Volume Title: Controlling Crime: Strategies and Tradeoffs

Volume Author/Editor: Philip J. Cook, Jens Ludwig, and Justin McCrary

Volume Publisher: University of Chicago Press

Volume ISBN: 0-226-11512-7

Volume URL: http://www.nber.org/books/cook10-1

Conference Date: January 15-16, 2010

Publication Date: September 2011

Chapter Title: Comments on "Crime and the Family: Lessons from Teenage Childbearing"

Chapter Author: Terrie E. Moffitt, Stephen A. Ross

Chapter URL: http://www.nber.org/chapters/c12095

Chapter pages in book: (p. 598 - 602)

of Children Born to Young Mothers: Results from the Rochester Youth Development Study." *Criminology* 41 (4): 1249–86.
Rebellon, Cesar J. 2002. "Reconsidering the Broken Homes/Delinquency Relationship and Exploring Its Mediating Mechanism(s)." *Criminology* 40 (1): 103–36.
U.S. Department of Health and Human Services. 2001. *Youth Violence: A Report of the Surgeon General.* Washington, DC: U.S. Department of Health and Human Services.
Wolfers, Justin. 2006. "Did Unilateral Divorce Laws Raise Divorce Rates? A Reconciliation and New Results." *American Economic Review* 96 (5): 1802–20.

Comment

Terrie E. Moffitt and Stephen A. Ross

Seth Sander's chapter concludes that policymakers are considering large-scale early-childhood education programs to promote children's self-control skills, with the aim of reducing the crime rate and improving citizens' health and wealth as well. Experiments and economic models suggest such programs could reap benefits. Yet evidence is needed that self-control is truly important for the health, wealth, and public safety of the population. By following a cohort of 1,000 children from birth to age thirty-two, we show here that childhood self-control predicts physical health, substance dependence, personal finances, and criminal offending outcomes, following a gradient of self-control. In another cohort of 500 sibling pairs, the sibling with lowest self-control had poorest outcomes, despite both siblings sharing their family background.

Economists, including the authors of chapters in this book, are drawing attention to individual differences in self-control as a key consideration for policymakers who seek to enhance the physical and financial health of the population and reduce the crime rate (Heckman 2007). The current emphasis on self-control skills of conscientiousness, self-discipline, and perseverance arises from the empirical observation that preschool programs that targeted poor children fifty years ago, although failing to achieve their stated goal of lasting improvement in children's intelligence quotient (IQ) scores, somehow produced by-product reductions in teen pregnancy, school

Terrie E. Moffitt is the Knut Schmidt Nielsen Professor in the departments of Psychology and Neuroscience, and Psychiatry and Behavioral sciences, and the Institute for Genome Sciences and Policy at Duke University, and is professor in the Social, Genetic and Developmental Psychiatry Centre at the Institute of Psychiatry, King's College London. Stephen A. Ross is a science assistant at the National Science Foundation.

This research received support from the U.S. National Institute for Aging (NIA; AG032282), the National Institute of Mental Health (NMIH; MH077874), the National Institute of Child Health and Development (NICHD; HD061298), the National Institute of Dental and Craniofacial Research (NICDR; DE015260), the National Institute of Drug Abuse (NIDA; DA023026), the U.K. Medical Research Council (MRC; G0100527, G0601483) and Economic and Social Research Council (ESRC; RES-177-25-0013), and the New Zealand Health Research Council.

dropout, delinquency, and work absenteeism (Carneiro and Heckman 2003; Doyle et al. 2009; Heckman 2006).

The Dunedin Study Design

In the context of this timely, ubiquitous and intense policy interest in self-control, we summarize findings from the Dunedin longitudinal study of a complete birth cohort of 1,037 children born in one city in one year, who we have followed from birth to age thirty-two years with minimal attrition. Our study design is observational and correlational; this is in contrast to experimental behavioral-economics experiments that yield compelling information about the consequences of low self-control. However, some economists have cautioned that "behavior in the lab might be a poor guide to real-world behavior" (Levitt and List 2008). The naturalistic Dunedin Study complements experimental research on self-control by providing badly needed information about how well children's self-control, as it is distributed in the population, predicts real-world outcomes after children reach adulthood. The Dunedin Study's birth-cohort members with low self-control and poor outcomes have not dropped out of the study (96 percent retention). This enabled us to study the full range of self-control and to estimate effect sizes of associations for the general population, information that is requisite for informed policy making (Moffitt et al. 2011).

We assessed the children's self-control during their first decade of life. Reports by parents, teachers, researcher-observers, and the children themselves gathered across ages three, five, seven, nine, and eleven years were combined into a single highly reliable composite measure. Mean levels of self-control were higher among girls than boys, but the health, wealth, and public-safety implications of childhood self-control were equally evident and similar among both males and females. Dunedin children with greater self-control were more likely to have been brought up in socioeconomically advantaged families and had higher IQs; we thus tested whether childhood self-control influenced adults' health, wealth, and crime independently of their social-class origins and IQ.

Predicting Crime

We obtained records of study members' court convictions at all courts in New Zealand and Australia by searching the central computer systems of the New Zealand police; 24 percent of the study members had been convicted of a crime by age thirty-two. Children with poor self-control were significantly more likely to be convicted of a criminal offense, even after accounting for social-class origins and IQ.

Predicting Health

When the children reached age thirty-two years, we assessed their cardiovascular, respiratory, dental, and sexual health, as well as their immune

functioning by carrying out physical examinations to assess the metabolic syndrome, airflow limitation, periodontal disease, sexually-transmitted infection, and inflammation status, respectively. We summed these five clinical measures into a simple physical health index for each study member; 43 percent of study members had none of the biomarkers, 37 percent had one, and 20 percent had two or more. Childhood self-control predicted adult health problems, even after accounting for social-class origins and IQ.

Predicting Substance Dependence

We also conducted clinical interviews with the study members at age thirty-two to assess substance dependence (tobacco, alcohol, and cannabis dependence, as well as dependence on other street and prescription drugs), following *Diagnostic and Statistical Manual of Mental Disorders* 4th edition (*DSM-IV*) criteria (American Psychiatric Association 1994). As adults, children with poor self-control had elevated risk of substance dependence, even after accounting for social class and IQ. This longitudinal link between self-control and substance dependence was verified by people study members had nominated as informants who knew them well: as adults, children with poor self-control were rated by their informants as having alcohol and drug problems.

Predicting Wealth

Childhood self-control foreshadowed the study members' socioeconomic status and income in adulthood. At age thirty-two, children with poor self-control were also less financially planful. Compared to other thirty-two-year-olds, they were less likely to save money, and they had acquired fewer financial building blocks for the future (such as home ownership, investment funds, or retirement plans). Children with poor self-control reported more money-management difficulties and had accumulated more credit problems. This longitudinal link between self-control and adult financial problems was verified by informants who knew them well: as adults, children with poor self-control were rated by their informants as poor money managers. Poor self-control in childhood was a stronger predictor of these financial difficulties than study members' social-class origins and IQ.

Sibling Comparisons

Policymaking requires evidence that isolates self-control as the active ingredient affecting health, wealth, and crime, as opposed to other influences on children's futures. In the Dunedin Study, statistical controls revealed that self-control had its own associations with outcomes, apart from childhood social class and IQ. However, each Dunedin Study member grew up in a different family, and their families varied widely on many features that affect children's adult outcomes. A compelling quasi-experimental research design that can isolate the influence of self-control is to track and compare siblings.

To apply this design, we turned to a second sample, the Environmental-Risk Longitudinal Twin Study (E-risk), where we have been tracking a birth cohort of British twins since their birth in 1994 to 1995 with 96 percent retention. When the E-Risk twins were five years old, research staff rated each child on the same observational measure of self-control originally used with Dunedin children as preschoolers. Although the E-risk children have been followed only up to age twelve years, their self-control already forecast many of the adult outcomes we saw in the Dunedin Study. We applied sibling fixed effects models to the 504 same-sex dizygotic pairs because they are no more alike than ordinary siblings (with the added advantages of being the same age and sex). Models showed that the five-year-old sibling with poorer self-control, as compared to his or her sibling with better self-control, was significantly more likely as a twelve-year-old to begin smoking (a precursor of adult poor health), perform poorly in school (a precursor of adult wealth accumulation), and engage in antisocial conduct problems (a precursor of adult crime).

Comment

For all of these associations, we observed a self-control gradient in which boys and girls with less self-control had less health, less wealth, and more crime as adults than those with more self-control at every level of the distribution of self-control. Effects were marked at the extremes of the self-control gradient. For example, by adulthood, the highest and lowest fifths of the population on measured childhood self-control had respective rates of multiple health problems of 11 percent versus 27 percent; rates of poly-substance dependence of 3 percent versus 10 percent; rates of employment in low-status jobs of 24 percent versus 46 percent, and crime conviction rates of 13 percent versus 43 percent. Our findings were consistent with a universal approach to early intervention to enhance self-control at all levels. The observed gradient implies room for better outcomes even among the segment of the population whose childhood self-control skills were somewhat above average. Programs to enhance children's self-control have been developed and positively evaluated, and the challenge remains to improve them and scale them up for universal dissemination (Greenberg 2006; Layard and Dunn 2009; National Scientific Council on the Developing Child 2007). Innovative policies addressing self-control might reduce a panoply of societal costs, improve public safety, save taxpayers money, and promote prosperity.

References

American Psychiatric Association. 1994. *Diagnostic and Statistical Manual of Mental Disorders.* 4th ed. Washington, DC: American Psychiatric Association.

Carneiro, P., and J. J. Heckman. 2003. "Human Capital Policy." In *Inequality in*

America: What Role for Human Capital Policy?, edited by J. J. Heckman and A. Krueger, 77–240. Cambridge, MA: MIT Press.

Doyle, O., C. P. Harmon, J. J. Heckman, and R. E. Tremblay. 2009. "Investing in Early Human Development: Timing and Economic Efficiency." *Economics and Human Biology* 7 (1): 1–6.

Greenberg, M. T. 2006. "Promoting Resilience in Children and Youth: Preventive Interventions and Their Interface with Neuroscience." *Annals of the New York Academy of Sciences* 1094:139–50.

Heckman, J. J. 2006. "Skill Formation and the Economics of Investing in Disadvantaged Children." *Science* 312 (5782): 1900–1902.

———. 2007. "The Economics, Technology, and Neuroscience of Human Capability Formation." *Proceedings of the National Academy of Sciences* 104 (33): 13250–5.

Layard, R., and J. Dunn. 2009. *A Good Childhood: Searching for Values in a Competitive Age.* London: Penguin.

Levitt, S. D., and J. A. List. 2008. "*Homo economicus* Evolves." *Science* 319 (5865): 909–10.

Moffitt, T. E., L. Arseneault, D. Belsky, N. Dickson, R. J. Hancox, H. L. Harrington, R. Houts, et al. 2011. "A Gradient of Childhood Self-Control Predicts Health, Wealth, and Public Safety." *Proceedings of the National Academy of Sciences,* forthcoming. Available online at www.pnas.org.

National Scientific Council on the Developing Child. 2007. *The Science of Early Childhood Development.* http://www.developingchild.net.