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What were they thinking? A discussion paper on brain and behaviour in relation to the justice system in New Zealand

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Date: 29 January 2020

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Foreword

Like all good trilogies, Ian Lambie's series of three discussion papers exploring factors that have led Aotearoa New Zealand to have a high incarceration rate has turned out to have a fourth part. The first three reports are available on our website. *Using evidence to build a better justice system: The challenge of rising prison costs,* covered factors related to incarceration rates and the costs of incarceration. *It's never too early, never too late: A discussion paper on preventing youth offending in New Zealand* explored factors particularly relevant to youth offenders (up to age 25 years). The third report *Every 4 minutes: A discussion paper on preventing family violence in New Zealand* highlighted how family violence and child maltreatment are risk factors for future offending, and how we, as a society, need to do more to prevent the multiple causes and consequences of violence. This latest discussion paper touches on another theme evident in exploring the criminal-justice system: the high rates of concerning brain and behavioural issues associated with those within the system. Like the last report, it is aimed at a general audience and hopes to raise the level and amount of debate and inspire action, by presenting the evidence of how we can do better in our criminal-justice system.

Ian presents a strong evidence base that throughout the system, those suffering brain injuries are over-represented as both victims and perpetrators. He then explores the question of what this means for justice, citing example after example of those whose behaviour is misinterpreted as that of 'the difficult and the guilty', when in fact they are confused, afraid, and unable (not unwilling) to correctly answer the question that may cost them their freedom. Ian argues that the high profile case of Teina Pora, whose Fetal Alcohol Spectrum Disorder led him to confess to a crime he did not commit, is the tip of an iceberg. The title of the report "What were they thinking?" captures the enormous challenge faced by those in the criminal-justice system in deciphering the difference between those who won't cooperate, and those who simply can't.

As with the first three reports, early diagnosis and intervention is where the evidence points us to solutions. Individual diagnoses will be complex, but this should not prevent action, which can start very simple and should start very soon. Precise diagnosis may not be possible, but targeted, practical support based on observed difficulties could be.

This report is endorsed by my Office on behalf of the Forum of Chief Science Advisors.

Professor Juliet Gerrard FRSNZ, HonFRSC

Juliet Gerrard

Dr Ian Lambie is Chief Science Advisor to the Justice Sector (Ministry of Justice, Department of Corrections and Police) and Professor in Clinical Psychology at the University of Auckland, where he teaches clinical, forensic, child and adolescent psychology. His specialist clinical and research interests are in child and adolescent mental health, childhood trauma and youth justice, building on more than 30 years' experience working with children and adolescents with severe conduct problems and trauma, and their families, carers and service-providers. His current areas of international research and clinical interest focus on criminal justice reform and children under 12 years old who are offending.

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Table of Contents

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Lambie, I. (2018). *It's never too early, never too late: A discussion paper on preventing youth offending in New Zealand.* Auckland, NZ: Office of the Prime Minister's Chief Science Advisor. Available from www.pmcsa.ac.nz.

Lambie, I. (2018). *Every 4 minutes: A discussion paper on preventing family violence in New Zealand.* Auckland, NZ: Office of the Prime Minister's Chief Science Advisor. Available from www.pmcsa.ac.nz.

Preamble

One day down at court…

The alleged offender fidgets and looks shifty. He doesn't appear to be listening when you explain the process and can't recall what he is supposed to do next. He doesn't look you in the eye and is easily distracted, as if he's got better things to do.

He quickly says, "Yeah, yeah" to your questions, even though that's getting him into more trouble; he's contradicting himself, changing his story, muddling up the details. He pulls his hoodie down to cover his eyes, he seems uncooperative and uninterested in proceedings, sullen, moody.

He didn't arrive on time and has forgotten important documents as if he doesn't care about how much trouble he's in. From his appearance in the dock, media report that he "shows no remorse" or "shows no emotion". He's pretty much confessed to a crime he didn't commit, he just wants it to be over. What on earth is he thinking?!

1. Many of you will know someone who has suffered a head injury, whether on the sports field, or from a car crash, accident or fall, and seen some effects on their energy, behaviour or thinking. NZ rugby players no longer just play on when they get a blow to the head or body that might have caused the brain to shake inside the skull; instead, there is a check for concussion, a common form of mild traumatic brain injury (TBI).
2. So why a report on such injuries, and other differences in brains and behaviour, in the justice system? Research is increasingly showing that a range of brain and behaviour differences, disorders and injuries are prevalent in both youth and adult justice populations, and potentially keep them in that system and hamper rehabilitation. In NZ, for example, the high-profile case of Teina Pora, who was wrongly imprisoned for a murder for 21 years, drew attention to the risks of criminal-justice involvement of people with undiagnosed fetal alcohol spectrum disorder (FASD), where the brain is permanently damaged by alcohol in utero.
3. As in the opening scenario, brain injuries or differences can mean you can have trouble remembering things in order or telling the time. It's hard to manage sensory overload (so you might cover your eyes to avoid the intense looks and bright lights). Differences in brain functioning like attention-deficit/ hyperactivity disorder (ADHD) can make it hard not to fidget. Difficulty hearing (such as from untreated ear infections or auditory processing disorder) means the brain is not processing sounds - you may not even know how much you're not hearing and, to others, it seems like you're not listening. Cause-and-effect thinking, a sophisticated process in the brain's frontal lobe, does not work so well if your frontal lobe has never developed properly, or has been damaged by repeated assaults. In all these circumstances, we need to better understand how behaviour might be influenced by brains that are operating quite differently from what we assume.
4. What I am calling "brain and behaviour" issues are those resulting from brain injuries or brain differences; they are sometimes called "neurological" rather than "psychological". They are not mental illnesses like depression or anxiety (although people can have mental health issues as well, that can make things harder). "Brain and behaviour" issues may be from birth, like FASD, or from incidents that happen at any age, like TBI. ADHD, communication disorders, intellectual disabilities, learning differences and autism spectrum disorder may be mild or severe, lifelong and affect behaviour in ways not well-understood.
5. Having one (or more) of these conditions does not mean a person will become involved in the criminal-justice system; however, the ability to make choices to avoid trouble, or to navigate the justice system, once involved, is often made much more difficult. If either a victim, witness or offender cannot concentrate, process information, hear or grasp basic concepts, let alone deal with stressful questioning or court proceedings, we have to wonder, is fair – and smart - justice being delivered?

Executive summary

1. **All brains are different.** Some differences are from birth, some appear as infant/child development continues, and some are from injury. This is a discussion paper using findings from current science to prompt informed reflection on how brain functioning affects behaviour in the justice system. "Brain and behaviour" issues are associated with complex and sometimes poorly understood combinations of both risk and protective factors and subsequent effects.

2. **People with brain and behaviour issues are over-represented in the justice system - as both victims and offenders.** In my earlier discussion paper on preventing youth offending in under 25-year-olds, I described how the frontal lobe of a young person may not develop fully until around age 25, which may be linked with impulsive adolescent offending. In contrast, such development may never occur fully in people with some types of brain functioning or damage. In this paper, these issues include traumatic brain injury (TBI), fetal alcohol spectrum disorder (FASD), cognitive impairment/intellectual disability, communication disorders, attention-deficit/hyperactivity disorder (ADHD), learning difficulties, dyslexia and autism spectrum disorder (ASD).

3. **Having brain and behaviour issues does not mean justice involvement is inevitable.** But it does help change the discussion about how much an offender's behaviour is because they are "bad" and just need more "punishment" to learn from. How much undiagnosed ADHD, brain damage from TBI (that means they cannot grasp cause-and-effect), and auditory processing disorder, for example, might have led to early school failure, dropout, hanging out with antisocial peers, and beginning to offend? The purpose is not to excuse offending, but to ensure that rehabilitation programmes, aimed to reduce reoffending, are well-targeted to offender ability, so as to be more effective. Also, we need to consider how the offending pathway may begin, so as to put in more preventative early intervention. As well as offenders, victims and witnesses with brain and behaviour issues also need to be supported to cope better with the justice system.

4. **The processes of the justice system itself may compound negative outcomes** for both victims and offenders with brain and behaviour issues, as a NZ forum on "neurodisabilities" explained:

> *In the justice system, where all procedures are essentially word-based, a person's inability to quickly process and comprehend information in written or verbal form leaves them open to manipulation and entrapment. Propensities to take statements literally, to become confused by information and sensory overload, to act impulsively, to not see their actions in context, and to speak before thinking make it difficult to navigate the complexities and nuances of the legal process.*

5. **Early intervention is important** to manage and support children with brain and behaviour issues as soon as they are evident, and to respond to brain injuries as soon as they occur (such as concussion on the rugby field which, until relatively recently, was largely ignored). Even where brain damage is permanent, its negative consequences and impacts ***do not*** have to be. Our education system should be geared to provide evidence-based help for known conditions. Early intervention is vital from government systems to help families, health and education providers do better – and ultimately, to prevent the first steps onto a pathway into offending.

6. **Diagnosis may not be simple but waiting for a diagnosis is not the point.** Screening an individual for deficits in hearing, speaking, seeing, verbal and written language comprehension may be as simple as talking to them in a quiet room, with an awareness that what seems to be going on (i.e., intentional offending without care for the consequences) may not be the only explanation (see more ideas in Appendix 2). A timely, general needs assessment, taking into account health and education history, not just offending, will also help, as would plenty of access to professional advice.

Higher rates in justice-involved people
Traumatic brain injury (TBI) rates are at least 4 times higher in justice-involved men than non-offending peers; more than one-third have had multiple, severe TBIs; many before age 15 (40% by assault, 26% motor vehicle accidents). Almost all women in a NZ prison study had a history of multiple TBIs; at least one-quarter were from being assaulted by a parent or partner.
FASD. Canadian research showed young people with fetal alcohol spectrum disorder were 19 times more likely to be incarcerated than those without. Comprehensive assessments of 10- to 18-year-olds in Australian youth detention found more than 1 in 3 (36%) had FASD, all undetected before the research. NZ research is needed.
Communication disorders. NZ youth-justice residents (aged 14 to 17 years) were 7 times more likely than matched controls to have **hearing loss** in one or both ears. They were twice as likely to have significant middle-ear pathology (which can be indicative of untreated ear infections and generally poor ear health). In language tests, 64% met criteria for **language impairment**, compared to only 10% of controls.
Dyslexia. Screening of 120 people in NZ prisons by a literacy expert found that nearly half had significant **dyslexia** (52% men, 43% women), previously undiagnosed. More than 80% had been at secondary school for 2 years or less, with many having been excluded in their first year.
ADHD. International research estimates that up to two-thirds of young offenders and 50% of adults in prison would have screened positively for ADHD in childhood. ADHD can make it hard to attend to relevant cues, remember all question parts and reply choices, provide coherent and accurate answers, and inhibit frequent "don't know" responses, culpable statements or false information/confessions.
Intellectual disability (ID). People with ID have an estimated 3 to 7 times greater risk of being *victims* of crime than people without ID, especially sexual victimisation. Children with ID are overrepresented in substantiated cases of child maltreatment; there is some evidence that caregiver violence, sexual predation or intimate partner violence may be less likely to be reported to authorities where the adult victim has ID. Rates of *offending* by people with ID are debated - a person with ID may be more likely to get "caught" than peers who can better talk their way out of trouble, understand risks and consequences, complex legal language or rights to silence or a lawyer.
Autism spectrum disorder (ASD). ASD in the justice system is poorly researched. Some ASD features may put people at risk of having difficulties, whether as victims or offenders, through different social behaviour or intense/repetitive interests/actions (e.g., the man with ASD who was accused of "looting" after the Christchurch earthquakes, when he was just acting on his special interest in light-fittings).

7. **When diagnostic testing is able to be done**, justice-involved people appear to have higher rates of brain and behaviour issues, both as victims and as offenders (as shown in the left-hand box examples). More emphasis on early diagnosis and specialist intervention at school age could help avoid them ever getting involved with justice.
8. **There are challenges when people with these issues are incarcerated,** including not understanding written information (prison rules, systems to access services, treatment programmes etc) and increased risks of being victimised for being "different". Undetected learning difficulties can compromise the success of evidence-based interventions, which may call for high levels of literacy and verbal ability to work on quite abstract notions of self-awareness, self-management and change. Therefore, there is a strengths-based initiative underway in the NZ Department of Corrections to better support "neurodiverse" learners (e.g. those with dyslexia) to better participate in educational and vocational activities. People with TBI may also struggle in prison:

> *If only a conservative estimate of 10% of the 10,000 NZ prison population has moderate to severe traumatic brain injury, that is 1,000 individuals whose behaviour is affected by memory problems, inability to follow instructions, issues with fatigue, concentration, headaches, sensitivity to noise and light, irritability and frustration; and who require assessment, diagnosis and rehabilitation that will work effectively with their limitations.*

9. **Cultural awareness** of all these conditions, a lack of culturally targeted services and culturally diverse expectations of children's behaviour and developmental milestones can also affect engagement and early intervention. Research shows there are barriers for Māori, Pasifika and Asian families to access disability and support services for brain and behaviour issues.
10. **The ways we respond to these issues can be disabling to those who have them.** The diagnostic language refers to impairment,

deficits and disorders, but others refer to forms of "neurodiversity" that affect cognitive, sensory and social processing, changing the way people see the world and interact with others in ways that are different, not "worse". It can be the responses of others that are "disabling", such as in the education or justice systems. Also, the ways that intelligence (and therefore "low" IQ or intellectual disability) is defined and measured are somewhat debated, especially for diverse cultures or people who have had less access to formal Western education. NZ research highlights the cultural biases in neuropsychological testing and programmes, which mean that all New Zealanders, but Māori in particular, score less well on some tests that are based on American-normed education and assessment systems, and need adjustment.

11. **Responses to brain and behaviour issues can be influenced by controversies outside of the evidence.** Funding for adequate help and support may be constrained by such controversy and "myths". For example, autism is not caused by the MMR vaccine (or any vaccination), yet this lethal myth is still widespread, despite being soundly debunked. It also hampers appropriate understanding of autism spectrum disorder as a brain difference (rather than a condition supposedly caused by mystery chemicals). Another controversy is around alcohol, which causes Fetal Alcohol Spectrum Disorder, but a clear message to would-be parents to not drink alcohol competes with much stronger social, cultural and marketing inducements to drink. There may also be violence and other relationship and social issues that make giving up alcohol difficult. Health and social service providers do not have access to enough well-resourced support for would-be parents trying to become alcohol-free.

12. **Brain and behaviour issues need evidence-based solutions, not political ones.** Resources are overwhelmingly directed to prisons, rather than to cost-effective health, education and family support that would prevent people ending up there. Imagining that "criminals" with permanent brain damage will "learn their lesson" in prison does not reflect current evidence or common sense.

13. **Information for the general public is needed, plus specialist resources and training for health, education and justice staff.** There is a good evidence base about some brain and behaviour conditions, but a lack of data about others, including in NZ, so culturally appropriate research, intervention and evaluation programmes are needed. The cost-effectiveness of prevention and early intervention is undoubted.

14. **Early diagnosis can be affected by social disadvantage and inequity**, such as lack of access to early childhood and health services, lack of stable schooling (so developmental issues are harder to track), or lack of abundant, culturally appropriate support to ensure parents and caregivers are well-resourced to respond to developmental and behavioural needs. Males are more often diagnosed than females with many of these conditions, but there is some evidence that girls are under-diagnosed, rather than unaffected. More research is needed on how brain and behaviour issues interact with deprivation, racism, colonisation, ethnic minority status, LGBTQI+ and all forms of diversity, including within the justice system, and on what works to minimise harm.

15. **Developmental milestones are complex, and problems may be multi-faceted.** An infant who, according to "typical" development, seems slow to respond to spoken language, may catch up over time and have no further problems. Or the delay might relate to a problem with hearing, autism spectrum disorder, developmental language disorder or intellectual disability. Or there could be a motor skills, structural or developmental problem with producing speech sounds, or learning to use and understand words, grammar or the social "rules" for interaction. Or there may be emotional problems or trauma – and any of these issues could potentially require different forms of help.

16. **However, working with targeted issues can be effective.** Difficulties with time

management, problem-solving, managing daily responsibilities and self-regulating behaviour and emotions – all of which can negatively affect education, employment and justice-system involvement – can be related to brain and behaviour issues, such as a history of severe TBIs or undetected FASD. They can be compounded by mental health/addiction issues and social issues but practical help can still be effective:

Precise diagnosis may not be possible or necessary, but targeted, practical support, based on observed difficulties, should be. For example, there are strategies to help someone to get somewhere on time, regardless of whether the barrier is inability to tell the time, forgetfulness, inability to focus or remember, severe anxiety and/or a negative attitude.

17. **There are specialists and support staff** who work with children, families, whānau and communities, within early-childhood, health or school services on assessment and what to do, although undoubtedly not enough of them (this discussion paper is not a service audit). Within the court system, could there be more Communication Assistants:

Help with communication in court
Legal and justice staff may believe a victim or defendant can understand easily and may adopt a communication style that is too complex. As a young defendant said, *They were using big words, so I thought, 'What the f***, I'll just say 'Yep'.*
To prevent this, a court-appointed Communication Assistant (a speech-language therapist) can assess the speech, language and communication needs of victims, witnesses or defendants (e.g. *TalkingTrouble* service).
It can also be difficult for people with brain and behaviour issues to clearly explain what they mean. This is often judged to be about reluctance, obstructive or unmotivated behaviour, or a lack of intelligence.
Also, people may not be aware of their own communication problems, or may be aware but cover them up, to avoid embarrassment.
These difficulties with communication may go undetected and are often not obvious to either side, making the involvement of a Communication Assistant vital. An international review, published this year, calls for speech-language pathology services to be viewed as "essential" in youth-justice services.

18. **Once in trouble, it can be hard to tell there is something "wrong" or different** – hence the need for more speech-language services**.** Difficulties understanding ('comprehension' problems) tend to be less obvious to anyone interacting with a child or young person than expressive language or speech problems. Children find strategies to cope and comprehension difficulties may masquerade as other problems, such as difficult behaviour or disengagement. People with brain and behaviour issues may have high IQ and language skills, but struggle with responding to emotional reactions and social cues in traditional group-based treatment. The NZ forum on neurodisabilities and justice gave examples of young people agreeing with police interviewers to try to escape a stressful situation, not realising the consequences of:

- saying 'yep, yup, yes' as a default answer.
- struggling with explanations of complex issues such as, "You have a right to a lawyer and/or a nominated person".
- struggling to understand consequences of their actions; lacking the cognitive ability to "learn their lesson".
- appearing sullen or defiant, avoiding eye-contact, grunting in response to questions, reluctant to speak up, which can be misinterpreted as lack of remorse.

19. **Don't we just need medication?** There are not evidence-based medications for most brain and behaviour issues, although associated mental or physical health issues (e.g. sleep) may be treated. ADHD may have methylphenidate ('Ritalin') prescribed - there are challenges with providing medication that has black-market value to those in the criminal-justice system, but international research is evaluating ways to manage risk/benefits of such provision.

20. **I think we can do better.** Here is what a defendant with neurodisability said about appearing in court. Is this good justice?

I couldn't really hear, I couldn't understand, but I said 'Yes', whatever to anything, because if I say, 'I don't know', they look at me as if I'm thick.

Brains and justice involvement

1. All of our brains are changed in many ways, across our lives, with a wide range of causes and consequences. Some are preventable, some are inevitable, many are lifelong and all are associated with complex and poorly understood combinations of both risk and protective factors and subsequent effects.

2. Names of brain and behaviour issues may relate to damage from blows to the head or body (e.g., "traumatic brain injury") or damage from prenatal alcohol (e.g., "fetal alcohol spectrum disorder"). Or, there are terms for difficulties with communication caused by physiological problems with hearing, auditory processing or language (e.g., "auditory processing disorder"). There are also terms like neurodevelopmental disorders, neuro-disabilities, intellectual disabilities (ID), learning disabilities, specific learning difficulties, developmental language disorders, cognitive impairment, intellectual and developmental disorders (IDD) or "strengths-based" terms like neurodiversity used in relation to the many ways brains and behaviour may be affected by issues and perform differently. There can be overlap between brain-functioning issues,[1] compounding problems of social deprivation and harm,[2] and under-resourced services to assess, diagnose or help.

3. Rather than trying to simplify or standardise conflicting terms, this discussion paper uses the words that a researcher being cited uses or the generic phrase "brain and behaviour". The issues in this paper include traumatic brain injury, fetal alcohol spectrum disorder, cognitive impairment/ intellectual disability, communication disorders, attention-deficit/hyperactivity disorder (ADHD), learning difficulties, dyslexia and autism spectrum disorder. This paper is a place to start with some key concerns and is not an attempt to comprehensively cover a wide-ranging, often under-researched and swiftly developing range of scientific fields.

4. What this paper intends to do is raise the level of discussion, debate and – most importantly – action, on reducing links between how brains work and how the justice system responds, as people with these (often preventable) issues are over-represented as both victims and offenders.

5. This topic also relates to the vital need for developmental crime prevention; namely, that it is never too early nor too late to use more evidence-based approaches to preventing offending.[3] The developmental, social, community and family environments, and intra-family and social relationships of children and young people, have a major impact on their potential for offending and need to be addressed early, by families, friends, neighbours, communities, and across education, health, cultural and social services. This is the essence of "developmental crime prevention".[4] The younger the child at intervention, the more effective it is likely to be.

6. How "just" is our justice system if you have any sort of brain and behaviour issue? Is the justice system designed to work for those who end up having to use it, or for those who design it (which may also mean to suit the politics and ideologies of the day)?

7. For example, in the recent nationwide consultation with New Zealanders about the justice system, Te Uepū Hāpai i te Ora, the Safe and Effective Justice Advisory Group heard from a Wellington respondent, "*The justice system is not set up for people with disabilities.*" The group reported (p. 37):[5]

> *Many people told us they found court processes generally confusing and alienating. They said the language used is intimidating and the professional culture of those at court gives the impression of indifference and superiority that privileges more educated and articulate people and disadvantages others.*

8. What was described as a first-ever forum on the justice system and neurodisabilities in New Zealand was held only as recently as 2016. This is an area of growing concern worldwide, with an acknowledged lack of understanding.[6] The forum also noted concerns about how the processes of the justice system itself may compound the

negative outcomes for victims and offenders, and risks of reoffending for people with such conditions.

9. There are many specialists in these fields; namely, those who live with wide-ranging brain effects on their experience and behaviour, and those who inspire and support them, or should do so. There are health and education staff, advocacy groups and justice-sector voices that need more opportunity to work together, problem-solve and build evidence-based research on effectively reducing harm. The Māori Hui report, a key part of Te Uepū Hāpai i te Ora Safe and Effective Justice consultation, highlighted the need for such working together, a whole-of-government approach, led by Māori (p. 18):[7]

> *The justice sector must work with other agencies, such as health and education, to understand the effect they have on the development of tamariki, to ensure they do not enter the justice pipeline. These sectors must work together and partner with Justice to reform the justice system.*

10. Brain and behaviour issues can also hamper rehabilitation, as a British Psychological Society report noted (p. 2): [8]

> *Neuro-disabilities can result in problems with memory and concentration, decreased awareness of an individual's emotional state, poor impulse control and poor social judgement. These associated problems have all been linked to an increased risk of crime and can make it more difficult for those individuals to engage effectively in their judicial proceedings or to benefit from traditional forms of forensic rehabilitation.*

11. Types of brain and behaviour issues are discussed next, plus the issues associated with testing and assessment canvassed. Then a range of individual conditions will be discussed in turn to briefly highlight justice-related issues, with some first-person accounts from research papers included.

Types of brain and behaviour issues

12. The World Health Organization's latest (11th) version of the *International Classification of Diseases* (ICD-11) uses "neurodevelopmental disorders" as an umbrella term for a range of conditions that affect early developmental processes in various neurological domains:[9]

> *Neurodevelopmental disorders are behavioural and cognitive disorders that arise during the developmental period that involve significant difficulties in the acquisition and execution of specific intellectual, motor, or social functions.*

13. The April 2019 version of ICD-11 and the other major classification system, the *Diagnostic and Statistical Manual of Mental Disorders-5* (DSM-5)[10] include a range of diagnoses under neurodevelopmental disorder, including "disorders of intellectual development" (intellectual disability), developmental speech and language disorders, autism spectrum disorders (ASDs), attention-deficit/hyperactivity disorder (ADHD), and specific learning, motor coordination and movement disorders. Previous classification systems ICD-10 and DSM-IV (both still in use) employ less-preferred terms like "mental retardation".

14. The causes and courses of these diagnoses are complex and diverse, and symptoms can overlap, hence the grouping of "neurodevelopmental disorders" is seen as useful by *The Lancet*.[11] Traumatic brain injuries are not neurodevelopmental disorders, but may result in neurodisabilities or may occur on top of existing brain and behaviour issues.

15. "Mental disorders" (mental health issues like depression, anxiety, psychosis) are grouped as a different diagnostic class, and are not specifically addressed in this discussion paper (having been canvassed in other reports[3, 12]). However, it is important to remember that nearly all (91%) people in prison in NZ have a lifetime diagnosable mental illness or substance-use disorder, 62% diagnosed in the past 12 months, according to the last NZ survey,[12] which can

co-occur with brain and behaviour issues. Indeed, the lack of support for both neurodevelopmental and mental health issues was highlighted by Te Uepū Hāpai i te Ora Safe and Effective Justice advisory group in 2019, who reported (p. 66):[13]

> *We heard that the system sometimes confuses people with mental illness with those who have intellectual disabilities, which results in inadequate and improper treatment and care for both.*

16. This echoes the past in many Western countries like NZ where people with all sorts of physical, mental and neurodevelopmental conditions and differences – or just different behaviours or backgrounds - were "institutionalised", sometimes from childhood, in "mental" and other hospitals, residential "homes" or prison-like facilities.

17. In addition, there is a lot of overlap between neurodevelopmental disorders and symptoms. There are often fragmented services, even to confirm diagnoses, let alone intervene. For example, attention-deficit/hyperactivity disorder (ADHD) may be assessed by child mental health or paediatric services but associated reading difficulties would be diagnosed in the education system, motor coordination problems could benefit from occupational therapy assessment, and speech and language therapists would do specialist diagnosis and intervention with the language or social communication issues associated with ADHD.[11] Or, as is often the case with those who end up involved in the justice system, the ADHD might never be assessed, as no-one considers that a kid's rotten behaviour is related to anything other than being "bad". The developing adolescent brain, which contributes to the impulsive actions of those up to age 25, can further compound the picture, as noted in the discussion paper on offending by under 25-year-olds, *It's never too early, never too late* (Lambie, 2018).[3]

18. This points to the need for early intervention, a constant theme through my previous three justice science advisor papers. As discussed in the earlier reports, government resources are overwhelmingly directed to those already in the criminal-justice system – "inside the wire". Far less is directed to preventing entrance into that system and this is an overwhelming failure of our current justice, health, education, social services and child-focused systems and policies. There is strong evidence that interventions are effective for pre-schoolers and young children who are showing the challenging behaviours that can underpin a pathway to offending, and that may point to an undiagnosed brain and behaviour issue. The younger the child is at intervention, the more effective – and cost-effective - it will be.[14] [15] As a justice advisory-group submitter pointed out, prevention is key (p. 56):[13]

> *Here's an idea – how about a focus on prevention? There is plenty of research that shows that spending on effective prevention programmes produces outcomes and savings that have more benefits and are more cost efficient than spending relating to those who have already entered the justice system.*

19. Such prevention includes paying attention to the first 1,000 days of a child's life as being crucial to positive outcomes, away from criminal-justice involvement, as NZ-based longitudinal studies[16] and the Māori Hui justice reform report highlight (p. 18):[17]

> *The first 1000 days of a child's life are crucial. We must ensure tamariki are supported appropriately, so they achieve significant milestones in their development and to ensure they do not enter the justice pipeline.*

20. Prevention and early intervention also apply to associated issues such as family violence and child maltreatment, where there is a call from those involved in the child-disability field for more awareness of disability status in all responses to child maltreatment[18] (which of course also has a sequelae into criminal-justice involvement[19]).

21. For example, a child born with brain damage from prenatal alcohol exposure may then also get traumatic brain injuries from being

assaulted by violent family members, be lost as a school 'failure' with undiagnosed learning disabilities, and compound the brain and emotional damage by using alcohol and drugs with adolescent peers. The pathway to criminal-justice involvement is by then well-signposted, but at any of these points of harm, early identification and intervention could shift the young person off that path. Even where brain damage is permanent, its negative consequences do not have to be.

Testing and assessment

22. Brain and behaviour issues may be part of a number of challenges and experiences faced. Comprehensive assessments of all that is going on for an individual and whānau are vital. This section discusses some of the specific assessment approaches, like neuropsychological testing, but these should always be part of a holistic approach. Also, although brain imaging and genetic or neurological research are contributing to understanding of how brain and behaviour issues may operate, these are beyond the scope of this paper.

23. Early assessment and screening (with work being focused around age 3 years, perhaps with the B4School check being redesigned for an earlier age), and the School Entry Assessment (SEA) could also highlight issues. A programme of evidence-based interventions for 'conduct problems' (from age 3 through to adolescence), developed in NZ but not sufficiently implemented, could also help assess and respond to those affected by brain and behaviour issues.[20]

24. Locally developed language assessments, including in te reo Māori, Samoan and Tongan were established in the longitudinal *Growing Up in New Zealand* study.[21, 22] Assessment in one language alone may underestimate the language strengths a child has. Conversely, it is possible that children are "weak" in several languages, pointing to possible undetected issues.

25. Neuropsychological testing is part of the toolkit to assess and diagnose the severity of brain and behaviour issues. As well as test scores, subtests provide a psychologist with qualitative information about how brain and behaviour may be affected, in terms of how a child or adult tackles a test, or how quickly they do it or give up on it. There are also relationships between subtests, so that performance on one subtest that is lower than expected compared to other tests can point to particular damage or impairment. Comprehensive assessment and reporting can be time-consuming and costly (for both participant and service-provider) and shorter screens or checklists are therefore also in use. This discussion paper will not attempt to canvas all these, but it is important to note some NZ research that highlights more awareness of culture is particularly needed in both assessment and intervention.

26. For example, research on a word-list learning task, the California Verbal Learning Test showed that *all* the New Zealanders (European/Pākehā, Māori and Pacific) performed below the American norms for their age as they tried to recall unfamiliar terms like "sweater" or non-New Zealand fruit and vegetable terms. Participants scored better on a trial verbal learning test (NZ-VLT) using local vocabulary.[23]

27. A key test battery is the Wechsler Adult Intelligence Scale (WAIS), normed on American populations in the 1950s and now in its 4th edition (WAIS-IV). It has been somewhat adjusted for the Australia and NZ education system in a 2008 version (WAIS-IV A & NZ Language Adapted Edition)[24] but not for indigenous populations.[25]

28. Culture is important. Research with a sample of Māori men aged 16 to 24 without head injury showed their scores were lower than "average" (per standardised norms) on tests that relied on formal education and westernised concepts, higher than average on visuospatial tests, and average on the rest (testing attention span and mental tracking). When Māori concepts or language were used to replace non-Māori in a revised version of a verbal memory test, they scored within the norm for their age.[26] This was also evident in research comparing the performance of groups of Māori and non-Māori, matched for age and education.[27]

29. Testing with the WAIS-IV on a non-head-injured group of more than 200 Māori showed their levels of income and education affected scores, in line with the increasingly established understanding that familiarity with test-taking in formal school settings affects neuropsychological test results, disadvantaging those who have had negative experiences or little experience or success in western schooling. Also, the authors noted that having the research testing run by Māori for Māori led to reports of "enhanced rapport, reduced anxiety and increased motivation" for participants (p. 11).[25]

30. Furthermore, there is a lack of detailed research on interactions between all forms of brain and behaviour issues and social determinants that put people at risk of poorer health and educational outcomes and criminal-justice system involvement. These include high socioeconomic deprivation, effects of racism and colonisation on Māori, cultural barriers faced by Pacific people, ethnic minorities, and those of diverse faiths and beliefs, different needs of LGBTQI+ people and other aspects that put children and young people at risk in diverse ways.

31. There is no doubt that adolescents known to have been institutionalised in infancy, or to have experienced severe lack of parental care in childhood, are biologically affected in their capacity to manage stress, with possible links to brain and behaviour issues and psychiatric illness,[28] as noted in my previous discussion paper on child maltreatment.[19] Also, as shown in NZ-based longitudinal research, relative to other adolescents, life-course-persistent offending youth are distinguished by social inequity, neurological abnormalities, volatile temperament, low intellectual ability, reading difficulties and poor performance on neuropsychological testing.[16]

32. Young Māori are significantly and persistently over-represented in the criminal-justice system, both as victims and offenders,[29] which underpins calls for profound justice reform and transformation.[30] In the latest NZ disability survey (2013), speaking, vision, intellectual and learning impairments were more common amongst Māori than non-Māori.[31] Of note, 16% of disabled Māori adults reported being crime victims in the past 12 months, including 8% experiencing violent crime (significantly more than violent-crime experiences of non-disabled Māori).[31]

33. Given that Māori have disproportionate rates of disability compared to non-Māori, there are calls for appropriate approaches that will be more effective in reducing harm for Māori living with disability. Similar to the social model of disability, where barriers to daily life are not simply to do with physical or intellectual impairments and issues, but the way society responds to such differences, the "Whānau Hauā" approach, for example, considers the way society disables people by inadequately taking account of their culture, identity and the meanings they make of disability.[32]

34. Progress in testing and assessment is therefore needed, including the cultural needs of the individual and their family.

35. This paper will now focus on specific brain and behaviour issues, starting with traumatic brain injury (TBI).

Traumatic brain injury

36. Simply described, a traumatic brain injury (TBI) is an injury "caused by a bump, blow, or jolt to the head that disrupts the normal function of the brain".[33] It is "an injury to the brain rather than an injury to the head" that may be identified by one or more of the following:

    - confusion or disorientation
    - loss of consciousness
    - post-traumatic amnesia
    - other neurological abnormalities, such as focal neurological signs, seizure and/or intracranial lesion (p. 3).[34]

37. Worldwide, TBI-related deaths are caused by falls, road-traffic accidents, self-harm/ suicide, and homicide. For non-fatal injuries, the leading cause of severe TBI in high-income countries like NZ is falls, ahead of road traffic accidents, according to a recent review.[35] NZ's Accident Compensation Corporation (ACC) lists falls, mechanical forces, driving-related accidents and assaults as the leading causes of TBI, with 20% caused by sport-related activity.[36] "Exposure to external forces" (like being struck accidentally by a person, animal, or inanimate object within sport or recreational activities) can cause a TBI.[37]

38. ACC estimates that every year around 36,000 New Zealanders suffer a traumatic brain injury. Most are mild TBIs, for which people do not seek medical attention, but more than half of ACC's serious injury claims relate to severe TBIs.[36]

39. The ACC figures show that NZ men are twice as likely as women to have moderate to severe TBIs; those in rural areas face twice the risk of city-dwellers of sustaining moderate to severe TBIs, mostly in motor-vehicle accidents,[36] and Māori[37] and Pacific people[38] are overrepresented in the statistics for TBI. About 75% of first-ever TBIs occur in children and young adults.[39]

40. The severity of traumatic brain injury has been described as ranging from mild ("a brief change in mental status or consciousness") to severe ("an extended period of unconsciousness or memory loss after the injury").[40] Not every blow to the head or jolt will result in a TBI and most TBIs are mild, commonly known as concussion;[40] but there is increasing evidence - and concern – about concussion and TBI effects.

41. TBI rates are described as a worldwide "*silent epidemic*"[41, 42] because of wide-ranging but poorly understood incidence and impact on long-term disability and premature death.[43] Some people are left with lifelong deficits, that may be underdiagnosed or compounded by cumulative TBIs, and that affect their health, wellbeing and independence; ability to engage in education, work and activities; and relationships, with enduring impacts on family/whānau/carers.[44] [45] Repeated mild TBIs are being linked to long-term neuro-degenerative disorders, making TBI "both an acute disorder and a chronic disease".[46]

42. In NZ, for example, rugby players no longer "play on" when they have had a knock to the head. Instead, there are strict requirements about concussion management in all sports, with ACC guidelines based on international Olympic Games, FIFA, World Rugby and other sports protocols (Appendix 1 CRT5), as evidence builds on the effects of repeat concussions in young athletes.[47] There is particular emphasis on preventing children and adolescents getting hit, or responding quickly when they are. The following definition of concussion is from the NZ "Rugby Smart"/ACC compulsory coaching and refereeing safety course:[48]

    - A concussion is a mild traumatic brain injury that can result from a direct hit to the head or from a blow to the body. You don't have to be knocked out or even be hit on the head directly to be concussed.
    - These hits cause the head to move rapidly or stop suddenly which makes the brain bounce around and twist in the skull. This damages and stretches the brain cells which causes them to release chemicals which affect how the brain works. This also makes the brain more sensitive to increased injury, until it recovers.

43. The guidelines remind coaches that concussion can occur even when the player is not knocked out, and recommend that the player must stop play to recover if concussion is suspected and, under medical advice, not return to play for some weeks.[49] Yet, in the wider community, what is done about a child or adolescent who is struck about the head and body in family violence incidents? Or who gets knocked out falling off somewhere they shouldn't have been in the first place? Issues are worse in the context of child maltreatment and neglect, or family violence. In its long-term strategy, ACC acknowledges that reducing family harm and "assaults occurring within familial settings" (p. 38) will reduce TBI risks.[36] Far from sports-field best-practice, Example 1 shows how social circumstances interact with TBI harm, where a child's head-gash is taped up and left otherwise untreated.

EXAMPLE 1: TRAUMATIC BRAIN INJURY

Taped up with Sellotape

In research with NZ offenders, including some convicted of either premeditated or impulsive murder, Dr Sheree Crump heard their histories of head injury. Her thesis explored the well-known links between violent offending and having executive dysfunction (damage to the prefrontal cortex such as through head injuries or alcohol abuse). A couple of participants' stories give a sense of the prevalence and circumstances of severe, repeated traumatic brain injuries (Crump, 2005: 215-7).

Participant 6 (carried out a premeditated murder): Reports many incidences of head injuries. The first major one he can remember is when he was eight years of age and he fell and hit his head on the doorframe. The front top right of his head was split open and taped-up with Sellotape by his mother. He received no other treatment. As a result of the fall he remembers, "blacking out briefly and feeling woozy" and he continued to feel "woozy" the next day as well.

One year later during a play-fight with some friends he was whacked on the head with a broom handle that had a nail sticking out of it. The nail embedded in the scar of the previous injury. Participant 6 states he "blacked out on (his) feet...and walked home dizzy and out of it...seeing spots." At 11 or 12 years of age he reports that he hit himself in the face with the back of an axe handle, which split the skin by his left eye. The gash was stitched up in hospital and he remembers feeling sick. At 15 years of age, Participant 6 reports that he "was set upon by 3 guys" and beaten about the head and stabbed shallowly in the chest. He did not go to hospital afterwards but recalls suffering headaches "for days afterwards".

He also reports a motorcycle accident in his early twenties where he ploughed into a ditch landing on his face and bending his neck and back. He did not seek hospital treatment after this but admits being bedridden for a while and very stiff and sore and suffering from fatigue.

Participant 7 (carried out an impulsive murder): Reports many head injuries, with the first one he can remember occurring when he was seven years old. At this time he had to visit the hospital (after falling into the corner of the coffee table) to have "a big gaping hole in my head" stitched up.

During his teenage years, Participant 7 was also involved in many fights, which included his head being targeted by punches, kicks, and weapons (such as planks of wood). Most of these fights would involve him blacking out and often coming to without any recollection of how he got there.

At 15 years of age during one of these fights he was "knocked out with a cinderblock (and) came to with a dog biting me." Also at 15 years of age he was "thrown out of home" because he had come home with a Mohawk haircut. He described how his dad dragged him out to the front of the house and strangled him for a while then threw his bike at him, at which point Participant 7 passed out on the driveway. He regained consciousness sometime later when his older sister woke him and took him to her house.

44. Difficulties with data-gathering about mild TBI, in particular, include that it is based on self-report. In the Christchurch longitudinal study, for example, self-report at age 25 years was shown to *underestimate* the incidence of TBI, when compared to the health and educational evidence gathered by researchers throughout participants' lives.[50]

45. To better understand TBI causes and consequences, a key population-based, prospective study gathered comprehensive data on Hamilton/Waikato adults treated for mild TBI in one year.[37] The Brain Injury Outcomes New Zealand in the Community (BIONIC) study found assault was the most common cause of mild TBI in those aged 16 to 35; sport/recreational injuries dropped noticeably after age 34; falls had the highest incidence after age 39;[51] and about 30% of TBI cases were never seen in hospital.[39]

46. In the NZ research, around 20% of people with a mild TBI continued to experience problems with complex attention and memory 12 months after the injury.[52] Four years on, cognitive problems significantly persisted (including forgetfulness, poor concentration and "taking longer to think"), compared to controls, and there was reduced community participation, in terms of lower productivity at work, poorer social relations and less "getting out and about".[53]

47. Furthermore, from a sample of 245 people who were employed prior to their injury, 17.3% had left the workforce or had reduced their working hours, and a further 15.5% reported injury-related limitations at work, such as taking more time to process information, taking rest breaks to manage fatigue or becoming more reliant on note-taking to remember tasks.[54] Those who had exited the workforce were under 35 years, which supports the concern that TBI worldwide is affecting young adults at the peak of their productive years.[55]

48. Children up to age 15 in the NZ BIONIC study who had had a mild TBI showed that many symptoms resolved up to 12 months but then plateaued, with behavioural sequelae of hyperactivity and inattention persisting for some.[56]

49. The NZ research showed that the incidence of TBI is highest among Māori, compared to non-Māori.[57] There is concern at a lack of culturally responsive neuropsychological assessment that could better guide diagnosis and rehabilitation for the person affected and their whānau,[58] such as reflecting the significance of the head as tapu and cultural meanings of injury and recovery.[59] The challenges of using neuropsychological tests cross-culturally, that are based on US English speakers and norms, have been raised internationally but not solved, and there remain few Māori neuropsychologists. As a Māori research participant said, there were no Māori words in the memory tests she had to do, whereas other language-speakers would be tested in their own language.[58]

50. **Ongoing issues:** Although most effects of "mild" TBI resolve within a few months, an estimated 15% to 50% of people have persistent symptoms that affect their personal, family and social lives.[60] It remains difficult to predict, based on different tests and symptoms at the time of injury, who will suffer persistent problems.[61] Ongoing post-concussion symptoms may include:

    - cognitive complaints (e.g., problems with memory, concentration and attention)
    - physiological complaints (e.g., headaches, dizziness, sensitivity to noise and light, fatigue)
    - mood complaints (e.g., irritability, frustration, anxiety and depression).[62]

51. Issues following "severe" or multiple TBI can include physical problems (motor and sensory impairment); cognitive problems (with memory, attention and judgement); behavioural issues (emotional and mood difficulties, inappropriate behaviour); and issues with communication (such as with language expression and comprehension).[63]

52. Recovery can take months or years, depending on age, health, access to care and resources and where in the brain the injury occurred. For example, prefrontal cortex injury has been linked with disinhibited, impulsive behaviour, and anterior cingulate damage with hostility, difficulty with monitoring conflict and cognitive control.[64]

53. It is therefore not surprising that behavioural issues from such damage might affect the likelihood of criminal-justice system involvement[65] and, once involved, how ongoing symptoms might compromise the ability to comply with and comprehend justice-system requirements. Also, the following comment from an Australian interviewee with brain injury highlights how effects of TBI such as memory loss can interfere with everyday tasks and compound criminal consequences (p. 131):[66]

> *I was tried 21 times for driving while disqualified; I keep on forgetting … The kids put a big sign up, 'Dad – you are not allowed to drive'. If I don't see it, I just take the keys and drive. My son has the car and he has had it ever since. What was I saying?*

54. Traumatic brain injuries are seen as a public health, medical and social challenge globally, a burden to families, healthcare and economic systems, as well as robbing those with TBIs of quality of life.[67, 68] Worldwide, programmes to prevent TBI are being developed, including road safety (helmets, road and vehicle safety improvement),[69] falls prevention, child injury prevention,[70] workplace injury prevention, recreational/ sports safety and post-TBI care and recovery. Furthermore, new research fields such as "neurocriminology"[71] highlight the growing awareness of the criminal-justice impacts of TBI and other neurological issues, which are the focus of this discussion paper.

TBI and justice involvement

55. People involved in the criminal justice system have higher rates of traumatic brain injury than those not involved.[72] For example, almost two-thirds (63.8%) of male offenders had had a traumatic brain injury and a third of them (32.5%) had had more than one, in NZ research on six months' intake of more than 1,000 male offenders into a new prison facility in 2015.[73] One in five had sustained their first TBI before the age of 15 and the primary cause of the first injury for 40% was assault, followed by motor vehicle accidents (26%). Rates of TBI were four times higher than for men of the same age in the community at the time (an estimated 14.3%).[73]

56. The NZ study figures are in the mid-range of estimates of rates of TBI amongst people in prison, which range as high as 88%; prevalence is hard to establish due to different screening tools or measures of TBI being used, but do consistently outstrip non-offender rates.[74] Also, as in the NZ study, research shows assault to be the most common cause of TBI in adults in prison, in contrast to sporting injury, for example, in a matched community sample[75] or other causes like traffic accidents and falls.

57. In trying to make sense of TBI and crime, it is important to remember that those who experience TBI in both community and offender settings do not necessarily know how serious their injury was, given widespread ignorance of TBI and its effects, lack of medical attention sought, and lack of links made between, for example, childhood assaults in undetected family violence and enduring behavioural, cognitive, emotional and social deficits in childhood and adolescence that affect educational and employment prospects.

58. Do TBIs "cause" crime? Issues following TBIs, such as increased impulsivity, aggression and mood disturbances, and associated substance abuse and mental health issues, mean that links between TBI and "criminality" are increasingly being explored, but simplistic associations need to be avoided, as it is often much more than a TBI that sets child on a pathway to prison. For example, if an offender has experienced assaults causing multiple TBIs before age 15, that may indicate a childhood characterised by other adverse childhood experiences (ACEs) that have been linked to an offending career, such as family violence, trauma, abuse, substance-using adults at home etc.[76]

59. Research evidence is also inconclusive as to whether TBI is causal per se, or part of many complex issues and associations between aspects of early life, in particular, and crime. In Western Australian research comparing hospital records of TBI with records of first

criminal conviction and matched population controls, there was a modest causal link proposed between TBIs and higher rates of conviction, especially for violent offending, for both men and women, even after controlling for substance abuse, mental illness, ethnicity and related social disadvantage.[77] However, in Washington State research, adults hospitalised for any injury (not just TBI) were more likely than those hospitalised for reasons other than injury to be arrested within five years of discharge.[78] In research with Canadian justice-involved males aged 24, offenders had histories of low family social status in childhood and high levels of disruptive behaviours between ages 6 and 12, but prior TBIs were not associated with an increased risk of criminal convictions aged 12 to 24 - some had had TBIs before first conviction, others had had them afterwards.[79]

60. In research with Māori men who had been in prison, almost all had had multiple head injuries from assaults (including in childhood), vehicle and sporting accidents, fights and falls, many of which had received no medical attention (Example 2). Now out of prison, the men were experiencing continued effects of multiple injuries, with no access to programmes that could help them, their whānau or potential employers understand how best to manage often severe ongoing impact.[80]

EXAMPLE 2: TRAUMATIC BRAIN INJURY

Multiple head injuries
• A 39-year-old ex-prisoner had his first head injury at age 2, subsequent blows to the head in family violence, was first in prison at age 16 and has served six terms. • He had a car accident at age 36 where his head went through the windscreen, with no medical treatment. • Following his injuries, he experiences persistent headaches, dizziness or balance problems, tiredness or fatigue, problems paying attention or concentrating, and being sensitive to bright lights or loud noises (still happening) • Because these changes persist for months, he loses a job, notices changes in relationships, has trouble remembering things and feels depressed. (p. 232)[80]

61. TBI is certainly increasingly considered to be a risk factor for criminal-justice involvement, if not a "cause". A recent *Lancet* review found that TBIs in childhood/adolescence affected offending and compromised social and emotional functioning (p. 836):[81]

> *TBI is a risk factor for earlier, more violent, offending. TBI is linked to poor engagement in treatment, in-custody infractions, and reconviction … Those with a self-reported history of TBI were, on average, 5 years younger at the age of first prison sentence than uninjured (age 16 compared to 21 years) … Neurological abnormalities are common in offenders. Brain functions, in areas important for social functioning, such as impulse control and empathy, appear compromised.*

62. Young women in the justice system also have higher rates of TBI than their non-offending peers. Canadian research with incarcerated women showed that those with TBI had experienced more early physical and sexual abuse (including concussive blows) than had those without TBI, further complicating their recovery from PTSD and other trauma-related effects.[82]

63. Similarly, high rates of violence-related, multiple TBIs were seen with justice-involved women researched in the US, with rates of assault-related TBIs equivalent to those of incarcerated men and far more than those of non-offending women.[83] Multiple TBIs were often within close proximity, thereby impairing recovery and long-term prognoses.

64. Also, in a small UK study with female offenders and matched controls, the incarcerated women had rates of TBI as high as those of male offenders, with 78% having experienced a TBI. Of these, 38% had had as many as six TBIs as part of childhood maltreatment or adult partner abuse, which the women reported had gone mostly unrecognised or untreated as an injury.[84]

65. In research with 38 women incarcerated in Christchurch Women's Prison, nearly all had a history of TBI (94.7%) with most (83%) reporting multiple injuries. Their TBIs were caused by falls, motor crashes and fights,

plus more than a quarter (26.3%) had had at least one TBI as a direct result of being assaulted by a parent or partner. Being younger at first injury (mean age 12 years, youngest was 2 years) was associated with more mental health (anxiety, depression) and sleep issues, highlighting the impact of TBI on the developing child's brain.[85]

66. NZ follow-up of 169 men and women with a documented history of mild or moderate/ severe TBI or orthopaedic injury (as a control group) showed that 22.4% had offended, with no significant differences in offending rates between men and women. There were however higher rates of externalising disorders reported by men (e.g., assault, substance abuse, disorderly behaviour), and internalising disorders (depression and anxiety) by women. The authors point to the need to therefore be aware that the association between TBI and behavioural sequelae may differ across gender.[86]

67. By matching ACC, hospitalisation and justice system data, NZ estimates showed that rates of TBI increased along the justice pipeline, from 34% of people facing police proceedings to 46% of people imprisoned having had TBIs, compared with 13% of the general public (Figure 1). Offenders with a TBI were more likely to have a conviction for a violent or sexual offence than other types of offending, and more likely to reoffend. These are acknowledged to be underestimations.

68. There seems little doubt that adverse childhood experiences (ACES)[76] and TBI interact and amplify negative effects, although causal directions are poorly understood. For example, use of alcohol and drugs are risk factors for crime and compound the cognitive and emotional effects of TBI (such as impulse control, aggressive behaviour, fatigue), but having a TBI (especially when from being struck repeatedly over time by a family member) may lead a young person to "self-medicate" with alcohol and drugs. *The Lancet* emphasises the need to consider TBI and life history interactions (p. 842):[87]

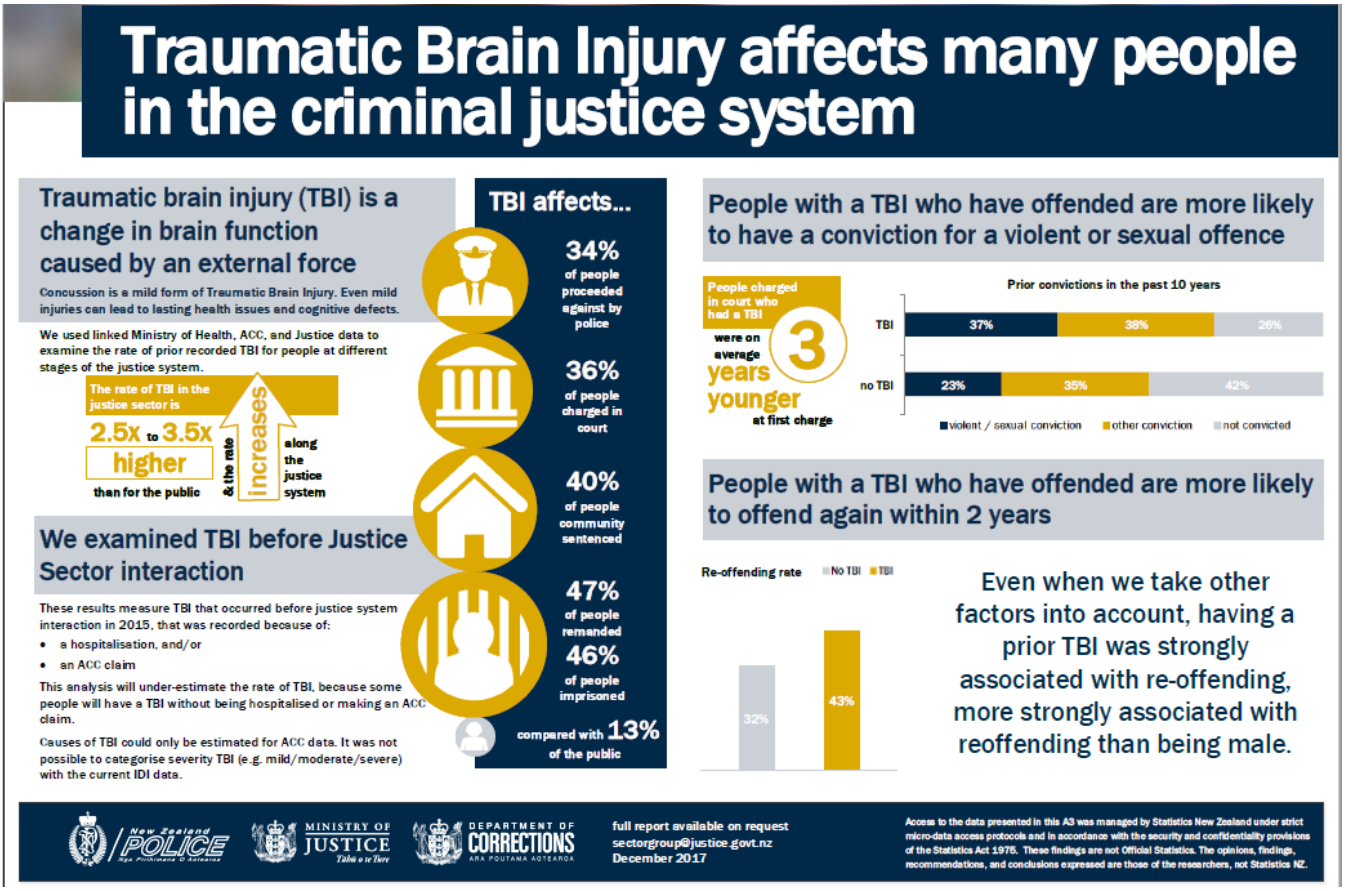


FIGURE 1. JUSTICE SECTOR ESTIMATES OF TRAUMATIC BRAIN INJURY IN JUSTICE-INVOLVED PEOPLE
(See Appendix 3 for a 2-page version of this Figure)

Life histories of abuse, neglect, and trauma appear particularly elevated in those with TBI versus those without TBI histories, as are ongoing mental health and drug and alcohol problems. Young offenders with TBI are particularly at risk of self-harm and suicidal behaviour. TBI could amplify any neurocognitive issues due to adverse life events.

69. This points to the importance of adding neuropsychological factors, as a matter of course, into forensic assessments and into planning for prevention and intervention. Addressing TBI and providing neuro-rehabilitative input may be particularly important for reducing reoffending with adolescent offenders.[88] There are calls for an integrated model of assessment to be developed (pp. 453-4):[89]

[An integrated model of assessment would include] an exploration of the confluence of biological, ecological (social, cultural and personal circumstances) and neuropsychological factors that continuously interact with each other to prompt, maintain and escalate offending behaviour … An integrated model will allow us to pull together a much richer formulation by bringing neuropsychological thinking into forensic evaluations of the offender with brain injury.

70. Reducing reoffending is an enduring challenge in the NZ justice system,[90] and it may be important to consider how this is affected by TBI. Figure 1 showed NZ offenders with TBI were more likely to reoffend within 2 years than were those without TBI. In other research on recidivism, 155 male inmates of the Indiana prison system were followed up 12 to 30 months after release. About one-third had TBI. Slightly more than half (53%) were rearrested; those with TBI were significantly more likely to be rearrested than those without. The authors stress the importance of dealing with TBI while incarcerated to reduce recidivism risk.[91]

71. Similarly, in research in Texas, more than 3,000 young offenders were screened (mean age 15.8 years); one in four met criteria for at least one TBI, most often caused by being assaulted, and most injuries had occurred before their offending began. Of particular concern was that there was no evidence that those with a TBI received any sort of specialist intervention or education that was different from the rest of the offenders, that took into account the cognitive and behavioural sequelae of TBI and taught strategies for managing cognitive problems or emotion regulation. The researchers argue that this showed a missed opportunity to reduce reoffending risk and improve the young people's lives, as well as to evaluate the most effective interventions.[92]

72. "One-size-fits-all" programmes are inadequate in general[93] and especially with those in the criminal-justice system, where TBI may be only one of a number of neurological, psychological and social challenges. In a UK government review of how young adults were treated in the criminal-justice system, the challenges of assessing and responding to the complex and diverse needs of individuals were highlighted, with "tick-box" assessments failing to attend to underlying causes and vulnerabilities to shape targeted interventions (p. 23):[94]

There is a tendency for existing needs assessments to focus on the external behaviour of young adults rather than its underlying causes. [Reviewers] highlighted the complexities of differentiating between vulnerability and risk, cautioning that vulnerability is not 'unidimensional' so that significant immaturity can be seen alongside sophisticated offending behaviour. … Others saw existing assessments as limited, characterising them as "tick-box" exercises rather than seeking to understand an individual as a "human being".

73. Media and community understanding of the complexities of TBI need to be improved. In research on 30 years reporting on crime and brain injury in the Australian media, for example, researchers noted that brain injury was seen largely as an individual problem,

with little reporting on the lack of support services (e.g. for children with TBI), especially for those from disadvantaged communities. People with brain injuries who were also offenders or had substance abuse issues were portrayed more negatively than those with equivalent injuries resulting from an accident on the road or sports field. There was occasional coverage of the over-representation of those with brain injury in prisons with little further analysis of related issues.[95] Such research in NZ is lacking.

74. Within justice systems (and in the community), there continue to be issues in assessing and diagnosing brain injuries and their effects, how they relate to offending and reoffending, and uncertainty as to what are the best interventions, within the resources available within the justice system and outside of it. As an extensive Scottish report on brain injury and offending asks, even if only those affected by moderate to severe TBI (modestly estimated to be about 10% of the 8,000 prison population) are provided with specialist help, the service implications of helping around 800 individuals are considerable.[96] The Scottish Prison Service and NHS Scotland have developed a number of recommendations in the 2016 report, and we will have to await outcomes of research and clinical projects, that will help to advance this field.

75. This may ultimately prevent the persistent humiliations someone with TBI may experience, as this Australian interviewee did while in prison (p. 133).[66] A "CRN" is a Corrections Reference Number:

> *I got incarcerated for the three weeks, and I couldn't remember my CRN. To make a phone call, you have to remember your CRN. I couldn't ring my girl in there because I couldn't remember it and they didn't want to tell me because I should remember it.*

Fetal alcohol spectrum disorder

76. Alcohol and other drugs have damaging effects on the developing brain of a baby before birth, and there is increasing concern about the links between prenatal damage and later adverse life outcomes, including criminal-justice involvement. As alcohol is the most widely consumed drug in NZ, this section will focus on prenatal alcohol-related harm, but there are also concerns about the effects of other drug use in pregnancy, including methamphetamine[97] in NZ.[98]

77. Drinking alcohol while pregnant can cause miscarriage, premature birth, stillbirth, physical abnormalities, and damage to critical organs including the brain. Fetal[*] alcohol spectrum disorder (FASD) is a broad term for a number of diagnoses related to brain function, including labels like fetal alcohol syndrome, partial fetal alcohol syndrome, alcohol-related neurodevelopmental disorders, alcohol-related birth defects[99] and a diagnosis in development in the DSM-5,[100] "neurobehavioral disorder associated with prenatal alcohol exposure (ND-PAE)".[101]

78. There is no simple medical test for FASD, and there are clinical diagnostic criteria widely agreed only for the most severe type, Fetal Alcohol Syndrome (FAS), including permanent central nervous system damage that causes behavioural, learning, functioning and communication issues; specific facial anomalies; and restricted growth (babies are smaller than peers and tend to stay small throughout life). [102] [103]

79. Other diagnoses within FASD are less easily made, in part because brain damage is not visible, may develop well beyond birth and may overlap with other conditions.[102] A NZ Ministry of Health FASD discussion paper highlights diagnostic challenges (p.4):[103]

> *Some of the most serious damage will be 'hidden', in the brain. FASDs are often characterised by communication, behavioural and sensory issues and can exist alongside or*

[*] Fetal and fetus are now the standard ways these technical terms are spelled, based on the Latin, as opposed to English variants such as foetus and foetal (Rogan, 2010).

be mistaken for other conditions. These issues will manifest themselves at different points along the developmental trajectory and may not be obvious until an important developmental milestone is delayed or not achieved. This may not be recognised as relating to alcohol exposure or any resulting brain damage.

80. There are many cognitive and behavioural effects that can be associated with FASD, listed here in plain language from a Fetal Network of New Zealand (FANNZ) education leaflet.[104] As well as having a range of talents, strengths and IQ levels, individuals with fetal alcohol damage may, to varying degrees, have:

- difficulties in processing information
- academic, social and developmental immaturity
- impaired memory retention
- poor reasoning and judgement
- rage
- lack of cause-and-effect thinking
- impulsivity
- inflexible thinking
- difficulties with concepts of money and time
- difficulty with learning from experience.

81. A recent review highlighted problems with assessment of FASD in adults, in particular, such as the following.[105]

- **Facial differences** (where present in the most serious form of fetal alcohol syndrome) change as a child ages, making them almost undetectable in adulthood, so a diagnosis missed in childhood is even more hard to make later in life.
- **There is a lack of screening and assessment tools** for FASD; so, for example, screening tests may show attention-deficit/hyperactivity disorder (as current screening tests often fail to distinguish FASD from ADHD). Where a child with ADHD has the capacity to develop adaptive skills (everyday functioning life skills) over time, a child with FASD is far less able to, without intensive, appropriate support.
- **Standard IQ tests may show average/above average IQ** in people with FASD as such tests do not capture the functional problems – the educational history and adaptive functioning (e.g., being able to tell the time, remember how to do everyday tasks) need to be assessed for a full picture.
- **With both short- and long-term memory problems**, self-reported histories are unreliable, even more so as those with FASD can be prone to "suggestibility" (i.e., a tendency to adopt the views and statements of others as truth) and "confabulation" (i.e., creating false memories) (p. 14). Assessors therefore need collateral information from official records or hard-to-find family members.
- **Confirmation of prenatal alcohol exposure is hard to achieve**, especially when trying to assess an adult; even where a birth mother can be contacted, she may not remember - or be afraid to admit - high alcohol use in pregnancy.

Prevalence and prevention of FASD

82. There is no safe amount of alcohol to drink when pregnant; however, this message competes with much stronger social, cultural and marketing inducements to drink alcohol.[106] Therefore, in NZ, as in other Western countries,[107] there is evidence of both would-be parents and their health providers not being sufficiently aware of the risks.[108] Leading medical journal, *The Lancet,* calls for urgent, global action on preventable, prenatal harm (p. e137):[106]

When more than a million babies are born every year with permanent brain injury from a known and preventable cause, response should be immediate, determined, sustainable, and effective. Broad-based policy initiatives and actions at different levels of every society are urgently needed to encourage abstinence from alcohol during pregnancy and to prevent fetal alcohol spectrum disorder.

83. According to initial work on an action plan on FASD in NZ,[103] it may be that at least half of all pregnancies are exposed to alcohol. The longitudinal *Growing Up in New Zealand* study gathered data on 6,822 expectant mothers and reported that 71% drank alcohol in the first trimester before they were aware of their pregnancy, but 43% said they stopped when they found out they were pregnant.[109] Ten percent of pregnancies are likely to be exposed at high-risk levels and two in five pregnancies are unplanned, increasing the likelihood that they will be exposed to alcohol.[103]

84. Conservative estimates from NZ's Ministry of Health website are that about 1 in 100 children exposed to alcohol will be affected by FASD; a recent international meta-analysis estimated more like 1 in every 13 pregnant women who drank alcohol during pregnancy gave birth to a child with FASD, giving a population rate of 8 in 1,000 people.[110] Prevalence is hard to determine, because, as noted, FASD can be hard to diagnose and is underdiagnosed worldwide. There have not yet been prevalence studies conducted in NZ[111] nor is it included in our routine infant and childhood screening.[112]

85. Estimates of general population rates of FASD in the US range from 2% to as high as 5%.[110] A Canadian population-based study of 7- to 9-year-olds estimated 2% to 3% had FASD (which was up to three times higher than previous estimates)[113] and an international meta-analysis put NZ prevalence at similar levels (about 21 per 1,000).[110] There are far higher rates amongst those who are involved with the justice or child-welfare systems.[114] For example, there are estimates that FASD affects about 50% of children and young people in the care of NZ's Oranga Tamariki Ministry for Children.[103] A 2019 global review showed FASD rates of around 7.7 per 1,000 births in the general population and estimated prevalence was between 10 and 40 times higher for "special" populations, namely children in care, those in the correctional system, special education or clinical services and indigenous/Aboriginal populations.[113]

86. Fetal alcohol syndrome (FAS), the most severe form of FASD comprising about one in 9 or 10 FASDs overall, is estimated to occur in at least 1 in 67 births where alcohol was consumed or 15 per 10,000 births (these are global estimates, not NZ-specific data).[115] In European countries with a high proportion (about a quarter) of women drinking during pregnancy, FAS rates were estimated to be 2.6 times higher (37.4 per 10,000).[115] In at-risk populations, estimates rise further, such as research on an indigenous Australian population showing rates of 92.6 children with FAS per 10,000 people, around 39 times higher than rates for the general population.[116]

87. As brain imaging and neuroscience advance worldwide, the impacts of fetal alcohol spectrum disorders are clearer, helping the efforts made to respond to its lifelong effects, including a New Zealand FASD action plan developed in 2016, with long-term goals of prevention. The action plan includes Australian and NZ government review of trans-Tasman labelling on alcohol products, which includes use of the pictogram and message that there is no safe level of alcohol intake when pregnant (p. 10):[117]

> *Stop drinking alcohol if you could be pregnant, are pregnant or are trying to get pregnant. There is no known safe level of alcohol consumption during pregnancy.*

88. It is important not to assume that an individualist or blaming approach to women drinking will be effective. Within NZ's binge-drinking culture and overall high alcohol intake,[118] women are strongly socialised to drink. Women are a growth market for multinational and local alcohol producers who are not required to warn those of child-bearing age of the risks.[119] Pressure to drink is common and health agencies encourage partners of women planning to get pregnant to join them in abstinence.[120] This NZ interviewee explained how she and her partner needed to lie to avoid pressure to drink when she was first pregnant (p.35):[121]

We went to a party and my partner and I both pretended we were on health kick so I didn't get hassled to drink.

89. *The Lancet*, reporting on efforts to develop an international charter on prevention of FASD, noted that fathers do not necessarily give adequate support to their pregnant partners, may be heavy drinkers themselves or there may be violence and other relationship and social issues that make giving up alcohol difficult.[122] Health and social service providers, who neither give clear information about alcohol risks nor offer well-resourced support to women and partners trying to become alcohol-free, are also seen as needing to do much better.[122]

90. There are persistent myths that "some" alcohol is OK, or some types of alcohol are OK, or that because other people's kids seem OK despite their mother drinking, it must be OK.[121] There are women addicted to alcohol, with few services or supports to successfully give up reliance on a substance that may have helped them cope with emotional trauma or family violence.[123] Furthermore, many clinicians lack the capability to diagnose FASD and families of people with FASD have difficulty accessing limited available support. [102, 123]

91. There is an economic case being made internationally for more resources to be spent on prevention of FASD.[124] Based on a low estimated prevalence of FASD affecting between 1 and 9 in 1,000 people, NZ economists calculated lost economic productivity due to decreased participation in the workforce by those with FASD, based on 2013 census figures, and not taking into account productivity losses from carers (who would otherwise be available for other work).[125] The calculation was only of economic productivity and did not include the health, social and educational costs for those with FASD; thus it is acknowledged to be an underestimation of the costs. The research calculated losses of between $NZ49 million and $NZ200 million – 0.03% to 0.09% of annual gross domestic product at the time. The authors argued that spending an equivalent amount on prevention – given FASD is entirely preventable - would therefore be more than justified, including in savings on criminal-justice costs (p. 79):

In terms of the productivity losses alone, NZ could ultimately spend up to $190,000 per day (i.e., $49 million per year) or more on an effective prevention program to prevent new cases of FASD. However the benefit to cost ratio would be considerably higher than one, because of reduced (or more effective) spending in other parts of the economy such as healthcare, special education & corrections.

FASD and justice involvement

92. There is increasing awareness worldwide that people with FASD are overrepresented in the criminal-justice system. For example, in a review of Canadian records, young people with FASD were 19 times more likely to be incarcerated than those without FASD.[126] Other Canadian research showed disproportionately high rates of FASD in a representative sample of incarcerated adults (aged 18 to 40) with between 17.5% and 31.2% having FASD and almost all having substantial neurodevelopmental and cognitive deficits in at least two domains of functioning. Only 6.3% of the sample had no cognitive impairment.[127]

93. There were no data on FASD rates amongst those in youth detention in Australia until a study published last year (2018).[128] A representative sample of young people (aged 10 to almost 18 years), who were sentenced to detention in Western Australia over 15 months, had comprehensive, multidisciplinary assessments for FASD. More than one-third (36%) were found to have FASD, all undetected before the research (except for two offenders who had been partially assessed/diagnosed, not in infancy but just prior to entering detention).

94. Furthermore, across the nine domains assessed (brain structure/neurology; motor skills; cognition; language; academic achievement; memory; attention; executive function; adaptive behaviour, social skills or social communication), almost all (89%)

showed severe neurodevelopmental impairment, not previously identified (that is, antisocial behaviour or school failure might be well-known, but brain damage as related to them had not been documented).

95. Given the range of behavioural and cognitive challenges associated with FASD, it is not surprising that executive function deficits can compromise effective engagement with the criminal-justice system, such as judging their competency to stand trial, being able to meaningfully participate in their own defence, or behaving impulsively or inappropriately during proceedings in court or in other formal, stressful settings.[129]

96. According to US forensic neuropsychologist, Dr Paul Connor, who has run training workshops with some NZ forensic staff, adolescents with undiagnosed FASD can end up in the criminal-justice system through:

- being easily led by more sophisticated peers
- engaging in frequent low-grade, impulsive and often nonsensical crime, such as stealing something of little or no value in situations with a high likelihood of being caught
- making guileless confessions, sometimes to crimes not committed
- waiving of rights on arrest
- showing no guilt or remorse
- a lack of appreciation of the magnitude of a crime (p. 15).[130]

97. Attempting to confirm diagnoses can be costly, time-consuming, challenging for both assessor and the person being assessed - and ultimately inconclusive - which may prevent under-resourced families, welfare or justice services managing to confirm a diagnosis.[131]

98. The range of behaviour that can be associated with FASD may be easy to misinterpret in correctional settings, where staff are dealing with many types of challenging behaviour, as a review by US psychology and justice professionals highlights (p. 1):[132]

> *FASD is a complicated, and often misunderstood and challenging disorder. Individuals with FASD who are confined to a correctional setting may be perceived as lazy, manipulative, irritating and self-defeating, especially when correctional staff lack an awareness and understanding of the disorder … This population is often highly suggestible, easily manipulated, impulsive, hyperactive, distractible, socially inept, and may present as superficially charming and competent.*

99. The case of Teina Pora in New Zealand who was wrongly imprisoned for a murder for 21 years (Example 3) provides a legal precedent for recognition of the risks of criminal-justice involvement of people with undiagnosed FASD.[133] Young adult Canadians diagnosed with FASD now wear MedicAlert bracelets to help to avoid such situations.[134]

EXAMPLE 3. FETAL ALCOHOL SPECTRUM DISORDER

Undiagnosed FASD leads to 21 years in prison

New Zealand has a famous case of undiagnosed FASD affecting criminal conviction. Teina Pora spent more than two decades in prison until his conviction for the murder of Susan Burdett was quashed.

First convicted at age 18, including on the basis of his confessions of the crimes, ultimately FASD was seen to be "the most significant factor in his original conviction – his inability to explain himself, his willingness to agree that he had committed terrible crimes, his false 'confessions' to police, and his young developmental age at the time of conviction" (p. 828)[120]

The vulnerability of those with FASD to "confabulate when interrogated by persons in authority such as police" was also noted (p. 182).[133]

His case was seen as putting FASD "on the map in the wider public arena, establishing that a failure to recognise it in the legal process had led to a gross miscarriage of justice, and could do so again in the future" (p. 828).[120] The Privy Council decision in 2015 was described in a QC's case commentary (Freckleton, 2016, p. 173) as providing:

> *authoritative legal precedent for recognition of the fact that questioning by police has the potential to yield unreliable and confabulated confessions from persons with FASDs. This highlights the need for all sectors of the criminal justice community to be alert to the presence of relevant impairments arising from pre-natal exposure of offenders to alcohol.*

100. Criminal-justice involvement is in no way inevitable with FASD (nor with any other neurodevelopmental issue). It is rather the combination of challenges and life experiences that may put a person at increased risk, including lack of early detection or lack of well-resourced and effective intervention and support from appropriate agencies.[135] An international psychological review emphasised (p. 50):[136]

> *The factors underlying CJS [criminal-justice system] involvement involve broad social justice issues such as poverty, unstable housing and unemployment, racism, lack of access to services, and concurrent issues such as substance use and mental and physical health challenges. Accordingly, the social determinants of health and issues underlying CJS involvement must be prioritized, not only for those with FASD but for all groups of marginalized individuals.*

101. Social determinants of health were evident in research with more than 500 incarcerated 12- to 19-year-olds in Canada, at least 11% of whom had FASD, which was associated with earlier onset of offending and more frequent offending.[137] When other risk factors for offending were explored, the FASD youth were at risk of early and frequent offending if they had first experienced other negative outcomes. For example, they were more likely to have been placed in foster care, and to have behaviour disorders, low self-control and a negative self-identity. They were also younger when they first used alcohol than non-FASD youth offenders. This research highlights the importance of understanding and intervening to reduce early-life criminogenic risk factors that compound FASD issues.

102. In addition, social and cultural determinants of health issues, such as alcohol overuse, plus the effects of racism and colonisation on overrepresentation in criminal-justice involvement must be considered, especially for so-called "at-risk" populations, as noted in the 2019 global review of prevalence in such populations[138] and local commentary of Māori overrepresentation.[139]

FASD responses: Moving from *won't* to *can't*

103. FASD may be associated with "a vast array"[105] of other diagnoses in childhood and adulthood, comorbid with substance use disorders ("comorbid" means the person has two or more disorders at the same time), trauma, sleep problems, other developmental disorders and mental health issues (such as depressive, bipolar or psychotic diagnoses), antisocial personality disorder, reactive attachment disorder and conduct disorder. When "treatment as usual" is applied, such as a programme to change alcohol and drug abuse or to manage conduct disorder, without awareness of the way that FASD limits the person's ability to participate in such treatment, it does not work, often with the failure being seen as due to the "bad" behaviour or "lack of cooperation" of the participant.[105]

104. In responding to behaviour, local FASD advocates note a "paradigm shift from *won't* to *can't*" is required in understanding what is going on;[140] that is, the child or adult is not saying "I *won't* do something" by refusing to keep calm, be on time or remember the consequences of a specific behaviour, they *can't* do those things, unless a lot of specific support, often since childhood, has helped them work with the effects of their permanent brain damage.

105. As the NZ Ministry of Health FASD discussion document points out, for those with neurodevelopmental issues like FASD, "treatment needs to take into account the way their brain works if it is going to be successful. For example, some behaviour therapies aim to teach an individual to think differently in order to behave in less antisocial ways. These therapies will not work if the underlying brain damage stops the person from understanding cause and effect" (p. 8).[141] A recent Matua Raki document (workforce development for mental health and addictions staff) calls for "frontline professionals" to have high-level values of respect, manaaki, whanaungatanga and kotahitanga when dealing with FASD; staff attributes of being hopeful, genuine, accepting, persistent and compassionate; and skills of understanding FASD and

keeping informed, supporting positive experiences and outcomes, and working alongside whānau and others involved.[142]

106. An alternative treatment pathway for those with both FASD and ADHD is being developed in the UK, to reduce ineffective interventions.[143] For example, where ADHD has been diagnosed, "red flags" that there may also be FASD include where there is little response to usual ADHD behavioural interventions; where the child presents most with inattentive subtype of ADHD plus some impulsive behaviours; and where they fail to respond to ADHD medication, or it increases behavioural disturbance. Multi-modal assessment should follow, including checking for a possible or confirmed history of prenatal alcohol exposure, and involving parents, teachers, occupational therapists, and speech and language therapists in targeted treatment plan development.

107. In the criminal-justice field, it is important for staff to know that confabulation is not about an intention to deceive (such as lying or malingering). Instead, in trying to make up for gaps in memory – often during stressful investigations – confabulating may include anything from slight factual distortions to completely made-up events. Investigators are advised to watch out for subtle signs of defendants who "report an excessive amount of negative personal information and seem eager to please" (p. 21) – unaware of the consequences of saying too much about their activities or history, and overly keen to help the investigator solve the crime, despite incriminating themselves.[144]

108. Former Supreme Court of Queensland Justice, Margaret White, reflected on Bower's recent research[128] that 89% of youth in Australian detention had severe neurodevelopmental impairment, saying that solutions to their behaviour in the face of such "profound" impairment "can never be found in a 'tough on crime stance'" (p. 262).[145] She was also concerned that the brain issues had not been detected earlier, despite the long involvement the young offenders had with the education, child protection and justice systems.

109. Better screening, assessment and diagnosis of FASD early in life makes sense for overall economic productivity, as noted above, and more effective treatment is needed, but intervention research is significantly lacking. The Alexis FASD Justice Program in Alberta, Canada is an innovative partnership between indigenous, clinical and justice services in a Sioux Nation community for people with FASD, using neurocognitive assessment findings to inform court decisions, and mentoring and environmental supports (finding a safe place to live etc).[146]

110. Perhaps a percentage of the profits and excise derived from NZ's excessive drinking culture could alleviate the health burden of FASD, as this researcher suggests (p. 85):[147]

> *The NZ Treasury levied almost $1 billion in alcohol excise duties [in 2017]and this has not been used to fund action to increase training, services or research in this now well-established area of neurodisability.*

Cognitive impairment/intellectual disability

111. There is a confusing array of terms for issues with cognitive functioning, such as cognitive impairment, low IQ, borderline IQ, intellectual disability, developmental disability etc. For example, in the International Classification of Diseases (ICD-10), the term used is "mental retardation" (terminology now seen as outdated), defined as "a condition of arrested or incomplete development of the mind". The language is changing to reflect better understanding, non-stigmatising language and lifecourse development. In ICD-11 (published but still under development), the term "retardation" has been replaced by "disorders of intellectual development", where people have "significantly below average intellectual functioning and adaptive behaviour".[148]

112. *Intellectual functioning* in ICD-11 can be expressed as an intelligence quotient (IQ) score, derived from the performance of a group of individuals of the same age on a battery of tests designed to assess intellectual skills (such as working memory, processing speed, verbal comprehension and perceptual reasoning), with a mean of 100 and standard deviation of 15, such as the Wechsler Intelligence Scale for Children-IV (WISC-IV) or WAIS-IV (as referred to previously).[149] Two or more standard deviations below the mean in standardised tests (IQ) are required to signal intellectual disability. [148] Although there is dissatisfaction with the way that constructs of "intelligence" and IQ are defined and measured, and how they can be used to stigmatise people, especially of diverse cultures,[150] [151]they are widely used in the absence of time and resources for fuller clinical assessments.

113. *Adaptive behaviour* in ICD-11 is also used to determine levels of functional difficulties including conceptual skills (application of knowledge and communication such as reading, writing, calculating, problem-solving, decision-making); social skills (such as interpersonal relationships, following rules and laws, social responsibility); and practical skills (such as self-care, health and safety, occupational and recreational skills, use of money, transport, everyday devices and appliances etc).[152]

114. Another diagnostic system, the Diagnostic and Statistical Manual of Mental Disorders-5 (DSM-5) defines "intellectual disability" as characterised by:

    - deficits in general mental abilities, such as reasoning, problem solving, planning, abstract thinking, judgment, academic learning and learning from experience
    - the deficits result in impairments of adaptive functioning, such that the individual fails to meet standards of personal independence and social responsibility in one or more aspects of daily life, including communication, social participation, academic or occupational functioning, and personal independence at home or in community settings.[153]

115. DSM-5 diagnosis can include developmental history and milestones, current level of functioning and results of standardised tests. The onset of intellectual disability used to be defined as before age 18; now a more general concept of "onset during the developmental period" (p. 72) is used.[154]

116. The prevalence rate of intellectual disability (ID) is about 1% of the population, with severe ID affecting about 6 per 1,000 people (according to DSM-5); other general population estimates range from 1% to 3%[154] or 2% to 4%.[155] Those involved in the criminal-justice system are often considered to have higher rates of ID than the non-justice population; however, rates vary as there are substantial issues with how and when ID is defined and measured.[156]

117. For example, a research review found studies with prevalence rates as high as 69.6% (of incarcerated prisoners in Israel) to 0% prisoners with intellectual disability in a South London remand prison, with variation due to different intellectual disability measures and definitions.[157] The review authors suggest there has been a consensus that about 25% to 30% of those in prison have "borderline ID" (defined as an IQ of 70-

85), and a further 10% have the more severe form of "mild ID" (IQ50-69).[157] A 2018 review discussed rates of "cognitive impairment" (which they defined as IQ <70) as being seen in 18% of young people in custody in NSW, Australia, and 23% of those in England and Wales; this review also found that 39% to 46% (NSW) and 36% to 41% (England/Wales) had "borderline" functioning (IQ70-79).[158] In New Zealand, Te Uepū Hāpai i te Ora Safe and Effective Justice advisory group heard about justice-system harm for those with intellectual disability, with a submitter saying (p. 66):[159]

> *Intellectual disability is also a key issue. Mental health is often combined with intellectual disability. People with disabilities ending up in prison for long periods – not good for anyone.*

118. Although an IQ under 70 is often accepted in research as evidence of "intellectual disability", terms such as "borderline ID" (IQ70 to 84, or in other studies IQ70 to 79)[160] [161]and/or "mild ID" (defined by some as anything under IQ85) are confusing. Full clinical assessments (rather than just IQ measures from written IQ tests) are called for.[162] A still-classic review of research on almost 12,000 people in prison in diverse jurisdictions excluded studies that only used group IQ testing without individual clinical assessment, and found prevalence rates of 0.5% to 1.5% of intellectual disability in the prison population, which they considered were similar to rates in the general population.[163] This highlights the risks of assuming those with intellectual disability have higher risks of justice involvement.

119. Also, as noted in the opening section on *Testing and assessment*, there are longstanding issues with IQ measurement across cultures and problems with measures for Māori.[164] Similarly, Australian research found that almost half of Australian young people in custody (45.8%) had borderline or lower intellectual functioning, and 14% had a "possible intellectual disability" (with an IQ under 70), as measured by IQ assessment.[165] Other Australian researchers, however, highlighted that indigenous young people are overrepresented in criminal-justice involvement, and IQ tests have not been validated for indigenous Australians (Aboriginal and Torres Strait Islander people).[162] There is, therefore, likely to be an over-estimation of rates of intellectual disability amongst those in prison (p. 641):[166]

> *Tests used in the assessment of general intelligence are rarely culture-free …. Overall, most psychometric instruments developed for cognitive assessments in Indigenous Australian [and other non-American] populations have been inadequately validated.*

120. It is important to note that research has found that people with intellectual disabilities are at greater risk of being *victims* of crime than people without such disabilities,[167] with estimates that the risk of victimisation is between three and seven times higher, particularly in terms of sexual victimisation.[168] Also, victimisation may be less likely to be reported to authorities[169] (for example, in caregiver violence, sexual predation or intimate partner violence[170]). In an Australian population cohort of more than half a million children, 4.6% had a maltreatment allegation; more than a quarter of allegations (25.9%) and even more (29%) of the substantiated allegations involved a child with a disability, including intellectual disability.[171] Those with mild-moderate intellectual disability were more likely to be maltreated; those with severe intellectual disability were more often neglected. This study attempted to distinguish between types of disability (for example, those with Down syndrome were less subject to maltreatment) and called for more assessment and research.[†]

[†] However, note that Maclean et al. (2017) included "prenatal exposure to alcohol" as one of the sources of intellectual disability, whereas other researchers do not include FASD, as the sequelae of FASD (as discussed in the previous section in this report) do not inevitably include low IQ. Again, issues with definition and assessing prevalence rates require far more research attention.

121. Similarly, in almost 6,000 substantiated cases of child maltreatment in Canadian children aged 0 to 14 years, children with an intellectual disability were overrepresented (11.3%), plus they experienced more severe maltreatment and were more likely to have been referred to child protection services than were those without intellectual disability.[172]

122. It is important to remember that exposure to maltreatment risk is the responsibility of us all - intellectual disability would not be inherently a condition of risk if social norms were less stigmatising, support for caregivers and educators more available and those with disabilities faced less trenchant social and economic deprivation.[173] [174]

Intellectual disability and justice involvement

123. Despite the lack of robust research on prevalence rates of people with intellectual disability in the criminal-justice system, there is agreement that there are compounding effects of having an intellectual disability that worsen outcomes once involved with the system.[175] These include not understanding legal rights or consequences when first engaged with police, nor the legal language and court processes that may follow.[176] Once in prison, difficulties arise from not understanding written information (prison rules, systems to access services, treatment programmes etc) and risks of being bullied and getting depressed and anxious increase.[175] There are brief screening tools that may detect cognitive difficulties but require follow-up full clinical assessment,[177] so these need to be normed locally and systematically used in the justice system with adequate access to fuller clinical assessment.

124. There have been longstanding myths and stereotypes that people with "low IQ" or "mental retardation" or other historical terms for diverse neurological differences have "criminal tendencies". A recent UK research manual on offenders with intellectual and developmental disabilities (IDD) states there is evidence not of such "tendencies" but more of being at increased risk of compounding criminal-justice consequences (p. 14):[178]

> *There is no research evidence that indicates that people with [intellectual and developmental disabilities] IDD are apprehended more frequently than people without IDD. It is the case that, once apprehended, people with IDD may be treated somewhat differently than are other groups. … People with IDD may be incarcerated more frequently than those without IDD. Finally, research evidence over the years has suggested that once incarcerated, people with IDD spend long periods in secure settings.*

125. Criminal-justice system involvement is seen as challenging for children and young people with cognitive issues, as discussions with judges in Australia and the UK highlighted. Often unassessed or undiagnosed, those with intellectual disabilities were at risk of having a reduced capacity to understand the implications of their offending or to comprehend and effectively participate in the legal process. As this UK district judge commented (p. 640):[179]

> *Chronological age can be very deceiving. You know we have 18 year olds who really are functioning as 10 year olds…their lives have been so chaotic… emotionally and indeed intellectually they are miles behind.*

126. Australian researcher Kathy Ellem has explored experiences of people with intellectual disability within the criminal-justice system over the past decade, including the risks of poor outcomes resulting from suggestibility, bullying, poorly coordinated services and the person not understanding legal rights or the consequences of their actions. She calls for "relationship-based practice" where police, corrections staff and support workers can reduce these risks by targeted, coordinated relationships built with the potential offender, to better understand the issues driving challenging behaviour.[180]

127. In a NZ forum on the justice system and people with neurodisabilities, participants presented examples of some of the risks involved in dealing with the complex justice system. These included young people

agreeing with interviewers in an effort to escape from a stressful situation without realising the consequences this could have. For example:

- They will answer 'yep', 'yup' or 'yes' as a default answer
- They will struggle with explanations of complex issues such as "You have a right to a lawyer and/or a nominated person"
- They will struggle to understand the consequences of their actions and may not have the cognitive ability to "learn their lesson"
- Remorse may be an issue – a young person affected by neurodisability may appear sullen or defiant … struggle with eye-contact, grunt in response to questions and be reluctant to speak up. This can be misinterpreted by decision makers and victims. (p. 13)[181]

128. In research on "fitness to stand trial" assessments with 79 NZ youth aged 13 to 17 years (mean age 15.6 years) referred to Regional Youth Forensic Services (2010-2015), intellectual disability was a significant factor in being deemed unfit to stand trial, both before appearing in court (p = .002) or once before the Youth Court (p = .03). More than half of the youth were evaluated to be "mentally impaired" with intellectual disability being the most common diagnosis, following by non-significant rates of ADHD, psychosis, autism spectrum disorder and FASD. Concern was expressed that IQ scores of many defendants were not recorded (most had long since dropped out of education) and that without careful evaluation, some might appear more competent than they are (p. 10):[182]

> *Adolescent development is fluid, and some youth will present with uneven developmental profiles. Conceivably, some might appear to be 'more fit' than they actually are because of relatively better verbal performance abilities, but may still have subtle undetected cognitive problems that nonetheless impact on fitness [to stand trial].*

129. There are ongoing debates as to how to respond to aggressive or "challenging" behaviour by those with intellectual disability who may come to the attention of authorities. There are issues as to whether the disability is diagnosed and the person is a service-user (with service staff trying to manage the behaviour), or undiagnosed and thus more likely to be treated by authorities as if the behaviour is intentional and calculated to offend.[183] There are also inconclusive debates as to how to view sexually inappropriate behaviour (seen as related to cognitive deficits[184]) or whether rates of sexual offending by males with intellectual disability are similar to those of the general male population, but that treatment issues may be different. These are beyond the scope of this discussion paper, not because they are not important but because the evidence is so mixed and inconclusive - the main point is that good NZ research is necessary, both to better figure out the impact of neurocognitive difficulties on an offender's actions and how to respond most effectively.

130. In summary, this section highlights how difficult it is to clearly understand neurodevelopmental disorders like intellectual disability in relation to offending because of wide-ranging problems with defining, diagnosing and responding effectively to such issues in the community, let alone in the justice system. It is clear that people with intellectual disability are vulnerable to victimisation and child maltreatment. They may be vulnerable to criminal-justice involvement not necessarily because they have higher offending risk factors, but because they may be more likely to get caught than their peers who can think faster, talk their way out of trouble better and understand more about the risks and consequences, the complex legal language, and how to claim a right to silence or legal representation. There is a need to better detect signs of intellectual disability, comorbid disorders/difficulties and their causes, earlier in the lifecourse and prior to justice-system involvement, through more research, cultural rigour and support for professional skill development.

Communication disorders

131. Communication issues include difficulties with talking, listening, hearing and understanding. Various milestones and tests can be used to determine difficulties with receptive language (understanding), expressive language (talking), hearing impairments and related issues throughout childhood and adolescence.[185]

132. Language development in childhood has an impact on educational, employment, health and social outcomes and is affected by childhood risk and protective factors (such as childhood abuse, exposure to violence, parental responsivity, or wider support) in complex ways that are not yet widely researched.[186]

133. Communication difficulties in children may be assessed by professionals from wide-ranging fields including education, psychology, paediatrics, child psychiatry, primary healthcare, audiology or speech-language therapy, all of whom may have different ways to assess, label or intervene.[185] An umbrella term of "developmental language disorders" (DLD) was only recently developed to assist communication across professions, in terms of characteristics, diagnoses and terminology, but inconsistent terms, tests and treatments persist.[187]

134. The term "developmental" in DLD reminds us that brains are not fully developed until well into the 20s[188] (and thus the cognitive, emotional and motivation systems of young people are not fully developed when they enter the youth justice system). It does not, however, mean that language difficulties in childhood simply resolve with maturation (which simply means, as you grow up), with many persisting throughout life.[189]

135. Both children and adults work very hard to mask their speech, language and communication problems. There can also be a persistent developmental language disorder in the absence of any other difficulty. Many people (including professionals) seem to think that significant communication difficulties only occur alongside other diagnoses such as autism, cerebral palsy and Down syndrome.[190]

136. Language impairment can often occur with other neurodevelopmental difficulties or issues with motor skills, and contribute to attention problems, reading difficulties, and issues with social interaction and behaviour. Also, as noted in the *Executive summary*, "typical" development widely varies. For example, an infant who seems slow to talk can later have no issues; and "atypical" development can have different causes. An infant or pre-schooler who, according to "typical" development, seems slow to respond to spoken language, may catch up over time and have no further problems. Or the delay might relate to a problem with hearing, autism spectrum disorder, developmental language disorder or intellectual disability. Or there could be a motor skills, structural or developmental problem with producing speech sounds, or learning to use and understand words, grammar or the social "rules" for interaction. Or there may be emotional problems and/or trauma – and any of these issues could potentially require different forms of help.[185]

137. Also, language comprehension difficulties tend to be much less obvious to anyone interacting with a child or young person than expressive language or speech difficulties. Children will find strategies to cope as best as they can, and comprehension difficulties are also more likely to masquerade as other problems such as difficult behaviour, unwillingness or disengagement.[190]

Communication disorders and justice involvement

138. About 5% to 10% of the general population experience language difficulties[191] but at least around 50% of those involved with the criminal justice system do,[192] and as many as 90% of justice-involved young people demonstrate language skills that are below average for their age.[193]

139. This is an area of concern that has only relatively recently been investigated, with small studies nevertheless consistently finding that more people involved in the

criminal justice system have communication difficulties than do non-offenders.[192]

140. For example, research with young offenders aged 15 to 17 years in the UK showed 66% to 90% had below-average language skills and, of these, 46% to 67% were measured as having *poor* or *very poor* skills. On a test of receptive vocabulary, none achieved the scores expected for their age. They would therefore struggle with the verbal and written language skills required for all legal processes and rehabilitation programmes. The authors recommend that speech and language assessments should be available to young offenders with speech and language therapy interventions available to those found to have difficulties.[194]

141. Being deaf or hard of hearing in prison is particularly problematic. US research points out that most instruction in prison is through sound (therefore, loudspeakers issuing instructions cannot be heard if hearing-impaired), activity and rehabilitation programmes are not usually set up for accessibility, there is lack of access to aids or interpreters, and high risk of social isolation and abuse.[195] A rare study with UK prison inmates also found persistent challenges for those who were deaf/Deaf or hard of hearing. Even where hearing aids were supplied, batteries for them were often not available, leaving people's everyday functioning in prison compromised. There was also a sense of profound loneliness, as this inmate explained (p. 239):[196]

> *Sometimes I cry just because I am in prison. I cry a lot ... because there's nobody Deaf, there's nobody Deaf here. I can't communicate. I can't express myself to anybody.*

142. In a New Zealand report on the health of prisoners in 2005, self-reported "difficulty in hearing in a group conversation" was reported by more than half (57%) of those aged 46+, and around a quarter of younger prisoners (23% aged 16-24 years; 29% aged 25 to 45).[197]

143. In more recent research, NZ young people in youth-justice residences (aged 14 to 17 years) were clinically tested (rather than surveyed by self-report). It was found they were 7 times more likely than matched controls to have hearing loss in one or both ears.[198] They were twice as likely as controls to have significant middle-ear pathology (which can be indicative of untreated ear infections and generally poor ear health). In terms of language tests, 64% of the youth-justice group met criteria for language impairment, compared to only 10% of controls. Almost all who had auditory processing difficulties also had language impairment, in contrast to controls.

144. Of note, the significantly higher rates of impaired hearing ability in the NZ youth-justice residents were *not* reported by the young people themselves – the majority of their self-reports was of hearing being *always easy* (61%), in contrast to 41% of the controls acknowledging that hearing was *sometimes difficult*.[198] This points to proper assessments being absolutely vital.

145. The researchers were in no doubt that, given these high rates of undetected hearing loss, poor auditory processing and impaired language skills, there were potentially negative effects on all aspects of restorative justice, education and rehabilitation, that are all primarily orally and verbally based.[198] They call for speech-language services, assessments and strategies for communication difficulties to be accommodated, and also point to promising research in the UK that shows that targeted, intensive speech and language interventions had a positive impact on test results and engagement in education and training (e.g., Gregory & Bryan, 2011[199]).

146. The often undetected communication difficulties are undoubtedly compounded by having to deal with the communication requirements of the legal system. For example, NZ interviews with a small group of youth-justice residents aged 16 years showed they had a lot of difficulty understanding the language and process of court hearings.[200] They explained that (pp. 602-3):

[In court], they talk all fancy, and sometimes I don't understand what they're saying.

[I did not ask questions], because I was just too shy – I woulda asked questions, but I'm just not a very good communicator… Like when they asked me, what do I want to do… I just kept saying, 'I dunno'.

147. They also found that it was difficult to hear from *way back in the dock*, despite microphones being used in court. A relationship with a trusted advisor who could explain processes and words was helpful when it happened; and speech-language assessment and help was recommended. As one interviewee explained (p. 604):

[When asked what they would change in court, it would be] if they put those fancy words into the words that we know, that's it.

148. Culture and language are closely tied and researchers acknowledge the need for more understanding of cultural issues in relation to communication difficulties. Lount, Purdy & Hand (2017)[198] noted the lack of ethnicity information in research into auditory processing disorder and that overrepresentation of Māori and Pacific in the youth-justice system meant that cultural issues and interventions must be better established. Similarly, Australian researchers working with youth offenders found that all justice processes were conducted in standard Australian English, despite high rates of language diversity and multilingualism amongst indigenous Australians, and called for better local, cultural input as well as speech-language assistance.[201]

149. Gender must also be considered. Much of the limited research in this area so far has focused on males, but female offenders also have communication difficulties, with an Australian study of incarcerated young offenders (mean age 17) reporting that language impairment was present in 27% of the females, significantly more than rates in that age-group of Australian non-offenders (13%).[202] In a 2019 UK study with first-time young offenders (mean age 15 years), developmental language disorder (DLD) was equally prevalent amongst the majority of both the males (58%) and females (67%). Reading ability was also extremely poor, with many refusing to even attempt a reading comprehension task. Of particular concern was that almost none (2%) of the young people had had DLD diagnosed at primary school. (DLD was defined as 1.5SD below the mean on Clinical Evaluation of Language Fundamentals CELF-4 subtests; different figures at different ages contribute to the range of findings, but all research persistently shows higher rates of language impairment for young offenders compared to non-offenders.)[203]

150. Also, it is important to note that communication disorders are not just issues for young offenders, but are also increasingly of concern for older people in prison, although research is limited. Some US research showed that a majority of those growing older in prison (aged 65+) experienced often undiagnosed hearing loss (affecting 72.9% men, 32.4% women) and vision loss (affecting 39.3% men, 87.6% women), cognitive issues and physical health concerns.[204]

151. Communication difficulties are associated with other neurodevelopmental issues such as fetal alcohol spectrum disorder. It can be hard to determine the complex, interactive effects on communication of issues with cognition, behaviour, social skills and emotion regulation associated with FASD, but there is some evidence that improving communication skills and reducing oral language problems can help reduce risks of young people with FASD getting in trouble with the law.[205]

152. In addition, research where comprehensive assessments for a range of issues were carried out on young people in custody showed that the 47% who had language impairments were also more likely to have difficulties with social communication, non-verbal cognition, self-harm and substance misuse. Language impairment and intellectual disability were associated, but

sample sizes were not large enough to establish statistical significance between comorbid traumatic brain injuries and language impairment in this UK research.[206]

153. To respond effectively, multidisciplinary assessments are needed, and multiple sources of information combined, including information from parents/caregivers, direct observation and interaction with the child or young person, and completion of age-normed standardised tests over time.[185] Cultural appropriateness of testing and interventions must be addressed[198] and, as in other areas of health and education, there are access barriers to referrals, capacity to attend appointments and follow-through on intervention or support options for children from socially disadvantaged families.[207]

154. Within the youth justice system, more speech-language specialists are needed, as called for in a 2019 review (p. 11):[208]

> *The international data attesting to the high prevalence of [developmental language disorders] DLD in this population should leave no uncertainty that speech-language pathology services need to be viewed as essential in youth detention facilities.*

155. Recent local research on the use of 'communication assistants' (speech-language specialists) for witnesses and defendants in youth justice highlighted how those with communication difficulties were not able to participate effectively in family group conferences or court proceedings without help.[209] Judges and lawyers endorsed the need for speech-language specialists' input, while also noting that there were issues with a lack of awareness or access to services, being unsure how (and who) to refer for such help and limited access and guidelines so far.[210]

156. Routine screening, well before young people end up associated with the justice system, is called for. For example, Hughes et al. (2017) suggest there should be routine assessment triggered by at-risk points such as when children are struggling to read; at the first signs of behavioural problems; when behaviour is leading to exclusion from school; when mental health difficulties are apparent; or at the very least on first contact with the justice system, and in planning for interventions once convicted.[211] NZ research has established that rates of literacy are extremely poor among those involved in the criminal-justice system,[212] but the causes of those difficulties are less well understood.

157. Early assessment and intervention in childhood is effective in reducing the risk of engagement with criminal justice as a young adult, as shown in UK research comparing two sets of behaviour - 1) rates of substance abuse and 2) contact with police, rule-breaking behaviour and aggression - between two groups (young people with developmental language disorder and age-matched peers). This study is unique in that the DLD group had had the disorder diagnosed in childhood and they had received specialist intervention, attending language units from age 7 as part of the UK education system, with longitudinal data collected regularly thereafter. At age 24, compared to their peers, they still had lower scores on language tests and higher rates of experienced aggression (possibly related to frustrations at their communication difficulties), but had lower engagement in substance abuse and significantly less contact with police than their age-matched peers. As the authors note, *This investigation provides novel evidence that specialist intervention in childhood has the potential to disrupt risk and reduce the cycle of adverse outcomes in relation to substance use and rule breaking* (p. 266).[213]

158. In other research on interventions to at least manage communication disorders if it is too late for prevention, a small Australian study showed that up to 16 weeks of one-to-one sessions with a speech-language therapist reduced the negative impacts of the communication difficulties of incarcerated youth-justice offenders (average age 17).[214] The researchers pointed to the challenges of delivering interventions within a custodial setting that nevertheless were of benefit, and the need for much more intervention research in this area. They also noted the

range of factors contributing to the offenders' language problems, including troubled and chaotic childhoods with disrupted placements and attachments (and thus less opportunity to communicate positively with attachment figures, build empathy, emotion and behaviour management skills), and school experience impeded by relocations, poor attendance and suspensions for challenging behaviour, which then compounded the (mostly undiagnosed) communication difficulties.

159. Good relationships are seen as crucial to rebuilding language capacity in young people, as shown in a small interview study with NZ teachers and specialists working in youth justice, who pointed out that *it's out of relationship that language will come*.[215]

160. In conclusion, difficulties with communication, some caused by a high degree of undetected impairment, disproportionately affect those involved in the criminal-justice system, and compound the issues that precede and precipitate their entry into that system. NZ researchers point out the sobering reality that we have a justice system designed for those with good verbal communication skills, and yet the majority of offenders lack exactly such skills, to the extent that their basic rights and access to justice may be being denied (p. 123):[216]

> *Verbal communication is the primary interface with the justice system in almost every jurisdiction, from the moments leading up to and following apprehension and questioning by police, to discussions with lawyers, court hearings, and throughout any restorative justice and/or rehabilitation processes.*
>
> *Therefore, any barriers to being able to participate fully—be it through impaired cognitive abilities; language or cultural barriers; and/or difficulties with hearing, auditory processing, or language skills—have implications for the offender's basic rights and access to justice.*

Other issues

161. This discussion paper cannot comprehensively cover all aspects of brain and behaviour that relate to the criminal-justice system, especially as many links and associations are poorly understood and definitions and diagnoses controversial. In this section, attention-deficit/hyperactivity disorder (ADHD), learning issues (specific learning difficulties including dyslexia) and autism spectrum disorder (ASD) are outlined, in the hope that the challenges they present for those dealing with the justice system are raised for further exploration.

Attention-deficit/hyperactivity disorder (ADHD)

162. Attention-deficit/hyperactivity disorder (ADHD) may be diagnosed when there is a persistent pattern of age-inappropriate levels of inattention, hyperactivity and/or impulsivity, beginning in early childhood and, for some, persisting through adulthood. There can be compounding and negative effects from ADHD on education, and subsequent employment problems; social interactions and relationships; poor self-esteem; antisocial behaviour; and risks of substance abuse, anxiety and depression. It is often comorbid with other neurodevelopmental disorders such as autism spectrum disorders and dyslexia, or with personality disorders, drug and alcohol abuse disorders, or psychiatric diagnoses.[217]

163. Prevalence is estimated to be about 3% to 5% of children, about 15% of whom retain a full diagnosis by age 25, and a further 50% experience some ongoing symptoms affecting daily life. [217] [218]A further 5% of children may have substantial difficulties with overactivity, inattention and impulsivity but not meet the diagnostic threshold.[219] Boys are more likely to be diagnosed with ADHD than are girls, but research is increasingly indicating that girls are being underdiagnosed and undertreated, rather than there being fewer with the condition,[220, 221] in part due to expectations than ADHD is about "disruptive boys".[222]

164. ADHD is overrepresented in those involved with the criminal-justice system, with a recent meta-analysis calculating that rates of ADHD amongst people living in detention are five times higher than general population prevalence.[223] International research estimates are that up to two-thirds of young offenders and 50% of adults in prison would screen positively for ADHD in childhood. Around 14% of adult male offenders and 10% of adult females may continue to have symptoms of ADHD.[224]

165. Risks of involvement with the justice system may be exacerbated by ADHD where it is undiagnosed, untreated and unsupported, with difficult social interactions and challenges in engaging in education associated with risk factors of exclusion and failure.[224] In research with 300 long-term adult prisoners in Sweden, 40% met criteria for ADHD; almost none had been diagnosed in childhood and many had abused amphetamine drugs (which the authors note may be a form of self-medicating, as it is the type of stimulant drug prescribed when treating ADHD).[225] Features reported in adults with ADHD include difficulties with organisation, time management, problem-solving, managing daily responsibilities and self-regulating (inhibiting) behaviour – all of which can negatively affect justice-system involvement.[226]

166. It is important, however, not to assume that having a diagnosis of ADHD automatically increases risks for offending.[227] In general, evidence is complicated by differences in how both "offending" and ADHD are measured and how other variables, such as substance abuse or conduct disorder, are included or controlled for.[228] [229] For example, substance use disorders are common alongside ADHD but researchers continue to explore a "complex and not fully understood relationship" between ADHD, substance use and offending, especially in adolescence.[230] Questions remain as to how multiple risk factors contribute to the offending pathway, whether associated with neurodevelopmental diagnoses, early trauma, family violence, challenging behaviour, school failure, antisocial peer development and substance abuse (to name but a few).[231] [232] A recent *Lancet Psychiatry* review notes that further research on attachment, trauma and neurodevelopment is needed (p. 180):[233]

> *Within child psychology and psychiatry there is also an ongoing debate about whether some children currently diagnosed as having ADHD would be better understood using an attachment or trauma paradigm and vice versa. However, this is not an either or debate, and there are strong theoretical reasons why these disorders can often coexist. However, this question has been somewhat neglected by researchers and merits further attention.*

167. A diagnosis of ADHD in childhood can trigger prescription of medication (such as methylphenidate in children and adolescents). A recent *Lancet* medication review acknowledged that debates persist about the efficacy and tolerability of ADHD medications across the lifespan, including methylphenidate (commonly called "Ritalin") in children and adolescents and amphetamines in adults.[234] There are challenges with providing medication that has black-market value to those in the youth-justice system or in adult prison.[235] There is also ongoing debate around adult diagnosis and treatment,[236] as comorbidities are high, with clinical guidelines emphasising the need to treat psychiatric diagnoses first, while being aware of risks of exacerbating ADHD symptoms by treatment for other conditions.[237]

168. Swedish research on the medication and reoffending records of more than 25,000 people in custody who had ADHD (around 50% aged 15 to 24 years) showed risk of reoffending was reduced when on medication, compared to periods when not medicated or compared to those who were unmedicated. Significant reductions in reoffending rates were shown for both men (32%) and women (41%) who were taking medication for ADHD (including either stimulant medications such as methylphenidate or non-stimulant atomoxetine).[238] A small, randomised

controlled trial with 30 men (aged 21 to 61) with severe ADHD in a high-security prison showed that medication significantly reduced measures on observer-rated scales of ADHD symptoms compared to controls, including where there were comorbid issues such as autism spectrum disorder, lifetime substance use problems, anxiety or depression. Treatment adherence was high and risk of misuse of the methylphenidate low due to the structured and controlled setting of the prison's dedicated ADHD wing;[239] there are also slow release forms of the stimulants and protocols used for methadone programmes in prisons (also a prescription drug at risk of abuse) that can reduce risk.[240]

169. Healthcare and justice systems that require transition at age 18 from child and youth services to adult services puts young people with ADHD at risk of discontinuity of medication and support.[241] ADHD does not meet entry criteria for adult mental health services, so good transition planning with primary care is needed if ongoing medication is required. Not attending appointments may be typical of the struggle a young person with ADHD has in organising themselves, not necessarily an intentional disengagement from support.[242]

170. There are effective psychological approaches to managing ADHD in children and adolescents, such as those focusing on cognitive behavioural approaches to managing conduct problems, social skills and academic performance.[243] Programmes for adults have also showed some benefit, including in managing antisocial behaviour and enhancing medication effectiveness.[244] Issues of "nature vs. nurture" are complex, with the role of parenting and early educational responses seen as having a positive effect on a "brain" disorder or conversely compounding whatever tendencies are described as innate. When a child is seen as impulsive, failing to follow through on tasks, insensitive to others, and avoidant of extended mental effort, some would describe them as having "low self-control", which is, for example, described as a "behavioural trait established at an early age through poor parenting" (p. 288) – and therefore able to be helped with good parenting support. Others would see such behaviour as accounted for by ADHD, described as a genetic brain disorder appearing early in life but able to be successfully managed by late adolescence, including through helping parents and schools to respond effectively to the condition.[245] What's more, research in 2019 continues to be unable to untangle these concepts in relation to the likelihood of later engaging in criminal offending.[245]

171. Social and environmental responses to ADHD include the challenges seen elsewhere in this discussion paper, in terms of whether support around diagnosis and interventions are equitably accessible, including to those facing social disadvantage; and whether programmes are culturally appropriate and the diagnostic approaches make cultural sense or are appropriate to diverse ethnicities, social and gender identities.

172. Awareness of ADHD in justice services is important, as researchers point out that ADHD can compromise a young person's ability to effectively manage a justice encounter in many ways (p. 510):[246]

> *Youth with ADHD have executive function deficits, and such deficits make it difficult to emotionally cope, attend to relevant cues, remember all question parts and reply choices, provide coherent and accurate answers, resist yielding and contamination errors, as well as to inhibit their disproportionately frequent 'don't know' responses, culpable statements and false information/confessions.*

173. In work with the Australian police, researchers found the police were well aware that young people they came in contact with often displayed ADHD behaviours that impeded the detectives' ability to conduct "time-efficient high quality interviews" (p. 520) and put the adolescents at high risk of continued criminal-justice system contact.[246] Yet, despite the detectives' knowledge, they could not identify ADHD as the most likely explanation for behaviour described in research

vignettes, over and above nine other possibilities – that the young person was "anxious" or "difficult", showing lack of respect for police, using drugs/alcohol or having problems at home; that the young person had an intellectual impairment, communication disorder, or oppositional defiant disorder; or merely that it was "typical behaviour". The researchers called for more screening tools to be available and more support for staff to better identify and manage ADHD behaviour.

174. In UK research on 200 young suspects in police custody, the researchers were able to establish diagnoses of intellectual disability (6.7%), ADHD (23.5%) and conduct disorder (76.3%), disproportionately higher than those of the non-offender population, and likely to compromise the suspects' ability to participate effectively in proceedings. Yet only 4.2% were allocated an "Appropriate Adult", the UK system of support for detainees (who are under 17 or are "mentally vulnerable" such as these suspects). This is about the same low rate as researchers had found 20 years prior, despite subsequent reviews calling for more access to such support.[247]

Learning differences

175. Learning disabilities, broadly defined, refer to achieving lower than expected achievement scores, for an individual's age and educational opportunities, in academic areas such as reading, comprehension and maths abilities.[248] Having even significantly below average test results is not, however, synonymous with "low IQ" or intellectual disability in NZ, whereas other countries use "learning disabilities" as a catch-all term for intellectual and developmental disabilities (and sometimes mental health problems), which adds some confusion to the field.

176. Furthermore, the use of terms like "disabilities" or "disorders" is debated – in line with the social model of disability, which argues that it is our systems of education or justice that may "disable" children and young people who learn or think differently. Indeed, researchers claim that "elevated levels of externalising problems, including behaviours characterised by defiance, impulsivity, disruptiveness, aggression, antisocial behaviour, and delinquency, have been found in children and adolescents who underachieve academically" (p. 1264) – that is, the ways the school system expects learners to behave is the problem, that some children then react to with "defiance" instead of compliance.[248]

177. Another way to describe these brain and behaviour interactions are as "specific learning difficulties" – a "family" of related conditions, together affecting about 15% of the population, that:

    - affect the way information is learned and processed
    - are neurological (rather than psychological)
    - occur independently of intelligence
    - include dyslexia, dyspraxia, dyscalculia and attention deficit disorder (p. 6).[249]

178. As with other areas of brain and behaviour discussed in this paper, there is a consistent pattern of justice-involved young people and adults having higher rates of learning difficulties than those not involved with offending, regardless of ongoing debates as to exactly how conditions are defined and

measured or what causes or maintains them.[248, 250] People with specific learning difficulties may face challenges in engaging with justice processes (from being a witness or making an allegation to being a suspect or defendant) that others do not face.

179. The following case study (Example 4) from the UK, reports on a person with dyslexia who lost child custody in a chaotic-feeling court experience (p. 13).[249]

180. Learning problems may be undetected - a justice-involved person with learning difficulties may be unaware that there could be an identifiable problem and specialist support that could help them, as shown in recent Australian research. Instead, they – and others around them, including in the justice system – may simply assume they can't or won't move forward (p. 115):[250]

> *It is entirely plausible that a person with undiagnosed learning difficulties underachieves at school and then disengages until they eventually drop out, never realising that perhaps their low achievement is due to specific learning difficulties that can be overcome with appropriate support.*

181. In an important study that documented learning disabilities within two of the three youth-detention facilities in NZ, 92% of the residents, aged 16 to 19 years, showed significant difficulties in at least one area of achievement (IQ, attention, literacy, numeracy, verbal abilities). Reading skills were particularly low (mean ability at 4th percentile) and reading comprehension was found to be predictive of future offending, when the young people were followed up 4 years later.[248]

182. Undetected learning difficulties compromise the success of education and evidence-based interventions offered to offenders, that may call for high levels of literacy and verbal ability to articulate and work on quite abstract notions of self-awareness and self-management. Many of the youth tested in the NZ youth-detention facilities had already been suspended from even the prison school.[248] Australian researchers point to the need for *practical* approaches and more professional development for staff and teachers in prisons, to ensure that educational and vocational programmes cater to the needs of prison populations with disproportionately high rates of learning issues.[250]

Dyslexia

183. Terms such as dyslexia may be used to signal learning difficulties. According to medical journal, *The Lancet,* this is where the person has "difficulties with accurate and/or fluent word recognition and spelling despite adequate instruction and intelligence and intact sensory abilities" (p. 1997).[251] The New Zealand Dyslexia Foundation defines it as, "*A specific learning difference which is constitutional in origin and which, for a given level of ability, may cause unexpected difficulties in the acquisition of certain literacy and numeracy skills*." "Constitutional" refers to dyslexia having a neurobiological basis, a view which *The Lancet* shares, although the precise biological and gene features continue to be debated.

EXAMPLE 4. DYSLEXIA IN COURT

Experience of dyslexia in court proceedings
I lost a child care battle this week due to my severe dyslexia. I experienced total disorientation, visual and audio isolation. I could hear things going on but nothing seemed to register or make sense. Important questions were garbled and distorted and in some cases the questions didn't even register. I had an overwhelming sensation of being in a tunnel. I was asked (unexpectedly) to recall events of several years ago in detail. The order of how I recalled the events was vital to my case. However, I was unable to access my memories of the events clearly and what I did manage to remember I was unable to express in a chronological order or with any clarity. This was interpreted as evasiveness and I was criticised heavily for not being able to 'keep to my story'.

184. Dyslexia is estimated to affect between about 4% and 8% of the general population,[252] or up to 10%, with about 4% experiencing severe dyslexia.[253] It is often undiagnosed, with people stigmatised as "slow" when they seem unable to acquire core reading and writing skills. Again, justice-involved people appear to have higher rates of dyslexia, when testing is done.[254]

185. Some common signs of dyslexia can include (these are indicators from the Dyslexia Foundation of NZ, not a diagnosis):[255]
    - Problems with labels, rhymes, sequences
    - Letters or numbers reversed or confused b/d/p/q, n/u, 13/31
    - Being slower to process and needing repeated exposures to retain learning
    - Retrieval issues – learns something one moment, gone the next
    - Large gap between oral and written capabilities
    - Poor sense of direction – difficulty telling left from right
    - Reluctance, embarrassment or avoidance around reading out loud
    - A preference for face-to-face meetings/phone calls rather than email correspondence, and for charts/graphs over text
    - Frequent misspelling of words and mixing up words which sound similar (recession/reception), in speech or written work
    - Poor handwriting, punctuation and grammar
    - Misunderstanding or misinterpretation of instructions
    - Problems meeting deadlines, despite working hard
    - Fine motor coordination may be problematic, e.g., tying laces, doing up buttons.

186. An example of the difficulty reading and resultant "visual stress" is illustrated in Figure 2, from a British Dyslexia Foundation guide to help those working in the justice system respond to people with dyslexia, including thinking about how accessible document layouts are (p. 9).[253] Screening of a sample of 120 people in New Zealand prisons by an expert in literacy and dyslexia found that nearly half had significant dyslexia (52% men, 43% women), previously undiagnosed. More than 80% had attended secondary school for two years or less, with many having been excluded during their first year at secondary school.[256] A prevalence of around 50% was also found in a Scottish prison study of dyslexia rates.[257]

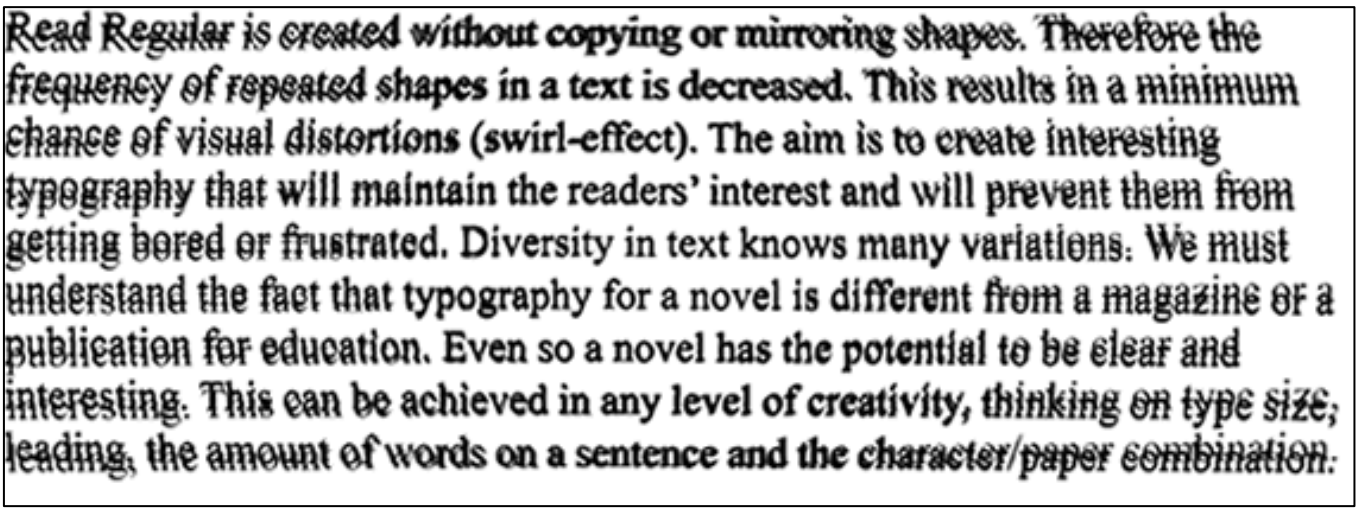

Read Regular is created without copying or mirroring shapes. Therefore the frequency of repeated shapes in a text is decreased. This results in a minimum chance of visual distortions (swirl-effect). The aim is to create interesting typography that will maintain the readers' interest and will prevent them from getting bored or frustrated. Diversity in text knows many variations. We must understand the fact that typography for a novel is different from a magazine or a publication for education. Even so a novel has the potential to be clear and interesting. This can be achieved in any level of creativity, thinking on type size, leading, the amount of words on a sentence and the character/paper combination.

FIGURE 2. EXAMPLE OF VISUAL STRESS FOR A READER WITH DYSLEXIA

187. Interestingly, a study of 598 police officers in the UK found 44% had some issues with literacy or dyslexia, including almost 10% with diagnosed dyslexia (at the high end of general population rates), 24% with self-identified, undiagnosed dyslexia and 10% with literacy difficulties they did not conceptualise as dyslexia traits.[258] Of the 56 men and women with dyslexia, fewer than half had disclosed this to their employer, due to fear of stigmatisation and having their competence doubted. They had difficulties with spelling/writing, short-term memory and reading. Under equality legislation, workers are supposed to be able to access "reasonable adjustments" to accommodate "impairments" like dyslexia at work; almost none had been offered "assistive technologies" (like text-to-speech technology to proofread writing, dictate software or digital voice recorders as memory aids etc). The authors note that UK police still have to hand-write statements from suspects for court as digital statements are inadmissible because of their editability.

188. It is notable that the focus of this paper on dyslexia in the police force was about the men and women having their employment rights compromised and facing risks of discrimination, not their potential for delinquency.

189. Those with diagnoses of dyslexia and other neurologically based specific learning disorders in reading, writing and/or arithmetic can also have diagnoses of attention-deficit/hyperactivity disorder (ADHD). As dyslexia is not usually diagnosed until the child has begun formal literacy instruction, earlier diagnoses such as of ADHD may point to a risk of later reading problems.[259] Different patterns of abilities within and outside of the school setting when multiple diagnoses are present are under-researched (according to a 2019 paper) but could help guide more effective interventions.[260] [261]

190. Access to diagnoses and interventions are affected by socioeconomic status, with children from more well-off households able to have privately funded diagnostic assessments and extracurricular programmes, and have more access to assistive technology.[262] Again, early intervention is the most effective (p. 3):[263]

> *Research indicates that most students who experience literacy problems in their early years do not ultimately have long-term difficulties when appropriate instruction and intervention are provided. In fact, interventions that are appropriately responsive to individual needs have been shown to reduce the number of children with continuing difficulties in reading to below 2% of the population.*

191. Dyslexia is a heterogeneous condition which for older children requires very good diagnostics to enable targeted interventions,[264] rather than one-size-fits-all programmes. The International Literacy Association calls for teachers to have the freedom to act on the basis of their professional expertise and responsiveness to provide "optimal instruction" to such students.[263]

192. There are also debates about negative views of dyslexia. The Dyslexia Foundation of NZ describes it as best characterised as a "learning preference" where learners work better with oral, visual or multi-sensory information than with the written word, and can be creative and entrepreneurial, but not if operating in stigmatising, disabling settings:[265]

> *Dyslexia's greatest difficulty is self-esteem – it only becomes a disability if not appropriately addressed. On the flipside, dyslexia can deliver great creative gifts, innovation and entrepreneurship. Dyslexic individuals tend to think in pictures rather than words, receiving and retrieving information in a different part of the brain to neurotypical, word-based thinkers. Dyslexia can also affect more than words alone, impacting skills such as auditory and information processing, planning and organising, motor skills, short-term memory and concentration.*

193. Against the negative stereotypes are suggestions that neurodiversity can be a bonus. For example, using assessment data from more than 1,400 Italian children, aged 7 to 16, researchers were able to explore rates of dyslexia and specific learning disorders (deficits in performance in reading, writing and/or arithmetic) as well as rates of high IQ or "giftedness", in line with popular ideas that geniuses like Einstein had dyslexia. The researchers found that, depending on the measures of intelligence used, there was evidence that more of those with learning disorders also had IQ measured at the "gifted" level than did those with typical learning abilities, though more research is required.[266]

194. In New Zealand, the Department of Corrections journal *Practice* describes a strengths-based initiative underway in 2019 to support tutors and instructors who are working in prisons to support "neurodiverse" learners, specifically those with traits of dyslexia, dyspraxia, dyscalculia and/or dysgraphia.[267] As well as developing practical screening tools, the programme intends to provide resources and a "passport" for learners that has information about their learning abilities to help guide participation in various educational and vocational activities, including after they leave prison.

Autism spectrum disorder

195. According to the Diagnostic and Statistical Manual of Mental Disorders (DMS-5),[268] autism spectrum disorder is characterised by "persistent difficulties with social communication and social interaction" and "restricted and repetitive patterns of behaviours, activities or interests" (including sensory behaviour), present since early childhood, to the extent that these characteristics may "limit and impair everyday functioning".

196. According to the Centers for Disease Control and Prevention (CDC), "autism spectrum disorder" (ASD) includes several conditions that used to be labelled separately: autistic disorder, pervasive developmental disorder not otherwise specified (PDD-NOS), and Asperger syndrome.[269]

197. The diagnostic language refers to impairment, deficits and disorder. Others refer to autism as a form of "neurodiversity" rather than as a problem; it is argued that the "problem" instead is in the ways that education and health systems "disable" people who learn, think, feel or express themselves differently from the "neurotypical" majority.[270, 271] Thus, the term "disorder" is not used in definitions such as, "Autism is a neurodevelopmental condition that affects cognitive, sensory, and social processing, changing the way people see the world and interact with others" (AutismNZ website) or in phrases like "quirky kids".[272]

198. A typical comment in information about autism is, "If you have met one person with autism, you have met one person with autism",[273] which highlights the wide diversity of ways a person with this label may behave, think and experience the world. Although independent of intellectual ability, the term has been used with some people who are also classified as having severe intellectual disability, through to those measured as having above average IQ, which further adds to diagnostic challenges.

199. Autism spectrum disorder is thought to affect at least 1 in 100 people[274]; however, the most recent USA prevalence, using the DSM-5 diagnosis for the first time, is that it

affects 1 in 59 children.[275] This is from the Autism and Developmental Disabilities Monitoring (ADDM) Network, a longstanding, population-based surveillance system that estimates prevalence of autism spectrum disorder in 8-year-olds from 11 American states. The range of prevalence was from 13.1 to 29.3 per 1,000 children, giving an overall prevalence of 16.8 per 1,000; hence 1 in 59 children.

200. According to the NZ government's *New Zealand Autism Spectrum Disorder Guideline* (2016), there is no definitive information on the prevalence and incidence of autism spectrum disorder in NZ, so international prevalence guidelines are used.[276] The NZ document has been set up as a "living guideline" to be updated as local prevalence rates and practices are investigated and established.

201. In the ADDM data, 31% of children with autism spectrum disorder were classified as being in the range of intellectual disability (IQ $\leq$70), 25% were in the borderline range (IQ 71–85), and 44% had IQ scores in the average to above average range (IQ >85).[275]

202. The diagnosis is made more often in males than females (estimated 4:1, or 3:1), although rates for women are thought to be underestimated, with evidence that girls meeting criteria for autism spectrum disorder do not necessarily receive a clinical diagnosis.[277, 278]

203. There are questions as to the associations between family socioeconomic and education status, and autism diagnosis, with a recent longitudinal cohort study in the UK showing that 5 to 8 year olds (born between 2007 and 2011) with more highly educated mothers ("A level" and above) were twice as likely to be diagnosed with autism spectrum disorder (1.5%) than were children of mothers with lower levels of education (0.7%).[279] The researchers suggest this may be primarily due to service provision and access issues (p. 138):[279]

Service provision is limited and potentially difficult to access, where in order to get to a diagnosis of autism, parents-carers need to be aware of the potential for their child to have autism, be engaged with the health care system, be able to access information, navigate through service provision options while advocating and demanding access to diagnosis and service provision to support their child.

204. The awareness and diagnostic prevalence of autism has increased worldwide.[280] This is due to the diagnostic criteria having moved from referring to narrowly defined, profound and distinct psychiatric disorders in the 1940s-50s; to ideas of autism being diagnosed as on a "spectrum", including both mild and more severe forms; and most recently as a "difference", part of "neurodiversity" not necessarily a "disability".[281] With the etiological uncertainty, and diverse ways of defining and tracking autism spectrum disorder, apparent increases, especially since the 1980s, have fuelled theories of all sorts of highly debateable causes.[282] Chief among these is the soundly debunked but still widely perpetrated social myth about the MMR vaccine "causing" autism spectrum disorder.[283]

205. There has been a lack of research attention to issues of ethnicity and culture in relation to autism.[284] It has been suggested that this may be due to early assumptions that autism spectrum disorder was associated with high-income "White" families or was a "Western disease",[285] that it was primarily a neurobiological condition (and therefore supposedly less affected by culture), and that prevalence rates seemed similar across cultures (despite research now showing that ethnicity has been insufficiently reported in prevalence studies).[286] Access to resources for diagnosis and intervention are affected by socioeconomic status and racism; for example, African-American children with autism spectrum disorder were found to be usually diagnosed with ADHD, conduct disorder or adjustment disorder on their first specialist visit, in contrast to white American

children, which led to delays in access to intervention.[287]

206. There are cultural and social influences on beliefs about and responses to autism spectrum disorder that need more research. There are diverse beliefs as to whether family members are responsible for children's "disability", from American psychiatric mother-blaming theories in the 1940s, to diverse cultural or religious beliefs about parental religious mistakes "causing" the condition.[288] There are culturally diverse meanings of "disability" or "difference" within different faiths and cultures,[289] and culturally diverse definitions of, and responses to, "challenging behaviour"[290] or how aspects such as "appropriate" eye contact are defined.[289]

207. In NZ, both Māori and Pacific rates and responses to autism spectrum disorder are poorly understood and require more research.[276] A supplementary literature review (added in 2018 as part of the Living Guideline process) on the impact of ethnicity on recognition, diagnosis, education, treatment and support for people on the autism spectrum[291] recommended that "Diagnosticians should be aware of the potential for bias based on ethnicity which may lead to delayed diagnosis or misdiagnosis" (p. 38), and that "Professionals should collaborate with individuals with ASD and their families/whānau to set goals that are culturally responsive" (p. 39).

208. In one of the only pieces of research on aspects of ethnicity and autism spectrum disorder in NZ, the delivery of a programme about autism for parents was investigated.[292] Barriers to Māori and Pasifika families accessing the programme were described as including "lack of awareness among Māori and Pasifika families of ASD as a diagnosis" (p. 114), and cultural aspects of the programme being a poor fit (including videotaping sessions, all work being conducted in English only, and group work, with differences amongst cultures around social cues for entering conversation, shyness and politeness). A 2019 study found Asian New Zealanders with autism spectrum disorder were also underrepresented in accessing disability and support services, due to cultural health beliefs and stigma around children's behaviour that might meet autism spectrum disorder criteria, and language/ cultural barriers in accessing help.[293] Further local research on all stages of autism spectrum disorder, from diagnosis to intervention, and across the lifespan, is needed.

209. As the NZ guideline notes, early intervention (e.g., preschool) can result in "fewer challenging behaviours and better outcomes for families and whānau" (p. 12).[276] It is beyond the scope of this discussion paper to explore the complexities and debates around intervention. For example, there is an evidence base for using applied behaviour analysis to shape problematic behaviours,[294] but there are issues with treatment fidelity and implementation science, as well as resourcing of the field, that hamper delivery (p. 13):

> *For children and youth with autism spectrum disorder, ABA [applied behaviour analysis] has generated a great deal of knowledge about effective interventions and human services for this population, yet the gap between research and practice remains wide.*

210. There are also calls for more involvement of people with autism in the development of policy and practice, including in the New Zealand guideline, to avoid the past lack of community engagement that was described in a recent paper on meaningful participation (p. 948):[295]

> *Understanding of autism has largely moved on from attempts to characterise autism in terms of a single, universal 'deficit' and now recognises the diverse pattern of features. Nevertheless, in the context of community engagement, a belief that autism is characterised by – for example – an inability to understand others has been used as an excuse not to engage with autistic people.*

ASD and the criminal-justice system

211. Autism spectrum disorder is perhaps even more poorly researched than other brain and behaviour issues in relation to the criminal-justice system (CJS), with a literature review just last year concluding that, "It is apparent that although the increasing research in this area is encouraging, the general nature and prevalence of ASD in the CJS is still largely unknown" (p. 115).[296] A systematic review exploring autism spectrum disorder in prison found only three peer-reviewed papers on the subject, primarily case reports of a few UK-based prisoners with ASD who had diverse responses to prison.[297]

212. The New Zealand ASD guideline acknowledges that, "Research is needed into how to minimise the stress experienced by people with ASD when they come into contact with the police and criminal justice system" (p. 181), whether as victims or offenders, and that associations with offending are unclear.[276]

213. Australian researchers noted this year (2019) that there has not yet been any research conducted as to the prevalence of autism spectrum disorder in the Australian justice population.[298] A self-report survey in the NSW prison system found about 1.3% of those in prison responded "Yes" to a survey question as to whether they had ever been diagnosed with a developmental disorder such as Asperger's or autistic disorder.[299] This is a similar prevalence to that in the general population and relies on self-report and a generic diagnosis.[298] A small study of 51 female prisoners in the UK's Broadmoor Hospital found higher rates of autism spectrum disorder than in the general population at 10% (*n* = 6 diagnosed with ASD) or higher (a further *n* = 5 were assessed as having "probable ASD").[300] Of most concern, none of the women had ever been assessed or diagnosed prior to being involved in the research.

214. Swedish research, based on clinical assessment and diagnostic data, rather than self-report, found rates as high as 13% of people with ASD, including autistic traits and atypical presentations, among a small group of people "institutionalised" in criminal-justice settings.[301] Data were reviewed on 42 cases: 4 adults in an inpatient forensic setting, with a primary diagnosis of autism; 18 adults being assessed in a pretrial forensic psychiatry setting; and 20 young people (under 18) who had been assessed clinically in youth justice institutions in 2002. The authors noted complexities of diagnosis, high rates of comorbidity with other developmental and mental health diagnoses, and diverse crimes – there were no "typical" offending patterns that could be linked to autism spectrum disorder among those incarcerated.

215. A 2014 systematic review concluded that, due to methodological issues (such as how autism spectrum disorder was assessed, or how "offending" was defined) and the lack of research, it was not possible to conclude that people with autism spectrum disorder were overrepresented in the criminal-justice system.[302] The reviewers did note, however, that behaviours associated with autism spectrum disorder may put people at risk at various points in the justice system, including "social naiveté, misunderstanding of social situations, lack of understanding of the rules, and obsessional interests" (p. 2730) and also that "psychosocial adversity" may be an important compounding factor.

216. Media coverage sometimes highlights the issue, as with the young man charged with "looting" light bulbs following the Christchurch earthquakes, without particular awareness of the possible consequences or the social context; his behaviour was eventually confirmed as being related to his mild autism spectrum disorder (Example 5).[303] This shows how behaviours associated with autism spectrum disorder may put people at risk of involvement in the justice system, especially where professionals are not aware of this risk.

217. Diagnosis of autism spectrum disorder can be time-consuming and complex, and those involved in the justice system may be unable to access the developmental history required. Australian research consultation with staff from healthcare and disability services in the justice system highlighted

EXAMPLE 5. AUTISM SPECTRUM DISORDER

Light-bulbs, autism spectrum disorder and imprisonment

A man was arrested for allegedly taking light fittings from a damaged Lincoln Rd property, and possession of tools for burglary, after the February 22 quake.

The 25-year-old has said he had been obsessed with light fittings for most of his life and could not resist his urges, which were fuelled by his Asperger's syndrome.

"It just drives me bonkers. I've seen it all the time and it just plays in my mind. Sometimes I get so excited about it I can't sleep."

[The defendant] was arrested and held in police custody for 11 days.

While he awaits his trial later this year, dozens of people have written to the ministers calling the handling of the case a "travesty of justice" and urging for it to be dropped.

Many of the emails were from concerned parents and grandparents of people with autism or Asperger's.

"I can assure you that many, many parents of autistic children and young adults were in tears watching [a TV] programme in sheer frustration of the lack of understanding and respect," a grandmother of a girl with the syndrome wrote. "[He] didn't take the light bulbs for monetary gain but solely as a result of his obsessional behaviours." Another person wrote: "His case should never have gotten to the courts."

Autism New Zealand chief executive Alison Molloy said earlier this year that the criminal justice and state support system was not equipped to meet the needs of people with Asperger's Syndrome and other forms of autism spectrum disorder.

issues with diagnosis and support. As a healthcare provider noted (p. 29):[298]

> *A good diagnosis [of ASD] relies heavily on good collateral information from reputable sources, and a good report of an individual's developmental history. Rare in this environment.*

218. A diagnosis of autism spectrum disorder in childhood may rely on stable schooling and location to track developmental issues, and parental persistence and resources to get professionals to explore what they have observed – and, even then, can take years to be diagnosed (in UK research with 1,000 parents of children with autism spectrum disorder, diagnosis took an average of 3.5 years[304]). As the Australian staff noted, justice-involved people typically attend many schools in childhood and adolescence, move often and have not usually had access to sustained parental or caregiver attention to distinguish sources of challenging brain and behaviour issues.[298] Similar issues would likely impact on the ability of NZ justice-involved people to have autism spectrum disorder diagnosed.

219. Also, the Australian staff highlighted that incarcerated adults who have autism spectrum disorder but who do not have comorbid intellectual disability fall into a service gap – not eligible for intellectual disability services (nor for the more individualised learning provision they may require), they may only come to the attention of healthcare services when anxiety and depression, exacerbated by being incarcerated, become severe enough to be attended to. However, at that point, because of workload and limited services, the only intervention is likely to be medication for the depression, without an opportunity to detect the underlying autism spectrum disorder, nor target treatment to better managing sensory sensitivity, interpersonal difficulties or other features of autism spectrum disorder that may hamper both recovery from the depression or rehabilitation from offending.[298]

220. As with the other issues covered in this discussion paper, those with autism spectrum disorder can face difficulties in all aspects of the justice system, from being a victim of crime to behaving in ways that draw police attention, managing poorly with court processes and coping poorly with sentence requirements and incarceration.[305] For example, this offender with Asperger syndrome described the UK court process as very difficult (p. 754):[306]

My barrister made things really confusing. He wasn't telling me what was going on or what was gonna happen next and that just made me worry more. I was just really confused and annoyed.

221. There is some indication that people with autism spectrum disorder may be suggestible and acquiescent in police interviewing, as per the risks discussed above with FASD. However, given the diversity of presentations of autism spectrum disorder, there is also evidence that this may not be a problem. As a review noted 5 years ago, more systematic evidence-gathering is required, across a number of jurisdictions (as numbers of people with autism spectrum disorder involved in the justice system do appear to be low), to grapple with issues of fitness to stand trial and what evidence-based rehabilitation approaches (perhaps modified) are needed.[307] Given that autism spectrum disorder is a "spectrum", there has been some speculation that ASD offenders may have particular ASD characteristics, such as an inability to "read" a fearful expression on another person's face (and therefore less understanding of how they are causing that person harm), than a non-offender with ASD who is better at reading emotional expressions.[307]

222. There may also be issues from coming to the attention of police and then having both police and the person with autism spectrum disorder handling that interaction poorly, which further compounds justice system involvement. For example, US longitudinal research on a nationally representative sample of non-institutionalised youth enrolled in special education included data on 920 with autism. Secondary data analysis of interactions with police at age 14-15 and again at age 20 showed that a substantial percentage (19.5%) had been stopped and questioned by police by the time they were in their early 20s, and nearly a quarter of those (4.7%) had also been arrested. Like non-ASD youth, those with externalising behaviours (such as difficulties with anger management), especially in the context of substance use, community and family violence, were more at risk of coming to the attention of police.[308]

223. If incarcerated, some people with autism spectrum disorder are seen by prison staff as vulnerable to victimisation and isolation, due to misreading social cues or being "obsessive" about aspects of routine. Being put in seclusion or kept isolated was sometimes described as being for the protection of the person with autism spectrum disorder, but could also compound and reinforce social difficulties. People with autism spectrum disorder may have high IQ and language skills, but may nevertheless struggle with prison rehabilitation programmes because of difficulty with abstract concepts, and difficulty recognising and responding to emotional reactions and social cues, that are prevalent in traditional group- and CBT-based rehabilitation programmes.[309]

224. There is also concern about a higher risk of institutionalisation for people with autism spectrum disorder, who may wish to return to the structure and predictability of prison, in contrast to the complex demands of reintegration and change post-release. As an Australian review noted (p. 730):[309]

Adjustment difficulties … may be compounded in prisoners with ASD due to characteristic difficulties in coping with change, a heightened desire for structure and a tendency towards rigidity related to engagement in fixed and repetitive routines and activities … individuals with ASD may derive reassurance and support from the restriction inherent in the prison environment, and therefore be particularly vulnerable to the effects of institutionalisation.

225. In interviews with some Welsh prisoners who had a diagnosis of Asperger's, some participants reported the relief when they were diagnosed, having not understood why they struggled before, "It opened my eyes to why I was doing things" (p. 753). However, the condition was poorly understood, "hidden" or not recognised in their

engagement with the justice system, as these two participants explained (p. 755):[306]

> *No one's really taken into consideration that I've got Asperger syndrome. I just don't feel like I'm getting any help for it...a lot of people just don't know what it means.*
>
> *Because it's not obvious and because it's kind of a bit hidden and, you know, not as severe as somebody with a serious mental illness, it's almost disregarded as a factor in understanding or explaining people's behaviour by the system.*

226. In a UK Children's Commission report urging that more attention be paid to the issues of neurodisability and neurodiversity in the criminal-justice system,[310] a simple framework for staff to use was provided by the UK National Autistic Society. It is SPELL (Structured, Positive, Empathic, Low-stress, Link with appropriate agencies):

    - A **structured** and consistent approach
    - Highlighting the **positive** abilities of the person
    - An **empathic** approach
    - An immediate environment that is **low** in stress
    - An approach that works to develop **links** with other agencies (p. 54).

227. Other recommendations include switching off sirens and flashing lights; approaching the person in a non-threatening way; calmly giving the person time to respond; giving clear instructions and avoiding the use of sarcasm, metaphors or irony; keeping facial expressions to a minimum; avoiding touching the person; and being aware that they may not understand personal space. Using visual information to explain the process, and addressing the person by using their name at the start of each sentence were also suggested.[306]

228. A recent, small US study surveyed law enforcement officers about autism spectrum disorder.[311] Despite 75% reporting they had had little or no training on autism, half of them had responded to a duty call involving a person with autism in the past year, which often ended in an involuntary hospital admission. Survey items included some agreement with the myth that "vaccines are causing an increase in autism" (p. 1281) but, more encouragingly, on average, officers correctly endorsed items such as that autism spectrum disorder was a neuro-developmental disorder (rather than an emotional disorder), that could co-occur with other disorders, and that there was not a single intervention or "cure" that worked for all young people with autism spectrum disorder. What are the opportunities for NZ law enforcement officers to learn more about autism and how to respond to it?

229. The need for more awareness amongst members of the public, for example who may serve in jury trials, was highlighted in a UK study. Researchers used a vignette describing a male offender's suspicious and aggressive behaviour with police and then in court that was given to potential jurors, half of whom judged him on face value while the other half were told he had autism spectrum disorder and were given information on the diagnosis.[312] He was more often judged to be guilty and seen as "deceitful, unremorseful, rude and aggressive" (p. 996) where no diagnosis and background information were given; those who understood he had autism spectrum disorder saw more mitigating circumstances, less often found him guilty or recommended more lenient sentencing.

230. A person diagnosed with autism spectrum disorder might also meet criteria for other neurodevelopmental issues, such as ADHD[313], or experience anxiety, depression and other mental health concerns, that may contribute to, or complicate, the diagnostic or intervention processes.

231. As with the other issues in this paper, there is limited research on both the prevalence of people with autism spectrum disorder within the criminal-justice system, and how to ensure their journey through the system is safe and effective, but there are increasing calls for more evidence, as awareness of the whole area of brains and behaviour in relation to justice or, perhaps more accurately, *injustice*, grows.

What can we do to work better with brain and behaviour issues?

232. It is not the purpose of this discussion paper to make detailed recommendations as to how people involved in the justice system should respond to those with brain and behaviour issues. The need is for reflective questions and a holistic approach; to be given the tools to wonder, "How does this person's neurocognitive functioning affect their involvement with the criminal justice system? What were they thinking?"

233. How come not all people with these sorts of brain issues get into trouble? What are the interventions we need to have available that will better suit those with cognitive functioning compromised by neurological issues, given that classroom-based or document-based interventions may be least effective?

234. The effects of brain and behaviour issues from childhood into adulthood can be made worse by the lack of equity in services for those in need. How can we get to better understand the situations people face, including noticing the effects of adverse childhood and life circumstances that compound existing brain and behaviour issues?

235. Given how many of the brain and behaviour issues raised in this overview can add sensitivity or stress to day-to-day life, the following quote from the *Hōkai Rangi* document on prison reform points to the added risks for those with brain and behaviour issues (p. 12):[314]

> *Prison takes a lot of really stressed out people, puts them all together and stresses them out even further.*

236. Community awareness of brain and behaviour issues needs to grow, including in relation to those in the criminal-justice system who experience them. In calls for tough punishment to "teach offenders a lesson", it is important to consider what "lessons" can, in fact, be learned and retained where there are injured brains. We need to take a smart and evidence-based approach to crime as opposed to an ill-informed approach. For example, the Ministry of Health information on FASD reminds us that these are "neurodevelopmental" disorders, not mental health or behavioural issues. Therefore, typical strategies used with children and adults who need to learn to "behave better" ***will not*** work (p. 8):[315]

> *When a person has a neurodevelopmental issue, treatment needs to take into account the way their brain works if it is going to be successful. For example, some behaviour therapies aim to teach an individual to think differently in order to behave in less antisocial ways. These therapies will not work if the underlying brain damage stops the person from understanding cause and effect.*

237. Furthermore, according to a recent statement from The United Nations Committee on the Rights of the Child (Para 28), children with brain and behaviour issues should be "***automatically excluded***" from the justice system:[316]

> *Children with developmental delays or neurodevelopmental disorders or disabilities (for example, autism spectrum disorders, fetal alcohol spectrum disorders or acquired brain injuries) should not be in the child justice system at all, even if they have reached the minimum age of criminal responsibility. If not automatically excluded, such children should be individually assessed.*

238. Earlier and more effective prevention and intervention with children and young people with brain and behaviour issues will reduce risks of criminal-justice involvement. Furthermore, such work must be led by those most affected by criminal-justice involvement, as emphasised in the Hui Māori in Rotorua in April 2019 (p. 19):[317]

> *All processes must be child focused, whānau centred and whānau led.*

239. Common-sense steps for action to ensure more effective intervention with children and young people with neurodisabilities to prevent offending have been suggested in a UK psychology position paper. [318] These range from earlier intervention and better assessment at the earliest signs of difficulty, to better screening and appropriate intervention if involved with the criminal-justice system, and ensuring health, education, child-welfare, justice and social-service professionals are well-informed and, along with caregivers, resourced to take action. Recommendations include that:

- A second "stand-down" from school should trigger comprehensive assessment of neurodisabilities, conduct disorder, maturity and vulnerability to risks of offending. [Some would argue the first stand-down should trigger this.]
- The first engagement with the criminal-justice system should trigger screening for neurodisabilities, substance use and mental health conditions, as well as assessment of the ability to engage with and follow the justice process (learning disabilities, suggestibility etc), and cultural assessments.
- The results of those assessments should inform court proceedings and pre-sentence reports.
- Training on identifying and working better with those with neurodisabilities and their families should become core curriculum for health, education, justice and social-sector professionals.
- Appropriate data-sharing across agencies should occur to prevent children and young people not getting the help they need soon enough.
- Research programmes establishing best-practice prevention and intervention should be carried out.

240. As noted in the second report in this series, on youth offending,[319] a NZ programme of work on severely challenging behaviour and conduct problems in infants and children was researched and ready to go a decade ago, tackling many issues also relevant to children affected by brain and behaviour issues as they enter early childhood education or primary school.[320] What is needed for this programme of targeted, evidence-based prevention and intervention work to be actioned?

241. It seems it can be politically challenging to fund programmes to make something not occur (i.e., to reduce the likelihood of costly imprisonment by supporting babies better). But the costs modelled of the entirely preventable condition of FASD - at $200 million, or 0.09% of GDP, *excluding* criminal-justice costs (from the economic paper[321] noted in the FASD section above) - is an indication of how much we are losing by not putting a fraction of such resources into prevention. The economic benefits of early prevention and intervention programmes are shown not only in reduced criminal-justice costs but also span healthcare (reduced use), education (more effective use of remedial approaches and support staff), social services (reduced use) and employment (increased tax revenue), as well as savings from reductions in the number of crime victims. [322]

242. Programmes targeted at the highest-risk populations are the most cost-effective, especially the earlier they occur in the lifecourse, and investing in early prevention is always more cost-effective than imprisonment.[322]

243. The challenges discussed in the third report in this series, on family violence,[323] included a range of adverse childhood experiences (ACEs) that can also cause or compound brain and behaviour issues (for example, physical assault by adults that causes repeated traumatic brain injuries) and compromise health and wellbeing.[324] When children have multiple ACEs, they experience chronic stress that has physiological effects – that is, research shows the child's nervous system, immune system and endocrine system can all be affected, with lifelong physical and mental health effects.[318, 325] More research and research funding is needed to understand how these physiological systems interact with brain and behaviour issues overviewed in this paper.

244. It is difficult to capture data on the nature and severity of particular childhood brain and behaviour issues and how these might track into offending, especially as diagnoses are often not made, in part due to a lack of an abundant specialist workforce in these fields. Initiatives like the Integrated Data Infrastructure (IDI) collect data at a top level, that is, only on what is officially recorded in terms of offending, rather than information related to interaction with the justice sector of people with communication impairments, learning or intellectual disability, ADHD, autism spectrum disorder or FASD. What does this mean in terms of the gaps there might be in the system and what is the impact on those in the system?

245. There is evidence of TBI-related data-gathering and recommendations being worked on in NZ that recognise the multiple complexities of TBI. For example, according to the *Traumatic brain injury strategy and action plan (2017-2021)*, ACC aims in 2021 to look at partnering with Oranga Tamariki, Department of Corrections and others to develop a screening programme for TBI in the youth and adult justice populations, in order to better identify those requiring medical and/or social rehabilitation.[326] Is this the kind of cross-agency cooperation that could be possible?

246. Te Uepū Hāpai i te Ora Safe and Effective Justice advisory group heard that New Zealanders feel the justice system needs profound transformation. Those with the type of brain and behaviour issues discussed in this report would agree (p. 37): [327]

> *Many people told us they found court processes generally confusing and alienating. They said the language used is intimidating and the professional culture of those at court gives the impression of indifference and superiority that privileges more educated and articulate people and disadvantages others.*

247. Instead, people with disabilities, including brain and behaviour issues, who come in contact with the NZ justice system (whether as victims or offenders) should have relevant issues "assessed and addressed" and support should not wait until after sentencing (p. 17).[328] The report notes that "significant numbers of imprisoned people live with disability" (p. 45); we need to know more about why. The latest recommendations from the Chief Victims' Advisor warns against "one-size-fits-all" responses to victims with disabilities within the justice system, calling instead for customised and specialist support.[329]

248. There is also a need to adjust treatment programmes for those with brain and behaviour issues, for example, where programmes require reading levels and ability to recall and understand concepts. There is little evidence, however, of how to effectively make such amendments.[330] Just "simplifying" the text used in an evidence-based, cognitive-behavioural group treatment programme, for example, may reduce its effectiveness and message. Similarly, the needs of those who are highly capable intellectually, but may have difficulty hearing, seeing, learning or processing information in "neurotypical" ways, present challenges to services with limited access to specialist resources.

249. There needs to be education and training to support those delivering justice services. For example, in a rare study on how those working in probation services understand TBI, there was evidence of no training on TBI, barriers to identifying and responding to its effects and widespread misconceptions. Probation staff expected the offenders to be able to identify, understand and clearly communicate to the service the extent and severity of their brain injuries - a degree of insight into their injuries that is not typical of those who have experienced severe TBI.[331] The study was set in Northern Ireland; what would a similar study of NZ staff find?

250. Some tips for those working with TBI were presented in a Department of Corrections psychologist paper[332] and there was also the NZ forum on neurodisability in the youth justice system (see Appendix 2). There needs to be ongoing research and development of evidence-based approaches to brain and behaviour issues, as planned in a number of the NZ guidelines or action plans mentioned,

and they must be culturally appropriate. As I have said before in these justice science-advisor reports, there must be adequate investment in piloting and evaluating early intervention and prevention initiatives. With leadership and knowledge, we can fundamentally transform the justice system, including for victims and offenders with brain and behaviour issues, and reduce victimisation and recidivism.

251. In the most recent Department of Corrections planning document, *Hōkai Rangi Ara Poutama Aotearoa Strategy 2019–2024*, the vital need to ensure kaupapa Māori-based programmes is highlighted (p. 25):[333]

> *Ensure that, as well as having access to current programmes and services, all Māori have access to kaupapa Māori-based pathways, programmes, and units, including those in high security and those with mental health needs [and brain and behaviour issues].*

To conclude, a defendant with neurodisability reporting his experience of appearing in court should have the last word (p. 445):[334]

> *I couldn't really hear, I couldn't understand, but I said 'Yes', whatever to anything, because if I say, 'I don't know', they look at me as if I'm thick.*

And, I ask you, is this really safe and effective justice?

372 Echemendia RJ, *et al*. *Br J Sports Med* 2017;**51**:872. doi:10.1136/bjsports-2017-097508CRT5

CONCUSSION RECOGNITION TOOL 5 ©

To help identify concussion in children, adolescents and adults

Supported by

RECOGNISE & REMOVE

Head impacts can be associated with serious and potentially fatal brain injuries. The Concussion Recognition Tool 5 (CRT5) is to be used for the identification of suspected concussion. It is not designed to diagnose concussion.

STEP 1: RED FLAGS — CALL AN AMBULANCE

If there is concern after an injury including whether ANY of the following signs are observed or complaints are reported then the player should be safely and immediately removed from play/game/activity. If no licensed healthcare professional is available, call an ambulance for urgent medical assessment:

- **Neck pain or tenderness**
- **Double vision**
- **Weakness or tingling/ burning in arms or legs**
- **Severe or increasing headache**
- **Seizure or convulsion**
- **Loss of consciousness**
- **Deteriorating conscious state**
- **Vomiting**
- **Increasingly restless, agitated or combative**

Remember:

- In all cases, the basic principles of first aid (danger, response, airway, breathing, circulation) should be followed.
- Assessment for a spinal cord injury is critical.
- Do not attempt to move the player (other than required for airway support) unless trained to so do.
- Do not remove a helmet or any other equipment unless trained to do so safely.

If there are no Red Flags, identification of possible concussion should proceed to the following steps:

STEP 2: OBSERVABLE SIGNS

Visual clues that suggest possible concussion include:

- Lying motionless on the playing surface
- Slow to get up after a direct or indirect hit to the head
- Disorientation or confusion, or an inability to respond appropriately to questions
- Blank or vacant look
- Balance, gait difficulties, motor incoordination, stumbling, slow laboured movements
- Facial injury after head trauma

STEP 3: SYMPTOMS

- Headache
- "Pressure in head"
- Balance problems
- Nausea or vomiting
- Drowsiness
- Dizziness
- Blurred vision
- Sensitivity to light
- Sensitivity to noise
- Fatigue or low energy
- "Don't feel right"
- More emotional
- More Irritable
- Sadness
- Nervous or anxious
- Neck Pain
- Difficulty concentrating
- Difficulty remembering
- Feeling slowed down
- Feeling like "in a fog"

STEP 4: MEMORY ASSESSMENT

(IN ATHLETES OLDER THAN 12 YEARS)

Failure to answer any of these questions (modified appropriately for each sport) correctly may suggest a concussion:

- "What venue are we at today?"
- "Which half is it now?"
- "Who scored last in this game?"
- "What team did you play last week/game?"
- "Did your team win the last game?"

Athletes with suspected concussion should:

- Not be left alone initially (at least for the first 1-2 hours).
- Not drink alcohol.
- Not use recreational/ prescription drugs.
- Not be sent home by themselves. They need to be with a responsible adult.
- Not drive a motor vehicle until cleared to do so by a healthcare professional.

ANY ATHLETE WITH A SUSPECTED CONCUSSION SHOULD BE IMMEDIATELY REMOVED FROM PRACTICE OR PLAY AND SHOULD NOT RETURN TO ACTIVITY UNTIL ASSESSED MEDICALLY, EVEN IF THE SYMPTOMS RESOLVE

APPENDIX 2. NOTICING BEHAVIOUR IN CRIMINAL-JUSTICE ENCOUNTERS

What you might notice	How it might be interpreted	Young person's possible view/experience	Useful responses
Can't hold eye contact or is easily distracted	Guilt, belligerence, disinterest Rudeness, disrespect	Eye contact can feel very unpleasant and very confronting, creates anxiety, nervousness and a sense of overwhelm. Western cultural rules are at odds with Māori, Pacific, and other cultural rules, where significant eye contact may be inappropriate and be seen as disrespectful	Don't expect eye contact, and don't automatically interpret lack of eye contact negatively. Can an appropriate, trusted support person – who knows the young person – be present? Whānau? Ask what is the culture of this person and how might their culture be impacting on their behaviour?
Answering 'yes' quickly and frequently to questions	Guilt Disinterest	A typical and well-practised coping strategy to bring an uncomfortable situation to an end.	Be alert for rapid, repetitive 'yes'. Lower your voice and try to sound non-confrontational. Frame questions as open-ended, that cannot be answered with yes or no, e.g. *Tell me what happened next*. Keep questions short. Avoid double negatives e.g. *There was nothing else you didn't notice after that?* Allow time for the person to process what you are asking them. Ensure a culturally appropriate, trusted support person who is familiar to the young person is present.
Individual appears "shut down". May also display tics or put clothing or hands over eyes, ears or nose.	Uncooperative and uninterested in proceedings, sullen, moody.	"Sensory overload". This may be a coping/survival strategy to block out light, noise and smell, e.g. bright fluorescent lights, loud noises, small spaces. May feel unable to cope with any more sensory input or visual, auditory, or olfactory stimuli. Might also be a response to feeling anxious.	Aim for a calm, ordered and stable environment. If possible, move to quieter surroundings, with less bright light, minimise strong smells (e.g. perfume and body odour). Try to minimise the number of people/professionals in the room, but ensure whānau are appropriately involved. Give 'rest breaks' – this can mean the difference between a situation escalating to a 'fight or 'flight' response from client. Offer food/drink.

What you might notice	How it might be interpreted	Young person's possible view/experience	Useful responses
Literacy and comprehension difficulties: Appears to be 'daydreaming' during conversations. Cannot follow explanations of complex issues such as 'You have a right to a lawyer and/or a nominated person'. Cannot follow instructions and gets lost after one or two instructional commands. Can't recall what he/she is supposed to do next. Doesn't appear to be listening when you explain the process they are about to go through. Withdrawn.	Obstructive. Not engaged in the process. May get 'lippy', swear, or become physically aggressive. Suspicious behaviour, belligerence, disinterest	Feels embarrassed, inferior or inadequate. Will do anything to avoid admitting to literacy/comprehension difficulties. This is just 'school experience' happening again. Needs clarity, so may ask same question over and over.	Break information into bite-sized chunks. Scaffold and support each step; don't presume comprehension. Refer to key events chronologically (rather than moving backwards and forwards). Allow frequent breaks to restore concentration. Read out statements and other documentation to the interviewee as necessary. Use visuals if possible/available to structure conversation – can be used as a memory aid. A court-appointed Communication Assistant* can assess and recommend strategies where comprehension difficulties preclude effective communication. Ensure whānau/cultural supports are appropriately involved.
Communication difficulties: Has trouble expressing ideas, can't find the right word, difficulty sharing what they know and supporting an argument or getting to the point. Difficulty with correct sequence of events. Doesn't understand hidden messages or connotative language or sarcasm, difficulty understanding proverbs and idioms, e.g. *pigs might fly*. Gives a statement which is 'unbelievable'; the story has holes in it, general evasiveness on details.	Guilt. Shifting the conversation to avoid telling the truth. Acting stupid.	Confusion. Overwhelm. No idea what's going on. Feeling anxious.	Break information into bite-sized chunks. Use simple language. Don't presume comprehension. Allow plenty of time. Refer to key events chronologically (rather than moving backwards and forwards). Allow the person being questioned to jot down notes – or make a rough sketch in this is more helpful – and then refer back to check details. A court-appointed Communication Assistant can assess and recommend strategies where communication difficulties preclude effective communication. Ensure whānau/cultural supports are appropriately involved.
Little concept of consequences of actions: Unable to link cause and effect or comprehend impacts of actions on others. May appear nonchalant when you are speaking (e.g. particularly if you tell anecdotal stories of another youth's crime and resulting consequences).	Lack of remorse. Lack of empathy. Suspicious behaviour. Not taking the matter seriously.	Confusion. No idea what you're talking about. Confronted.	Extra time required for processing information and making connections between actions and consequences. The time between the incident/situation and the consequence may mean the person does not link the consequence itself to the incident. It therefore is NOT likely to act as a deterrent for the person engaging in this behaviour/action/choice again in the future.

What you might notice	How it might be interpreted	Young person's possible view/experience	Useful responses
Inappropriate social conduct/impulsive emotive reactions: Displays inappropriate emotional responses. Poor control of emotions and behaviours, especially anger.	Guilt. Rudeness. Aggression. Belligerence.	Scared and threatened. Feeling anxious, trapped, attacked and/or isolated.	Give verbal/visual reminders about expected behaviour. Model positive communication skills in the way you interact with the individual. Stay calm, do not overreact. Be patient. Ensure whānau/cultural supports are appropriately involved.
Non-compliant, poor time-keeping: Doesn't arrive on time, or arrives at wrong place, forgets important documents, ignores police summons etc. Struggles with following instructions and time management.	Lack of respect. Deliberately uncooperative. Doesn't care. Being obstructive.	Poor short-term memory, concentration, and spatial awareness. Struggles with anything requiring 'executive function' [the brain activities that do organising, planning, higher-level strategy and understanding].	Refer to key events chronologically (rather than moving backwards and forwards). Allow the person being questioned to jot down notes – or make a rough sketch if this is more helpful – and then refer back to check details. Scaffold and support each step/don't presume comprehension. Be patient.
Pulling clothing over head, banging head or kicking surfaces, hitting self.	Shame. Rudeness. Aggression.	Calming technique to escape visual and auditory stimuli. Coping/survival strategy. Self-soothing, through firm or repetitive deep pressure contact on the body. Sense of claustrophobia – too many people in a small space.	Offer a 'rest break' in a low-stimulus environment.
Fidgeting or tapping, often with an object such as a pen, phone or clothing elements.	Disinterest. Rudeness. Suspicious behaviour.	Calming, repetitive action that is a necessary tool to aid concentration and focus. If prevented from doing this, the individual will have to exert considerable energy trying NOT to fidget or tap, making them unable to focus or prone to shutting down.	Allow person to have the pen or similar object of their interest to assist with their need to actively process information. (It is acknowledged that pens and similar can be used as a weapon, so this risk factor needs to be taken into account, case-by-case.) What about a small squeezy ball or similar to play with?
Jittery, sweaty, anxious, slurred or rapid speech, hyperactive, aggressive, jerky movements or seizures.	Disruptive and suspicious behaviour.	Alcohol and drug addiction OR medical condition, for example diabetes, traumatic brain injury, epilepsy, ADHD, post-traumatic stress disorder (PTSD)/trauma reaction.	Recognise that their addiction may be doing the talking. Have a health nurse or medical support person available to assess. Ensure whānau/cultural supports are appropriately involved. Offer food/drink.

What you might notice	How it might be interpreted	Young person's possible view/experience	Useful responses
Absence seizures (where the individual appears to zone out): Non-responsive individual, may not answer to their name or may seem unable to focus eyes or to hear.	Ignoring the situation. Uncooperative. Stoned/on drugs.	If undiagnosed, may not be aware what is happening. Afterwards, may be tired but have no memory of the incident.	Recognised medical condition. Rapid breathing (hyperventilation) can trigger an absence seizure. Usually begin and end abruptly, sometimes lasting only a few seconds. Signs and symptoms of absence seizures include: - sudden stop in motion without falling - lip smacking - eyelid flutters - chewing motions - finger rubbing - small movements of both hands. Recognise individual will be tired afterwards, seek urgent medical help. Ensure whānau/cultural supports are appropriately involved.

* Specialised assessments of speech, language and communication skills of a person in relation to managing court context, reports, recommendations and a court-appointed Communication Assistant are sometimes available – see Talking Trouble Aotearoa NZ. (talkingtroublenz.org)

Adapted from Neurodisability tendencies checklist, pp 19-24 in Lynch N. Neurodisability in the youth justice system in New Zealand: How vulnerability intersects with justice. In Prof J Prebble & G Alloway eds., *Victoria University of Wellington Legal Research Papers* 2018; **8**(3): 16/2018.

Traumatic Brain Injury affects many people in the criminal justice system

Traumatic brain injury (TBI) is a change in brain function caused by an external force

Concussion is a mild form of Traumatic Brain Injury. Even mild injuries can lead to lasting health issues and cognitive defects.

We used linked Ministry of Health, ACC, and Justice data to examine the rate of prior recorded TBI for people at different stages of the justice system.

The rate of TBI in the justice sector is **2.5x to 3.5x higher** than for the public & the rate increases along the justice system

We examined TBI before Justice Sector interaction

These results measure TBI that occurred before justice system interaction in 2015, that was recorded because of:

- a hospitalisation, and/or
- an ACC claim

This analysis will under-estimate the rate of TBI, because some people will have a TBI without being hospitalised or making an ACC claim.

Causes of TBI could only be estimated for ACC data. It was not possible to categorise severity TBI (e.g. mild/moderate/severe) with the current IDI data.

TBI affects...

34% of people proceeded against by police

36% of people charged in court

40% of people community sentenced

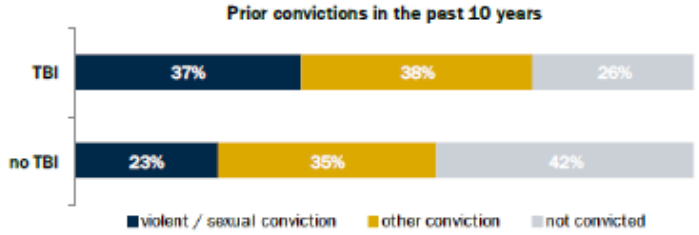
47% of people remanded

46% of people imprisoned

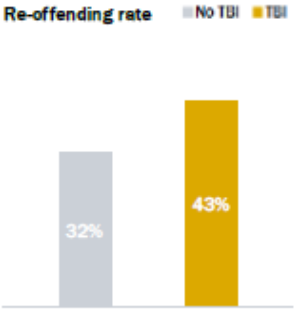
compared with **13%** of the public

People with a TBI who have offended are more likely to have a conviction for a violent or sexual offence

People charged in court who had a TBI were on average **3** years younger at first charge



People with a TBI who have offended are more likely to offend again within 2 years



Even when we take other factors into account, having a prior TBI was strongly associated with re-offending, more strongly associated with reoffending than being male.

New Zealand Police | Ministry of Justice | Department of Corrections

full report available on request
sectorgroup@justice.govt.nz
December 2017

The rate of TBI is different for people of different sex & ethnicity

For people in every part of the justice system, as well as for the public:

- males are more likely to have a TBI than females
- European, Māori, and Middle Eastern, Latin American, or African ethnicities are more likely to have a TBI
- people of Asian ethnicity are less likely to have a TBI

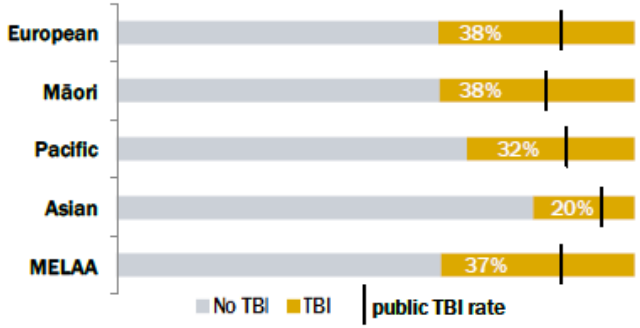
of people proceeded against by police

37% of males

had a TBI, compared with

26% of females

People proceeded against by police with TBI

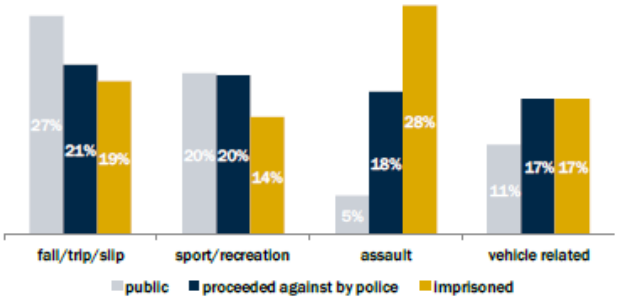


the most common cause of TBI for the public is **falls/trips/slips (27%)**

the most common cause of TBI for people in prison is **assault (28%)**

Causes of TBI are different for people in the justice system than for the public

Causes of TBI through the justice pipeline



This analysis filled a gap in knowledge about TBI in the justice system

TBI is a major cause of injury and death in New Zealand

- a 2015 study showed that in 2010 13% of New Zealanders had experienced at least one TBI
- of all health conditions, TBI has the second greatest impact on employment and income after stroke
- over half of serious claims to ACC are about a TBI

We knew that rates of TBI are higher for prisoners

- in a 2005 survey 64% of people in prison reported having a head injury
- in a 2017 study 95% of females in prison had a history of TBI

There is some evidence that TBI is related to criminal behaviour, although more research is required to understand this association.

TBI at different stages of the justice system had not been investigated in the IDI until now

What next?

Using this information about TBI, we can work towards a more trauma responsive Justice System.

This analysis will help underpin policy advice provided as part of the Humane and Effective Justice programme.

The findings will provide the basis for further investigation into how the Justice System can be more responsive to and support the wellbeing of those who have experienced a TBI.

New Zealand Police Nga Pirihimana O Aotearoa | Ministry of Justice Tāhū o te Ture | Department of Corrections Ara Poutama Aotearoa

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December 2017

Access to the data presented in this A3 was managed by Statistics New Zealand under strict micro-data access protocols and in accordance with the security and confidentiality provisions of the Statistics Act 1975. These findings are not Official Statistics. The opinions, findings, recommendations, and conclusions expressed are those of the researchers, not Statistics NZ.

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