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Understanding the Nature of ADHD and the Vulnerability of Those with the Condition Who Fall Foul of the Criminal Justice System

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ABSTRACT

Individuals with Attention Deficit Hyperactivity Disorder (ADHD) are highly overrepresented in criminal offender populations. Those with ADHD present with problematic and excessive levels of inattention, and/or hyperactivity and impulsivity. It is generally accepted that self-control difficulty is a core vulnerability for those with ADHD. A lack of appropriate self-control has long been recognised across disciplines to be an important influencing factor on the commission of crime. Historically, the occurrence of pervasively low-self-control within an individual has been seen to be principally influenced by social and environmental factors. Up-to-date research and understanding, however, shows that variability in self-control is heavily biologically/genetically derived. This article offers an integrated medical paediatric, psychological, and criminological perspective on ADHD and its impact on criminal justice outcomes. We argue that crime prevention and/or ADHD symptom management strategies that have been ignorant of this understanding are inadequate and may have unintentionally worked to the detriment of those with ADHD. We propose that a more comprehensive and applied understanding as to the origins of pervasive self-control difficulties in policy and practice is necessary to reduce the overrepresentation of those with ADHD in criminal and youth justice offender populations.

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I Introduction

ADHD is an internationally recognised, common neuro-developmental disorder of brain function.¹ It typically presents in early childhood and affects 2.5% of adults and 5% of children.² ADHD has been suggested to be somewhat underdiagnosed in Australia.³ It is important to note that ADHD is no more prevalent in Australian First Nations groups than in the wider Australian population.⁴ The core symptoms of ADHD are excessive difficulties with inattention, and/or hyperactivity, and/or impulsiveness.⁵ Symptoms most commonly persist into adulthood.⁶ ADHD is often comorbid (ie, coexistent) with other conditions.⁷ It can be successfully treated and managed.⁸ Untreated, ADHD creates a significant vulnerability to a range of negative social, academic, employment, and health outcomes.⁹ There is mounting local¹⁰ and meta-analytic international¹¹ evidence indicating that those with ADHD are highly overrepresented in criminal and youth justice settings across the world.

There has been considerable, often ill-informed, controversy about the nature of ADHD and of the medications used to treat it. This has ultimately worked to the detriment of those with ADHD who find themselves tied up in criminal justice systems.¹² A variety of

¹ Stephen V Faraone et al, 'The World Federation of ADHD International Consensus Statement: 208 Evidence-Based Conclusions about the Disorder' (2021) 128 *Neuroscience & Biobehavioral Reviews* 789.

² Guilherme V Polanczyk et al, 'ADHD Prevalence Estimates Across Three Decades: An Updated Systematic Review and Meta-Regression Analysis' (2014) 43(2) *International Journal of Epidemiology* 434.

³ Deloitte Access Economics, *The Social and Economic Costs of ADHD in Australia: Report Prepared for the Australian ADHD Professionals Association: 2018* (Web Page) <<https://www2.deloitte.com/au/en/pages/economics/articles/social-economic-costs-adhd-Australia.html>>.

See also, Corey J Lane and Mark David Chong, 'A Hard Pill to Swallow: The Need to Identify and Treat ADHD to Reduce Sufferers' Potential Involvement in the Criminal Justice System' (2019) 25 *James Cook University Law Review* 119.

⁴ Lane and Chong (n 3).

⁵ American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders: DSM-5-TR* (American Psychiatric Association Publishing, 5th ed, 2022).

⁶ Margaret H Sibley et al, 'Variable Patterns of Remission from ADHD in the Multimodal Treatment Study of ADHD' (2022) 179(2) *American Journal of Psychiatry* 142.

⁷ Arthur Caye, Douglas Teixeira Leffa and Luis Augusto Rohde, 'The Influence of Comorbidities on the Trajectories of ADHD Throughout Development' (2021) 130 *Neuroscience & Biobehavioral Reviews* 31.

⁸ Samuele Cortese, 'Debate: Are Stimulant Medications for Attention-Deficit/Hyperactivity Disorder Effective in the Long Term?' (2019) 58(10) *Journal of the American Academy of Child and Adolescent Psychiatry* 936; Samuele Cortese, 'Pharmacologic Treatment of Attention Deficit-Hyperactivity Disorder' (2020) 383(11) *New England Journal of Medicine* 1050; Konstantin Mechler et al, 'Evidence-Based Pharmacological Treatment Options for ADHD in Children and Adolescents' (2021) 230 *Pharmacology & Therapeutics* 107940.

⁹ Faraone et al (n 1).

¹⁰ Lane and Chong (n 3).

¹¹ Susan Young and Kelly M Cocallis, 'Attention Deficit Hyperactivity Disorder (ADHD) in the Prison System' (2019) 21(6) *Current Psychiatry Reports* 41.

¹² Lane and Chong (n 3).

professionals from many different sectors and disciplines may, at some point, have a degree of responsibility for care provision or consideration of the plight of an individual suffering adversity linked with their ADHD symptoms. In our view, it would be highly valuable to gain the perspective of all such professions and service providers. However, an undertaking of this size is beyond the scope of our current work in the field. This paper is a literature-informed commentary that integrates medical paediatric, psychological, and criminological perspectives in arguing for more serious consideration of the plight of those with ADHD who might fall foul of the law.

II Classification

For a diagnosis of ADHD to be made, a patient's presenting behaviours must sufficiently meet the requirements of the established diagnostic criteria. The current ADHD diagnostic criteria outlined in the Diagnostic and Statistical Manual of Mental Disorders (ie, DSM-5)¹³ requires that sufficient inattentive and/or hyperactive symptoms be present before the age of 12 years, that the symptoms cause significant dysfunction in two or more contexts (eg, school, home, work), and that they cannot be better explained by another syndrome. The clinical presentations of ADHD can be described as either primarily inattentive, primarily hyperactive-impulsive, or a combined type that depends on the nature of the symptoms.

III Societal and Individual Implications of ADHD

ADHD has been found to have a close association with a range of potential individual and societal costs. The Deloitte Review¹⁴ of the costs of child, adolescent and adult ADHD in Australia estimated total annual costs to be over \$20 billion Australian dollars (AUD), or \$25,000 AUD per person with ADHD. This includes financial costs of \$12.8 billion AUD, well-being losses of \$7.6 billion AUD, and productivity losses of \$10.2 billion AUD.

Those with ADHD are comparatively more prone to experience a range of misfortunes in their lives.¹⁵ These include accidents and injuries, delinquency, criminal behaviour, substance misuse, early or unplanned pregnancy, social and relational problems, and challenges in education and/or work settings.¹⁶ Studies have shown comparatively reduced quality of life for children and adolescents with ADHD relative

¹³ American Psychiatric Association (n 5).

¹⁴ Deloitte Access Economics (n 3).

¹⁵ Lane and Chong (n 3); Ian Freckelton, 'Attention Deficit Hyperactivity Disorder (ADHD) and the Criminal Law' (2019) 26(6) *Psychiatry, Psychology and Law* 817.

¹⁶ Faraone et al (n 1); Lane and Chong (n 3).

to their typically-developing peers.¹⁷ As children with ADHD grow older, their quality of life worsens in the physical, emotional, and school domains.¹⁸ They are eight- to ten-times as likely to manifest a high level of impairment in their home life, friendships, classroom learning, and leisure activities.¹⁹ Children and adolescents with ADHD have been found to have a disproportionately high level of emotional and conduct problems than those without ADHD.²⁰ Adults with ADHD have also been shown to experience much more difficulty with emotional regulation than those without ADHD.²¹

Children, adolescents and adults with ADHD more frequently experience mood disorders (ie, bipolar disorder, anxiety and depression),²² as well as learning disorders and other neurodevelopmental disorders (especially Autism Spectrum Disorder (ASD)).²³ ADHD is also highly comorbid with other child and adolescent behavioural syndromes including Oppositional Defiant Disorder (ODD), Conduct Disorder (CD), and adult Antisocial Personality Disorder (ASPD).²⁴ Of note, difficulty with self-control is also a core feature of these behavioural syndromes.²⁵ ADHD, when complicated by the early onset of CD and learning difficulties, particularly in a poor socio-economic situation, closely mirrors the risk factors for potential future criminal activity.²⁶

While the majority of those with ADHD do not end up involved as offenders within adult or youth justice systems,²⁷ there are a disproportionately high number of youths (ie, people under 18 years of

¹⁷ Rashi Agarwal et al, 'The Quality of Life of Adults with Attention Deficit Hyperactivity Disorder: A Systematic Review' (2012) 9(5-6) *Innovations in Clinical Neuroscience* 10.

¹⁸ Yi-chen Lee et al, 'Meta-Analysis of Quality of Life in Children and Adolescents with ADHD: By Both Parent Proxy-Report and Child Self-Report Using PedsQL™' (2016) 51 *Research in Developmental Disabilities* 160.

¹⁹ Tara W Strine et al, 'Peer Reviewed: Emotional and Behavioral Difficulties and Impairments in Everyday Functioning Among Children with a History of Attention-Deficit/Hyperactivity Disorder' (2006) 3(2) *Preventing Chronic Disease* 1.

²⁰ Ibid 18.

²¹ Susan Young et al, 'Guidance for Identification and Treatment of Individuals with Attention Deficit/Hyperactivity Disorder and Autism Spectrum Disorder Based Upon Expert Consensus' (2020) 18(1) *BMC Medicine* 1; Ana-María Soler-Gutiérrez, Juan-Carlos Pérez-González and Julia Mayas, 'Evidence of Emotion Dysregulation as a Core Symptom of Adult ADHD: A Systematic Review' (2023) 18(1) *Plos one* e0280131.

²² Rosaria Di Lorenzo et al, 'Children and Adolescents with ADHD Followed Up to Adulthood: A Systematic Review of Long-Term Outcomes' (2021) *Acta Neuropsychiatrica* 1.

²³ Nitin Patel, Mita Patel and Harsha Patel, 'ADHD and Comorbid Conditions' in Jill Norvilitis (ed), *Current Directions in ADHD and its Treatment* (BoD-Books on Demand, 2012); Lane and Chong (n 3); Susan Young et al, 'Neurodevelopmental Disorders in Prison Inmates: Comorbidity and Combined Associations with Psychiatric Symptoms and Behavioural Disturbance' (2018) 261 *Psychiatry Research* 109.

²⁴ Young and Cocallis (n 11).

²⁵ Walter Matthys, Louk JMJ Vanderschuren and Dennis JLG Schutter, 'The Neurobiology of Oppositional Defiant Disorder and Conduct Disorder: Altered Functioning in Three Mental Domains' (2013) 25(1) *Development and Psychopathology* 193.

²⁶ Young and Cocallis (n 11).

²⁷ Lane and Chong (n 3).

age) and adults with ADHD that do. Baggio and colleagues²⁸ and Young et al,²⁹ amongst others, have shown that those with ADHD appear approximately 10 times more in prison and 5 times more in youth detention populations than they appear in broader society. Those with ADHD have also been found to be comparatively more involved in incidences of domestic violence (as perpetrators and victims) as well as experiencing substance abuse disorders.³⁰

IV Treatment

A high proportion of children and adolescents and more than half of adults with ADHD do not receive treatment for their problematic symptoms.³¹ In 2022, the Australian ADHD Professionals Association released an evidence-based clinical guideline relating to ADHD assessment and treatment.³² Much of the guideline has been informed by the substantial empirical and anecdotal evidence that has demonstrated that ADHD is an eminently treatable medical condition.³³ In compliance with the guidelines, paediatricians and psychiatrists increasingly adopt a carefully fine-tuned approach for each patient they treat.³⁴ This involves making sure that the core ADHD symptoms of inattention, hyperactivity, and impulsiveness are soundly managed as a first step, whatever the additional comorbidities may be. While this will be more difficult if the condition has been allowed to progress, amelioration is still possible.³⁵ The main medications used to treat ADHD are classified as either stimulants, such as methylphenidate and amphetamine; or non-stimulants, such as atomoxetine, guanfacine, and clonidine.³⁶ Extended release versions of such medications including Concerta (extended release methylphenidate) and Vyvanse (extended release lisdexamphetamine) have, in recent years, greatly eased and improved medication compliance.³⁷

²⁸ Stéphanie Baggio et al, 'Prevalence of Attention Deficit Hyperactivity Disorder in Detention Settings: A Systematic Review and Meta-Analysis' (2018) 9 *Frontiers in Psychiatry*.

²⁹ Susan Young et al, 'A Meta-Analysis of the Prevalence of Attention Deficit Hyperactivity Disorder in Incarcerated Populations' (2015) 45(2) *Psychological Medicine* 247.

³⁰ Nannet Buitelaar et al, 'Type and Severity of Intimate Partner Violence in Offenders with and without ADHD' (2020) 19(2) *International Journal of Forensic Mental Health* 142.

³¹ Lane and Chong (n 3).

³² Australian ADHD Guideline Development Group, *Australian Evidence-Based Clinical Practice Guideline for Attention Deficit Hyperactivity Disorder* (Australian ADHD Professionals Association, 2022).

³³ For example, Samuele Cortese et al, 'Comparative Efficacy and Tolerability of Medications for Attention-Deficit Hyperactivity Disorder in Children, Adolescents, and Adults: A Systematic Review and Network Meta-Analysis' (2018) 5(9) *The Lancet Psychiatry* 727.

³⁴ Australian ADHD Guideline Development Group (n 32); Faraone et al (n 1).

³⁵ Salvatore Mannuzza et al, 'Age of Methylphenidate Treatment Initiation in Children with ADHD and Later Substance Abuse: Prospective Follow-Up into Adulthood' (2008) 165(5) *American Journal of Psychiatry* 604.

³⁶ Faraone et al (n 1).

³⁷ David Coghill et al, 'Long-Acting Methylphenidate Formulations in the Treatment of Attention-Deficit/Hyperactivity Disorder: A Systematic Review of Head-to-Head Studies'

There is considerable evidence showing that, at the very least, short-term use of ADHD medicine for children, adolescents and adults, is both safe and effective.³⁸ Particularly moderate-to-strong improvements in ADHD symptoms have been shown to occur through the use of methylphenidate with children and amphetamine with adults.³⁹ Stimulants have also been shown to reduce anxiety, aggression, oppositional behaviour, and conduct problems in youth with ADHD.⁴⁰ Furthermore, ADHD medication has been found to reduce the risk of depression by more than 40%, three years after medication commencement.⁴¹ Studies have also shown that there is a significantly-reduced risk of suicide for those who are treated with stimulant medication.⁴² Relevant studies have likewise shown a reduction in indicators of substance abuse among those prescribed with stimulant medication where the longer the medication is used, the lower the rate of engagement in substance abuse.⁴³ People with ADHD have also been found to be about half as likely to smoke cigarettes when regularly treated with stimulant medications.⁴⁴ A key meta-analysis has also demonstrated that consumption of stimulant medication does not increase the risk for alcohol, nicotine, cocaine, or cannabis abuse/dependence.⁴⁵

Additionally, treatment of ADHD with medication is associated with a variety of functional behaviour improvements.⁴⁶ In one study, medication treatment for three months was associated with an increase in the probability of completing upper secondary school by two-thirds.⁴⁷ Stimulant treatment has also been shown to be associated with

(2013) 13 *BMC Psychiatry* 1; Juliana Setyawan et al, 'Treatment Persistence in Attention Deficit/Hyperactivity Disorder: A Retrospective Analysis of Patients Initiated on Lisdexamfetamine vs Other Medications' (2013) 16(11) *Journal of Medical Economics* 1275.

³⁸ Cortese (n 8).

³⁹ Faraone et al (n 1).

⁴⁰ Holly E Erskine et al, 'Long-Term Outcomes of Attention-Deficit/Hyperactivity Disorder and Conduct Disorder: A Systematic Review and Meta-Analysis' (2016) 55(10) *Journal of the American Academy of Child & Adolescent Psychiatry* 841; Caye, Leffa and Rohde (n 7).

⁴¹ Zheng Chang et al, 'Association Between Prescription of Major Psychotropic Medications and Violent Reoffending After Prison Release' (2016) 316(17) *JAMA* 1798.

⁴² Kenneth KC Man et al, 'Association of Risk of Suicide Attempts with Methylphenidate Treatment' (2017) 74(10) *JAMA Psychiatry* 1048; Sophie Hsin-Yi Liang et al, 'Suicide Risk Reduction in Youths with Attention-Deficit/Hyperactivity Disorder Prescribed Methylphenidate: A Taiwan Nationwide Population-Based Cohort Study' (2018) 72 *Research in Developmental Disabilities* 96.

⁴³ Susan Young and Emma Woodhouse, 'Assessment and Treatment of Substance Use in Adults with ADHD: A Psychological Approach' (2021) 128(7) *Journal of Neural Transmission* 1099.

⁴⁴ Erin N Schoenfelder, Stephen V Faraone and Scott H Kollins, 'Stimulant Treatment of ADHD and Cigarette Smoking: A Meta-Analysis' (2014) 133(6) *Pediatrics* 1070.

⁴⁵ Kathryn L Humphreys, Timothy Eng and Steve S Lee, 'Stimulant Medication and Substance Use Outcomes: A Meta-Analysis' (2013) 70(7) *JAMA Psychiatry* 740.

⁴⁶ Heidi Boland et al, 'A Literature Review and Meta-Analysis on the Effects of ADHD Medications on Functional Outcomes' (2020) 123 *Journal of Psychiatric Research* 21.

⁴⁷ Tamara Pringsheim et al, 'The Pharmacological Management of Oppositional Behaviour, Conduct Problems, and Aggression in Children and Adolescents with Attention-Deficit Hyperactivity Disorder, Oppositional Defiant Disorder, and Conduct Disorder: A Systematic

a decrease in rates of injuries due to accidents.⁴⁸ In short, these benefits occur because medication treatment aids children and adolescents with ADHD to function in a way that is more similar to those without ADHD, particularly in areas of the brain that are involved in the control of cognition which ADHD typically disrupts.⁴⁹ The use of mood stabilisers, such as Risperidone in particular, can be key to dealing with excessive emotional volatility,⁵⁰ as can additional antidepressant or anxiolytic medications.⁵¹

That said, it is important to acknowledge that sometimes ADHD medication may be associated with unwanted side effects.⁵² The most common side-effects of psychostimulants appear to be appetite suppression, difficulty in getting to sleep, irritability, and/or subduing of personality.⁵³ Children treated with stimulants may also, albeit infrequently, show delays in expected height gains averaging two centimetres over one or two years.⁵⁴ However, some studies do dispute this.⁵⁵ Nevertheless, recent large-scale studies have uncovered additional concerns including, for example, potential cardiac side effects, where the use of ADHD medication may be associated with an increased risk of cardiovascular complications (risk is 4% annually and stabilising after 3 years of treatment), however no association has been found between the use of such medication and severe adverse cardiac

Review and Meta-Analysis. Part 1: Psychostimulants, Alpha-2 Agonists, and Atomoxetine' (2015) 60(2) *The Canadian Journal of Psychiatry* 42.

- 48 Nathalie Brunkhorst-Kanaan et al, 'ADHD and Accidents over the Life Span - A Systematic Review' (2021) 125 *Neuroscience & Biobehavioral Reviews* 582.
- 49 Katya Rubia et al, 'Effects of Stimulants on Brain Function in Attention-Deficit/Hyperactivity Disorder: A Systematic Review and Meta-Analysis' (2014) 76(8) *Biological Psychiatry* 616; Katya Rubia, Analucia Alegria and Helen Brinson, 'Imaging the ADHD Brain: Disorder-Specificity, Medication Effects and Clinical Translation' (2014) 14(5) *Expert Review of Neurotherapeutics* 519.
- 50 Joseph C Blader et al, 'Stepped Treatment for Attention-Deficit/Hyperactivity Disorder and Aggressive Behavior: A Randomized, Controlled Trial of Adjunctive Risperidone, Divalproex Sodium, or Placebo After Stimulant Medication Optimization' (2021) 60(2) *Journal of the American Academy of Child & Adolescent Psychiatry* 236.
- 51 Giulio Perugi et al, 'Current and Emerging Pharmacotherapy for the Treatment of Adult Attention Deficit Hyperactivity Disorder (ADHD)' (2019) 20(12) *Expert Opinion on Pharmacotherapy* 1457.
- 52 Faraone et al (n 1)
- 53 Michael J Manos et al, 'Changes in Emotions Related to Medication Used to Treat ADHD. Part I: Literature Review' (2011) 15(2) *Journal of Attention Disorders* 101; Faraone et al (n 1).
- 54 Deirdre Carolan, 'ADHD Stimulant Medication Misuse and Considerations for Current Prescribing Practice: A Literature Review' (2021) 191(1) *Irish Journal of Medical Science* 313; Stephen V Faraone et al, 'Effect of Stimulants on Height and Weight: A Review of the Literature' (2008) 47(9) *Journal of the American Academy of Child & Adolescent Psychiatry* 994.
- 55 Suzanne McCarthy et al, 'Effects of Long-Term Methylphenidate Use on Growth and Blood Pressure: Results of the German Health Interview and Examination Survey for Children and Adolescents (KiGGS)' (2018) 18(1) *BMC Psychiatry* 1; Le Zhang et al, 'Attention-Deficit/Hyperactivity Disorder Medications and Long-Term Risk of Cardiovascular Diseases' (2023) *JAMA Psychiatry*.

events (ie, sudden death, heart attack and stroke).⁵⁶ It is important to note that with any medication for any condition, a range of unwanted side effects can occur. However, many of these issues can often be addressed with dosage adjustments in the medication.⁵⁷ In any event, medication effect trade-offs are best considered at an individual patient level, taking into account all relevant factors, and girded by an underlying acknowledgement that the benefit of the medication outweighs any potential unwanted side effects.⁵⁸

In addition to adopting such pharmaceutical regimes, non-medical interventions (eg, Cognitive Behavioural Therapy) should also be put in place to complement ADHD medication treatment.⁵⁹ Non-medical interventions are especially efficacious in the treatment of conditions that are highly comorbid with ADHD, including anxiety and depression.⁶⁰ Psychological interventions have also been found to be associated with a variety of psychosocial improvements including reductions in unemployment and schooling/education-related problems as well as reliance on cash benefits and social services.⁶¹

V Impact of Medical Treatment on Deviant Behaviour

Notwithstanding the numerous benefits identified in the previous section, medication treatment for youth and adult *offenders* with ADHD, especially those who are incarcerated, is highly contentious. There has been a high degree of concern raised in relation to the use of stimulant medications in custodial institutions.⁶² Intriguingly, this concern has been impacted by misunderstandings regarding the use of Methylphenidate [Ritalin], which many consider to be an amphetamine. In fact, Methylphenidate is classified as a sympathomimetic,⁶³ which is in the same chemical group as the asthma treatment salbutamol (ie, Ventolin). Although Methylphenidate can be potentially abused, it is not addictive when used in the low doses designed to treat ADHD. Misinformation has made its potential use to treat those with ADHD in

⁵⁶ Edwin F Liang et al, 'The Effect of Methylphenidate and Atomoxetine on Heart Rate and Systolic Blood Pressure in Young People and Adults with Attention-Deficit Hyperactivity Disorder (ADHD): Systematic Review, Meta-Analysis, and Meta-Regression' (2018) 15(8) *International Journal of Environmental Research and Public Health* 1789.

⁵⁷ Benedetto Vitiello et al, 'Methylphenidate Dosage for Children with ADHD Over Time Under Controlled Conditions: Lessons from the MTA' (2001) 40(2) *Journal of the American Academy of Child & Adolescent Psychiatry* 188.

⁵⁸ Samuele Cortese and Cristiano Fava, 'Long-Term Cardiovascular Effects of Medications for Attention-Deficit/Hyperactivity Disorder—Balancing Benefits and Risks of Treatment' (2023) *JAMA Psychiatry*.

⁵⁹ Faraone et al (n 1).

⁶⁰ Ibid.

⁶¹ Ibid; Lane and Chong (n 3).

⁶² Young and Cocallis (n 11).

⁶³ Xanthe M Barkla, Paul A McArdle and Dorothy Newbury-Birch, 'Are There Any Potentially Dangerous Pharmacological Effects of Combining ADHD Medication with Alcohol and Drugs of Abuse? A Systematic Review of the Literature' (2015) 15(1) *BMC Psychiatry* 1.

the prison system more complex, given that those with ADHD who are in custody are more likely to have comorbid substance use issues as well.⁶⁴ Perhaps more encouragingly, providing medical treatment to those with comorbid ADHD and substance use issues, appears to actually reduce risk of further substance misuse.⁶⁵ The development of newer long-acting medications such as Concerta (long-acting methylphenidate) and Vyvanse (long-acting amphetamine), have been shown to be very effective in treating the core ADHD symptoms and present an opportunity to help to reduce concerns over potential abuse of ADHD medication in custodial populations.⁶⁶

Ideally, ADHD medication should be the first-line treatment for youth and/or adult offenders with ADHD.⁶⁷ As noted earlier, other psychotropic medications including mood stabilisers, antidepressants and/or anxiolytic medications, may also be key to dealing with excessive emotional instability and behavioural disinhibition in offenders.⁶⁸

Evidence of the efficacy of medication treatment for offenders with ADHD has been established in several studies.⁶⁹ For instance, a Swedish study of over 25,000 ADHD patients found a 30% reduction in criminality among men receiving ADHD medication, and a 40% reduction for women.⁷⁰ Another study utilising a Danish national registry of over 4,200 individuals with childhood ADHD found that crime rates in adulthood were 30 - 40% lower during periods of taking ADHD medication.⁷¹

It should be acknowledged that the Australian evidence-based guideline,⁷² provides justification for, and an outline of, considerations

⁶⁴ Amy M Yule and Joseph Biederman, 'What Do We Know About the Relationship Between Attention Deficit Hyperactivity Disorder and Substance Use Disorders?' (2017) 40(5) *Salud Mental* 181.

⁶⁵ Joseph Biederman et al, 'Stimulant Therapy and Risk for Subsequent Substance Use Disorders in Male Adults with ADHD: A Naturalistic Controlled 10-year Follow-Up Study' (2008) 165(5) *American Journal of Psychiatry* 597; Ylva Ginsberg et al, 'ADHD and Criminality: Could Treatment Benefit Prisoners with ADHD Who Are at Higher Risk of Reoffending?' (2013) 13(4) *Expert Review of Neurotherapeutics* 345; John J Mariani and Frances R Levin, 'Treatment Strategies for Co-Occurring ADHD and Substance Use Disorders' (2007) 16 *The American Journal on Addictions* 45.

⁶⁶ Lane and Chong (n 3).

⁶⁷ Susan Young et al, 'Identification and Treatment of Offenders with Attention-Deficit/Hyperactivity Disorder in the Prison Population: A Practical Approach Based Upon Expert Consensus' (2018) 18(1) *BMC Psychiatry* 1.

⁶⁸ Ibid.

⁶⁹ Susan Young et al, 'Overview of Offenders with ADHD' in Jane M McCarthy, Regi T Alexander and Eddie Chaplin (eds), *Forensic Aspects of Neurodevelopmental Disorders: A Clinician's Guide* (Cambridge University Press, 2023) 34-37.

⁷⁰ Paul Lichtenstein et al, 'Medication for Attention Deficit-Hyperactivity Disorder and Criminality' (2012) 367(21) *New England Journal of Medicine* 2006.

⁷¹ Christina Mohr-Jensen et al, 'Attention-Deficit/Hyperactivity Disorder in Childhood and Adolescence and the Risk of Crime in Young Adulthood in a Danish Nationwide Study' (2019) 58(4) *Journal of the American Academy of Child & Adolescent Psychiatry* 443.

⁷² Australian ADHD Guideline Development Group (n 32).

for treatment of those with ADHD involved in the correctional system. In short, medication and multimodal treatment regimes are strongly argued for. While the guideline document is a good start, other countries have already developed expert consensus statements regarding the identification and treatment of offenders with ADHD.⁷³ Australia is behind in this regard and therefore the development of a local consensus statement is urgently needed.

VI Author Insights: General Obstructions to Progress

A *Process Issues in Bringing the Problem to Light*

Paediatricians, psychiatrists, and psychologists see a wide range of clinical presentations of children, adolescents, and adults with ADHD. Some individuals struggle with inattention; others have trouble with impulsivity, while some have primary battles with managing hyperactivity. Regardless of any particular struggle, for a diagnosis of ADHD to be made in accordance with DSM-5⁷⁴ requirements however, one or more of these core symptoms must be shown to substantially impair a person's ability to function within normative parameters in physical, social, emotional, and school or occupational domains. There must also be no better causal explanation for these impairments other than ADHD. Unfortunately, there is no blood test or sustainably viable scanning technique that definitively confirms an ADHD diagnosis. Given the consequent need to meet the extensive diagnostic requirements listed above, the process of diagnosing ADHD can be an onerous clinical task. Increasing acceptance of ADHD as a valid internationally recognised neurodevelopmental condition, and the associated increasing need for more assessments to be done, has put significant pressure on a variety of medical and mental health professionals to meet this need.⁷⁵

Assessment of ADHD is also made more complex by the volume of comorbid disorders those with ADHD also experience.⁷⁶ Any ADHD assessment must necessarily involve due consideration of the potential for comorbid psychological, neurodevelopmental and learning disorders.⁷⁷ The revelation that conditions may overlap rather than being separate entities is more recent, and critical to an effective

⁷³ See Young et al (n 67). See also Susan J Young et al, 'The identification and Management of ADHD Offenders within the Criminal Justice System: A Consensus Statement from the UK Adult ADHD Network and Criminal Justice Agencies' (2011) 11(1) *BMC Psychiatry* 1.

⁷⁴ American Psychiatric Association (n 5)

⁷⁵ Margaret Ryan, 'Training and Specialisation of Psychiatrists in ADHD' (2023) 31(5) *Australasian Psychiatry* 613-615.

⁷⁶ Mohammad-Reza Mohammadi et al, 'Prevalence of ADHD and its Comorbidities in a Population-Based Sample' (2021) 25(8) *Journal of Attention Disorders* 1058.

⁷⁷ Australian ADHD Guideline Development Group (n 32).

evaluation.⁷⁸ Many children and adolescents, particularly those with severe progressive disorders, have several neurodevelopmental conditions that overlap, and each of these require effective diagnosis and management.⁷⁹ For example, children with potentially poor prognoses may not only have severe ADHD core symptoms; they may be coexisting with ASD, ODD, CD, and/or specific learning difficulties.⁸⁰

Responsible assessment of potential ADHD therefore includes a clinical interview/observation component, and the use of various rating scales to collate information from a range of sources, potentially including other family members, friends, and school staff.⁸¹ Assessment of the impact of these disorders on the family, and their socio-economic status, is also very important.⁸² Such an evaluation does not necessarily conclude that a difficult family situation, or low socio-economic status, is causative of any disruptive behavioural issues.⁸³ It is arguable that in complex family situations, the presence of excessive degrees of impulsiveness, hyperactivity, or inattention in a child strongly suggests that there may be an ADHD component underlying the more obvious social stresses.⁸⁴ Thus, the diagnosis of ADHD should be regarded more as an explanation rather than an excuse for whatever socio-economic difficulties are present in a person's life.⁸⁵

Lamentably, the diagnosis of ADHD can be missed in situations of low socio-economic status or where there are significant environmental problems, thereby masking the neurodevelopmental complications.⁸⁶ In these situations, parents often continue to be erroneously blamed by others for their child's behavioural difficulties including, for instance,

⁷⁸ Ibid.

⁷⁹ Rosleen Mansour et al, 'ADHD Severity as it Relates to Comorbid Psychiatric Symptomatology in Children with Autism Spectrum Disorders (ASD)' (2017) 60 *Research in Developmental Disabilities* 52; Camille Hours, Christophe Recasens and Jean-Marc Baleyte, 'ASD and ADHD Comorbidity: What are We Talking About?' (2022) 13 *Frontiers in Psychiatry* 154.

⁸⁰ Kevin M Antshel and Natalie Russo, 'Autism Spectrum Disorders and ADHD: Overlapping Phenomenology, Diagnostic Issues, and Treatment Considerations' (2019) 21 *Current Psychiatry Reports* 1; Mansour et al (n 79).

⁸¹ Australian ADHD Guideline Development Group (n 32).

⁸² Johanna Waltereit et al, 'Family and Developmental History of ADHD Patients: A Structured Clinical Routine Interview Identifies a Significant Profile' (2020) 270 *European Archives of Psychiatry and Clinical Neuroscience* 1047.

⁸³ Abigail Emma Russell et al, 'The Association Between Socioeconomic Disadvantage and Attention Deficit/Hyperactivity Disorder (ADHD): A Systematic Review' (2016) 47(3) *Child Psychiatry & Human Development* 440.

⁸⁴ Jalal Uddin et al, 'Parenting Stress and Family Resilience Affect the Association of Adverse Childhood Experiences with Children's Mental Health and Attention-Deficit/Hyperactivity Disorder' (2020) 272 *Journal of Affective Disorders* 104; Sophie Leitch et al, 'Experience of Stress in Parents of Children with ADHD: A Qualitative Study' (2019) 14(1) *International Journal of Qualitative Studies on Health and Well-Being* 1690091.

⁸⁵ Lane and Chong (n 3).

⁸⁶ Philip Asherson et al, 'Under Diagnosis of Adult ADHD: Cultural Influences and Societal Burden' (2012) 16(5_suppl) *Journal of Attention Disorders* 20S-38S.

those in positions of authority and power, such as school staff, and even other family members who may suggest the behaviour is simply due to 'bad parenting'.⁸⁷ The onset of puberty often exacerbates these issues, and an adolescent can easily be led into a life of crime, substance misuse, or other non-normative/risky behaviours.⁸⁸ In adolescence and young adulthood, the diagnosis of ADHD may be overlooked even though there is continuing impairment caused by the disorder.⁸⁹ Although hyperactive/impulsive symptoms may lessen in their levels of impulsivity, inattention generally remains.⁹⁰ Undoubtedly, a sub-optimal environment plays a key part in the progression of the condition.⁹¹

B *Key Barriers to Effective Treatment*

There are significant impediments and roadblocks in Australia that make it difficult for people with ADHD to receive early help and support. Quite apart from the often, persistently 'psychosocial only' approach still taken by many professionals and by society on these issues, there is an increasingly recognised dearth of service provision.⁹² Most paediatricians, child psychiatrists and psychologists are booked out for significant periods of time or have closed their bookings to new patients.⁹³ This is further exacerbated in most Australian States by antiquated prescription medicine regulations. There is, arguably, a pharmaceutical misunderstanding of the nature of these medications that has unfortunately resulted in restricting the prescription of such psychostimulants to specialists and not extending it to general practitioners.⁹⁴ However, the chronic nature of the condition and the need for recurrent ongoing prescriptions means that, whilst some children do need highly fine-tuned on-going management, most specialists become bogged down with ongoing management issues, many of which could be more readily handled by a general

⁸⁷ Alessandra Frigerio, Lorenzo Montali and Michelle Fine, 'Attention Deficit/Hyperactivity Disorder Blame Game: A Study on the Positioning of Professionals, Teachers and Parents' (2013) 17(6) *Health* 584.

⁸⁸ Susan Young, 'ADHD Children Grown Up: An Empirical Review' (2000) 13(2) *Counselling Psychology Quarterly* 191. See also Young and Cocallis (n 11).

⁸⁹ Stephen L Able et al, 'Functional and Psychosocial Impairment in Adults with Undiagnosed ADHD' (2007) 37(1) *Psychological Medicine* 97.

⁹⁰ Mats Fredriksen et al, 'Childhood and Persistent ADHD Symptoms Associated with Educational Failure and Long-Term Occupational Disability in Adult ADHD' (2014) 6 *ADHD Attention Deficit and Hyperactivity Disorders* 87.

⁹¹ Australian ADHD Guideline Development Group (n 32), Faraone et al (n 1).

⁹² Mitchell Dodds et al, 'Economic Burden and Service Utilisation of Children with Attention-Deficit/Hyperactivity Disorder (ADHD) - A Systematic Review and Meta-Analysis' (2023) 27(2) *Value in Health* 247.

⁹³ Melissa Mulraney et al, 'How Long and How Much? Wait Times and Costs for Initial Private Child Mental Health Appointments' (2021) 57(4) *Journal of Paediatrics and Child Health* 526.

⁹⁴ Ryan (n 75).

practitioner.⁹⁵ This means that specialist skills are not being most effectively used in these types of cases. In addition, the relatively small number of such specialists in Australia exacerbates the problem even more.⁹⁶

A lack of acceptance and understanding of the nature of ADHD by some involved in mental health service delivery, education, learning and support services makes early identification of ADHD especially problematic.⁹⁷ This situation has been fuelled by previous misunderstanding and misinformation regarding the true nature of ADHD and the medications used to treat it, as well as allegations that it is grossly over-diagnosed.⁹⁸ Another impact of misunderstanding the true nature of ADHD and its functional impact might be an increase in public use of the word 'ADHD' to erroneously describe behaviour that is a transient state or temperamental tendency rather than part of an ADHD-related *permanent* impairment.⁹⁹ This will likely fuel accusations of overdiagnosis of ADHD and adversely impact upon perceptions of its credibility amongst sceptical service providers. Ensuring that accessible, credible, and standardised ADHD diagnostic processes are used is crucial in minimising its criticism and/or any concept creep.¹⁰⁰ An additional problematic observation is that there appears to be a lack of cohesion between the various ADHD support groups and organisations which has minimised their capacity for effective political lobbying.

C *Flaws in 'The System'*

Given the longevity, pervasiveness, and impact of ADHD, it is not surprising that it is generally regarded as a disability by those who understand its true nature.¹⁰¹ It is worth noting that the symptoms of ADHD clearly appear to fall within the definition of 'disability' as set

⁹⁵ Angelina Mueller et al, 'General Practitioner-Centred Paediatric Primary Care Reduces Risk of Hospitalisation for Mental Disorders in Children and Adolescents with ADHD: Findings from a Retrospective Cohort Study' (2022) 28(1) *European Journal of General Practice* 150.

⁹⁶ Claudia Cao, Callum Deakin and Shane Gill, 'Attitudes of South Australian Psychiatrists Towards Attention Deficit Hyperactivity Disorder in Adults' (2023) *Australasian Psychiatry* 10398562231211132.

⁹⁷ Matthew Bisset et al, 'Recent Attitudes toward ADHD in the Broader Community: A Systematic Review' (2022) 26(4) *Journal of Attention Disorders* 537; Matthew Bisset et al, 'Practitioner Review: It's Time to Bridge the Gap - Understanding the Unmet Needs of Consumers with Attention-Deficit/Hyperactivity Disorder - A Systematic Review and Recommendations' (2023) 64(6) *Journal of Child Psychology and Psychiatry* 848; Mimi Tatlow-Golden et al, 'What do General Practitioners Know About ADHD? Attitudes and Knowledge Among First-Contact Gatekeepers: Systematic Narrative Review' (2016) 17(1) *BMC Family Practice* 1.

⁹⁸ Tatlow-Golden et al (n 97); Lane and Chong (n 3).

⁹⁹ Lane and Chong (n 3).

¹⁰⁰ Nick Haslam, 'Concept Creep: Psychology's Expanding Concepts of Harm and Pathology' (2016) 27(1) *Psychological Inquiry* 1.

¹⁰¹ Fredriksen et al (n 90).

out in the *Disability Discrimination Act 1992*,¹⁰² which states as follows:

Section 4 (1) disability, in relation to a person means: ...

(f) a disorder or malfunction that results in the person learning differently from a person without the disorder or malfunction; or

(g) a disorder, illness or disease that affects a person's thought processes, perception of reality, emotions or judgment or that results in disturbed behaviour....

Despite appearing to fit the definition of 'disability' outlined in the *Disability Discrimination Act 1992* (Cth), those with ADHD receive limited to no 'help' in school settings because most Australian education state and territorial systems do not accept ADHD to be a condition worthy of extra funding and support.¹⁰³ This is particularly perplexing given that the *Disability Standards for Education 2005* (Cth) (the Standards),¹⁰⁴ which set the standard practices to be complied with by public and private schools across Australia, explicitly refer to the *Disability Discrimination Act* when defining the term 'disability.' Thus, those with ADHD do not receive the same degree of help and care as those with other neurodevelopmental disorders such as ASD.

The body responsible for determining funding eligibility for those with a disability who require access to key support services in Australia is the National Disability Insurance Agency (NDIA). This body was formed and is administered under the *National Disability Insurance Scheme Act 2013* (Cth),¹⁰⁵ which sets out relevant standards, definitions, and goals of the body in managing funds allocated to those with a disability through the National Disability Insurance Scheme (NDIS). The definition of disability (or 'disability requirement') is provided in section 24 of that Act. It could be said that, even from the perspective of a lay observer, it is obvious that the ADHD syndrome fits within the definitions and requirements of that section specifically, and of that Act more broadly. Despite this, ADHD has been determined by the NDIA not to be an eligible disability under its jurisdiction.¹⁰⁶ In short, ADHD alone, no matter how severe, will likely not result in a child receiving NDIS funding needed to pay for important support and services to reduce the likelihood of adverse life trajectories.

¹⁰² *Disability Discrimination Act 1992* (Cth) (*Disability Discrimination Act*) s 5.

¹⁰³ Sarah M Mulholland, 'ADHD: The Untold Truths of the ADEP (Australian Deficit in Educational Policy)' (2017) 64(1) *International Journal of Disability, Development and Education* 1.

¹⁰⁴ *Standards for Education (the Standards) 2005* (Cth) (*Standards for Education (the Standards)*).

¹⁰⁵ *National Disability Insurance Scheme Act 2013* (Cth) (*National Disability Insurance Scheme Act*).

¹⁰⁶ Australian ADHD Guideline Development Group (n 32).

D 2023 'Senate Community Affairs Reference Committee Report: Assessment and Support Services for People with ADHD'

In 2023 the Senate Community Affairs Reference Committee handed down findings related to its investigation into the availability of assessment support services for people with ADHD.¹⁰⁷ The associated report documents in detail many of the shortfalls, inefficiencies, roadblocks, and problems mentioned above and more. It is a good reference point for anyone wishing to understand the difficult journey faced by those with ADHD who seek assessment and support services. The report outlines four key areas that need addressing: (1) the lack of services; (2) the high cost of services, and poor consumer experiences; (3) particular challenges for key groups (eg, women, First Nations peoples); as well as (4) insufficient support provided by schools, out of home care services and in correctional settings.

As Lane and Chong note in their review:

... between 23-31% of children and 80% of adults with ADHD, do not undertake any sustained treatment. Given what is 'actually' known about ADHD, and that it is clearly a disability, it is our view that it is a gross failure of the 'system' and of society more broadly, to have allowed a person with such a medical condition, to have progressed unsupported to such a degree that the person's ADHD symptoms have led to their liberty and other freedoms being taken from them through incarceration. These 'system' failures need to be addressed immediately, and a consistent legal and practical approach has to be adopted across each and every relevant part of the criminal/youth justice process so as to ameliorate the deleterious effects of this form of disability.¹⁰⁸

VII ADHD, Self-Control, and Criminal Behaviour

In his book *ADHD & the Nature of Self Control*,¹⁰⁹ eminent Professor and ADHD educator, Russell Barkley, proposed that self-control difficulty is likely to be the primary link between ADHD and delinquent/criminal behaviour. He considers that ADHD is primarily an executive function disorder that impacts upon all seven executive functions: self-awareness; inhibition (self-restraint); verbal working memory; non-verbal working memory; self-motivation; planning; and problem solving.¹¹⁰

¹⁰⁷ Senate Community Affairs References Committee, *Assessment and Support Services for People with ADHD* (Commonwealth of Australia, 2023).

¹⁰⁸ Lane and Chong (n 4) 127.

¹⁰⁹ Russell A Barkley, 'Improving Clinical Diagnosis Using the Executive Functioning - Self-Regulation Theory of ADHD' (2022) 30(1) *The ADHD Report* 1.

¹¹⁰ Russell A Barkley, 'Implications of the Executive Function - Self-Regulation (EF-SR) Theory of ADHD for Estimates of Persistence and Prevalence' (2021) 29(5) *The ADHD Report* 8.

The notion that poor self-control could be innate (within a person's brain), rather than due to one's environment or upbringing was raised many years ago by Professor George Still, the first President of the British Paediatric Association in 1901.¹¹¹ This was the first clinical, analytic, and reasoned description of a cluster of symptoms clearly approximating our present-day diagnosis of ADHD. He analysed a group of children with behavioural problems, and considered that they likely had an innate problem with self-control, noting in particular that self-control 'variation is no doubt in part the result of environment, but partly also, it seems possible, the result of differences in the innate capacity for the development of self-control,'¹¹² and that 'the keynote of these qualities is self-gratification, the immediate gratification of self without regard either to the good of others or to the larger and more remote good of self.'¹¹³

He also noted that punishment made little difference. Still added that:

... there is the likelihood, nay almost the certainty, that children with the more profound and permanent disorders of moral control will be punished as criminals in spite of the evidence that their acts are the outcome of a mental state just as marked as the more generally recognised imbecility or insanity.¹¹⁴

A key component of the discussion about whether lack of self-control is a predisposing factor in youth crime therefore centres on whether there is a biological component to it. On this issue, Barkley observes that the general societal position here appears to be:

... that our capacity for self-control is pretty much self-determined (no circularity of reasoning intended), that with the exception of the truly insane, we are all pretty much granted an equal amount of this capacity at birth, and that just how well we may put it to use in day-to-day functioning reflects in part the proficiency with which our parents imparted it to us.¹¹⁵

However, Barkley further points out that, contrary to this view, the bulk of scientific evidence has actually revealed that 'human inhibition and self-control are traits that are largely, but not solely, biologically determined.'¹¹⁶

Although ADHD terminology is relatively new, problematic ADHD symptoms have long been recognised. Whilst ADHD had been the most

¹¹¹ George F Still, 'The Goulstonian Lectures: Some Psychical Conditions in Children' (1902)(April) *The Lancet* 1077; George F Still, 'Some Abnormal Psychical Conditions in Children: Excerpts from Three Lectures' (2006) 10(2) *Journal of Attention Disorders* 126.

¹¹² Still, 'The Goulstonian Lectures: Some Psychical Conditions in Children' (n 111) 1009.

¹¹³ *Ibid* 1077.

¹¹⁴ Still, 'Some Abnormal Psychical Conditions in Children: Excerpts from Three Lectures' (n 111) 135.

¹¹⁵ Russell A Barkley, *ADHD and the Nature of Self-Control* (Guilford Press, 1997) 318.

¹¹⁶ *Ibid*.

referenced paediatric condition in the Index Medicus in the 1970s and 80s, there was virtually no awareness of it in the UK even up to the mid-1990s.¹¹⁷ In the UK at that time, the term 'Hyperkinesis' was instead often used to describe ADHD-like presentations.¹¹⁸ ADHD was largely considered a North American condition, and prevailing psychological attitudes to it at the time conceived it to have a largely psychosocial basis.¹¹⁹

In 1993, the British Paediatric Association produced a document, *Health Services for School Age Children*,¹²⁰ that focussed on children with Emotional and Behavioural Difficulties [EBD], noting that they were the largest cause of disability amongst school-aged children, and hence of major concern to health, education, and social services. The report noted that 2.1% of UK school children had severe EBD, 20% had significant difficulties and it accounted for 3000 children being permanently excluded from school and 8000 children in residential care.¹²¹ Subsequently, as awareness of ADHD grew in the UK, studies showed that 60% of children in residential care were hyperactive¹²² and that 73% met the criteria for ADHD.¹²³ There was growing acceptance of the possibility of children having an ADHD diagnosis, and acknowledgement of a biological, 'within brain', rather than just a psychosocial causation, of the child's difficulty. This opened up alternative and often more effective means of helping the child. Without an ADHD diagnosis, the only supports provided were special schooling and psychological input. Unfortunately, vestiges of the differences in these two approaches still remain, particularly in the area of youth justice, where commonly employed psychosocial approaches continue to dominate. This is often related to prevailing attitudes regarding the nature of self-control.

¹¹⁷ Geoffrey D Kewley and Eileen Orford, 'Personal Paper: Attention Deficit Hyperactivity Disorder is Underdiagnosed and Undertreated in Britain (Commentary: Diagnosis Needs Tightening)' (1998) 316(7144) *British Medical Journal* 1594.

¹¹⁸ Stephen Overmeyer and Eric Taylor, 'Annotation: Principles of Treatment for Hyperkinetic Disorder: Practice Approaches for the UK' (1999) 40(8) *The Journal of Child Psychology and Psychiatry and Allied Disciplines* 1147.

¹¹⁹ JM Swanson et al, 'Attention-Deficit Hyperactivity Disorder and Hyperkinetic Disorder' (1998) 351(9100) *The Lancet* 429; Marie Reinholdt, *ADHD in Historical and Comparative Perspective: Medical, Educational and Public Approaches to Childhood Hyperactivity in the US and the UK, 1960-2010* (The University of Manchester, 2013).

¹²⁰ British Paediatric Association, *Health Needs of School Age Children* (Report of a Joint Working Party, British Paediatric Association, 1995).

¹²¹ Ibid.

¹²² Leslie Vivian, 'The Changing Pupil Population of Schools for Pupils with Emotional and Behavioural Difficulties' (1994) 3(3) *Therapeutic Care & Education* 218.

¹²³ Maurice Place et al, 'The Frequency of Emotional and Behavioural Disturbance in an EBD School' (2000) 5(2) *Child Psychology and Psychiatry Review* 76.

VIII Criminological Perspectives on Self-Control

Criminological theory and research have also long recognised self-control difficulty to be an important factor in crime commission.¹²⁴ The criminological perspective, however, has largely conceived self-control difficulty as being environmentally derived.¹²⁵ A seminal criminological study by David Farrington examined and documented important factors related to engagement in criminal behaviour.¹²⁶ He found that problematic factors contributing to later criminal behaviour included those that were social and/or environmental. He stressed that ‘hyperactivity and impulsivity were among the most important individual or personality risk factors predicting later delinquency’.¹²⁷ Similarly, the Dunedin Long Term Study into health, wealth and human behaviour found that risk factors at three years of age including excessive hyperactivity and impulsivity (low self-control), and the early onset of conduct disorder symptoms, heavily predict later delinquency.¹²⁸

In their 1990 publication *General Theory of Crime*, Gottfredson and Hirschi proposed that criminal opportunity and low self-control were significant factors that increased the risk of crime being perpetrated.¹²⁹ Here, low self-control was considered to be due to ineffective parental management – the inability of parents to monitor, recognise and consistently punish deviant conduct. The *General Theory of Crime*, like other criminological ‘Control’ theories, largely explains the absence rather than the emergence of crime. In other words, it is argued that most individuals do not commit crime because they are able to apply self-control. It follows nevertheless that where an individual has little self-control, and there exists an opportunity to obtain the benefit of a crime, criminal behaviour becomes more likely. Agnew also considered low self-control to be a factor that helped the delinquent cope with strain.¹³⁰ Colvin likewise noted that low self-control was a psychosocial

¹²⁴ Callie H Burt, 'Self-Control and Crime: Beyond Gottfredson & Hirschi's Theory' (2020) 3 *Annual Review of Criminology* 43; Noah C Venables et al, 'Integrating Criminological and Mental Health Perspectives on Low Self-Control: A Multi-Domain Analysis' (2018) 56 *Journal of Criminal Justice* 2.

¹²⁵ Venables et al (n 124).

¹²⁶ David Farrington, 'Understanding and Preventing Youth Crime' in John Muncie, Gordon Hughes and Eugene McLaughlin (eds), *Youth Justice: Critical Readings* (Sage, 2002) 425-430.

¹²⁷ Ibid.

¹²⁸ Terrie E Moffitt, 'Juvenile Delinquency and Attention Deficit Disorder: Boys' Developmental Trajectories from Age 3 to Age 15' (1990) 61(3) *Child Development* 893.

¹²⁹ Michael R Gottfredson and Travis Hirschi, *A General Theory of Crime* (Stanford University Press, 1990).

¹³⁰ Robert Agnew, 'Foundation for a General Strain Theory of Crime and Delinquency' (1992) 30(1) *Criminology* 47.

deficit produced by coercion.¹³¹ Colvin, Cullen and Ven¹³² considered that low self-control was due to insufficient social support in childhood.

Acknowledgement of the difference that a biological basis for self-control might make to criminological theory was first articulated by Pratt.¹³³ He noted that criminological research had consistently linked self-control difficulty to high levels of delinquency and crime. He went on to comment that if the causes of low self-control were not just psychosocial but had genetic/biological underpinnings, there had been a general failure to consider ADHD as a potential cause of low self-control. He considered that current criminological theories may therefore be incomplete, if not substantially incorrect. Consideration of ADHD as a condition where excessive degrees of impulsiveness or self-control have a biological basis rather than just having a social and environmental cause, places a different emphasis on possible approaches to crime prevention and understanding of criminal behaviour.

IX Important Considerations and Implications for Criminal Justice

In an ideal world, ADHD would be identified early in the life of a child who presents with excessive amounts of inattention, hyperactivity, and impulsivity. Beyond that, it may be beneficial for an individual who displays problematic behaviour, particularly if they have been expelled or excluded from school, to be screened for ADHD.¹³⁴ Sadly, any inquiry regarding the possible impact of ADHD, even at that level, insufficiently occurs.¹³⁵ This means that, a person's entrance into the justice system may be the first opportunity for their ADHD to be legitimately identified or diagnosed.¹³⁶ Unfortunately, a criminal justice-based screening of ADHD has been the subject of some criticism and controversy, largely because of the high degree of cost and resources required to implement such a measure.¹³⁷ Nevertheless, given

¹³¹ Mark Colvin, *Crime and Coercion: An Integrated Theory of Chronic Criminality* (Springer, 2000).

¹³² Mark Colvin, Francis T Cullen and Thomas Vander Ven, 'Coercion, Social Support, and Crime: An Emerging Theoretical Consensus' (2002) 40(1) *Criminology* 19.

¹³³ Travis C Pratt et al, 'The Relationship of Attention Deficit Hyperactivity Disorder to Crime and Delinquency: A Meta-Analysis' (2002) 4(4) *International Journal of Police Science & Management* 344.

¹³⁴ Margot O Reed et al, 'Predictors of Long-Term School-Based Behavioral Outcomes in the Multimodal Treatment Study of Children with Attention-Deficit/Hyperactivity Disorder' (2017) 27(4) *Journal of Child and Adolescent Psychopharmacology* 296.

¹³⁵ David M Ramey and Brittany N Freelin, 'Exploring the Relationships Between School Suspension, ADHD Diagnoses, and Delinquency Across Different School Punitive and Special Education Climates' (2023) 148 *Children and Youth Services Review* 106849.

¹³⁶ Lane and Chong (n 3).

¹³⁷ John Tully, 'Management of ADHD in Prisoners-Evidence Gaps and Reasons for Caution' (2022) 13 *Frontiers in Psychiatry* 771525; Susan Young and Kelly Cocallis, 'ADHD and Offending' (2021) 128(7) *Journal of Neural Transmission* 1009.

the relevant statistics, it appears that, cost-effective and appropriate ADHD screening should be developed and applied to offenders at the earliest opportunity.¹³⁸ Optimally, this would reveal any presence of excessive degrees of hyperactivity, inattention or impulsiveness in an individual, which might flag the possibility of an ADHD diagnosis as well as, potentially, that of other deleterious comorbid conditions.¹³⁹

People with ADHD who enter the youth and/or criminal justice arenas, can still be effectively treated medically, provided they are prepared to engage cooperatively with their physicians and allied health practitioners.¹⁴⁰ Their management will likely be complex, and involve additional medications for their comorbidities, and more psychosocial involvement once the situation is stabilised with medication.¹⁴¹ Such medical treatment of ADHD may reduce a person's vulnerability to adverse outcomes, improve self-esteem, and enable them to more effectively achieve pro-social goals and aspirations in the future.

In summary, an understanding of both biological and environmental factors associated with ADHD presentation and/or severity provides a platform for augmented understanding and prevention of the overrepresentation of those with ADHD in criminal and youth offender populations. If one accepts only that poor self-control is due to societal and environmental factors, then it is likely that changes to existing justice processes and attitudes will not occur, and those with ADHD will continue to be overrepresented. Acknowledgement of the existence of a biological/genetic basis for a lack of self-control, however, provides a new perspective on the vulnerability of those with ADHD towards disproportionate involvement in felonious behaviour. More informed prevention and management strategies therefore need to be put in place. Until now, the scepticism, misunderstanding and lack of comprehension of ADHD has worked against effective support and understanding. Once again, it should be noted that ADHD is not proffered here as an excuse to avoid punishment, rather it is proposed that it should be better understood as a factor influencing deviant conduct.

X Conclusion

In conclusion, ADHD is therefore not just like 'any other' phenomenon potentially relevant to our criminal and youth justice systems. The acquisition of a true understanding of the condition and an acceptance that there is a significant genetic/biological impact on variations in self-control, has enormous implications for the operation of justice systems.

¹³⁸ Young et al (n 67).

¹³⁹ Young et al (n 69)

¹⁴⁰ Young et al (n 43)

¹⁴¹ *Ibid.*

Ignorance of the true nature of ADHD likely explains the concerning and disproportionate appearance of those with ADHD in offender populations worldwide. Given that ADHD is a proven medical condition and is increasingly accepted as a disability, should not our justice systems be reformed so as to stop inadvertently punishing those who are labouring under this condition? A more comprehensive understanding of ADHD opens doors to more effective treatment and management, and perhaps more effective crime prevention and recidivism reduction.

That said, acceptance that ADHD and low self-control have a genetic/biological link will create a variety of challenges. Most of those with ADHD do not become youth or adult offenders so it is therefore crucial that any arguments that those with ADHD are 'born criminals' be vehemently rejected. Similarly, any broad argument that those with ADHD must be excused for any and all delinquent and criminal behaviour must also be quelled. Arguments such as these are inherently flawed and unhelpful. Nevertheless, traditional perceptions and moral judgements around what causes and motivates delinquent and criminal behaviour will require re-thinking and adjustment. Medically treating those with ADHD in criminal justice populations or before they enter the system, will likely reduce offending/reoffending, overrepresentation and associated costs to other individuals and to society. Consequently, we call for all those involved in youth and criminal justice administration and policy to responsibly and accurately inform themselves of the vulnerabilities that those who labour with ADHD disproportionately face.