Sex Differences in Antisocial Behaviour
Conduct Disorder, Delinquency, and Violence
in the Dunedin Longitudinal Study

Why are females antisocial so seldom and males antisocial so often? This key question is addressed in a fresh approach to sex differences in the causes, course, and consequences of antisocial behaviour. The book presents all-new findings from a landmark investigation of 1,000 males and females studied from ages 3 to 21 years. It shows that young people develop antisocial behaviour for two main reasons. One form of antisocial behaviour is a neurodevelopmental disorder afflicting males, with low prevalence in the population, early childhood onset, and subsequent persistence. The other form of antisocial behaviour, afflicting females as well as males, is common, and emerges in the context of social relationships. The book offers insights about diagnosis and measurement, the importance of puberty, the problem of partner violence, and the nature of intergenerational transmission. It puts forward a new agenda for research about both neurodevelopmental and social influences on antisocial behaviour.

Terrie E. Moffitt is Professor of Social Behaviour and Development at the Institute of Psychiatry, King’s College, London, Professor of Psychology at the University of Wisconsin-Madison, and Associate Director of the Dunedin Multidisciplinary Health and Development Research Unit.

Avshalom Caspi is Professor of Personality and Social Psychology at the Institute of Psychiatry, King’s College, London, and at the University of Wisconsin-Madison.

Sir Michael Rutter is Professor of Developmental Psychopathology at the Institute of Psychiatry, King’s College, London, and Deputy Chairman of the Wellcome Trust.

Phil A. Silva is Director Emeritus of the Dunedin Multidisciplinary Health and Development Research Unit at the University of Otago School of Medicine.
Cambridge Studies in Criminology

Editors
Alfred Blumstein, Carnegie Mellon University
David Farrington, University of Cambridge

This series publishes high-quality research monographs of either theoretical or empirical emphasis in all areas of criminology, including measurement of offending, explanations of offending, police, courts, incapacitation, corrections, sentencing, deterrence, rehabilitation, and other related topics. It is intended to be both interdisciplinary and international in scope.

Also in the series:

J. David Hawkins (editor), Delinquency and Crime: Current Theories
Simon I. Singer, Recriminalizing Delinquency: Violent Juvenile Crime and Juvenile Justice Reform
Scott H. Decker and Barrik Van Winkle, Life in the Gang: Family, Friends, and Violence
Austin Lovegrove, A Framework of Judicial Sentencing: Decision Making and Multiple Offence Cases
John Hagan and Bill McCarthy, Mean Streets: Youth Crime and Homelessness
Edward Zamble and Vernon L. Quinsey, The Criminal Recidivism Process
Joan McCord (editor), Violence and Childhood in the Inner City
Don Weatherburn and Bronwyn Lind, Delinquent-Prone Communities
Alfred Blumstein and Joel Wallman (editors), The Crime Drop in America
David Weisburd, Elin Waring and Ellen Chayet, White-Collar Crime and Criminal Careers
Jerzy Sarnecki, Delinquent Networks: Youth Co-offending in Stockholm
Sex Differences in Antisocial Behaviour
Conduct Disorder, Delinquency, and Violence in the Dunedin Longitudinal Study

Terrie E. Moffitt, Avshalom Caspi
Institute of Psychiatry, King’s College London and University of Wisconsin-Madison

Michael Rutter
Institute of Psychiatry, King’s College London

Phil A. Silva
University of Otago
This book is dedicated to three people we admire:

Professor Emeritus Eleanor Maccoby, who pioneered the psychological study of sex differences; Professor Emeritus Lee Robins, who pioneered the longitudinal study of antisocial behaviour; and police officer and community leader Mr Paul Stevenson, who helped to gather the data for this book.
Contents

List of figures xi
List of tables xii
Preface xv
Acknowledgements xvii

1 Introduction 1
2 The Dunedin Multidisciplinary Health and Development Study 10
3 Sex differences in the amount of antisocial behaviour: dimensional measures 23
4 Sex differences in the prevalence of antisocial behaviour: categorical diagnostic measures 38
5 Sex differences in physical violence and sex similarities in partner abuse 53
6 Sex and the developmental stability of antisocial behaviour 71
7 Sex and the age of onset of delinquency and conduct disorder 81
8 Sex effects in risk predictors for antisocial behaviour: are males more vulnerable than females to risk factors for antisocial behaviour? 90
9 Sex effects in risk predictors for antisocial behaviour: are males exposed to more risk factors for antisocial behaviour? 109
10 Can sex differences in personality traits help to explain sex differences in antisocial behaviour? 123
<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Sex and comorbidity: are there sex differences in the co-occurrence of conduct disorder and other disorders?</td>
<td>135</td>
</tr>
<tr>
<td>12</td>
<td>Do girls who develop antisocial behaviour surmount a higher threshold of risk than their male counterparts?</td>
<td>151</td>
</tr>
<tr>
<td>13</td>
<td>Sex differences in the effects of antisocial behaviour on young adult outcomes</td>
<td>159</td>
</tr>
<tr>
<td>14</td>
<td>Sex, antisocial behaviour, and mating: mate selection and early childbearing</td>
<td>184</td>
</tr>
<tr>
<td>15</td>
<td>Evaluating the recommendation to relax the criteria for diagnosing conduct disorder in girls</td>
<td>198</td>
</tr>
<tr>
<td>16</td>
<td>Life-course persistent and adolescence-limited antisocial behaviour among males and females</td>
<td>207</td>
</tr>
<tr>
<td>17</td>
<td>Priorities for a research agenda</td>
<td>227</td>
</tr>
</tbody>
</table>

References

Index
Figures

4.1A The prevalence of DSM-IV conduct disorder
4.1B New case incidence of DSM-IV conduct disorder
4.2 Girls’ conduct disorder symptoms as a function of pubertal maturation
5.1 Testing the self-defence hypothesis: women with prior conduct problems abuse their partner in excess of any provoking effects of his abuse
5.2 Men with prior conduct problems abuse their partner in excess of any provoking effects of her abuse
7.1 Age at first criminal conviction
7.2 Age at first criminal arrest
7.3 Age at first DSM-IV conduct disorder diagnosis
7.4 Age at first self-reported delinquency
7.5 Age at first self-reported violent offences
7.6 Age at first self-reported theft offences
7.7 Age at first self-reported drug/alcohol offences
8.1 The cohort distribution of adolescent antisocial behaviour by sex
11.1 Changing prevalence of depression by sex and history of conduct disorder (CD)
11.2 Changing depression symptoms by sex and history of conduct disorder (CD)
14.1 The continuity of antisocial behaviour among women, as a function of their male partner’s criminal behaviour
14.2 How assortative mating with antisocial men shapes women’s lives
16.1 Risk factors for LCP males and females
16.2 Risk factors for AL males and females
16.3 Young adult problems of LCP and AL delinquents
Tables

2.1 The Dunedin Multidisciplinary Health and Development Study: members of the sample assessed at each age page 11
2.2 Antisocial behaviour measures across time and circumstance in the Dunedin Study 14
3.1 Mean z-scores for males and females on measures of antisocial behaviours, standardized for the whole sample within age, for boys and girls 28
3.2 Comparison of males’ and females’ official records of contact with police and of court convictions 32
3.3 Percentage of the sample’s total offences in a given year (twelve-month period) committed by males versus females 35
4.1 Diagnostic criteria for DSM-IV diagnosis of conduct disorder that were available in the Dunedin data archives at each assessment age 41
4.2 Prevalence rates of DSM-IV diagnoses of conduct disorder for males and females at ages 11, 13, 15, 18, and for their lifetime to age 21 42
5.1 A comparison of males’ and females’ mean scores on measures of physically aggressive or violent behaviours 58
6.1 Continuity and change in conduct disorder: observed transition probabilities between conduct disorder (CD) diagnoses 74
6.2 The cross-age stability of individual differences in parent reports of antisocial behaviour for boys and girls. 76
6.3 The cross-age stability of individual differences in teacher reports of antisocial behaviour for boys and girls. 76
6.4 The cross-age stability of individual differences in self-reports of antisocial behaviour for boys and girls. 77
6.5 The cross-age stability of individual differences in informants’ reports of antisocial behaviour for boys and girls.

8.1 Correlations showing how well 35 risk factors predict boys’ and girls’ antisocial outcome during adolescence

9.1 Boys’ and girls’ mean levels on risk factors for adolescent antisocial behaviour

9.2 Explaining the sex difference in adolescent antisocial behaviour using the measures that showed significant sex differences from table 9.1

10.1 Age-18 Multidimensional Personality Questionnaire correlates of males’ and females’ antisocial behaviour during adolescence, and mean-level sex differences for the MPQ scales

10.2 Explaining the sex difference in adolescent antisocial behaviour using personality data from the Multidimensional Personality Questionnaire

11.1 Lifetime comorbidity among males and females who were ever diagnosed with DSM-IV conduct disorder during the longitudinal study

11.2 Comorbidity among males and females: correlations between continuously distributed scales of diagnostic symptoms and the composite measure of adolescent antisocial behaviour

12.1 Mean difference on risk factors between Study members who attain a lifetime DSM-IV diagnosis of conduct disorder (5+ symptoms) and Study members with no diagnosis (fewer than 3 symptoms)

13.1 Young adult outcomes of males’ and females’ antisocial behaviours during adolescence

13.2 Mean levels of standardised young-adult outcomes at age 21 for males and females who had attained a lifetime diagnosis of conduct disorder between ages 11 and 18

14.1 Assortative mating: how well did the Study members’ past antisocial behaviours during adolescence predict the characteristics of the partners with whom they were involved in a serious relationship at age 21?

14.2 The effect of assortative mating on the continuity of antisocial behaviour

15.1 Mean levels of standardized young-adult outcomes for females with a lifetime diagnosis of mild subclinical conduct problems versus males with diagnosed conduct disorder
15.2 Mean levels of standardized young-adult outcomes for males with a lifetime diagnosis of mild subclinical conduct problems versus females with diagnosed conduct disorder 204

16.1 Male and female Dunedin Study members on the life-course persistent and adolescence-limited paths, compared on risk factors for delinquency 216

17.1 What have we learned about sex differences? A summary of the major findings 228

17.2 What have we learned about sex similarities? A summary of the major findings 230

17.3 What have we learned about measurement? A summary of the major findings 232

17.4 What have we learned about theory and research? A summary of the major findings 233
Preface

This book presents all-new findings from the Dunedin Study, which has followed 1,000 males and females from ages 3 to 21. Unlike previous studies of sex differences, we incorporate information about how antisocial behaviour changes with age over the first two decades of life, a stage when it emerges, peaks, and consolidates into antisocial disorders and serious crime. Unlike previous studies of age effects on antisocial behaviour, we incorporate information about sex differences. This novel synthetic look at age and sex opens windows on the fundamental aetiology of antisocial behaviour, ruling out some old hypotheses and pointing to some new ones. The findings will interest students of antisocial behaviour, but the questions we frame – and the analytic approaches we use to answer them – demonstrate an approach that is applicable to any behavioural problem or mental disorder showing a sex difference.

The book incorporates approaches from three disciplines: developmental psychology, psychiatry, and criminology. Using dimensional measures of antisocial behaviour, diagnostic measures of psychiatric disorders, and measures of adjudicated delinquency and violent crime, chapters examine sex differences in the developmental course, causes, correlates, and sequelae of antisocial behaviour. We test the hypothesis that girls pass a higher threshold of risk to become as antisocial as boys, finding evidence counter to the hypothesis. We test the hypothesis that the diagnostic cut-offs defining conduct disorder should be set at a lower, milder, level for girls than for boys, finding that this is not justified.

Taken together, the new findings in the book’s seventeen chapters show that young people develop antisocial behaviour for two main reasons. On the one hand, one form of antisocial behaviour may be understood as a disorder
having neuro-developmental origins that, alongside autism, hyperactivity, and dyslexia, shows a strong male preponderance, early childhood onset, subsequent persistence, and low prevalence in the population. The book shows that extreme sex differences are linked with this form of antisocial behaviour. This form is a good candidate phenotype for molecular and quantitative genetic research. On the other hand, the book’s findings show that the bulk of antisocial behaviour, especially by females, is best understood as a social phenomenon originating in the context of social relationships, with onset in adolescence, and high prevalence. The book shows that sex differences linked with this form are negligible; for example, the antisocial activities of males and females are especially alike when alcohol and drugs are involved, near the time of female puberty, and when females are yoked with males in intimate relationships. This form needs more basic research on processes of social influence.

The book’s findings point to the overarching conclusion that females’ antisocial behaviour obeys the same causal laws as males’. Females are unlikely to develop the neuro-developmental form because they are unlikely to have the risk factors for it, whereas they are as likely as males to develop the socially influenced form because they share with males the risk factors for it. The book’s final chapter puts forward an agenda to stimulate future research into both neuro-developmental/genetic and social-influence origins of antisocial behaviour. These are the most promising directions for basic science work on individual differences in antisocial disorders and violence.
Acknowledgements

This book was made possible by more than two decades of collaboration among Study members, scientists, and funding agencies. For painstakingly constructing the twenty-year archive of data analyzed in this book we thank the Dunedin Study members and their parents, teachers, peer-informants, and partners, the Dunedin Unit research staff, the Unit’s multidisciplinary team of principal investigators, Unit director Richie Poulton, the New Zealand Police, and officer Paul Stevenson. Hona Lee Harrington, Don Lynam, and Brad Wright assisted with statistical analyses. Jay Rodger and Matt Smart provided critical technical support. Five anonymous peer reviewers helped us to improve the book. The Dunedin Study and our work were supported by the New Zealand Health Research Council, the US National Institute of Mental Health (MH45070, MH49414, MH56344), the US National Institute of Justice (94-IJ-CX0041), the William T. Grant Foundation, the University of Wisconsin Alumni Research Foundation, the UK Department of Health, and the British Medical Research Council.