent offending, it makes sense to look at risk factors that occur in early childhood—prior to the onset of this developmental process. Perinatal factors are one such type of early potential risk. Perinatal factors include low birthweight, pregnancy complications such as mother’s poor nutrition and viral infections, and delivery complications such as hypoxia or lack of oxygen to the fetus during labor. These medical risk factors have been hypothesized to lead to central nervous system damage, which in turn, is thought to increase the risk for persistent criminal offending (Moffitt, 1993). Central nervous system damage as a mediating factor fits well with the literature on violence and aggression, as neurological and neuropsychological deficits have been found to be especially related to persistent or violent offending (Gorenstein, 1990).

1.2. Perinatal Factors and Crime

Very little research has been carried out on the relationship between perinatal factors and criminal behavior. The research that exists suggests that perinatal factors may be more related to violence, rather than delinquency or property offending. For example, Lewis and her colleagues have noted this pattern in their examination of the health histories of delinquents. Violent delinquents are found to have more perinatal problems noted in their hospital records than other delinquents or controls (Lewis, Shanok & Balla, 1979). In a separate longitudinal study, Kandel and Mednick (1991) found that delivery complications were correlated with later arrests for violence, but were not correlated with later arrests for property offenses.

Existing research also suggests that perinatal factors may be especially related to aggressive and criminal outcomes for individuals with high social risk. For example, in a prospective longitudinal study in Kauai, Werner (1987) found that the effects of perinatal stress on delinquent outcome were strongest for children exposed to a disruptive family environment. A disruptive family environment was defined by Werner as separation from the mother, marital discord, absence of the father, legitimacy of the child or parental mental health problems. These social risk factors, in combination with the biological risk resulting from perinatal complications, increased the likelihood for delinquent outcome in her Kauai sample. In our research in Denmark, we have found similar biosocial interactions predicting to the outcomes of violent and persistent criminal behavior.

The research on perinatal factors and crime has been heavily focused on male offenders. Our empirical results presented in this chapter are also focused on males. Unfortunately, it is difficult to determine the predictors of violence in females as the low base rate of female violence hinders much of this research. Even in very large samples, the low rates of female violence preclude reliable statistical analyses. Because our analyses are restricted to males, our results cannot be generalized to female violence.

2. DANISH COHORT STUDIES ON PERINATAL FACTORS AND VIOLENT CRIME

We have examined the relationship between perinatal factors, social risk, and violent crime in the context of several longitudinal cohort studies in Denmark. In one study, we assessed the combined effects of delivery complications and child institutionalization on violent criminal outcome. Early institutionalization has been found to be a risk factor