

Looked After Children in prison as adults: Life adversity and neurodisability

Hope Kent¹, Amanda Kirby², George Leckie³, Rosie Cornish⁴, Lee Hogarth¹ & Huw Williams¹

¹Department of Psychology, Washington Singer Laboratories, University of Exeter, UK

²Dyscovery centre, University of South Wales, UK

³School of Education, University of Bristol, UK

⁴Bristol Medical School (PHS), University of Bristol, UK

This author accepted manuscript is deposited under a Creative Commons Attribution Non-commercial 4.0 International (CC BY-NC) licence. This means that anyone may distribute, adapt, and build upon the work for non-commercial purposes, subject to full attribution. If you wish to use this manuscript for commercial purposes, please contact permissions@emerald.com

Author Note

We have no conflicts of interest to disclose.

This project was funded by HMP/YOI Parc. Hope Kent was supported by the Economic and Social Research Council [grant number ES/P000630/1]. The funders had no role in the study design; collection, analysis and interpretation of the data; writing of the report; or the decision to submit the article for publication. Due to ethical concerns, the research data supporting this publication are not publicly available.

Correspondence concerning this article should be addressed to Hope Kent, Washington Singer Laboratories, Perry Road, University of Exeter, EX4 4QG, UK. hmk201@exeter.ac.uk.

Abstract

Purpose. Looked After Children (LAC) are criminalised at 5 times the rate of children in the general population. Children in contact with both child welfare and child justice systems have higher rates of neurodisability and substance use problems, and LAC in general have high rates of school exclusion, homelessness, and unemployment. We aimed to understand whether these factors persist in LAC who are in prison as adults.

Methodology. Administrative data collected by the Do-IT profiler screening tool in a prison in Wales, UK were analysed to compare sentenced prisoners who were LAC (n=631) to sentenced prisoners who weren't LAC (n=2,201). The sample comprised all prisoners who were screened on entry to prison in a two-year period.

Findings. Prisoners who were LAC scored more poorly on a functional screener for neurodisability (effect size = 0.24), and on four self-report measures capturing traits of dyslexia (0.22), attention-deficit hyperactivity disorder (0.40), autism spectrum disorders (0.34), and developmental co-ordination disorder (0.33). Prisoners who were LAC were more likely to have been to a Pupil Referral Unit (0.24), have substance use problems (0.16), be homeless or marginally housed (0.18), and be unemployed or unable to work due to disability (0.13).

Originality/Value. This study uniquely contributes to our understanding of prisoners who were LAC as a target group for intervention and support with re-integration into the community upon release. LAC in prison as adults may require additional interventions to help with employment, housing, and substance use. Education programmes in prison should screen for neurodisability, to develop strategies to support engagement.

Keywords: *Looked After Children, Social Care, Neurodisability, Homelessness, Prisoner, Criminal Justice System*

Introduction

Looked After Children (LAC) are defined in the United Kingdom under the Children Act of 1989 as children whom the local authority provides with accommodation for 24 hours or more, and children who are subject to a care or placement order. The most common reason for children becoming LAC is being identified as at risk of abuse or neglect, but other reasons also include absent parenting, family in acute stress, and family dysfunction (DfE, 2019). A 2018 report indicates that LAC who have been in care for at least 12 months are five times more likely to be criminalised than children in the general population (DfE, 2018a). The reasons for this are complex but include frequent police presence in residential care homes for issues that would not normally warrant police intervention in domestic homes (Shaw, 2016). LAC are also at greater risk of criminal exploitation (i.e. the coercion or manipulation of a child into criminal activity) by adult gangs, who utilise vulnerable children to shield themselves from prosecution (Baidawi et al., 2020). It is also well established in the literature that experiencing Adverse Childhood Experiences (ACEs), which LAC are exposed to at disproportionate rates, is associated with later contact with the criminal justice system and that this effect is cumulative; experiencing multiple ACEs increases risk exponentially (Testa et al., 2022). The 'Stress Proliferation Model' offers an explanation for this association, positing that stress begets stress over the lifetime, and thus early exposure to ACEs increase risk of a range of problematic circumstances such as low socio-economic status, health-related stressors, stressful relationships, and maladaptive coping strategies, all of which increase vulnerability to later justice system contact and other negative life course outcomes (see Pearlin et al., 2005 for a full discussion).

While the number of LAC ending up in contact with the criminal justice system in the UK is decreasing - 15% of children in residential care homes were formally criminalised in 2014, compared to 10% in 2018 (The Howard League for Penal Reform, 2019), it is still considerably higher than children in the general population - 0.5% of children in 2018/19 (YJB and MoJ, 2020). This follows significant advocacy and policy attention over the last five years. In 2016, the Howard League for Penal Reform launched a 'Programme to end the criminalisation of children in residential care' (2016), and in 2018 the Department for Education, the Home Office, and the Ministry of Justice launched the 'National protocol on reducing criminalisation of looked after children and care leavers' (2018). However, despite this increased policy attention for this vulnerable group of children, little attention has been paid to the population of adults in prison who were LAC. The legacy of these high criminalisation rates is evident as 24% of adult male prisoners are reported to have been Looked After Children (MoJ, 2012), despite LAC constituting about 0.7% of the general population (NSPCC, 2021). It is important to understand the specific challenges faced by this group, in order to direct resources and interventions to avoid cyclical justice system contact, and support rehabilitation and community reintegration.

Neurodisability and Special Educational Needs. LAC in the general population have higher levels of neurodisabilities (Ogundele, 2020) and special educational needs (SEN) (DfE, 2019) – which is an umbrella term, incorporating formal diagnoses of neurodisabilities, other disabilities and learning difficulties, as well as 'social, emotional, and mental health' needs. Neurodisability is also an umbrella term, encompassing several neurodevelopmental conditions. These include (but are not limited to) Dyslexia, Attention-Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorder (ASD), and Developmental Co-ordination Disorder (DCD) (also known as Dyspraxia). A study of 80 LAC found that 70% had one or more neurodisability, compared with a prevalence of 15% in the general population

(Ogundele, 2020). The causes of neurodisability are complex and varied, but include genetics, prenatal substance use, birth trauma, infection, injury, and nutritional deprivation (Patel *et al.*, 2011). Whilst the resultant presentation is heterogeneous, neurodisabilities frequently result in impairments in key developmental domains: cognition, memory, social and communication skills, attention and concentration, emotion regulation, impulse control, and physical motor skills. Neurodivergence and neurodiversity are terms often used interchangeably with neurodisability, but in this instance we choose the term neurodisability to elicit the social model of disability (Oliver, 1983; Oliver, 1990). Individual or medical models of disability place the locus of the problem within the disabled person, whereas social models of disability locate the problem within the systems the disabled person is navigating, which are frequently inaccessible and inappropriate. Those given the label of ‘social, emotional, and mental health’ are at particular risk of permanent school exclusion (Timpson, 2019), and often have high rates of neurodisabilities including dyslexia and ADHD but importantly don’t receive appropriate screening (Regan, 2010; Clegg *et al.*, 2009) as the focus tends to lie on ‘disruptive behaviours’ rather than the underlying drivers of this. In 2019, 56% of LAC had a SEN, compared to 15% of those who aren’t LAC (DfE, 2019).

School Exclusion. Children with SEN are over-represented in school exclusions. In 2016/2017, 47% of all permanent exclusions were children with SEN, despite children with SEN representing only 14% of the general school population (Timpson, 2019; DfE, 2018b). LAC are more than five-times more likely to be excluded from school (Timpson, 2019). Children who are excluded from mainstream school in the UK spend time in Alternative Provision settings, which are frequently Pupil Referral Units (PRUs). Children in PRUs often have poor outcomes in terms of employment, educational attainment, and later contact with the criminal justice system (DfE, 2018b). These interactions build a picture of cumulative

adversity for children in the care system, having levels of neurodisability, and at inflated risk of school exclusion.

Crossover Children. In general, outcomes for ‘crossover’ children involved in both child justice and child welfare systems are more negative than outcomes for children involved in only one system (Herz *et al.*, 2012). Instability in placements is a factor strongly linked to poor psychosocial outcomes for LAC, compounding feelings of rejection, and impacting on educational attainment, criminalisation, and poor physical and mental health (Staines, 2016; The Howard League for Penal Reform, 2016). There is sparse literature exploring rates of neurodisability amongst crossover children. However, in 2021, an Australian study of 300 crossover children aged 10-21 found that 48% had an identified neurodisability (Baidawi and Piquero, 2021). A key limitation of that study is that identified neurodisability was found using a record search – which is likely to be an under-identification, as this requires a formal diagnosis. To address this, the current study utilises data from the Do-IT profiler screening tool (Kirby, 2016) for neurodisability. No current evidence exists, to our knowledge, exploring the characteristics of adults in prison who were LAC.

In addition to high levels of neurodisability, crossover children have vulnerability to substance use problems (Simkiss, 2012), which has been linked to neurodisabilities including ADHD in prison populations (Gonzalez *et al.*, 2017). There is a high association between criminal justice system involvement and substance use (Bennett *et al.*, 2008), and those in prison with substance use problems face complex challenges when reintegrating back into the community (Visher *et al.*, 2004).

Multidimensional Life Adversity. In general populations it is known that adults who were previously LAC have high levels of homelessness and unemployment (Tyler and

Melander, 2010). Glover and Clewett (2011) reported that LAC in custody received insufficient support in finding suitable and stable living accommodation when released. This then was a significant contributor to a lack of engagement with other services, and eventual reoffending. Homelessness and unemployment are inextricably linked, as are homelessness and disability which renders people unable to work (Steen *et al.*, 2012). Unemployment is also linked to educational disruption (Sutherland and Eisner, 2014), which LAC are vulnerable to as discussed above.

Viewpoints that consider broad sociological perspectives and the interactions of all these above factors are important in understanding the multidimensional risk of criminalisation and the appropriate policy response (Berridge, 2006). These multidimensional adversities are a key area for intervention, to ensure successful community reintegration on release from custody for crossover children. These relationships haven't yet been explored in crossover children who are now in the adult secure estate, and this is an aim of the current study. This could elucidate key targets for rehabilitation for crossover children who have 'grown up' in contact with the justice system. As justice system contact is criminogenic, these children may have been caught in cyclical 'revolving door' justice system contact and therefore still be in the secure estate as adults, with the same psychosocial needs (McAra and McVie, 2010).

The Current Study. The current study aimed to assess whether adults in prison who had been LAC have higher levels of neurodisability, as screened for by the Do-IT profiler. It is important to note here that the measure of LAC in the Do-IT profiler only asks whether the individual has ever been fostered or adopted, so only captures a subset of LAC. We refer to this group as LAC in this manuscript, but note that the group may not capture those who spent time in residential care homes but were never fostered or adopted. This study expands on existing literature which has so far relied on record searching (which can be an

underestimate as it relies on diagnostic thresholds being met and screening taking place reliably) and to our knowledge has only studied children and young people in the justice system (rather than adults). In addition, we aimed to establish whether adults in prison who had been LAC were more likely to have lifelong psychosocial vulnerabilities including being referred to a PRU as a child, substance use, unemployment, and homelessness, compared to those who were never LAC. It is also important to note that our data are cross-sectional and may be confounded by variables not captured here (such as socio-economic status and educational attainment); as such we did not aim to infer causality from our findings. We aimed instead to produce normative rates of comorbidities in the LAC versus non-LAC adult prison population.

Method

Data. Administrative screening data from HMP Parc (a male prison in Wales, UK) were analysed. 3544 adult male prisoners completed the Do-IT profiler during 2017 and 2018 as part of usual practice during the first six weeks in prison. Prisons screen individuals with the Do-IT profiler to collect background information about individual vulnerabilities (e.g. substance use), and to identify deficits and strengths in functional skills that may impact engagement with education. 413 individuals were removed from the analysis as they were being held on remand, and so had not been convicted of a crime. 299 individuals had missing data in one or more variables. Those who had missing data made up <10% of the sample, and did not significantly differ on age, which was the only administrative variable collected for all respondents (Welch's $t = -0.035$, Cohen's $d = -0.002$, $p = .972$, missing mean age = 32.4, non-missing mean age = 32.2). See supplementary material for more information about individuals with missing data. They were removed listwise, so the final sample comprised 2832 convicted adult males.

Ethics. Ethical approval for this study was granted by the HMPPS National Research Committee (NRC) and the University of Exeter Department of Psychology Research Ethics Committee. Permission to analyse the data was granted by HMP Parc as data controllers. Participants provided consent for their anonymised data to be used for research, and this is a routine part of the screening process.

Measures. The Do-IT profiler (Kirby, 2016) is a computerised screening tool, divided into modules which can be completed at once or at different time points depending on concentration and time available. Optional accessibility features are built into each module, including the ability to change the text and background colour, and the option to have each question read aloud. A member of prison staff was present to help with completion if any problems were encountered.

Participants completed the following modules:

About Me (Demographics and Background Information). This is a self-report module comprising questions about conviction status, ethnicity, gender, and being a LAC ('Have you ever been fostered or adopted?'). It asks whether the individual has experienced substance use problems ('yes' or 'no'), what their employment status was before coming to prison (with drop-down options including but not limited to 'self-employed', 'unemployed', 'employed full-time', 'employed part-time'), and whether they have ever attended a PRU ('yes' or 'no').

It also includes questions about housing - 'What were your living arrangements before coming to prison?' with drop-down answers (including but not limited to 'Homeless', 'Supported Accommodation', and 'Living Independently (with or without others)' and the option to enter a free-text description of living arrangements if preferred. In recognition of the fact that those housed 'marginally' in unstable living situations have similarly poor

outcomes in terms of mental health and substance use to those who are ‘literally’ homeless, and that these outcomes differ in the literature to those who are stably housed (Eyrich-Garg *et al.*, 2008), we created a dichotomy - ‘homeless or marginally housed’ and ‘stably housed’. Those who self-reported unstable living conditions (such as ‘sofa-surfing’ or ‘staying with friends’) were classed as being marginally housed. Respondents can select ‘prefer not to say’ for any question in this module.

Knowledge and Skills Screener (KASS). KASS comprises 42 items assessing transdiagnostic functional skills in domains relevant to everyday life. The items are multiple choice, and the correct answer receives a score of 1 whilst all other answers receive a score of 0. Higher scores therefore indicate better functional skills. The maximum score is therefore 42. Example questions include: ‘Click on the clock which is showing 8:25’ accompanied by a selection of analogue clocks, and ‘Which coin is worth the least?’ accompanied by a selection of coins.

How I Learn. This module includes 60 self-report items, which are divided into four subscales. These broadly represent difficulties indicative of the spectrums of dyslexia, ASD, ADHD, and DCD. Example questions include ‘I find it hard to read aloud’ (dyslexia), ‘I find it hard to make direct eye contact with people’ (ASD), ‘I get distracted easily’ (ADHD), and ‘I often knock into people or things’ (DCD). Responses are on a Likert Scale where 1 = Very like me, 2 = A bit like me, 3 = Not really like me, and 4 = Not like me at all. Each scale is therefore scored out of 60, with low scores reflecting self-assessed difficulties in that domain.

These measures have not been validated against traditional diagnostic criteria, as the philosophy of the screening tool is to be transdiagnostic. This includes rejecting the medical model of diagnostic threshold criteria, in favour of a transdiagnostic functional needs assessment. The Do-IT assessments were developed in collaboration with forensic

psychologists and prison services to ensure their practical utility in prison populations who typically have complex, multifaceted profiles of need (see Kirby, 2016; Kirby and Saunders, 2015), and have been used in other published studies of justice-involved samples (e.g. Kirby *et al.*, 2020).

Analysis

Welch's t-tests (with Cohen's d effect sizes) were used to compare prisoners who were LAC to prisoners who were not LAC in all continuous variables (age, KASS Score, and the four 'How I Learn' scales). Chi-Square tests (with Cramer's V effect sizes) were used to compare LAC to non-LAC in categorical or binary variables. Significance was reported at $p < 0.001$. According to Cohen (1992), $d > 0.2$ indicates there is a small effect size, $d > 0.4$ a medium effect size, and $d > 0.6$ a large effect size. Cramer's V can be interpreted as $V > 0.1$ indicates a small effect size, $V > 0.3$ a medium effect size, and $V > 0.5$ a large effect size (Cramer, 1946). However, more recent literature indicates that these are high thresholds with which to define effect size groups, particularly in social research, (Lovakov and Agadullina, 2021) and this is reflected in our interpretation of results. In addition, prison populations are relatively homogenous compared to the general population in terms of negative life outcomes and neurodisability, so any differences found have potentially important implications for this group of prisoners.

Results

22% of prisoners self-reported having been LAC. Table I shows characteristics of those who were LAC and those who were not. We found that adults in prison who were LAC were more likely to have been homeless or marginally housed before coming to prison (38% of LAC compared to 20% of non-LAC), more likely to have substance misuse problems (50% of LAC compared to 32% of non-LAC), and more likely to have been referred to a

PRU as a child (49% of LAC compared with 22% of non-LAC). LAC in prison as adults were different to prisoners who were not LAC in employment before prison – higher proportions of LAC were unemployed (40 % of LAC compared with 33% of non-LAC) or unable to work due to illness or disability (19% of LAC compared to 13% of non-LAC) compared to prisoners who were not LAC. Cramer's V sizes for these comparisons ranged from 0.13 to 0.24. LAC in prison also differed from prisoners who were not LAC in ethnicity – a higher proportion of LAC were White British/White European, but this effect size was very small. Adults in prison who were LAC scored worse than those who were never LAC in the KASS functional screener, and the four domains of the How I Learn measure (indicative of traits of dyslexia, ASD, ADHD, and DCD). Cohen's D effect sizes here ranged from 0.22 to 0.40. We confirmed that these results weren't confounded by age (as LAC are on average only two years older) or ethnicity (as the percentage of LAC who are White is only three percentage points higher than non-LAC) by comparing adjusted and unadjusted models (see supplementary material).

Table 1: Sample description, including test statistics for Welch’s t-tests to compare outcomes on continuous variables for adults in prison who were LAC compared to those who were not LAC, and Chi-Square tests of independence to make this comparison for categorical or binary variables. Cohen’s d and Cramer’s V effect sizes are also provided for each comparison.

Variable		Total Sample Description (n = 2832)	Description of LAC (22.3%, n = 631)	Description of those who were not LAC (77.7%, n = 2,201)	Test Statistic comparing LAC with not LAC. (Cohen’s d/Cramer’s V Effect Size)
Age		M = 32.2 (SD = 11.4)	M = 32.7 (SD = 11.6)	M = 30.2 (SD = 10.5)	t = 5.12*** (d = 0.23)
Ethnicity	Asian or Asian British	3.4% (n = 96)	1.4% (n = 9)	3.9% (n = 87)	X ² = 16.09*** (V = 0.075)
	Black African	2.5% (n = 71)	1.3% (n = 8)	2.9% (n = 63)	
	Black Caribbean	2.7% (n = 79)	2.7% (n = 17)	2.8% (n = 62)	
	Mixed	5.8% (n = 166)	6.8% (n = 43)	5.6% (n = 123)	
	White British/White European	85.5% (n = 2420)	87.8% (n = 554)	84.8% (n = 1866)	
PRU		28.2% (n = 800)	48.5% (n = 306)	22.4% (n = 494)	X ² = 164.19*** (V = 0.24)
Homeless or Marginally Housed		24.3% (n = 688)	38.4% (n = 242)	20.3% (n = 446)	X ² = 87.24*** (V = 0.18)
Substance Misuse		35.7% (n = 1012)	49.9% (n = 315)	31.7% (n = 697)	X ² = 71.15*** (V = 0.16)
Employment Status Prior to Prison	Employed (full or part time)	22.7% (n = 643)	15.1% (n = 95)	24.9% (n = 548)	X ² = 83.41*** (V = 0.13)
	Self-Employed	21.9% (n = 621)	18.1% (n = 114)	23.0% (n = 507)	
	Unable to work – illness or disability	14.5% (n = 410)	19.2% (n = 121)	13.1% (n = 289)	
	Unemployed	34.4% (n = 973)	40.1% (n = 253)	32.7% (n = 720)	
	Other	6.5% (n = 185)	7.6% (n = 48)	6.2% (n = 137)	
KASS Score		M = 36.1 (SD = 5.9)	M = 35.0 (SD = 6.7)	M = 36.5 (SD = 5.5)	t = 5.00*** (d = 0.24)
How I Learn	Dyslexia traits	M = 42.7 (SD = 7.6)	M = 41.4 (SD = 7.9)	M = 43.1 (SD = 7.5)	t = 4.81*** (d = 0.22)
	ASD traits	M = 42.5 (SD = 7.8)	M = 40.4 (SD = 7.8)	M = 43.1 (SD = 7.7)	t = 7.54*** (d = 0.34)
	ADHD traits	M = 41.5 (SD = 7.7)	M = 39.1 (SD = 7.6)	M = 42.1 (SD = 7.6)	t = 8.80*** (d = 0.40)
	DCD traits	M = 43.5 (SD = 7.6)	M = 41.6 (SD = 6.8)	M = 44.0 (SD = 7.8)	t = 7.61*** (d = 0.33)

Note: *** = p < .001

Lower scores on the KASS and How I Learn measures indicate poorer functional skills, and therefore higher levels of neurodisability. No comparison was made between prisoners who self-identified as male vs female, as cell counts would have been too small, revealing identifying information about individuals. Similarly, those who identified as White European have been combined with those who identified as White British, to avoid small cell counts.

Discussion

Despite the homogeneity of prison populations compared to general populations in life outcomes, we found meaningful differences between prisoners who were LAC and prisoners who were never LAC. Prisoners who had been LAC were more likely to have spent time in a PRU. This indicates that education settings have been inappropriate or inaccessible for these individuals in the past, or they may not have been properly screened to identify functional difficulties associated with neurodisability. Our comparison indicates higher levels of neurodisability in LAC in prison as adults compared to those who were never LAC, in line with emerging literature which indicates that children in contact with both child welfare and child justice courts have elevated levels of neurodisability (Baidawi and Piquero, 2021). LAC were more likely to be unemployed or be unable to work due to illness or disability. Interventions in prison focussed on future employment after prison will be particularly important for this group, as employment is a key factor in preventing cyclical re-offending (MoJ 2013). They were also more likely to have problems with substance use, and more likely to be homeless or marginally housed, indicating that providing substance use rehabilitation programs and housing support is also key in wrap-around support for LAC in prison as adults.

These differences are also likely an under-estimation of true differences between these groups as prisoners who spent time in residential care were excluded from the LAC sample. Children in residential care may have more complex needs relative to other LAC who have been fostered or adopted. For example, they may enter care for behavioural reasons (rather than maltreatment being the primary reason), have poorer academic outcomes, be subject to more instability in care placements, and be older at the point of entry to care (Trout et al., 2008; Baskin & Sommers, 2011; Ryan, 2012). We therefore recommend that prisons

collect more robust and detailed data regarding looked-after status of prisoners in future which is inclusive of residential care to support future research into this group.

Implications. These findings are important, as they indicate that there are a high proportion of LACs in prison as adults, who are a particularly vulnerable group that may require higher levels of support with re-integration into the community. This includes additional support with housing, employment, and substance use problems. LAC may also require specialist, multi-agency intervention in prison education settings, to provide support for challenges to learning created by neurodisability. Holistic, rather than siloed approaches to screening and intervention inside prison and on release could be better equipped to support individuals with a very complex picture of adversity. Whilst significant efforts are currently being made currently to reduce the criminalisation of LACs, it is important to also allocate resource to support adults in prison who were in contact with the social care system as children. We have found evidence that they are a vulnerable group within prisons, and additional support with rehabilitation could reduce cyclical, repeat contact with the justice system, as well as providing social support that may have been missing when they were children.

Additionally, these findings have implications in broader justice-system settings, including in court and in community justice rehabilitation programmes. The Risk – Need – Responsivity (RNR) model of assessment and rehabilitation of people in contact with the justice system identifies three core principles (Bonta & Andrews, 2007). First, risk: matching the level of service to the individual’s risk of reoffending. Second, need: assessing criminogenic needs and targeting them in treatment. Finally, responsivity: maximising efficacy of rehabilitative interventions by tailoring the intervention to the learning style and specific needs of the individual. Neurodisability represents a responsivity factor that could impact the efficacy of community justice interventions (such as restorative justice sentences).

If not properly identified and responded to, this could hinder efficacy of the programme and increase risk of reoffending. Understanding whether an individual is a LAC in these contexts could also therefore provide insight into complex needs and challenges which will inform the responsivity element of interventions.

Limitations. Self-report measures have natural limitations. By their nature, they rely on insight, attention, and choice to report from the individuals. This could impact our findings, particularly for sensitive measures such as substance misuse. However, it should be noted that Schofield and colleagues (2011) found prisoners to be reliable survey respondents when asked to self-report traumatic brain injury. Whilst every effort was made to ensure completion was accurate, including the assistance of a prison staff member to improve attention and understanding of questions, it is possible that falsely anticipated punishment for substance use may have had an impact. When considering neurodisability we posit that the combination of self-report measures (which provide insight into domains where the individual perceives they are having difficulties) and functional screening measures (the KASS, which assesses functional ability in a more objective manner) provides insight into the level of neurodisability as well as its impact on the individual, however we accept that this requires a level of insight into functional difficulties experienced. The measure of being a LAC ‘have you ever been fostered or adopted?’ also has limitations. We might not capture those who spent time in residential care homes but were never actually fostered or adopted, so they may be missing from our LAC group. We also did not have a measure of the length of time spent in care, so the LAC group in the current study is likely to be a very heterogenous population – some may have been in care for short placements (e.g. emergency foster care), and others may have spent years in care. Future research should seek to capture more complete data about being a LAC.

Our findings are also drawn from cross-sectional data. We therefore present them as correlational, rather than drawing any conclusions about causality. Like much research in the field, uncontrolled confounders could account for the differences seen between adults in prison who were LAC compared to those who weren't LAC. Factors like socio-economic status could be distorting these effects, causing the measured LAC effect to be amplified. Temporal order of variables isn't clear, as the data did not capture age at becoming a LAC, age at referral to a PRU, and age at onset of substance misuse problems. We would recommend longitudinal studies of education and justice data in future to disentangle the temporal order of these relationships. Ascertaining the temporal order of these factors would allow more complex modelling to assess which variables impact each other, and whether pathways into prison differ for LAC, and those who were never LAC.

Finally, our sample was from a male prison. Exploring these relationships in female prisons is also important, as women in prison have particularly high levels of adverse childhood experiences, and this early life trauma could also contribute to negative outcomes for female LAC (Friestad *et al.*, 2014).

Conclusion. Adults in prison who were LAC are likely to have experienced multi-dimensional life adversity, including school exclusion, substance use problems, homelessness, and unemployment. They therefore should be a target group for intervention and support with re-integration into the community upon release. LAC in prison as adults also have indications of higher levels of neurodisability. This neurodisability may create complex barriers to engagement in education in prison and contribute to cyclical incarceration. Proper holistic assessment is key to understanding an individual's strengths and weaknesses and designing multi-agency interventions. Reducing the criminalisation of LAC is an essential focus of new policy, but we should additionally take care not to forget the LAC

who are currently in prison as adults in this paradigm shift away from punitive responses to children in contact with the welfare system.

References

- Baidawi, S., & Piquero, A. R. (2021). "Neurodisability among children at the nexus of the child welfare and youth justice system". *Journal of Youth and Adolescence*, Vol. 50, pp.803-819.
- Baidawi, S., Sheehan, R., & Flynn, C. (2020). "Criminal exploitation of child protection-involved youth." *Children and Services Youth Review*, Vol. 118, 105396.
- Baskin, D. R., & Sommers, I. (2011). "Child maltreatment, placement strategies, and delinquency." *American Journal of Criminal Justice*, Vol. 36, pp. 106-119.
- Bennett, T., Holloway, K., & Farrington, D. (2008). "The statistical association between drug misuse and crime: A meta-analysis." *Aggression and Violent Behavior*, Vol. 13, pp. 107–118.
- Berridge, D. (2006). "Theory and explanation in child welfare: education and looked-after children." *Child & Family Social Work*, Vol. 12, 1-10.
- Bonta, J., & Andrews, D. A. (2007). "*Risk – need – responsivity model for offender assessment and rehabilitation.*" Available at:
<https://www.publicsafety.gc.ca/cnt/rsrscs/pblctns/rsk-nd-rspnsvty/index-en.aspx>
(Accessed 12th October 2022).
- The Children Act (1989). "Chapter 41". Available at:
https://www.legislation.gov.uk/ukpga/1989/41/pdfs/ukpga_19890041_en.pdf
(Accessed 20th August 2022).

Clegg, J., Stackhouse, J., Finch, K., Murphy, C., & Nicholls, S. (2009). “Language abilities of secondary age pupils at risk of school exclusion: A preliminary report”. *Child Language Teaching and Therapy*, Vol. 25, pp. 123-139.

Cohen, J. (1992). A power primer. *Psychological Bulletin*, Vol. 112, p. 115.

Cramer, H. (1946). *Mathematical Methods of Statistics*. Princeton University Press, Princeton, NJ.

Department for Education., Home Office., & Ministry of Justice (2018). “*The national protocol on reducing unnecessary criminalisation of looked-after children and care leavers*”. Available at:
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/765082/The_national_protocol_on_reducing_unnecessary_criminalisation_of_looked-after_children_and_care_leavers.pdf (Accessed 18th July 2022).

Department for Education. (2018a). “*Children Looked After in England (including adoption), year ending 31 March 2018*”. Available at:
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/757922/Children_looked_after_in_England_2018_Text_revised.pdf (Accessed 20th July 2022).

Department for Education. (2018b). “*Creating opportunity for all: Our vision for alternative provision*”. Available at:
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/713665/Creating_opportunity_for_all_-_AP_roadmap.pdf (Accessed 20th July 2022).

Department for Education (2019). “*Children Looked After in England (including adoption), year ending 31 March 2019*”. Available at:

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/850306/Children looked after in England 2019 Text.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/850306/Children_looked_after_in_England_2019_Text.pdf) (Accessed 21st July 2022).

Eyrich-Grag, K., Cacciola, J. C., Carise, D., Lynch, K. G., & McLellan, T. (2008).

“Individual characteristics of the literally homeless, marginally housed, and impoverished in a US substance abuse treatment-seeking sample”. *Social Psychiatry and Psychiatric Epidemiology*, Vol. 43, pp. 831-842.

Friestad, C., Ase-Bente, R., & Kjelsberg, E. (2014). “Adverse childhood experiences among women prisoners: relationships to suicide attempts and drug abuse”. *Int J Soc Psychiatry*, Vol. 60, pp. 40-46.

Glover, J., & Clewett, N. (2011). “*No fixed abode: The accommodation struggle for young people leaving custody in England*”, Barnado’s, London: UK.

Gonzalez, R. A., Gudjonsson, G., Wolff, K., Xenitidis, K., Mutch, L., Mallet-Lambert, I., Levin, F. R., & Young, S. (2017). “The pathway to substance misuse for young people with ADHD and conduct disorder”. *Drug and alcohol dependence*, Vol. 171, <https://doi.org/10.1016/j.drugalcdep.2016.08.215>

Herz, D., Lee, P., Lutz, L., Stewart, M., Tuell, J., & Wiig, J. (2012). “*Addressing the needs of multi-system youth: Strengthening the connection between child welfare and juvenile justice*”, Centre for Juvenile Justice Reform, Georgetown: DC.

The Howard League for Penal Reform (2016). “*Programme to end the criminalisation of children in residential care*”. Available at: <https://howardleague.org/programme-to-end-the-criminalisation-of-children-in-residential-care/> (Accessed 18th July 2022).

- The Howard League for Penal Reform (2019). “*Ending the criminalisation of children in residential care: Know your numbers.*” Available at: <https://howardleague.org/wp-content/uploads/2019/07/Know-your-numbers.pdf> (Accessed 12th October 2022).
- Kirby, A. (2016). “*Using data driven decision systems to deliver person-centred approaches in developmental disorders: one example of complexity – the criminal justice system*”. Hillary Place Papers, 3rd edition, University of Leeds, Leeds: UK.
- Kirby, A., & Saunders, L. (2015). “A case study of an embedded system in prison to support individuals with learning difficulties and disabilities in the criminal justice system”. *Journal of Intellectual Disabilities and Offending Behaviour*, Vol. 6, pp. 112-124.
- Kirby, A., Williams, H., Clasby, B., Hughes, N., & Cleaton, M. (2020). “Understanding the complexity of neurodevelopmental profiles of females in prison”. *International Journal of Prisoner Health*, Vol. 17, No. 4. DOI: 10.1108/IJPH-12-2019-0067
- Lovokov, A., & Agadullina, E. R. (2021). “Empirically derived guidelines for effect size interpretation in social psychology”. *European Journal of Social Psychology*, Vol. 51, pp. 485-504.
- McAra, L., & McVie, S. (2010). “Youth crime and justice: Key messages from the Edinburgh Study of Crime and Justice”. *Criminology and Criminal Justice*, Vol. 10, pp. 179-209.
- Ministry of Justice. (2012). “*Prisoners’ childhood and family backgrounds: Results from the Surveying Prisoner Crime Reduction (SPCR) longitudinal cohort study of prisoners*”. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/278837/prisoners-childhood-family-backgrounds.pdf (Accessed 10th June 2022).

- Ministry of Justice. (2013). “*Analysis of the impact of employment on re-offending following release from custody, using propensity score matching*”. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/217412/impact-employment-reoffending.pdf (Accessed 10th June 2022).
- NSPCC. (2021). “*Statistics briefing: looked after children*”. Available at: <https://learning.nspcc.org.uk/media/1622/statistics-briefing-looked-after-children.pdf> (Accessed 15th June 2022).
- Ogundele, M. (2020). “Profile of neurodevelopmental and behavioural problems and associated psychosocial factors among a cohort of newly looked after children in an English local authority”. *Adoption & Fostering*, Vol. 44, pp. 255-271.
- Oliver, M. (1983). “*Social Work with Disabled People*”, Macmillan, Basingstoke: UK.
- Oliver, M. (1990). “The individual and social models of disability”. *Paper presented at Joint Workshop of the Living Options Group and the Research Unit of the Royal College of Physicians*. <https://disability-studies.leeds.ac.uk/wp-content/uploads/sites/40/library/Oliver-in-soc-dis.pdf> (Accessed 11th June 2022).
- Patel, D.P., Greydanus, D.E., Omar, H.A. & Merrick, J. (eds.) (2011). “*Neurodevelopmental Disabilities: Clinical Care for Children and Young Adults*”, Springer, New York: NY.
- Pearlin, L. I., Schieman, s., Fazio, E. M., & Meersman, S.C. (2005). “Stress, health, and the life course: Some conceptual perspectives”. *Journal of Health and Social Behaviour*, Vol. 46, pp. 205-219.
- Regan, F. (2010). “Exclusion from school and attention-deficit hyperactivity disorder”. *The International Journal of Emotional Education*, Vol. 2, pp. 3-18.

Ryan, J. P. (2012). "Substitute care in child welfare and the risk of arrest: Does the reason for placement matter?" *Child Maltreatment*, Vol. 17, pp. 164-171.

Schofield, P., Butler, T., Hollis, S., & D'Este, C. (2011). "Are prisoners reliable survey respondents? A validation of self-reported traumatic brain injury (TBI) against hospital records." *Brain Injury*, Vol. 25, pp. 74-82.

Shaw, J. (2016). "Policy, practice, and perceptions: Exploring the criminalisation of children's home residents in England". *Youth Justice*, Vol. 16, pp. 147-161.

Simkiss, D. (2012). "Outcomes for looked after children and young people". *Paediatrics and Child Health*, Vol. 22, pp. 388-392.

Staines, J. (2016). "*Risk, adverse influence and criminalisation: Understanding the over-representation of looked after children in the youth justice system*", Prison Reform Trust, London: UK.

Steen, A., Mackenzie, D., & McCormack, D. (2012). "*Homelessness and unemployment: Understanding the connection and breaking the cycle*", Swinburne Institute for Social Research, Victoria: AU.

Sutherland, A., & Eisner, M. (2014). "The treatment effect of school exclusion on unemployment". *SSRN*. <http://dx.doi.org/10.2139/ssrn.2380956>

Testa, A., Jackson, D. B., Ganson, K. T., & Nagata, J. M. (2022). "Adverse Childhood Experiences and criminal justice contact in adulthood". *Academic Paediatrics*, Vol. 22, pp. 972 – 980.

Timpson. (2019). "*Timpson review of school exclusion*". Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/807862/Timpson_review.pdf (Accessed 15th June 2022).

Trout, A. L., Hagaman, J. L., Chmelka, B. M., Gehringer, R., Epstein, M. H., & Reid, R.

“The academic, behavioural, and mental health status of children and youth at entry to residential care.” *Residential Treatment for Children and Youth*, Vol. 25, pp. 359-374.

Tyler, K. A., & Melander, L. A. (2010). “Foster care placement, poor parenting, and negative outcomes among homeless young adults”. *Journal of child and family studies*, Vol. 19, pp. 787-794.

Visher, C., Kachnowski, V., La Vigne, N.G., & Travis, J. (2004). “*Baltimore prisoners’ experiences returning home*”, The Urban Institute, Washington: DC

Youth Justice Board., & Ministry of Justice. (2020). “*Youth justice statistics 2018/19*”.

Available at:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/862078/youth-justice-statistics-bulletin-march-2019.pdf (Accessed 11th June 2022).