CRIMINOLOGY
RESEARCH GRANT

Adverse childhood experiences and trauma among young people in the youth justice system

Catia Malvaso
Andrew Day
Paul Delfabbro
Jesse Cale
Louisa Hackett
Stuart Ross

Report to the Criminology Research Advisory Council
Grant: CRG 12/18–19

June 2022

This project was supported by a Criminology Research Grant.
The views expressed are the responsibility of the author and are not necessarily those of the Council.

Published by the Australian Institute of Criminology
GPO Box 1936 Canberra ACT 2601
Tel: (02) 6268 7166
Email: front.desk@aic.gov.au
Website: www.aic.gov.au/crg

ISBN 978 1 922478 62 7 (Online)

This research was supported by a Criminology Research Grant. The views expressed are those of the author and do not necessarily reflect the position of the Criminology Research Advisory Council or the Australian Government.

This report was reviewed through a double-blind peer review process.

Edited and typeset by the Australian Institute of Criminology.

Contents

Tables

Figures

Acknowledgements

The research team would like to thank all Youth Justice staff (Department of Human Services, South Australia) and in particular the project advisory group members: Fiona Curnow, Katherine Hawkins, Christopher Campbell, Michelle Hopkins, Melissa Clarke, Shane Tongerie, Samuel Ledger and Steven Mather. We acknowledge that this research was conducted on the ancestral lands of the Kaurna people, and we thank Michelle Hopkins, Melissa Clarke, Shane Tongerie, Joanne O'Connor and Arrin Hazelbane for their ongoing cultural advice, guidance and support throughout the project. A big thank you to all staff from Community Youth Justice and Kurlana Tapa, who helped to facilitate data collection, and in particular to Sharon Schroeter and Matthew Kroeger for assistance with administrative data extraction. Thank you to members of the BetterStart Child Health and Development Research Group at the University of Adelaide: Dr Pedro Santiago for assistance with administrative data cleaning, and Dr Dandara Haag, Dr Catherine Chittleborough and Dr Murthy Mittinty for advice on latent class analysis methods and interpretation. Last but not least, thank you to the 184 young people who took the time to participate in this study. Without your generosity, this research would not have been possible.

Acronyms and abbreviations

AADIS	Adolescent Alcohol and Drug Involvement Scale
ACEs	adverse childhood experiences
CBCL-YSR	Child Behaviour Checklist Youth Self-Report
CP	child protection
CU	callous-unemotional
DLC	developmental and life-course criminology
LCA	latent class analysis
OOHC	out-of-home care
PTSD	post-traumatic stress disorder
TSCC	Trauma Symptom Checklist for Children

Abstract

This research examines the prevalence of adverse childhood experiences (ACEs) in a representative sample of young people under youth justice supervision in South Australia. Data were collected from a set of self-report assessments administered to 184 young people, which were subsequently linked to administrative records. The analysis showed that not only was the prevalence of ACEs particularly high in this population (89% experienced a combination of maltreatment and household dysfunction), but so too were trauma symptomatology, substance use, and internalising and externalising behaviours (with more than two-thirds of young people scoring in the clinical ranges on each of these measures). Using latent class analysis, four distinct subgroups of young people were identified according to different patterns of ACEs experienced. These findings offer empirical evidence for youth justice policymakers and practitioners to develop new ways of working with justice-involved young people that take account of key developmental experiences of adversity.

Executive summary

Background

Youth justice systems around Australia experience considerable challenges in meeting expectations that they should manage risk in a way that ensures the protection of the community and that addresses the developmental needs of young people in their care. There is now almost universal agreement that understanding adversity in childhood is critical to effective youth justice service delivery. These experiences disrupt and change biological, psychological and social development in ways that create the very circumstances in which criminal justice system involvement becomes more likely. Yet the associations between adversity during childhood and risk of youth justice system involvement are poorly understood and, as a consequence, the development of programs and practices in youth justice systems that effectively address the drivers of offending behaviour has been limited.

Aims

This research establishes the prevalence of adverse childhood experiences (ACEs) in a representative sample of young people under youth justice supervision (both in detention and in the community) in South Australia. It adopts a developmental and life-course criminology (DLC) theoretical framework to investigate the ways in which ACEs are associated with trauma symptoms and related needs—namely, substance use and social and emotional behavioural problems, and how these are reflected in different youth justice contact patterns. This is achieved by:

- profiling the background characteristics of young people under youth justice supervision and their exposure to ACEs;
- measuring the psychosocial needs of this population in terms of trauma symptoms, substance use, and social and emotional behaviour;
- identifying subgroups of individuals with similar ACE patterns and comparing them on background characteristics, trauma, substance use, social and emotional behaviour, and youth justice contact patterns; and
- using this information to identify new directions for youth justice practice, including: prevention and early intervention; screening, assessment and referral; clinical-level intervention; and youth justice milieu characteristics.

Method

This study involved the collection of data through a set of self-report assessments administered to young people under youth justice supervision in the community and in custody. Young people who were aged 14 and older were eligible to participate. A total of 211 young people were approached, of which the majority (*n*=184, 87%) consented to participate. Participation was completely voluntary and no incentives to take part were offered. Data collection took place over a 12-month period. More than half of the young people were interviewed in the community (*n*=104, 57%), and the rest participated while in custody (*n*=80, 43%). The majority were male (*n*=155, 84%) and 29 (16%) were female. Just over one-third of the young people (*n*=69, 38%) identified as Aboriginal and/or Torres Strait Islander. Participants ranged in age from 14 to 21 years old, with a median age of 16 years. The study sample was broadly representative of the South Australian youth justice population (Australian Institute of Health and Welfare 2020).

Self-report assessments included four measures: an adapted version of the Adverse Childhood Experiences Questionnaire (Felitti et al. 1998); the Trauma Symptom Checklist for Children (TSCC) (Briere 1996); the Adolescent Alcohol and Drug Involvement Scale (Moberg 2005); and the Child Behaviour Checklist-R Youth Self-Report (Achenbach 2001).

The analysis proceeded in three stages: (1) descriptive statistics were used to characterise young people under youth justice supervision according to their youth justice and child protection (CP) histories, ACEs, trauma symptoms, substance use, and social and emotional behaviour; (2) using latent class analysis (LCA), we then examined whether there were different patterns of ACEs experienced by young people under youth justice supervision; and (3) the groups identified through stage 2 were compared according to the prevalence of trauma symptoms, substance use, emotional and behavioural problems, and offending characteristics.

Results

Background characteristics

Of the 184 young people who participated, 180 consented to having their administrative data accessed for the purposes of this study, with more than three-quarters (83%) identified as having experienced custodial supervision at least once before being interviewed. For those who had their first offence proven, agreed to or convicted, the largest proportion were for theft (*n*=47, 26%), followed by property crime (*n*=26, 14%) and assault (*n*=24, 13%). Overall, more than half (*n*=104, 57%) had committed at least one violent offence.

A total of 170 (94%) young people under youth justice supervision were known to CP. Over three-quarters (83%) had at least one notification for alleged maltreatment, with 105 (57%) the subject of at least one investigation, and 85 (46%) the subject of at least one substantiation. Almost one-third (30%) had ever been in care, and 14 percent were in care on long-term orders until age 18. Almost a quarter had experienced at least one placement in residential care (*n*=39, 21%).

Adverse childhood experiences

Fewer than five percent of young people reported zero ACEs, and 178 (97%) experienced at least one ACE. Overall, 141 (77%) reported four or more ACEs. Over two-thirds of young people had experienced physical abuse, emotional abuse, neglect, parental separation or the death of a close friend or family member, and over half had experienced family violence, household member substance use, household member imprisonment and neighbourhood violence exposure. Over three-quarters of young people (89%) experienced a combination of maltreatment and household dysfunction ACEs. ACEs experienced frequently (ie 'often' and 'very often') included: emotional abuse (64% of young people), neglect (62%), family violence (46%), physical abuse (45%), bullying (44%), neighbourhood violence (39%), and sexual abuse (7%). Overall, 170 (92%) of the young people experienced at least one of these ACEs frequently, and 157 (85%) experienced at least one maltreatment type frequently.

Trauma symptoms

A total of 146 (88%) young people with valid TSCC assessments scored in the symptomatic range for at least one of the trauma symptoms scales. Their responses were indicative of clinically significant problems across a broad range of post-traumatic domains, including: anxiety (53% of young people), depression (57%), anger (60%), post-traumatic stress (62%), dissociation (66%), overt dissociation (71%), fantasy dissociation (40%), sexual concerns (12%), sexual preoccupation (15%), and sexual distress (13%).

Substance use

A total of 159 (86%) young people scored in the problematic range for alcohol and/or other drug use. Marijuana use was common among two-thirds of the sample, and over half reported smoking marijuana daily. Almost half of the young people had ever used hallucinogens, approximately one-third had used inhalants, and almost one-quarter had used amphetamines.

Social and emotional behavioural problems

Almost two-thirds of the sample provided responses that reflected the presence of internalising behavioural problems (inclusive of anxious/depressed, withdrawn/depressed and somatic complaints symptoms), with evidence that over three-quarters experienced externalising behavioural problems (inclusive of rule-breaking and aggressive behaviour).

Reoffending

Of the 180 young people who consented to have their administrative records accessed, 141 (78%) had at least one new conviction in the 12 months after the interview for this study. Of those with at least one conviction, the most serious conviction recorded in almost half of the cases was for assault (48%). Calculating new youth justice orders in the 12 months post interview was more complicated. Some young people had turned 18 and were therefore not eligible for a new youth justice order unless they had committed the offence before age 18. Using this scenario, 102 young people were eligible to be assessed for a new youth justice order. Of these, 70 (69%) had at least one new youth justice order in the 12 months post interview. Of those with a new order, 40 (39%) had at least one new unsentenced community supervision order, 10 (10%) had a sentenced community order, 43 (42%) entered custody on an unsentenced order and seven (7%) were sentenced to detention. No substantial differences in reoffending by gender or cultural background were observed.

Subgroups identified through latent class analysis

Based on a combination of face validity checks and fit statistics, the LCA revealed four groupings of young people under youth justice supervision according to their patterns of 12 different ACEs:

(1) a **high maltreatment/high household dysfunction** group, which was high on all types of maltreatment (except sexual abuse) and high on measures of household dysfunction (*n*=66, 36%);

(2) a **high maltreatment/low household dysfunction** group, which was high on all types of maltreatment (except sexual abuse) and low on measures of household dysfunction (*n*=52, 28%);

(3) a **family/neighbourhood disadvantage** group, which experienced family (ie neglect, separation, death), peer (ie bullying) and neighbourhood disadvantage (ie witnessing neighbourhood violence; *n*=45, 25%); and

(4) a **high on all adversities** group, which had high probabilities of all ACEs (including sexual abuse; *n*=21, 11%).

Differences between groups

The high on all adversities group had the highest proportion (91%) of young people with trauma symptoms across all categories. The two groups with high maltreatment had relatively similar proportions of young people with trauma symptoms, which ranged from approximately one-half to two-thirds of young people in these groups (excluding the fantasy dissociation subscale and sexual concerns scales). The family/neighbourhood disadvantage group had the lowest relative proportion of young people with any trauma symptoms (64%), with almost two-thirds of young people in this group also scoring in the symptomatic ranges for overt dissociation.

The proportion of young people who had scores indicating problematic substance use was high across all groups (>71%) and was indicated for nearly all young people in the high maltreatment/high household dysfunction and high on all adversities groups.

The proportion of young people scoring in the symptomatic ranges for externalising emotional/behavioural problems was high across all three maltreatment groups (>92%), with over two-thirds of those in the family/neighbourhood disadvantage also scoring in the symptomatic range for this problem. The high on all adversities group also had the highest proportion (91%) of young people with internalising problems.

In terms of reoffending, almost three-quarters of young people across all four groups had a new conviction in the 12 months post interview. The highest proportion (86%) of young people who reoffended was in the family/neighbourhood disadvantage group.

Discussion

This study provides further evidence, and from an Australian sample, that exposure to multiple forms of ACEs is common among young people supervised by the youth justice system. These young people are also characterised by high levels of trauma symptomatology, substance use, and internalising and externalising behaviours. This is perhaps unsurprising given that previous studies have highlighted the experience of multiple adversities among justice-involved young people, but our findings provide further support for the need to understand how life events may alter the course of child and adolescent development. This is consistent with the tenets of the DLC approach, but due to the cross-sectional design of this study it was not possible to elucidate potential causal associations between ACEs and offending behaviour. Longitudinal research is needed to better understand when, how and for whom these experiences lead to an increased risk of offending.

Policy and practice implications

From a whole-of-system perspective, this study has several important implications for policy and practice, specifically in the following areas: prevention and early intervention; screening, assessment and referral; treatment and rehabilitation; and youth justice milieu characteristics.

With regard to prevention and early intervention, our findings emphasise the need for greater attention to be paid to efforts to reduce exposure to ACEs through improved family and community supports, to improve responses to the sequelae of these experiences, and to divert young people with these experiences away from the justice system. Although a strong diversion system is already in place in South Australia, further alternatives to youth justice supervision that can address the consequences of ACEs might be considered. This may, for example, involve the development of more therapeutic and culturally framed accommodation options for those posing a low risk to the community instead of relying on remand. Prevention efforts can also, of course, occur at multiple time points. Targeting prevention opportunities early in the life course may alter pathways away from the justice system but requires investment from other health and social agencies in the broader service system.

Initiatives to better respond to the needs of young people under youth justice supervision and to prevent reoffending are needed. These may be related to trauma screening, an activity which should then be linked with holistic assessments and referral to appropriate treatment. Given that ACEs, trauma symptoms, substance abuse, and social and emotional problems cluster together for the majority of young people in our study, specialist clinical-level interventions are likely needed. These necessary supports are likely to extend beyond the remit of youth justice agencies. Addressing these needs will inevitably require close coordination and collaboration between justice, CP and other health and support services.

Finally, it is likely that one-size-fits-all approaches to milieu characteristics in youth justice settings that lack a trauma-informed overlay, particularly in custodial arrangements, may not be optimally effective. Staff in these settings are assets and need specific support and training in how they interact with young people if they are to serve as role models for self-rehabilitation.

In conclusion, this study offers empirical evidence that adversity and trauma characterise the South Australian youth justice population and further suggests that carefully considering the implications of this for policy and practice may be useful because of the potential to achieve better outcomes for young people and for justice systems and communities.

Introduction

It has been well established that children in Australia who have a history of child maltreatment are at increased risk of not only receiving a youth justice conviction but also being placed in custody (Hurren, Stewart & Dennison 2017; Malvaso, Delfabbro & Day 2017; Papalia et al. 2017). It is also evident from international research that childhood maltreatment is not an isolated incident but often occurs in the context of a range of other adverse experiences, and it is the cumulative impact of these that increases the risk of criminal behaviour (Baglivio & Epps 2015; Baglivio et al. 2014; Craig et al. 2017; Fox et al. 2015). What is less clear, however, is how this happens. This is the focus of this research project, which seeks to understand the potential factors through which experiences of maltreatment or other types of adversity serve to elevate risk among young people under youth justice supervision. This is likely to be important for identifying and implementing new—and potentially more effective—initiatives to prevent the incarceration of young people and improve community safety.

Specifically, we consider the possibility that it is the experience of trauma symptomatology following adversity that is key to the development of risk in those young people who have contact with the justice system. If this is indeed the case, it might also follow that more 'trauma-informed' interventions have an important role to play in efforts to reduce recidivism by redirecting young people who have experienced adversity towards prosocial pathways (Kerig 2012). It is also clear that not every young person who experiences maltreatment or adversity will be 'traumatised' and, further, that not all of those with trauma symptomatology will go on to offend. Thus, understanding the prevalence of adverse experiences, traumatic responses and other potentially related factors (eg substance use, social and emotional problems) among young people involved in the justice system becomes foundational to any comprehensive prevention and rehabilitation strategy.

The primary aim of this research is to empirically examine the different patterns of adversity that are experienced by young people under youth justice supervision in South Australia. An analysis of background and offence characteristics, trauma and related needs (eg substance use and social and emotional problems) will be used to inform youth justice assessment, treatment and policy strategies. In this way this study draws on a DLC perspective to better understand the ways in which ACEs may be associated with trauma, related needs and offence characteristics, and how this information can be used to assist youth justice services to match assessment and intervention efforts with the needs of young people in their care.

Literature review

Adverse childhood experiences

Since its inception in 1998 by Felitti and colleagues, the concept of ACEs has gained considerable scientific and policy attention across a diverse range of disciplines, including criminology (Anda et al. 2010; Baglivio et al. 2014; Hardt & Rutter 2004). The ACEs framework identifies 10 distinct life events that can occur before age 18 and are thought to influence health and wellbeing over the life course. These include physical abuse, sexual abuse, emotional abuse, physical neglect, emotional neglect, witnessing domestic violence, parental separation or divorce, household mental illness, household substance abuse, and living with a household member who has been incarcerated. Felitti and colleagues hypothesised that those with the poorest outcomes will have experienced multiple adverse events and that it is the cumulative impact of these experiences that contributes to poorer health and wellbeing as well as behavioural problems (Felitti et al. 1998). A number of empirical studies have since been published that support this general assumption, demonstrating, for example, an association between the number of ACEs and a range of issues later in life, including: poor health outcomes and chronic disease (Anda et al. 2006, 2010); smoking and substance abuse (Dube et al. 2006; Ford et al. 2011); mental health problems (Anda et al. 2006; Chapman et al. 2004); and criminal and violent behaviour (Baglivio et al. 2014; Fox et al. 2015).

The prevalence of adverse childhood experiences among young people who offend

A recent systematic review by Malvaso et al. (2021) curates current knowledge about the prevalence of ACEs among young people known to have offended. From a pool of 124 studies published since the year 2000 in 13 different countries, they found evidence that an overwhelming majority (87%) of justice-involved young people will have experienced at least one event that is considered potentially traumatic. A particularly striking finding was that the odds of experiencing at least one ACE were over 12 times greater for justice-involved young people than for those who have had no justice system involvement. The mean prevalence of individual ACEs among justice-involved young people ranged from 12 percent for childhood sexual abuse to 80 percent for parental separation and, compared with males, females were twice as likely to have experienced one or more ACEs.

While the nexus between the CP and youth justice systems has been the source of ongoing discussion in Australia (the Australian Institute of Health and Welfare released its first report on the crossover of young people between these systems in 2016), only a handful of empirical studies have examined the prevalence of a full range of ACEs in criminal justice populations. These studies have typically only investigated the role of specific (or very few) ACEs on offending outcomes, with the focus often on child abuse and neglect. For example, previous work in this area established that CP system involvement is very common among young people in custody in South Australia, with almost 75 percent of the 2,045 young people who had entered custody at least once between 1995 and 2012 also experiencing some form of contact with CP. This ranged from notifications of child abuse and/or neglect through to out-of-home care (OOHC) placements (Malvaso, Delfabbro & Day 2017). A more recent study using whole-of-population data found that 84 percent of young people who were supervised by youth justice between 2001 and 2016 were known to CP (Malvaso, Santiago et al. 2020a). The large 'crossover' between CP and youth justice in South Australia is consistent with data from other jurisdictions. For example, findings from the Young People in Custody Health Survey in New South Wales in 2009 indicated that just under two-thirds of all young people in custody had a history of child abuse and/or neglect (Indig et al. 2011).

Through an audit of Victorian Children's Court files of 300 young people who had crossed over from CP to youth justice, Baidawi and Sheehan (2019) appear to have been the first in Australia to examine the full range of ACEs in this population. The prevalence of abuse and neglect in their sample was high (ranging from approximately one-quarter of the sample for sexual abuse to two-thirds for neglect). They also found that nearly three-quarters of their sample had been exposed to family violence and household substance abuse, half had lived with a household member with mental health concerns, one-fifth had experienced the death of a parent, and most had experienced parental separation. Summing affirmative answers to each ACE resulted in an average cumulative score of 5.4 (out of a possible 10), with over two-thirds (68%) of young people experiencing five or more ACEs. Although this was a comprehensive examination of the prevalence of different ACEs in the court system, to the best of our knowledge no studies have been conducted using Australian data that determine the nature and extent of the entire range of ACEs that characterise young people in the youth justice system, whether in the community or in detention. In addition, while these studies do provide important information about the numbers of young people in the justice system who have also experienced maltreatment and other potentially traumatic events, they provide only limited insight into the factors that link these experiences to behaviour. Further research is needed that has direct application to the ongoing development of youth justice policy and practice.

Links between adverse childhood experiences, trauma symptoms and offending

Although there is increasing evidence that exposure to ACEs is associated with an increased risk of offending (Craig et al. 2017), it is important to reflect on Finkelhor's (2018) observation that this does not necessarily mean that all individuals with high ACEs scores will be traumatised—just as not all individuals with symptoms of trauma will offend. In fact, a specific aim of the recent systematic review (Malvaso et al. 2021) was to understand whether, in fact, there is evidence to support the assumption that ACEs do typically lead to traumatic reactions which in turn result in high rates of offending behaviour. Although there is evidence that both the number of ACEs and the experience of multiple types of ACEs were associated with an increased likelihood of a diagnosis of post-traumatic stress disorder (PTSD), a quality assessment of relevant studies revealed that the vast majority could not—as a result of their design—provide insight into the causal associations that might exist between ACEs, trauma and offending. Rather, existing knowledge on this topic is almost exclusively derived from data relating to young people in custody, and almost all the available studies have not considered data from comparison groups of young people without justice system involvement. In addition, a small proportion of those identified studies which did include comparison groups (approximately 10%) did not adequately control for differences between the exposure and comparison groups. In the absence of well-designed prospective, longitudinal studies, only limited conclusions can currently be drawn about the extent to which ACEs are simply correlates or coinciding vulnerabilities in what is a high-risk population or, indeed, whether they do predict offending behaviour.

Studies using data from samples of justice-involved youth do, however, provide valuable insight into how justice systems might better respond to the needs of the young people in their care, as well as into some of the key factors that might underlie ACEs-offending pathways. For example, studies by Kerig and others have considered how ACEs and trauma symptoms are often associated with disruptions in emotion regulation and processing, including dissociation, numbing and overmodulation (Modrowski & Kerig 2017), anger, depression and somatic complaints (Kerig et al. 2009) and the development of what have been termed 'callous-unemotional' (CU) traits (Mozley, Lin & Kerig 2018). As Kerig et al. (2009) have pointed out, failing to recognise those who suffer from trauma symptoms can also be costly given that, if left untreated, these symptoms may be exacerbated—thereby increasing the risk of further poor outcomes, such as escalating psychiatric problems, substance abuse, disengagement from school and services, and recidivism. Indeed, comparatively high levels of PTSD have been found in adult prisoners; Baranyi et al.'s (2018) meta-analysis of studies involving 56 different samples (comprising over 20,000 male and female prisoners across 20 countries) reported a lifetime prevalence of PTSD of 18 percent for males and 40 percent for females. These authors reported that this is five and eight times higher than the general population estimates for PTSD.

Understanding how ACEs may (or may not) be associated with other psychological effects, such as trauma and potentially related consequences (eg substance abuse), also has important implications for the development of appropriate treatments. Indeed, a DLC perspective recognises the role of trauma and psychological distress in altering cognition, emotions and behavioural responses in ways that then place individuals on more serious offending trajectories. For example, one hypothesised pathway could be that ACEs lead to trauma and, in turn, trauma is associated with the development of problematic behaviours such as drug and alcohol use and aggression. Taken together, these factors increase the risk of involvement in offending behaviour. If this is the case, rehabilitation strategies that focus strictly on consequences of trauma, such as substance use, may not be as effective as addressing the underlying causes. It is also possible that a trauma-focused overlay may lead to better engagement in treatment programs, especially when these programs are matched to individual needs and are delivered in sufficient dosages (Baglivio et al. 2021). One challenge is that many young people under youth justice supervision present with comorbid problems that interfere with treatment progress (Day 2011a), and this has important implications for clinical decision-making and service development (Baranyi et al. 2018).

There is a clear dearth of studies conducted in Australia that highlight the ways in which ACEs and offending behaviour are related. There is a particular need to conduct local research given the different histories, practices and policies of both CP and youth justice systems in different countries. For example, it has been suggested that South Australia has a longer tradition of diversion than many other jurisdictions (King, Delfabbro & Day 2013). Importantly, the specific intergenerational impacts of adversity and trauma among Aboriginal and Torres Strait Islander young people—who continue to be disproportionately represented across the justice system (Richards 2011) —must also be considered. A pilot study of young men in detention in South Australia (Malvaso et al. 2016) found that the majority (24 of the 28 young people assessed) endorsed at least one of the events listed on a childhood trauma questionnaire, with nearly three-quarters (70%) rating these experiences as ‘extremely traumatic’. This study also found preliminary support for the hypothesis that this trauma is associated with other proximal risk factors for youth justice involvement, such as poor anger regulation and antisocial thinking patterns. However, while the number and chronicity of traumatic events vary, so too can the way in which individuals assign meaning to these events. This is likely to be key to whether a particular event is actually perceived as traumatic and, in turn, may influence the levels of physical and psychological disruption that are experienced. The small sample included in this pilot project also precluded the examination of diversity in the pathway between ACEs, trauma and offending behaviour. Therefore, this project aims to help fill the gap in knowledge in this area.

Population diversity and priority groups

Young people under youth justice supervision are not a homogeneous group. Certain groups may display different levels of trauma symptoms, and these symptoms may be related to different behavioural expressions or, perhaps, the types of crime committed. For example, there is some evidence that a higher number of ACEs is associated with increased levels of violent behaviour. Fox et al. (2015) demonstrated that the odds of engaging in serious, violent and chronic offending in adulthood increased by 35 percent for each additional ACE experienced, even after controlling for other known correlates of crime. Thus, the identification of young people with a greater number, or particular profile, of ACEs may prove important to providing targeted early interventions that have the potential to inhibit higher-risk pathways through the justice system. Furthermore, understanding how any trauma associated with these ACEs is expressed by these individuals (eg through externalising behaviour, poor emotion regulation or aggression) may inform the development of more sophisticated, and ultimately more effective, interventions. This is likely to be especially important in the Australian context, where a deeper and more nuanced understanding of cultural difference in the experience of adversity and subsequent traumatic symptomatology will be beneficial in developing culturally appropriate rehabilitation strategies (Day et al. 2008).

Although it is important to note that the current study does not focus specifically on Aboriginal and Torres Strait Islander young people, it would be remiss of us to overlook the need to identify and understand culturally specific developmental offending pathways. The over-representation of Aboriginal and Torres Strait Islander young people in both youth justice and CP systems remains a significant challenge for service providers, and personal, familial and cultural experiences of adversity and trauma are often identified as critical drivers of over-representation, linked to the enduring legacies of colonisation, transgenerational grief and loss, racism, discrimination and structural inequality (Commission for Children and Young People 2021).

As a team of non-Indigenous researchers, we are also cognisant of the need to not perpetuate what Phelan and Oxley (2021: 25) called ‘the exploitation, harvesting, adapting, or reproducing of narratives, knowledges, and experiences of these highly vulnerable groups to promote researchers’ own academic and professional agendas, expertise and reputational kudos’. We acknowledge that, for many Aboriginal and Torres Islander people, research is intimately bound up with the political process of colonisation and that quantitative data especially has been used to maintain the status quo or, at worst, promote inequity. However, as is also noted by Westerman (2021) a failure to break data down by Indigenous status can limit our ability to identify early risk and causal pathways to crime for Aboriginal children. This similarly restricts the ability to identify important promotive or resilience factors that act against involvement in the criminal justice system. Therefore, in this study, the research team consulted with community representatives to discuss the aims and intentions and how we viewed the potential contribution of the research. We also set up a reference group with Aboriginal

and Torres Strait Islander representation to oversee the project and, together, made the decision to present data comparing Aboriginal and non-Aboriginal young people. However, it is important to recognise that any interpretation of these differences is inevitably influenced by the aforementioned impacts of colonisation, as well as the lack of culturally validated measures used in this study. (See Day & Malvaso 2021 for a discussion of the design and the methodological and reporting choices made in this research project.)

It is also important to understand that patterns of trauma symptomatology and related needs are likely to be different for young men and young women. It is commonly reported, for example, that women are more likely to develop internalising disorders (eg depression, anxiety) in response to trauma, whereas men are more likely to develop externalising disorders (eg substance use; Chong et al. 2020). Research involving adult criminal justice populations has also shown that female prisoners are more likely to score in the clinical range for PTSD and are at greater risk of suicidal behaviour than male prisoners (Tyler et al. 2019). Furthermore, Drapalski et al. (2009) found that PTSD was higher in female compared with male prisoners and that alcohol-related problems were twice as prevalent in the latter group but that males and females had similarly high levels of drug-related issues. If there are gender-based differences in the experience of, and association between, ACEs, trauma and other related needs, this will have implications for the development of appropriate and responsive services and strategies.

Another group of particular interest is those young people who have had prior contact with the CP system, especially those who have been placed into OOHC. These young people have likely experienced early onset, protracted and repeated traumatic events, such as experiences of maltreatment and domestic violence. Neurobiological vulnerabilities created by these circumstances often mean that those who enter OOHC will present with a range of behavioural issues (eg difficulties in emotion regulation, attention, activity levels and/or aggression) that contribute directly to difficulties in supporting young people in their placements, leading to placement breakdown and changes in carers—experiences that may then compound initial behavioural difficulties and increase the risk of delinquent behaviour over time (Malvaso & Delfabbro 2015; Ryan & Testa 2005). Thus, although some criminological theory suggests that desistance from crime should be expected to occur during the transition from adolescence to adulthood, there is evidence that those young people who offend and have spent time in OOHC are disproportionately more likely than those without care histories to engage in chronic offending into early adulthood (Yang, McCuish & Corrado 2017). Therefore, a deeper understanding of the circumstances under which risk is reduced or exacerbated by OOHC placement is likely to be helpful when designing targeted strategies to reduce recidivism across the justice system.

Limitations of adverse childhood experiences research in the youth justice system

A particular criticism of the ACEs framework is that there are other potentially influential childhood adversities that also influence outcomes later in life. For example, some developmental researchers have argued that a broader set of childhood adversities should be incorporated into the ACE framework (Finkelhor et al. 2013). There is certainly evidence that experiencing the death of a close relative or friend, peer violence and bullying, and witnessing community violence are all associated with subsequent offending behaviour (Amato & Anthony 2014; Farrington 2007) and such life events are potentially relevant to this research. For example, Baidawi and Sheehan (2019) found that 20 percent of children involved in both the CP and youth justice systems in Victoria had experienced the death of one or both of their parents. This stood in stark contrast to Australian community data reporting that only five percent of young people aged 18 to 24 years have experienced the death of a parent. Similarly, Garrido et al. (2010) found that community violence exposure predicted trauma symptoms among maltreated young people over and above exposure to family violence. Accordingly, this study extends previous ACEs research by incorporating questions about these experiences into our measure of ACEs.

Underlying the practice of calculating the number of ACEs is the assumption that it is the cumulative effects of these factors that lead to poor outcomes rather than any specific ACE or combination of ACEs. Cumulative risk indices are generally created when examining the effects of ACEs, with most studies examining the effects of a sum of four or more ACEs along with recommendations from the United States' Centers for Disease Control and Prevention (2015). However, information is inevitably lost in this approach that may pertain to the mechanisms through which specific risk factors operate. As others have also pointed out, there may well be groups of young people with different combinations of ACEs that have different needs or outcomes (Baglivio et al. 2021; Barra et al. 2018). Therefore, the development of person-centred approaches to analysing ACEs data and their outcomes may be useful. One example of this used in previous research is LCA to identify underlying subgroups of individuals with similar ACEs patterns and to account for the number, types and combinations of ACEs (Barra et al. 2018; Charak et al. 2019; Ford et al. 2010). Understanding the associations between subgroups and their characteristics, needs and outcomes may inform the development of more sophisticated (and potentially targeted or matched) intervention options.

Another obvious limitation of existing ACEs research is the almost exclusive focus on youth at the most extreme end of the youth justice system: that is, young people in detention. Given that detention is often a last-resort option reserved for the most serious offences, and that the majority of young people under youth justice supervision are in the community (~80% throughout Australia on any given day; Australian Institute of Health and Welfare 2020), there is a need to better understand risk among young people supervised in the community as this may highlight opportunities for early intervention. However, a recent study conducted in South Australia has shown that almost 70 percent of these young people will experience custodial supervision at some stage throughout their contact with youth justice (Malvaso, Santiago et al. 2020b). Therefore, it may be less important to examine differences between these two groups and more important to determine whether different intervention options will be more (or less) effective in different environments (ie in custody and in the community). Indeed, health-related needs have been shown to be prevalent in both detention- and community-based youth offending populations (Kenny et al. 2006; Kinner et al. 2014), suggesting that it is important to include all young people under youth justice supervision when examining the needs of this population.

In a recent paper by some of the authors of the original ACEs study, Anda, Porter and Brown (2020) highlighted a number of limitations and misapplications of the ACEs framework. These authors cautioned against making inferences about individuals based on information derived from population-based studies, as risk may be overestimated (ie an ecological fallacy). Examples provided included over-diagnosis and over-referral of people to services that are not beneficial, subsequently creating stigma towards the individual and disrupting relationships with healthcare providers. Further to this, Baldwin et al. (2021) have examined the ability of ACEs data to predict individual risk of later health problems. They found that, although ACEs scores were robust predictors of mean group differences in health, they had poor accuracy in predicting individual risk. This led the authors to caution against the deterministic use of ACEs in disease prediction and clinical decision-making. A final, but nonetheless major, limitation of existing ACEs research is the reliance on cross-sectional research (Batty & Kivimaki 2021; Malvaso et al. 2021). As we noted earlier, these designs cannot provide insight into potential causal associations between ACEs, trauma and offending. In light of these limitations, the intention of the current study is not to support efforts to better predict offending behaviour (ie risk assessment; see Koh et al. 2021) but to provide deeper insight into whether ACEs, along with other clinically important information (ie trauma and related needs) can assist youth justice services to match assessment and intervention efforts with individual needs.

Aims and objectives

This research will establish the prevalence of ACEs in a representative sample of young people under youth justice supervision—both in detention and in the community—in South Australia. It adopts a DLC theoretical framework to investigate the ways in which exposure to these potentially traumatic life events is related to current manifestations of trauma symptomatology and related needs: namely, substance use, social and emotional behavioural problems, and offence characteristics. This will be achieved by:

- profiling the background characteristics of young people under youth justice supervision and their exposure to ACEs;
- measuring the psychosocial needs of this population in terms of trauma symptoms, substance use, and social and emotional behaviour;
- identifying subgroups of individuals with similar ACEs patterns and comparing them on background characteristics, trauma, substance use, social and emotional behaviour, and youth justice contact patterns; and
- using this information to identify new directions for youth justice practice, including: prevention and early intervention; screening, assessment and referral; intervention programs and rehabilitation; and youth justice milieu characteristics.

Methods

This study involved the collection of data through a set of self-report assessments administered to young people under youth justice supervision which were subsequently linked with administrative CP and youth justice records.

Ethics approval was obtained from the University of Adelaide Human Research Ethics Committee (H-2018-232). An advisory group was established to oversee the project, including Department of Human Services executives and senior Aboriginal and Torres Strait Islander youth justice advisers. Although this study was not designed to specifically focus on Aboriginal and Torres Strait Islander young people, the importance of understanding culturally specific developmental offending pathways was identified. Personal, familial and cultural experiences of adversity and trauma are identified as critical drivers of over-representation linked to the enduring impacts of colonisation, transgenerational grief and loss, racism, discrimination and structural inequality. The decision to present data comparing Aboriginal and Torres Strait Islander and non-Aboriginal and Torres Strait Islander young people was made by the advisory group, with caveats that any interpretation of these differences is inevitably influenced by the aforementioned impacts of colonisation and the absence of culturally validated measures used. (See Day & Malvaso 2021 for a discussion of the design and methodological and reporting choices made in this research project.) The term 'Aboriginal' is used in this report to refer to Aboriginal and/or Torres Strait Islander people who participated in this research. We respectfully acknowledge their diversity and autonomy and recognise that the preferred language and terminology may differ among individuals, families and communities. We chose the term 'Aboriginal' for this report as it is specific to South Australia. Many South Australian Aboriginal people prefer the term 'Aboriginal' but we also respect and acknowledge those who prefer to be referred to by their specific language group(s).

Participants

A total of 211 young people under youth justice supervision were approached to participate in this study. Participation was completely voluntary and no incentives to take part were offered. Of those approached, most (*n*=184, 87%) consented to participate. Of the 184 young people who participated in this study, the majority were male (*n*=155, 84%) and 29 (16%) were female. Just over one-third of young people (*n*=69, 38%) identified as Aboriginal and/or Torres Strait Islander. Participants ranged in age from 14 to 21 years old, with a median age of 16 years. The study sample was broadly representative of the South Australian youth justice population (Australian Institute of Health and Welfare 2020).

Measures and materials

Administrative youth justice and child protection records

Those who participated in this this study were asked to provide consent for access to administrative records that provided details of previous contact with youth justice and CP services. Only four young people did not consent to having their administrative records accessed.

Youth justice

Details of all supervision orders (community- and custodial-based), age and type of first supervision, and length and number of supervision orders, were extracted from the Connected Client Case Management System. Details of all offences—agreed to, proven and/or convicted—were extracted from the Justice Information System. Proven or agreed offences are those that have been legally sustained but when the young person did not receive a formal conviction. This occurs in accordance with South Australia's emphasis on diversion as stipulated by the *Young Offenders Act 1993* (SA) and the *Youth Justice Administration Act 2016* (SA). Matters that had been dismissed, not proceeded with or committed to trial in which the defendant was subsequently found not guilty were not counted.

The type of conviction was recorded, along with the individual's age at the time of their first agreed to, proven or convicted offence. Offence type was classified according to the third edition of the Australian and New Zealand Standard Offence Classification, which classifies offences into 16 divisions. A measure of violent offending was also created based on classification codes 01–06 and definitions of violence provided in the code. Because young people varied in age at the time of their interview, the median number of offences and orders was calculated by first converting the number of offences or orders to rates: that is, for each individual we summed the number of offences or orders and divided this sum by the number of years since the young person had turned 10 years old. For example, the number of orders would be divided by four for a young person aged 14 and by eight for a young person aged 18.

A second record extraction of youth justice system information was completed to assess reoffending in the 12 months after participants were interviewed. This included any details of new agreed to, proven or convicted offences, as well as new youth justice supervision orders. New supervision orders were difficult to calculate due to the varying ages of the young people interviewed. Some of the young people were already 18 or over at the time of the interview, and others turned 18 in the 12 months after their interview. Therefore, unless orders were made based on offences committed before the age of 18, some young people were not eligible for new youth justice orders. Based on these criteria, only 102 young people were considered eligible for this analysis (ie they were not 18 years old in the 12 months before being interviewed and/or they were not sentenced to any new youth justice orders based on offences committed before age 18).

Child protection

Details of all notifications (including for alleged maltreatment, risk-of-harm and adolescent-at-risk reports) made to the Department for Child Protection, investigations carried out, substantiations of maltreatment made, guardianship orders granted, and details of placements in out-of-home care were extracted from the Client Information System and the Connected Client Case Management System. This included the age at each contact and/or placement, as well as the number of contacts and/or placements. Data were used to create indicators of 'ever being on a long-term guardianship order until age 18', 'ever placed in foster care' and 'ever placed in residential care'.

Self-report assessment

All participants completed a set of self-report assessments, comprising the following.

Demographics

This included the young person's gender (male or female), age (in years) and Aboriginal identification (yes or no; though we respectfully acknowledge that this does not capture the diversity of cultures and identities that comprise this group).

Adverse Childhood Experiences Questionnaire

This questionnaire was adapted from that developed by Felitti and colleagues (1998, 2006) and included the original 28 items relating to 10 adverse experiences: (1) emotional abuse, (2) physical abuse, (3) sexual abuse, (4) emotional neglect, (5) physical neglect, (6) family violence, (7) household substance abuse, (8) household mental illness, (9) parental separation or divorce, and (10) incarcerated household member. The Felitti questionnaire was constructed using questions from the original Conflicts Tactics Scale (Straus & Gelles 1990) to define psychological and physical abuse during childhood and violence against the respondent's mother. However, we adapted the question of witnessing violence against the mother to encompass all forms of family violence, in recognition that violence towards women is just one form of family violence. This question thus included physical and psychological abuse between parents and between siblings, and adolescent violence towards parents. Questions from Wyatt (1985) were used to define sexual abuse, and questions about exposure to alcohol or drug abuse were adapted from the National Health Interview Survey (Blackwell & Tonthat 2002). We also included three additional adverse childhood experiences: death of a close relative or friend, peer violence and bullying, and witnessing neighbourhood violence. Therefore, 13 individual ACEs were assessed in this study.

ACEs exposure was measured in several ways. First, affirmative responses to any individual item under each ACEs category were used to define those who had experienced a particular ACE. For the maltreatment ACEs, we also used administrative CP substantiations to create combined self-reported and officially recorded exposure to physical, sexual, emotional abuse and neglect. It was not possible to differentiate physical neglect from emotional neglect using the administrative data; therefore, a combined category of 'any neglect' was created and included information from both the self-report questions and administrative records. A total ACE score, the sum of all affirmative responses in each of the 13 categories, was then calculated. We used the Centers for Disease Control and Prevention's (2015) cut-off of four or more ACEs to better understand how exposure to ACEs in the current sample compared with other international studies. We only used the original ACEs items for the purposes of these comparisons.

We also measured the frequency of these experiences by using the response categories defined by Straus and Gelles (1990), including 'never', 'once or twice', 'sometimes', 'often' or 'very often'. We defined frequency using endorsements of the 'often' and 'very often' categories for particular ACEs (physical abuse, sexual abuse, emotional abuse, neglect, family violence, bullying and neighbourhood violence), supplemented by two or more substantiations for the four maltreatment types.

Trauma Symptom Checklist for Children

Trauma symptoms were measured using the shortened versions of six clinical scales: anger, depression, anxiety, dissociation, post-traumatic stress, and sexual concerns. The dissociation scale includes two subscales: overt and fantasy dissociation. Similarly, the sexual concerns scale includes two subscales: sexual preoccupation and sexual distress. The measure thus consisted of a total of 54 items. Participants were asked how often they had experienced the symptom described in each item in the past month, with options on a four-point scale ranging from zero (not at all) to three (very often). For the six clinical scales, *T*-scores of over 65 are indicative of clinically significant symptomatology, and *T*-scores between 60 and 65 indicate subclinical (but significant) symptomatology. The TSCC (Briere 1996) has sound psychometric properties (test–retest reliability of r=0.81, with internal consistency in this study α=0.83) and good construct validity (Lanktree et al. 2008).

Eight critical items are also assessed through affirmative responses to the following items: (1) wanting to hurt myself, (2) wanting to hurt other people, (3) feeling scared of men, (4) feeling scared of women, (5) not trusting people because they might want to have sex, (6) getting into fights, (7) feeling afraid someone will kill me, and (8) wanting to kill myself. These items are used to screen for problems or issues that may require more immediate clinical attention. As part of our risk management strategy, if a young person endorsed any of the eight critical items during the interview, the Youth Justice Principal Psychologist was alerted to undertake a welfare check.

The TSCC also includes two validity checks for under-responding and hyper-responding. Through these checks, 18 (10%) participants were identified as under-responders and an additional 12 (7%) were identified as hyper-responders. After consultation with clinical psychologists working in the youth justice area, it was decided that hyper-responders should be considered as having valid scores, as this was likely a true reflection of the symptoms experienced by young people in the justice system. Therefore, a total of 166 young people had trauma data available for analysis.

Adolescent Alcohol and Drug Involvement Scale

Use of alcohol and other drugs was measured using a screening tool for adolescents adapted from the well-established Adolescent Drug Involvement Scale (Moberg 1991). This is a face-valid and reliable measure (α=0.94) that requires participants to select a single answer on a scale of zero (never used) to seven (several times a day) that best reflects how often they drink alcohol or use other drugs. Item scores are summed to obtain a total score, with scores of 37 or higher indicative of alcohol and drug use that may reach Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) criteria for substance use problems.

The Adolescent Alcohol and Drug Involvement Scale (AADIS; Moberg 2005) is able to discriminate between adolescents diagnosed with and without substance use disorder, with a sensitivity of 0.62 and a specificity of 0.95. A second section of the AADIS comprises 14 items pertaining to alcohol and drug involvement that are rated on five- to eight-point scales, with responses that are unique for each question. For example, the item 'Whom do you drink or use drugs with?' has responses: 'with parents or adult relatives'; 'with brothers or sisters'; 'with friends or relatives own age'; 'with older friends'; and 'alone'. The items from the second section provide further insight into drug and alcohol practices but are not included in the total score.

Child Behaviour Checklist-R Youth Self-Report Form

Emotional and behavioural problems and social competencies were assessed using a standardised screening questionnaire, the Child Behaviour Checklist-R Youth Self-Report Form (CBCL-YSR; Achenbach 2001). The CBCL-YSR is normed for use with young people aged 11 to 18 years. Only the syndrome profiles of the CBCL-YSR were used in this study, which comprises 118 items scored from zero to two. There are eight syndrome scales: anxious/depressed, withdrawn/depressed, somatic complaints, social problems, thought problems, attention problems, rule-breaking behaviour, and aggressive behaviour. High scores on these scales indicate problems in these areas. Problems are broken down into clinical (scores above the 97th percentile of the normative sample) and borderline (scores between the 93rd and 97th percentiles) concerns. The syndrome scales can be scored in terms of two broad groupings of syndromes: internalising (comprising problems that are mainly within the self) and externalising (comprising problems that mainly involve conflict with other people). A total problems score can also be computed by summing the scores of the eight syndrome scales, with clinical ranges at or above the 84th percentile. The CBCL-YSR has been reported to have good test–retest reliability (with the mean score ranging from 0.79 to 0.88), and our study demonstrated strong internal consistency (α=0.88).

Procedure

Due to the small number of young people under youth justice supervision in South Australia, data collection took place over a 12-month period, from March 2019 to February 2020. Young people under supervision in the community and in custody who were aged 14 and over were eligible to participate. Recruitment involved the lead researcher liaising with community youth justice case managers and Kurlana Tapa Youth Training Centre staff to identify young people who might be eligible to participate. Just over half of the young people were interviewed in the community (*n*=104, 57%) and the other half participated while they were in custody (*n*=80, 43%).

Participants were given the option to complete the assessment themselves or have the researcher read out the questions and fill in the responses. If the young person chose to complete the assessment themselves, the researcher first assessed potential literacy issues by asking the young person to read the first set of instructions out loud. If any literacy issues were identified, the researcher then assisted the young person to read the questions and explained their meaning. Most young people (>85%) asked the researcher to verbally administer the assessment but provided verbal responses. The interviews varied in duration from approximately 40 to 60 minutes.

Analysis plan

The analysis proceeded in three stages: (1) descriptive statistics were used to characterise young people under youth justice supervision according to their youth justice and CP histories, ACEs, trauma symptoms, substance use, and emotional and behavioural problems; (2) using latent class analysis, we then examined whether there were different patterns of ACEs experienced by young people under youth justice supervision; and (3) the groups identified through step 2 were compared according to their trauma, substance use, emotional and behavioural problems, and offending characteristics.

Due to the small number of participants, the main analysis relied on data collected from the full sample of young people. However, in recognition of the diversity and different needs of young people in the justice system, descriptive results are also provided according to sex (male and female) and cultural background (Aboriginal and non-Aboriginal). Relative risks and confidence intervals were calculated when considering differences between groups. *P* values are reported, but we suggest these should not be relied on for interpretation, in line with recommendations of the American Statistical Association (Wasserstain & Lazar 2016). *P* values and confidence intervals have been shown to be highly dependent on sample size, which can bias conclusions based on interpretations of statistical significance (Greenland et al. 2016; Morey et al. 2016). Confidence intervals were interpreted as indicators of the precision of the effect estimate, and not as having a 95 percent probability of including the true effect size of the population, as commonly misinterpreted. We also caution against drawing definitive conclusions about the differences between groups, particularly between male and female participants, due to the small numbers and wide confidence intervals. All analyses were conducted in Stata version 15.1, with LCA performed using the Stata Plugin (version 1.2; Lanza et al. 2018).

Results

Describing the population of young people under youth justice supervision

Youth justice and child protection characteristics

Of the 180 young people who consented to having their administrative data accessed for the purposes of this study, over three-quarters (83%) had been in custody at least once before being interviewed. Less than five had been sentenced to detention; therefore, the vast majority had spent time in custody on remand or in police custody. Relative to young men, the proportion of young women who experienced custodial supervision (unsentenced and/or sentenced) was 17 percent higher (*RR*=1.17, *CI*=0.77–1.78). Relative to non-Aboriginal young people, Aboriginal young people were 27 percent more likely to experience custodial supervision (*RR*=1.27, *CI*=0.92–1.76). The median number of youth justice orders per young person, after accounting for age, was 1.3. Young women and non-Aboriginal young people had a median number of one youth justice order, while young men and Aboriginal young people had median numbers of 1.3 and 2.6 youth justice orders, respectively.

Agreement to attend a family conference was the most common type of first contact with the court system (*n*=97, 54%). For the remainder of young people who attended court for their first offence, 43 (24%) had their first offence proven or agreed to but without a conviction recorded, with less than five young people receiving a formally recorded conviction for their first offence. For those who had their first offence proven, agreed to or convicted, the largest proportion were for theft (*n*=47, 26%), followed by property crime (*n*=26, 14%) and assault (*n*=24, 13%). Table 1 summarises the lifetime prevalence of different types of offences (proven, agreed to or convicted) among the young people interviewed. Overall, more than half (57%) had committed at least one violent offence and/or an offence relating to property damage (57%) and public order (59%). In addition, over two-thirds had ever breached a condition of their supervision orders (unsentenced or sentenced). A small proportion of young people (*n*=19, 10%) had ever had an intervention order placed against them.

Table 1: Lifetime prevalence of ever proven, agreed to or convicted offences by type prior to being interviewed according to the Australian and New Zealand Standard Offence Classification coding system (*n*=180)

Code #	Classification	*n*	%
1	Homicide and related offences	<5	–
2	Acts intended to cause injury	91	50.6
3	Sexual assault and related offences	<5	–
4	Dangerous or negligent acts endangering persons offences	7	3.9
5	Abduction, harassment and other offences against the person	<5	–
6	Robbery, extortion and related offences	33	18.3
7	Unlawful entry with intent/burglary, break and enter offences	53	29.4
8	Theft and related offences	66	36.7
9	Fraud, deception and related offences	<5	–
10	Illicit drug offences	40	22.2
11	Prohibited and regulated weapons and explosives offences	45	25.0
12	Property damage and environmental pollution offences	103	57.2
13	Public order offences	107	59.4
14	Traffic and vehicle regulatory offences	48	26.7
15	Offences against government procedures, security and operations	128	71.1
16	Miscellaneous offences	<5	–

Note: Percentages are presented only where *n* values are greater than 5

A total of 170 (94%) young people under youth justice supervision who consented to having their administrative records accessed were known to CP (as the subject of at least one maltreatment or risk-of-harm allegation, and/or adolescent at-risk notifications, through to more serious involvement such as placement in OOHC). More than three-quarters (84%) had at least one notification for alleged maltreatment, with 105 (57%) the subject of at least one investigation, and 85 (46%) the subject of at least one substantiation. Almost one-third (30%) had ever been in OOHC, and 14 percent were in care on long-term orders until age 18. Almost one-quarter had experienced at least one placement in residential care (*n*=39, 21%). The median age at first maltreatment notification was three (range: 0 to 17) and the median age of first OOHC placement was eight (range: 0 to 16). Of those with at least one maltreatment notification, the vast majority experienced their first notification before their first court contact and before their youth justice supervision order (*n*=150, 97%). Of those who had been placed in OOHC, the majority experienced their first placement prior to their first court contact (*n*=43, 77%), with 47 (84%) experiencing their first placement before their first youth justice supervision.

While the difference between young men and women under youth justice supervision who had been notified to CP for alleged maltreatment was small (93% versus 82%, respectively), young women were twice as likely to have experienced placement in OOHC (*RR*=1.90, *CI*=1.05–3.44). Young women were younger at their first notification compared with young men (*M*=3.9 and *M*=6.0), as were Aboriginal compared with non-Aboriginal young people (*M*=4.7 and *M*=5.3). Young women were also younger at their first OOHC placement compared with young men (*M*=5.8 and *M*=7.2). Similarly, the mean age at first OOHC placement was lower for Aboriginal compared with non-Aboriginal young people (*M*=5.8 and *M*=7.7).

Adverse childhood experiences

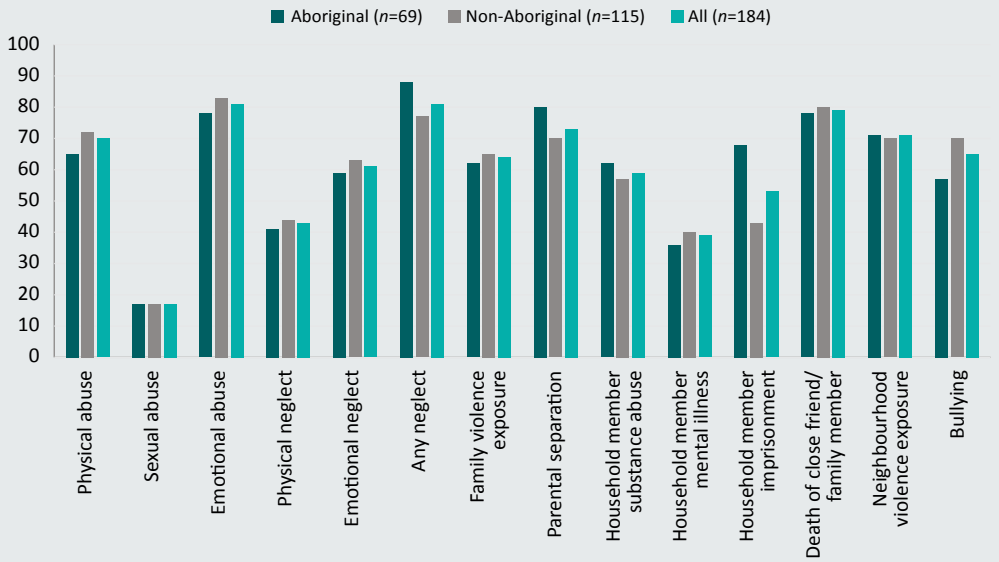
Less than five percent of young people reported zero ACEs and 178 (97%) experienced at least one ACE. Overall, 141 (77%) reported four or more ACEs. This was calculated using only the 10 original ACEs measured by Felitti et al. (1999). When all 13 ACEs measured in this study are included, 162 young people (88%) reported four or more ACEs. Combinations of maltreatment and household dysfunction ACEs were also examined. Very few young people reported that they had only experienced maltreatment ACEs or only household dysfunction ACEs (11%). Instead, over three-quarters of young people (89%) experienced a combination of maltreatment and household dysfunction ACEs.

The prevalence of each ACE according to sex is shown in Figure 1 and according to cultural background in Figure 2. Prevalence rates ranged from 13 percent for sexual abuse among young men to 90 percent for emotional abuse among young women. With the exception of sexual abuse, at least one-third of young men and women had experienced each ACE. Table A1 summarises the differences in numbers and proportions of young people experiencing each ACE by sex and cultural background. While *p* values are reported, we suggest these should not be relied on for interpretation, in line with recommendations from the American Statistical Association (Wasserstain & Lazar 2016). The most pronounced gender differences were for sexual abuse, family violence and family member mental illness. Relative to young men, the proportion of young women who experienced sexual abuse was three times higher, and exposure to family violence and living with a family member who had a mental illness were almost one and a half and two times higher, respectively.

Differences in the prevalence of ACEs were also observed between Aboriginal and non-Aboriginal young people. The most pronounced difference was for household imprisonment. Relative to non-Aboriginal young people, the proportion of Aboriginal young people who reported that a household member had been incarcerated was one and half times higher.

Figure 1: Prevalence of adverse childhood experiences, by sex (%)

Figure 2: Prevalence of adverse childhood experiences, by cultural background (%)



The frequency of selected ACEs was also examined. ACEs experienced 'often' and 'very often' included: emotional abuse (64% of young people), neglect (62%), family violence (46%), physical abuse (45%), bullying (44%), neighbourhood violence (39%), and sexual abuse (7%). Overall, 170 (92%) of young people experienced at least one of these ACEs frequently, and 157 (85%) experienced at least one maltreatment type frequently. Some sex differences were observed, with females reporting more frequent sexual abuse compared with males (see Table A2 for a summary of the number and proportion of young people experiencing frequent ACEs by sex and cultural background).

Trauma symptoms

A total of 146 (88%) young people with valid TSCC assessments scored in the symptomatic range for at least one of the trauma symptoms scales. Figure 3 shows the proportion of young people who scored in the symptomatic ranges for each of the six clinical scales by sex, and Figure 4 shows the proportion by cultural background. As the TSCC can be broken down into clinical and subclinical ranges, Table A3 and Table A4 show the number and proportion of young people who scored in the clinical and subclinical ranges for each scale by sex and cultural background. Overall, there were minimal substantial differences between young men and young women.

Figure 3: Proportion of young people scoring in symptomatic (clinical or subclinical) ranges on the Trauma Symptom Checklist for Children, by sex (%)

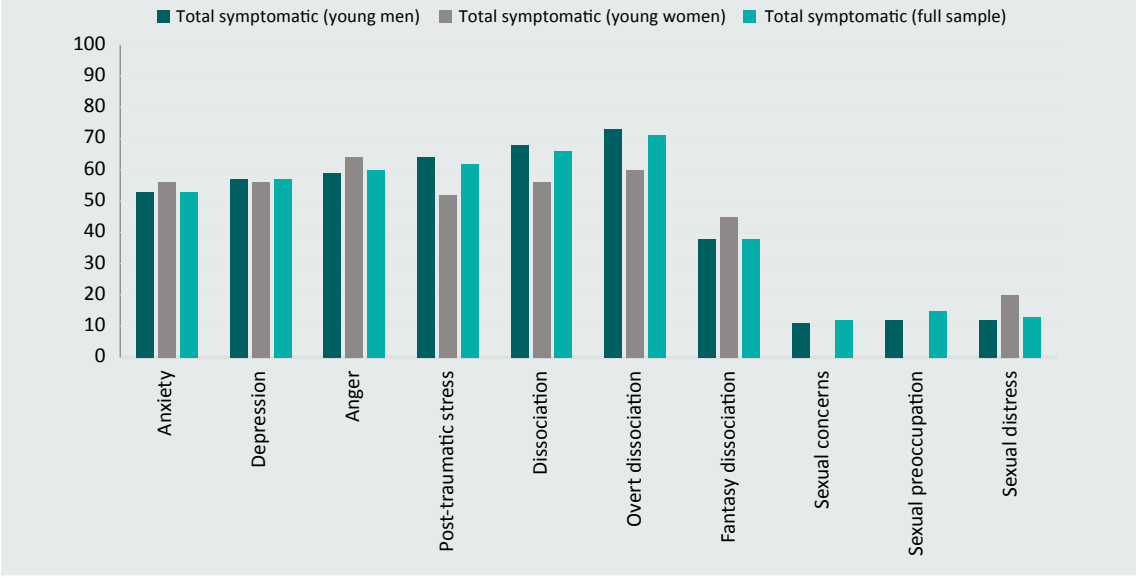
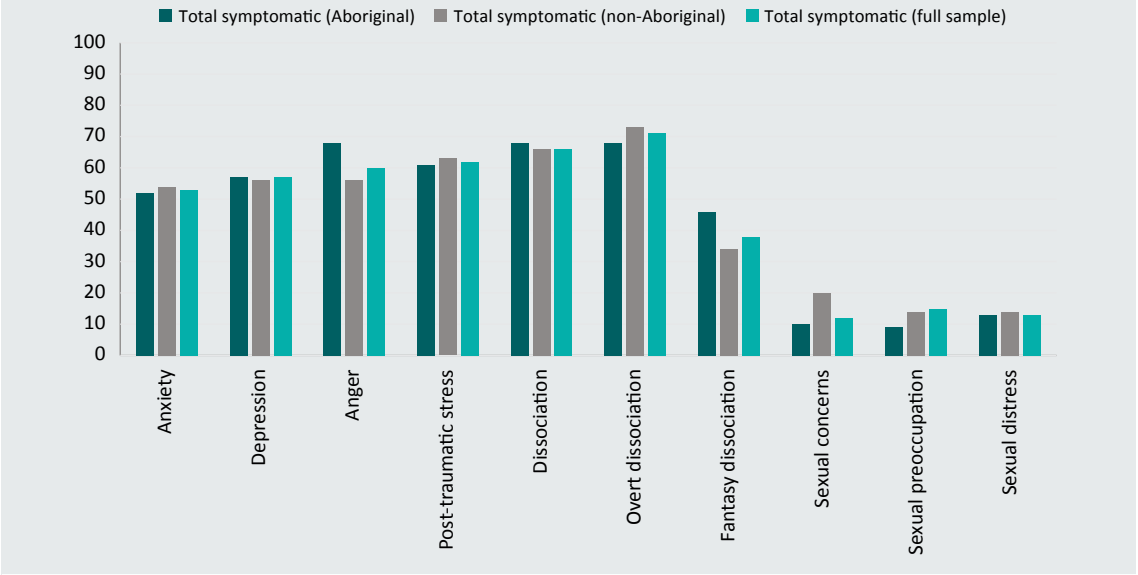


Figure 4: Proportion of young people scoring in symptomatic (clinical or subclinical) ranges on the Trauma Symptom Checklist for Children, by cultural background (%)



Over 80 percent of young men (*n*=133) and 96 percent (*n*=24) of young women, and 96 percent (*n*=54) of Aboriginal and 94 percent (*n*=103) of non-Aboriginal young people, endorsed at least one critical item. Table 2 provides a summary of critical items endorsed. Overall, getting into fights and wanting to hurt others were the most commonly endorsed critical items.

Table 2: Number and proportion of young people endorsing each critical item on the Trauma Symptom Checklist for Children

Critical item	Total	
	n	%
Wanting to hurt myself	57	34.3
Wanting to hurt others	97	58.4
Feeling scared of men	40	24.1
Feeling scared of women	48	28.9
Not trusting people because they might want to have sex	51	30.7
Getting into fights	132	79.5
Feeling afraid someone will kill me	42	25.3
Wanting to kill myself	48	28.9

The number and the proportion of young people endorsing each critical item, by sex and cultural background, are shown in Table A5. Some sex differences were observed: a higher proportion of young men reported wanting to hurt others and feeling scared of women, and a higher proportion of young women reported wanting to hurt themselves, getting into fights and wanting to kill themselves. However, the most pronounced difference was for feeling scared of men and not trusting people because they might want sex. Relative to young men, young women were over three times more likely and almost twice as likely, respectively, to endorse these critical items.

Drug and alcohol use

Overall, 86 percent (*n*=159) of young people scored in the problematic ranges for alcohol and/or other drug use, including 90 percent of young women, 86 percent of young men and 90 percent of Aboriginal and 84 percent of non-Aboriginal young people. The types of substances used by young people by sex are shown in Figure 5, and by cultural background in Figure 6. Marijuana use was common among two-thirds of the sample, and more than half reported smoking marijuana daily. Almost half of young people had ever used hallucinogens, approximately one-third had used inhalants and almost one-quarter had used amphetamines. There were few pronounced differences between young men and young women, and Aboriginal and/or Torres Strait and non-Aboriginal young people (see Table A6).

Figure 5: Proportion of young people endorsing use of different substances, by sex (%)

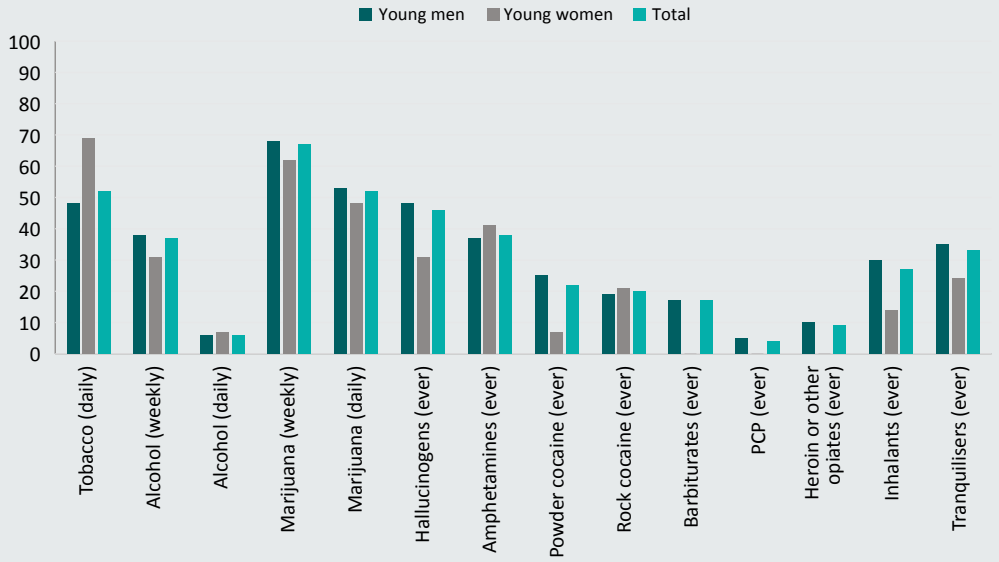
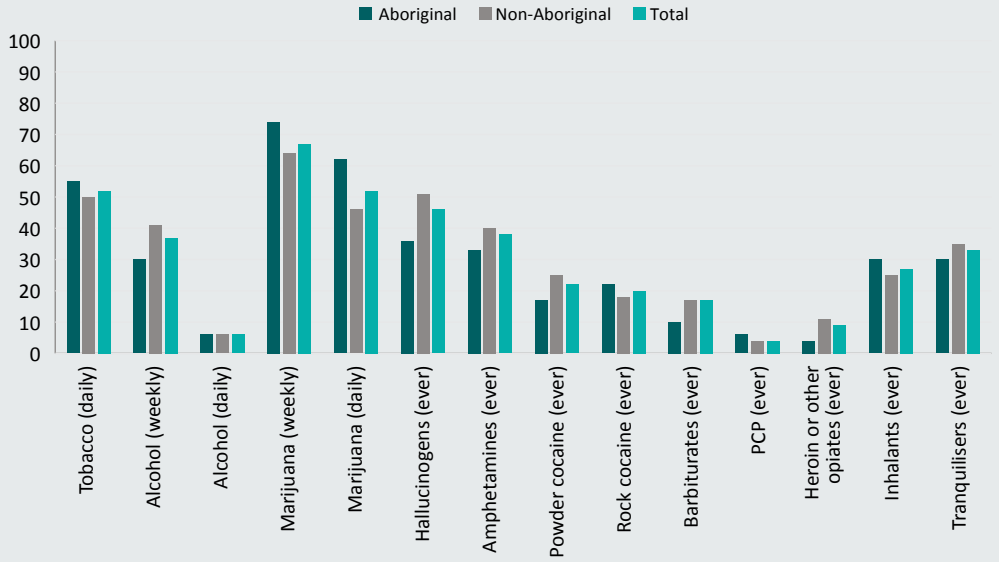


Figure 6: Proportion of young people endorsing use of different substances, by cultural background (%)



The AADIS also includes some questions that ask young people to describe their drug and alcohol use in more detail. For example, one question asks why the young person usually starts to drink or use drugs. Almost half of the young people (43%) reported drinking or using drugs because they felt stressed, tense, or fully of worry and problems. Most young people got their alcohol or drugs from friends or bought their own (49% and 49%, respectively). Although the majority of young people reported drinking and taking drugs at night (82%), over half (52%) reported using them in the morning when they first woke up and almost one-third (33%) reported getting up during their sleep to use drugs or alcohol. Similarly, while the majority reported drinking or taking drugs with friends or relatives their own age (69%), over one-third reported drinking and using drugs alone (42%). Although the majority (67%) of young people reported feeling that they had no substance use problems or were in control of their use, over half (53%) reported that their family or friends had advised them to seek assistance for their substance use.

Emotional and behavioural problems

Almost two-thirds of the sample provided responses that reflected the presence of internalising behavioural problems, with evidence that over three-quarters experienced externalising behavioural problems (Figure 7, by sex, and Figure 8, by cultural background). Few pronounced differences were observed between young men and women. Table A7 and Table A8 show the number and proportion of young people who were considered as symptomatic (clinical and borderline) on each scale according to sex and cultural background.

Figure 7: Proportion of young people scoring in symptomatic ranges of the Child Behaviour Checklist Youth Self-Report, by sex (%)

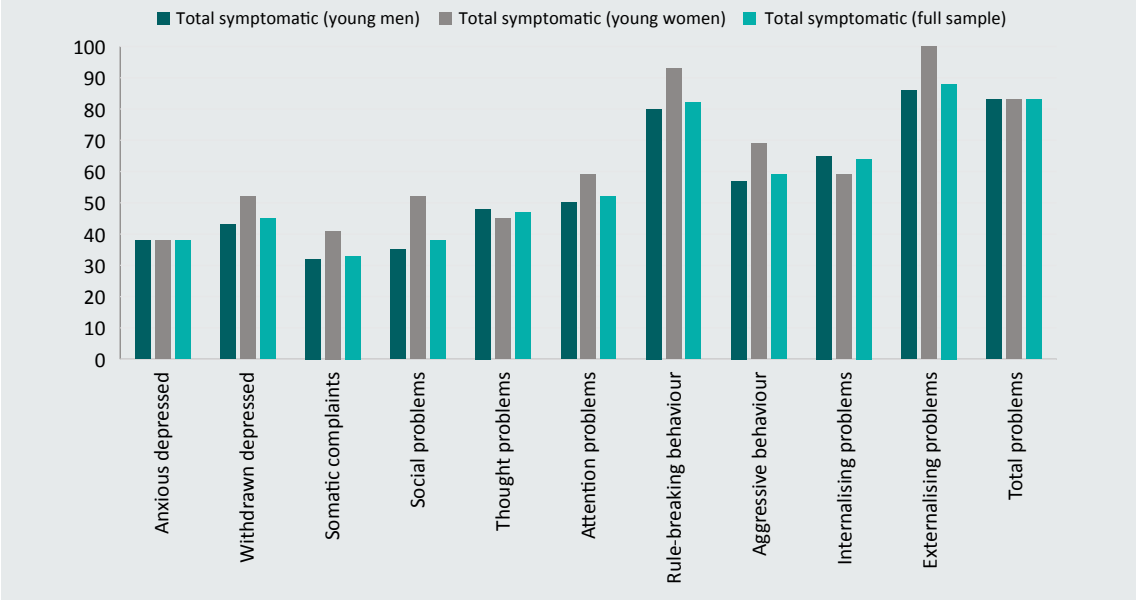
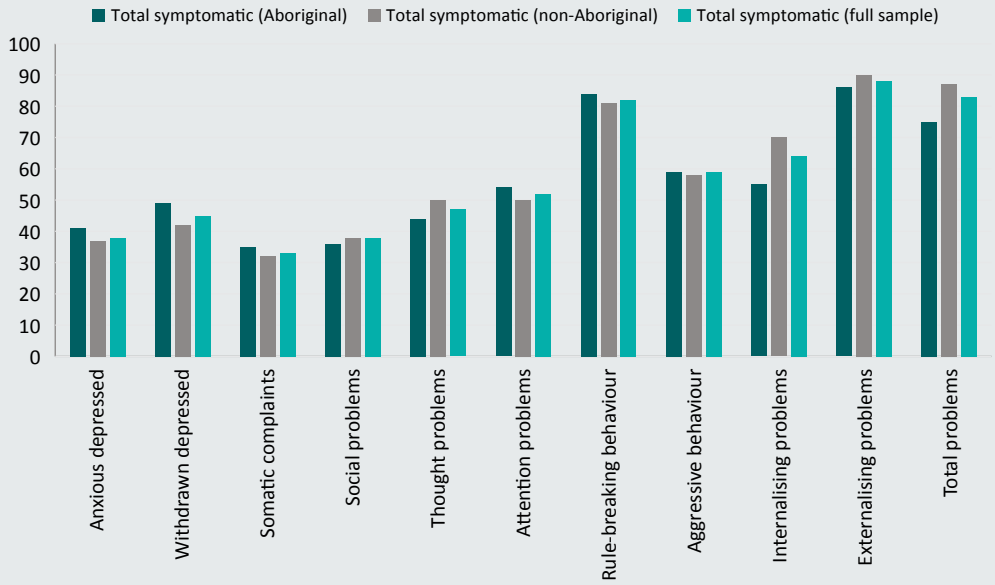


Figure 8: Proportion of young people scoring in symptomatic ranges of the Child Behaviour Checklist Youth Self-Report, by cultural background (%)



Correlations between the TSCC and CBCL-YSR scores indicated that the internalising scale was more strongly correlated with anxiety, depression and post-traumatic stress, whereas the externalising scale was more strongly correlated with anger (Table 3). In this study, the internalising scale was more strongly correlated with dissociation.

Table 3: Correlations between the Trauma Symptom Checklist for Children and Child Behaviour Checklist-Youth Self-Report scores

	TSCC scales					
CBCL-YSR scales	Anxiety	Depression	Post-traumatic stress	Dissociation	Anger	Sexual concerns
Internalising	0.78	0.84	0.78	0.76	0.55	0.42
Externalising	0.38	0.42	0.42	0.45	0.77	0.42

Reoffending

Of the 180 young people who consented to having their administrative records accessed, 141 (78%) had at least one new conviction in the 12 months after their interview for this study. Of those with at least one conviction, the most serious conviction recorded in almost half of the cases was for assault (*n*=67, 48%), followed by theft and related offences (*n*=22, 16%) and break and enter (*n*=18, 13%). At least one breach of a youth justice supervision order was recorded for almost half of the young people (*n*=83, 46%).

Calculating new youth justice orders in the 12 months post interview was more complicated. Some young people turned 18 and were therefore not eligible for a new youth justice order unless they committed the offence before age 18. Using this scenario, 102 young people were eligible to be assessed for a new youth justice order. Of these, 70 (69%) had at least one new youth justice order in the 12 months post interview. Of those with a new order, 40 (39%) had at least one new unsentenced community supervision order, 10 (10%) had a sentenced community order, 43 (42%) entered custody on an unsentenced order, and seven (7%) were sentenced to detention. No substantial differences in reoffending by sex or cultural background were observed.

Identifying subgroups of young people according to patterns of adverse childhood experiences

LCA is a model-based cluster analysis approach used to identify underlying subgroups of young people who share similar characteristics (Lanier et al. 2018). To construct indicators of different patterns of ACEs, 12 ACE items were included in latent class models. The most comprehensive measure of neglect ('any neglect', which included both self-reported and official records of neglect) was used in this analysis only given the overlap that existed between this measure and the two self-reported measures of physical and emotional neglect. Two-, three-, four- and five-class LCA models were tested, where the posterior probability of membership in each class was computed for each individual. Young people were then assigned to the class for which they had the highest probability.

To distinguish groups of varying ACEs, the four-class model was selected based on a combination of face validity checks and fit statistics (Table A9). While the two-class solution had the highest entropy, it did not provide sufficiently separated ACEs groups and had poorer face validity. Even though the four-class model had lower entropy, it had better face validity, with more consistent and clearly interpretable patterning across the 12 ACEs. Figure 9 shows the affirmative item response probabilities for the four-class model of ACEs. Table A10 shows the class membership and item response probability for the four-class model of ACEs.

The LCA revealed four groupings of young people under youth justice supervision according to their patterns of 12 different ACEs:

(1) a group that was high on all types of maltreatment (except sexual abuse) and high on measures of household dysfunction (*n*=66, 36%);

(2) a group that was high on all types of maltreatment (except sexual abuse) and low on measures of household dysfunction (*n*=52, 28%);

(3) a group that experienced family (ie neglect, separation, death), peer (ie bullying) and neighbourhood disadvantage (ie witnessing neighbourhood violence; *n*=45, 25%); and

(4) a group that had high probabilities of all ACEs (including sexual abuse; *n*=21, 11%).

These four groups have been labelled for brevity:

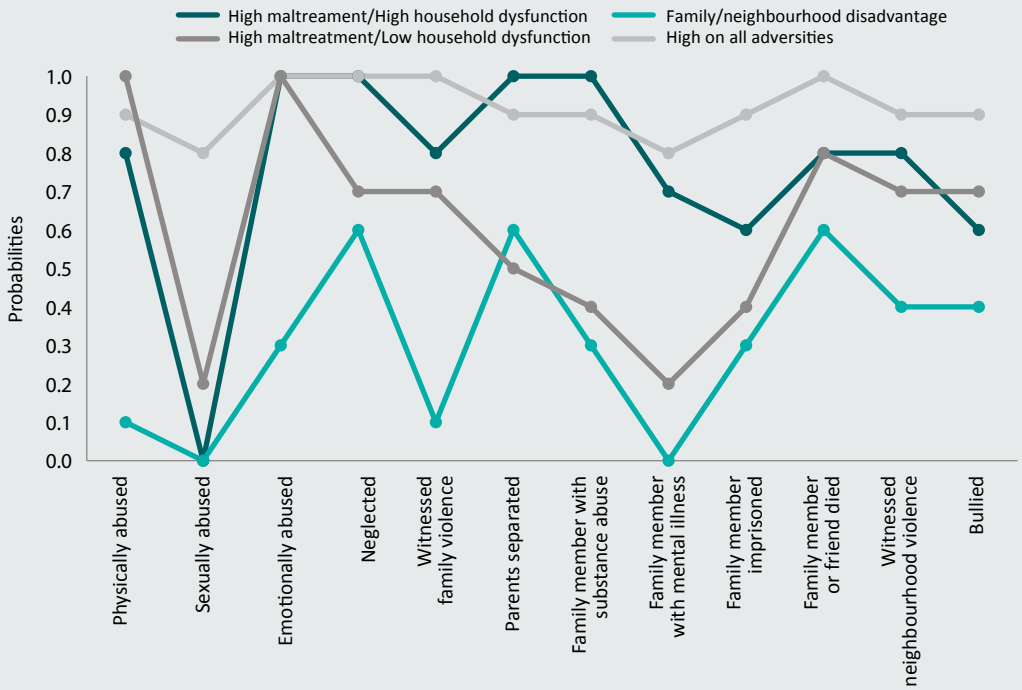
(1) high maltreatment/high household dysfunction;

(2) high maltreatment/low household dysfunction;

(3) family/neighbourhood disadvantage; and

(4) high on all adversities.

Figure 9: Affirmative item response probabilities for a four-class model of adverse childhood experiences



Differences between latent class groups

Differences among the ACEs groups were found according to sex and age, as well as in the proportions of young people who scored in the symptomatic ranges for trauma, substance use and behavioural problems (see Table 4). The high on all adversities group had the highest proportion of young women and the lowest proportion of young people who were younger at the time of their interview (14–15 years old). Aboriginal and/or Torres Strait and non-Aboriginal and/or Torres Strait young people were relatively evenly divided across the four groups.

In terms of their offending history, approximately half of the young people in each group had committed at least one violent offence, with this increasing to almost two-thirds of young people in the high on all adversities group. Young people in this group were also the most likely to have experienced custodial supervision, although more than three-quarters of young people across the other three groups had also experienced custodial supervision. We also examined the median age at first proven offence, but this remained at 14 across all groups.

CP characteristics indicated that the highest proportions of young people who had been on a guardianship until the age of 18 order and placed into OOHC were in the high on all adversities group and the lowest proportions were in the family and neighbourhood disadvantage group. Between one-quarter and one-third of young people had experienced placement in residential care across all three high maltreatment groups. We also examined differences in the median age at first notification and first placement between groups. Although a higher proportion of the high on all adversities group had experienced contact with the CP system, it appeared that this contact was occurring, on average, at a later age. The median age at first notification was as follows: high maltreatment/high household dysfunction=3; high maltreatment/low household dysfunction=4; family/neighbourhood disadvantage=5; and high on all adversities=6. The median age at first placement was: high maltreatment/high household dysfunction=2; high maltreatment/low household dysfunction=6; family/neighbourhood disadvantage=9; and high on all adversities=12.

The high on all adversities group had the highest proportion of young people with trauma symptoms across all categories. This ranged from approximately one-fifth of young people with sexual concerns to almost all young people with overt dissociation symptoms. The two groups with high maltreatment had relatively similar proportions of young people with trauma symptoms, which ranged from approximately one-half to two-thirds of young people in these groups (excluding the fantasy dissociation subscale and sexual concerns scales). The family/neighbourhood disadvantage group had the lowest relative proportion of young people with trauma symptoms; however, almost two-thirds of young people in this group scored in the symptomatic ranges for overt dissociation.

The proportion of young people who had scores indicating problematic substance use was high across all groups and was indicated for nearly all young people in the high maltreatment/high household dysfunction and high on all adversities groups. A number of AADIS items thought to be potentially conceptually related to trauma and/or offending behaviour were also examined. Higher proportions of young people endorsing three items that could be potentially indicative of self-medicating (using substance due to stress, to escape problems, and alone) were found in the high on all adversities group, as well as the two high maltreatment groups. The proportions of young people endorsing these items were the lowest in the family/neighbourhood disadvantage group. Despite this, the proportions endorsing substance use as leading to fighting and aggressive behaviour were similar across all four groups.

As with substance use, the proportions of young people scoring in the symptomatic ranges for externalising emotional/behavioural problems were similar, and high, across all three maltreatment groups, with over two-thirds of those in the family/neighbourhood disadvantage also scoring in the symptomatic range for this problem. The high on all adversities group also had a higher proportion of young people with internalising problems.

In terms of recidivism, almost three-quarters of young people across all four groups had a new conviction in the 12 months post interview, and at least half of those eligible had a new youth justice order. The highest proportion of young people who reoffended according to these two measures was in the family/neighbourhood disadvantage group.

Table 4: Comparison of subgroups of young people identified according to patterns of ACEs, by background characteristics, trauma symptoms, substance use, behavioural problems and reoffending (%) (*n*=184)

	High maltreatment/ high household dysfunction (*n*=66, 35.6%)	High maltreatment/ low household dysfunction (*n*=52, 28.3%)	Family/ neighbourhood disadvantage (*n*=45, 24.5%)	High on all adversities (*n*=21, 11.4%)
Sex				
Male	83.3	82.7	95.6	66.7
Female	16.7	17.3	4.4	33.3
Background				
Aboriginal	39.4	34.6	37.8	38.1
Non-Aboriginal	60.6	65.4	62.2	61.9
Age				
14–15 years	30.3	32.7	33.3	23.8
16+ years	69.7	67.3	66.7	76.2
Offending history prior to interview				
Ever violent offending	59.1	51.9	53.3	66.7
Ever custody	84.6	75.0	80.0	90.5
Child protection history				
Ever on long-term guardianship order	13.6	14.3	11.4	23.8
Ever in OOHC	31.8	34.7	20.5	42.9
Ever in foster care	10.6	10.2	9.1	14.3
Ever in residential care	21.2	22.4	15.9	33.3
Trauma symptoms				
Any	89.4	75.0	64.4	90.5
Anxiety	53.9	50.0	38.9	84.2
Depression	58.5	56.5	36.1	89.5
Anger	66.2	60.9	38.9	73.7
Post-traumatic stress	60.0	63.0	52.8	84.2
Any dissociation	69.2	60.9	55.6	89.5
Overt dissociation	70.8	67.4	63.9	94.7
Fantasy dissociation	35.4	37.0	30.6	63.2
Sexual concerns	10.8	13.0	5.6	21.1
Sexual preoccupation	12.3	15.2	5.6	15.8
Sexual distress	6.2	19.6	11.1	26.3

Table 4: Comparison of subgroups of young people identified according to patterns of ACEs, by background characteristics, trauma symptoms, substance use, behavioural problems and reoffending (%) (*n*=184) (cont.)

	High maltreatment/ high household dysfunction (*n*=66, 35.6%)	High maltreatment/ low household dysfunction (*n*=52, 28.3%)	Family/ neighbourhood disadvantage (*n*=45, 24.5%)	High on all adversities (*n*=21, 11.4%)
Substance use				
Problematic use	95.5	86.5	71.1	90.5
Substance use linked to stress	51.5	47.1	20.0	52.4
Substance use as escape for problems	26.6	21.7	25.0	45.0
Using substances alone	43.1	54.9	20.0	52.6
Substance use linked to fighting or aggressive behaviour	53.0	43.1	42.9	52.3
Behaviour problems				
Internalising	69.7	63.5	44.4	90.5
Externalising	97.0	92.3	66.7	95.2
Total	90.9	82.7	62.2	100.0
Recidivism				
Any new conviction post 12 months	77.2	73.5	86.4	76.2
Any new violent conviction post 12 months	56.9	50.0	47.4	50.0
Any new youth justice order post 12 months	71.0	53.3	82.8	66.7

Note: ACEs=adverse childhood experiences; OOHC=out-of-home care

Discussion

This study provides evidence, and from an Australian sample, that exposure to multiple forms of ACEs is common among young people supervised in the youth justice system. Not only is the prevalence of ACEs high in this population, but so too are levels of trauma symptomatology, substance use, and internalising and externalising behaviour. Given that previous research has highlighted the experience of multiple adversities among justice-involved young people, this conclusion is perhaps unsurprising. However, the findings of this study demonstrate the importance of understanding how life events and the experience of adversity can alter the course of child and adolescent development. This is, of course, a key tenet of DLC, but these findings suggest that further research is needed to better understand when, how and for whom these experiences result in an increased risk of offending behaviour. It was not possible to establish potential causal associations between ACEs and offending behaviour from the cross-sectional design employed in this research but, clearly, prospective studies are needed to elucidate how the timing and nature of ACEs impact on behaviour. Until these studies are conducted, our ability to identify the most important prevention and intervention opportunities along ACEs-offending pathways will remain limited. Nonetheless, this study is useful insofar as it has collated data about ACEs in a relatively large sample of young people receiving youth justice services in one Australian jurisdiction, including data from those serving community orders (not only those in custody). Importantly, this study also involved assessing a range of potentially important mediating factors (trauma, substance use and social and emotional behaviour) that can only be assessed through face-to-face interviews. It is also important to note that there was a high rate of participation in the study and many young people appreciated the opportunity to be part of a study designed to identify opportunities to improve outcomes for young people like themselves in the youth justice system.

These findings about the prevalence of ACEs and levels of trauma symptomatology, substance use, and social and emotional behaviours, as well as the identification of distinctive groupings of young people under supervision with different patterns of exposure to ACEs, are discussed next, along with some possible implications for practice and policy.

Prevalence of adverse childhood experiences

The first question that this study sought to answer related to the prevalence of ACEs among young people supervised by the youth justice system. We found that the overwhelming majority of young people (97%) reported that they had experienced at least one ACE, with less than five percent reporting that they had experienced zero ACEs. These prevalence estimates are similar to those reported by Baidawi and Sheehan (2019), who, in an audit of 300 Victorian Children's Court files, also found a high prevalence of ACEs among young people who crossed over between the CP and youth justice systems. These prevalence estimates contrast markedly with those observed in community samples in previous Australian research. For example, Rosenman and Rodgers (2004) found that almost two-thirds (60%) of a randomly selected sample of over 7,000 individuals aged 20 to 64 years had experienced at least one ACE and only one-third (37%) had experienced more than one ACE. Thus, the prevalence in a youth justice population appears to be much higher.

It is also worth noting that the prevalence of most individual ACEs in this study was much higher than the pooled prevalences obtained from 124 studies in a recent systematic review (Malvaso et al. 2021). With the exception of parental separation and parental incarceration, which had similar prevalence estimates, exposure to family violence was 20 percent higher and sexual abuse was 40 percent higher in this sample. Prevalence rates for a number of ACEs (physical abuse, emotional abuse, emotional neglect and household substance abuse) were all between two and two and a half times higher in this study, with household mental illness and physical neglect three and four times higher, respectively. Given that the majority of studies included in the systematic review were conducted in the United States, these differences may simply reflect the fact that youth justice supervision in South Australia is typically reserved for those who have committed the most serious and repeat offences. This, perhaps, is a product of the emphasis placed on diversion in the guiding legislation in South Australia (which has been characterised as reflecting a 'welfare-based' approach), which stands in contrast to what appear to be the more punitive approaches taken in some areas in the United States. Such differences highlight the importance of collecting local data about ACEs rather than relying on knowledge collected in other countries.

Our findings also point to the utility of obtaining data on ACEs from different sources. A particular strength of this study was the use of both self-reported experiences of child maltreatment and official CP records, as triangulation across these different data sources allowed us to capture a fuller range of experiences. As a result, our estimates of maltreatment are likely to be higher, given most other ACEs studies in this area rely exclusively on self-report.

While the prevalence of ACEs found in our study is striking, the conclusion of the Malvaso et al. (2021) systematic review was that there is currently little empirical evidence to demonstrate that a high prevalence of ACEs will necessarily translate into offending. Somewhat surprisingly, rather little is known about the potential mechanisms through which exposure to ACEs might lead to the initiation and/or continuation of offending behaviour or whether ACEs can (or should) be used as a 'red flag' indicator that leads to interventions in relation to crime reduction and prevention efforts. This relates to the second aim of our study, which was to measure those needs of the population that are potentially associated with ACEs, with a focus on trauma symptomatology, substance use, and social and emotional problems.

Trauma symptoms and potentially related needs

Trauma symptoms

Nearly all (*n*=146, 88%) of those for whom valid assessments were completed scored in the symptomatic range on at least one of the trauma symptoms scales. These responses indicate clinically significant problems across a broad range of post-traumatic domains, including: anxiety (53% of young people), depression (57%), anger (60%), post-traumatic stress (62%), dissociation (66%), overt dissociation (71%), fantasy dissociation (40%), sexual concerns (12%), sexual preoccupation (15%), and sexual distress (13%). Compared with normative data for these scales reported in Briere (1996), young people in this study had higher mean scores for anxiety, depression, anger, post-traumatic stress and dissociation (including the overt dissociation subscale). Young men in this study also had higher mean raw scores for sexual concerns, whereas young women had lower mean raw scores for sexual concerns (with the exception of the sexual distress subscale). A higher proportion of young people under youth justice supervision endorsed each critical item, with the exception of 'feeling afraid someone will kill me'. A higher proportion (~25% above the norm) of both young men and young women endorsed 'not trusting people because they might want sex'. Compared with the norm sample, a higher proportion of young men reported 'feeling scared of women'. Almost double the proportion of young women under youth justice supervision endorsed 'getting into fights' compared with the norm sample.

The most prevalent trauma symptom in this study was dissociation, and overt dissociation in particular. Dissociation items include derealisation, one's mind going blank, emotional numbing, pretending to be someone else or somewhere else, daydreaming, memory problems and dissociative avoidance. A series of studies, particularly by Kerig and colleagues in the United States, have examined how these symptoms are associated with ACEs among justice-involved young people. For example, Modrowski and Kerig (2017) investigated the dissociative subtype of PTSD in a sample of 842 detained young people. They found that both peritraumatic dissociation (dissociative experiences that occurred during, or shortly after, a traumatic event) and emotion dysregulation were strongly correlated with the dissociative PTSD subtype. In another study using the same sample, Mozley, Lin and Kerig (2018) found that traumatic event exposure was indirectly associated with persistent offending through over-modulation (an excessive repression or control of unwanted emotions through dissociation, numbing and/or avoidance) and callous-unemotional traits. These findings highlight the clinical importance of screening for dissociative symptoms among young people under youth justice supervision if the risk of reoffending is to be fully assessed, as well as the potential utility of PTSD treatments targeting emotion dysregulation.

The development of CU traits has received the attention of researchers in the United States, who have sought to understand whether one particular aspect, emotional numbing, manifests in ways that appear to reflect premeditated CU traits that are associated with aggression and violence. Bennett and Kerig (2014), for example, investigated differences in emotion processing and CU traits between detained adolescents with different levels of PTSD symptoms. They found that the group with high CU traits and PTSD had greater difficulty in emotion processing compared with the group with high CU traits and low PTSD. This included greater difficulty with lack of clarity, nonacceptance of emotions, general numbing of emotions, and recognition of disgust. These findings offer support for the suggestion that young people who present with high CU traits and dissociative symptoms may have developed these traits in response to traumatic experiences. This is of particular importance for youth justice practice because, contrary to the idea that those with high CU traits are less amenable to treatment, these traits may instead reflect reactions to traumatic experiences which can be targeted in treatment. Indeed, others have shown that these defensive responses have a biological basis, triggered by physical stressors stemming from histories of maltreatment (Ford et al. 2012). Locating the expression of dissociative and related symptoms within a developmental and historical lens of the experience of ACEs may thus identify the need for more specialist trauma interventions as part of any risk management strategy in youth justice.

Associations between post-traumatic stress symptoms and anger and depression have also been reported (Kerig & Becker 2010). In our study, analysis of scores on the trauma symptoms scale revealed that almost two-thirds of the sample reported clinical-level depressive and anger symptoms. Depressive symptoms and mental illnesses have not traditionally been viewed as drivers of offending behaviour but rather as co-occurring vulnerabilities in those involved in the justice system. For example, a recent study in Queensland demonstrated the high prevalence of inpatient-diagnosed mental health disorders among one-third of young adults born in 1990 who were incarcerated (Stewart et al. 2021). The authors of this study concluded that mental illness should be viewed as a core vulnerability for individuals in custody and that early diagnosis of these problems may present as an opportunity to provide intervention services. This suggestion was reinforced by the findings of Teplin (2021), who found that, in a 15-year follow-up of 1,829 randomly selected young people in a detention facility in Illinois, 64 percent of young men and 35 percent of young women who had a mental disorder at baseline also had a disorder 15 years later. Among the most common disorders at follow-up were behavioural, substance use, mood and anxiety disorders. These authors also advocated for an expansion of mental health services for justice-involved young people, both in custody and in the community, suggesting that treating disorders identified in adolescence can help to reduce psychological problems over time.

Improving the regulation of anger has, of course, been a longstanding focus of offender rehabilitation efforts, as it is viewed as an important antecedent to aggressive and violent behaviour. The connection with trauma is supported by research that has found strong associations between exposure to community violence, post-traumatic stress and aggression (Garrido et al. 2010; Stimmel et al. 2014). Indeed, in this study, scores on the anger scale of the Trauma Symptom Checklist for Children were strongly correlated with the externalising scale of the Child Behaviour Checklist, which measures conflict with others, including aggressive behaviour.

Nearly three-quarters of young people reported exposure to community violence and over half of the young people in our study had committed at least one violent offence. Although we were not able to establish causal associations between these factors and trauma, from a clinical perspective it is plausible at least to explore whether the origins of anger lie in trauma that results from ACEs. In fact, both Day (2011b) and Novaco (2013) have suggested that new insights into treatment effectiveness may be realised if anger-related problems are conceptualised according to their association with historical experiences of traumatic events. This may be especially important for survivors of sexual abuse, as abuse-specific shame and self-blame attributions have been associated with increased anger, which in turn is associated with deviant peer relationships and offending behaviour (Feiring, Miller-Johnson & Cleland 2007).

Furthermore, a review by Ford et al. (2012) found that interventions targeting emotion regulation have promise in reducing post-traumatic stress among justice-involved young people and may be most effective when employed in conjunction with behavioural management approaches targeting anger responses. A further consideration relevant to Australian youth justice populations is how anger is experienced by Indigenous populations, especially in relation to intergenerational processes associated with pervasive feelings of helplessness and experiences of loss and discrimination (Day et al. 2008). Locating the expression of anger within a developmental, historical and socio-political context may be key to the development of effective rehabilitation initiatives for many Australian young people in youth justice.

Substance use

The overwhelming majority of young people in this study (86%) scored in the problematic range for alcohol and/or other drug use that may be indicative of clinical-level substance use disorders. The proportion of young people endorsing use of illicit substances was around three to nine times higher in this study than that reported by the NSW Ministry of Health from the 2010 National Drug Strategy. For example, in the NSW (2014) survey, 21 percent and four percent of 18 year olds and 19 year olds reported using marijuana and methamphetamines, compared with 67 percent and 39 percent in this study. In the context of the criminal justice system, the prevalence of substance use problems in our sample is not particularly surprising; substance use problems have been identified in other studies of justice-involved young people both in Australia (eg Prichard & Payne 2005) and internationally (eg McCuish 2017).

Substance use also appears to be strongly associated with the presence of ACEs in general. For example, a self-report retrospective multiple cohort study of 8,613 adults who attended a primary care clinic in the US state of California by Dube et al. (2006) found that, for each single increase in ACEs, the likelihood of early-onset illicit drug use (<14 years old) increased by two to four times. Those with five or more ACEs were seven to 10 times more likely to report illicit drug use problems than those with none. These findings are in line with research which has shown that substance use problems act as potential 'snares' in delaying desistance (Baglivio & Epps 2015). Furthermore, given the body of research that shows that substance use and trauma symptoms are highly correlated (Ford et al. 2012), interventions that focus on the causes and functions of substance use may augment approaches that focus on decision-making and goal-setting (Levenson & Willis 2018).

Emotional and behavioural problems

Social and emotional behavioural problems were also highly prevalent in this sample. Almost two-thirds of young people (64%) were identified as experiencing internalising behavioural problems and over three-quarters (88%) as experiencing externalising behavioural problems. These proportions are substantially higher than those usually obtained in research involving the broader community. For example, in the National Survey of Mental Health and Wellbeing (Sawyer et al. 2001), only 16 percent of young people had internalising problems and 20 percent had externalising problems. The figures in our study are thus approximately four times higher than those observed by Sawyer et al. (2001). Our figures are also higher than those observed in research on young people living in OOHC in both South Australia (Sawyer et al. 2007) and New South Wales (Tarren-Sweeney & Hazell 2006), but an even more interesting finding, perhaps, is that our figures are substantially higher than those observed in a study of 13 to 17 year olds remanded in custody in South Australia in 2008–09 (Sawyer et al. 2010). In particular, the prevalence of withdrawn or depressed problems was four and half times higher in our study, and total problems were twice as high. There are a number of potential explanations for this apparent increase, one of which relates to decreases in one-off and low-level offending behaviour, and an increase in more serious chronic offending in Australia (McCarthy 2020; Payne & Piquero 2020). It is possible that young people who come under youth justice supervision now—compared with a decade ago—are those who engage in repeat, more serious offending and who arguably present with more complex behavioural profiles. Again, the links between ACEs and social and emotional behavioural problems (in particular, aggression) and trauma symptoms (anger reactions and poor emotion regulation, dissociation and emotional numbing) may help to explain an increased risk in the initiation and persistence of serious offending behaviour.

Sex differences

A few noticeable differences were observed between young men and young women in their reporting of ACEs. Compared to the young men who participated in this study, young women were more likely to report experiences of sexual abuse, family violence and household mental illness. This may be because males are known to under-report traumatic events (Moore, Gaskin & Indig 2013), but further investigation into the consistency between self-report and official records (eg of maltreatment and exposure to domestic violence) is needed to provide insight into this issue. The fact that young women were almost twice as likely to report exposure to family violence and household mental illness also raises questions about how such experiences are observed and perceived by young women or are potentially normalised for young men. However, unlike previous research that has demonstrated noticeable differences between young men and young women, overall few substantial differences were observed in this study on measures of trauma, substance use, and social and emotional behaviour. Trauma symptomatology was, for example, similarly distributed between the sexes, although some symptoms were slightly more prevalent among young men (eg post-traumatic stress and dissociation). Problematic alcohol use was highly prevalent in both young men and young women, the prevalence of internalising problems was slightly higher among young men, and externalising problems were higher among young women (in contrast with the findings from previous research conducted with adult prison populations). While these findings may have implications for the development of universal services and strategies within youth justice populations, caution should be exercised in interpreting sex-based comparisons in this study, given the small number of young women interviewed.

Patterns of adverse childhood experiences and associated needs

In this study, we used LCA to show that exposure to ACEs is not uniform across the entire youth justice population. Rather, we identified four distinct groupings of young people based on the pattern of ACEs experienced, as follows: (1) a group that had high levels of all types of maltreatment (except sexual abuse) and household dysfunction; (2) a group that had high levels of all types of maltreatment (except sexual abuse) but low exposure to household dysfunction; (3) a group that experienced familial adversity (ie neglect, separation, death), peer problems (ie bullying) and neighbourhood disadvantage (ie witnessing neighbourhood violence); and (4) a group that was likely to have been exposed to all of the ACEs (including sexual abuse), as well as all types of household dysfunction and disadvantage. It was this last group that reported the highest level of trauma symptoms, although the prevalence of trauma symptoms was also elevated among the other two groups that had experienced multiple types of maltreatment.

There were a number of reasons we chose to conduct an LCA to examine whether subgroups of young people experienced similar patterns of ACEs. First, it has been shown that ACEs often cluster or co-occur, and it appears to be the presence of multiple adversities that differentiates those at high risk of offending from those who are considered to be at low risk (Ford et al. 2013; Raviv et al. 2010). Although the experience of multiple adversities can be measured by calculating a cumulative ACEs score (created by simply summing affirmative responses to individual experiences), a significant limitation of this approach is that dichotomisation inevitably results in information being lost. A cumulative score will inevitably hide relevant information about how exposure to specific types of ACEs is associated with different needs and outcomes, and assumes that all exposures are equally related to outcomes. This is especially problematic from a developmental and life-course perspective, as different ACEs have been shown to be associated with a variety of negative psychosocial effects (Ford et al. 2012).

Other researchers have suggested that it may be less important to focus on the number of ACEs reported than on whether they had experienced a *combination* of both childhood maltreatment (ie interpersonal exposures) and household dysfunction (ie non-interpersonal exposures; Charak et al. 2019; Ford et al. 2013). In our study, though, very few young people reported that they had only experienced maltreatment ACEs (5%) or had only experienced household dysfunction ACEs (4%). Instead, over four in every five had experienced a combination of both maltreatment and household dysfunction. Thus, identifying subgroups of individuals who have experienced similar types and numbers of ACEs may help to provide a more nuanced understanding of how particular patterns of ACEs are associated with different needs.

A number of previous studies have used LCA to do just this (Barra et al. 2018; Charak et al. 2019; Ford et al. 2013), although it has proven difficult to identify consistent patterns of ACEs that are theoretically meaningful across these studies. This is especially the case when different ACE indicators have been used, as this results in inconsistencies in ACE classifications. Differences in the samples used (eg justice-involved only versus community-based samples) also make comparisons difficult. Nonetheless, these studies have tended to identify a subgroup (class) who have been exposed to multiple ACEs (generally in studies including only highly disadvantaged populations: eg incarcerated young people) and a subgroup with low ACEs (generally in studies using community samples). Aside from these two broad subgroups, a range of different subgroups have been identified. For example, in the largest study to date that examined ACEs in a sample of over 92,000 youth involved in the justice system in the US state of Florida, Wolff et al. (2018) identified five ACE subtypes including:

- a high adversity class (7.2%; average number of ACEs=5.17; high likelihood of emotional abuse, family violence, household substance use, household incarceration; highest likelihood of household mental illness);
- a low adversity class (51.7%; average number of ACEs=0.562; low likelihood of most ACEs);
- a moderate adversity/emotional abuse class (19.7%; average number of ACEs=2.99; high likelihood of emotional abuse, family violence; moderate likelihood of household incarceration; low likelihood of household substance use);

- a moderate adversity/physical and sexual abuse class (11.7%; average number of ACEs=4.17; moderate likelihood of sexual abuse; high likelihood of physical abuse, family violence; moderate likelihood of household incarceration); and
- a moderate adversity/household substance abuse and incarceration class (9.7%; average number of ACEs=2.31; moderately high probability of household incarceration; moderate likelihood of household substance abuse; low likelihood of emotional, physical or sexual abuse).

In terms of ACE classes, this study is unique, as it incorporated both quantitative (level of ACEs) and qualitative (type of ACEs) dimensions in the groupings.

The high adversity class identified in the study by Wolff et al. (2018) is similar, in terms of the composition of ACEs and proportions of young people, to the high on all adversities class identified in this study. While these groupings are consistent with those previously reported, we did not find a low ACEs group; all four of our classes were characterised by a reasonably high probability of exposure to multiple ACEs. Furthermore, three were characterised by multiple maltreatment types, with two of the classes only differentiated by the high probability of sexual abuse in one. This contrasts with the results of studies that have used community samples, with Shin, McDonald and Conley (2018), for example, finding that maltreatment was restricted to a single ACEs class among 336 young adults. As mentioned previously, differences between our sample and those drawn from the United States may reflect South Australia's welfare-based approach, which emphasises diverting young people from the justice system and reserves youth justice supervision for young people involved in serious or repeated offending behaviours. Such differences highlight the importance of collecting local data about young people in the justice system rather than relying on knowledge collected in other countries.

Differences between subgroups

An initial look at the differences between the classes shows that the high on all adversities group contained the highest proportion of young people with trauma symptoms. This is consistent with the findings of other studies employing LCA, which have demonstrated that the subgroups of young people with multiple adversities consistently display the most deleterious trauma needs (Turner et al. 2020). In terms of CP characteristics, this group was also the most likely to have been notified and placed in OOHC and, in particular, residential care. However, the median age at first placement was much higher (12 years) compared with the median ages found for the other three groups (<9 years). The highest proportion of young women were also in this group. Taken together, these findings suggest that the high on all adversities group may be the most important targets for prevention and intervention initiatives, from both a CP and community safety perspective. A particular focus for CP efforts may, for example, involve providing particular supports to young people who enter OOHC at older ages and young women in residential care placements. This may have direct benefits for community safety, given that this group has the highest proportion of those with violent convictions and custodial supervision.

A close inspection of the results reveals that further differences between the three classes with high probabilities of maltreatment were few and far between. The high maltreatment/high household dysfunction group had slightly higher proportions of young people with substance use and externalising problems but was otherwise very similar to the high maltreatment/low household dysfunction group. The distinction between the groups based on household dysfunction may be a result of the study methodology—it seems somewhat counterintuitive that young people exposed to maltreatment would not have been exposed to other familial problems, such as substance use, mental illness or offending. It may be that these young people were reluctant to report these issues or that these experiences occurred very early in childhood, limiting the ability to recall and endorse such experiences. Another possibility is that such experiences were so normalised that young people did not endorse them as problematic.

Regardless of the fact that the LCA differentiated these two groups based on their ACEs, the groups were otherwise very similar. Furthermore, these two 'high maltreatment' groups did not differ substantially from the high on all adversities group. At a minimum, two-thirds of the young people classified into any of the three maltreatment classes scored in the symptomatic ranges on at least one trauma scale; virtually all of the young people in these groups were identified as also having problematic substance use, and the majority had significant social and emotional behavioural problems. This suggests that the experience of multiple maltreatment types, regardless of other ACEs, may result in significant needs in terms of trauma, substance use and behavioural issues among young people supervised by youth justice, and these young people may all benefit from specialist assessment and treatment in these areas. Furthermore, the high on all adversities group was distinguished from the others by a high probability of having experienced sexual abuse, indicating that specialist services may also be beneficial for a small group of young people.

The identification of a family/neighbourhood disadvantage class in the current study requires some further consideration. This group may reflect other key developmental experiences associated with breakdowns in the family structure (ie death in the family, parental separation, neglect) and the subsequent effects on children, particularly in terms of subsequent behavioural problems and youth justice involvement. Young people in this class were the least likely to report being placed in OOHC and to report trauma symptoms, substance abuse and behavioural problems, but were the most likely to have subsequent convictions. However, these findings could be a product of the imperfect measures of reoffending and the nature of the latent classes: that is, young people in the high an all adversities group, for example, were older at the time of the interview and more had experienced custodial supervision. Therefore, the opportunity to be captured by measures of reoffending may have been reduced (ie they were not captured in the measure of new youth justice order in the preceding 12 months because they had 'aged out' of the system). Nevertheless, these results have implications for how we respond to young people who offend and for the design and implementation of interventions aimed at reducing recidivism.

There is a potential alternative explanation that adverse familial issues were occurring in the context of neighbourhood disadvantage for this group, and this represents a unique ACEs pathway towards involvement in the youth justice system. Moffitt (1993) described how such adversities could lead to associations with delinquent peers and delinquency in adolescence that potentially ensnares young people who otherwise would typically avoid criminal justice involvement. This would also be relevant for young people who may have experienced the loss of protective factors—for example, through the death of a close friend or family member, parental separation, or neglect—which may make them more vulnerable to negative peer influences. This may explain higher rates of subsequent convictions for this particular group, relative to the others, and may also reflect the more prolific offending patterns associated with 'adolescent-limited offending'. Long-term follow-up of these groups is required to understand life-course offending pathways. Conversely, as hypothesised by Craig et al. (2020), who found that ACEs failed to predict post-release recidivism in a sample of incarcerated young people in Texas, ACEs may not be as relevant for predicting reoffending among the young people with the most serious offending patterns as more proximal factors such as educational deficits, limited employment opportunities or lack of employment, and lack of prosocial relationships. It is also worth noting that the proportion of young people who were convicted of a violent offence in the 12 months post interview was similar across groups, with some research supporting the supposition that ACEs are linked with more serious types of offending behaviour (Fox et al. 2015). Nevertheless, it is noteworthy that among the young people in the family/neighbourhood disadvantage class, though having the lowest relative proportions of young people with trauma and potentially related needs, 64 percent still scored in the symptomatic range for at least one trauma scale, 71 percent had problematic substance use scores, and 67 percent had externalising behaviour problems. It is clear that further research is required to investigate the complex links between trauma, substance use and recidivism among young people with different profiles of ACEs.

Substance use appeared to have a nuanced association with ACEs, being the most prevalent in the groups with high maltreatment and lowest in the group that featured only neglect. Given that a similarly high prevalence of trauma symptoms was found in the groups characterised by multiple maltreatment types, it is reasonable to hypothesise that maltreatment and trauma symptoms often underpin substance use and that addressing the underlying causes of substance abuse problems is key to long-term abstinence (de Andrade et al. 2019; de Andrade et al. 2018). Overall, by the time young people enter the youth justice system, it may well be that the vast majority have already endured a range of different traumatic events and present with significant levels of trauma symptomatology, substance use problems, and social and emotional behavioural issues. While the causal links with offending behaviour remain unclear, identifying these issues early and preventing potentially traumatic events in childhood may help to divert young people from pathways towards the criminal justice system.

Taken together, the LCA results provided some evidence that empirical identification of discrete classes of young people who endorse similar patterns of ACEs is possible, but the ability of these classes to discriminate between potentially related needs and theoretically meaningful groups is less clear. As Lee and Taxman (2020) have argued, LCA results simply add further strength to arguments for more holistic approaches to the assessment and treatment of the needs of young people under youth justice supervision. They also point to the importance of prevention and early intervention efforts, with trauma symptoms and substance use potentially being key targets.

Implications for policy and practice

Overall, this study's findings can be used to support calls for greater attention to be paid to the prevention of ACEs and to effective responses to their psychological and behavioural sequelae. Efforts to reduce exposure to ACEs (through improved family supports), to divert young people with these experiences away from the justice system (by reconsidering responses to early offending behaviour), and to better respond to the needs of young people living in OOHC who are displaying challenging behaviours will likely result in better outcomes for young people and, more broadly, the criminal justice system and community. More specifically, the findings from this study have implications for: prevention and early intervention; screening, assessment and referral; clinical-level interventions; and youth justice milieu characteristics. Each of these areas is discussed in turn and considerations are summarised in Table 5.

Table 5: Summary of policy and practice implications and considerations for future development			
Target area	Considerations for future development		Selected examples
	In research	In policy and practice	
Prevention and early intervention	Prospective and longitudinal research that can provide evidence of when, how and for whom exposure to ACEs translates to increased risk of YJ contact. Rigorous evaluation of primary and secondary prevention efforts using a combination of methodologies (randomised controlled trials, quasi-experimental designs, qualitative perspectives, and decolonising research methodologies) that provide insight into intervention effectiveness in local contexts. The design and development of intelligent information infrastructure that can provide system-wide insight into what works for prevention and intervention. Evaluation of alternative accommodation options, diversion, and family support services.	Evidence-informed strategies. The design and development of primary (universal) and secondary (targeted) interventions that reduce contact with the YJ system. Integrated, coordinated and collaborative agencies within the service system. Development, availability and resourcing of alternative supported accommodation options to YJ supervision that are culturally framed and therapeutic, including diversion from institutional care and provision of intensive family support options.	Longitudinal cohort studies. Administrative linked data platforms that enable long-term follow-up. Whole-of-community developmental crime prevention programs. Intelligent information infrastructure to support data collection and information sharing between agencies. Supported, therapeutic and culturally framed housing support. Intensive child and family support programs.

Table 5: Summary of policy and practice implications and considerations for future development (cont.)

Target area	Considerations for future development		Selected examples
	In research	In policy and practice	
Screening, assessment and referral	Development of screening tools. This can include the development and validation of ACEs screening tools for use in YJ populations as a way to 'flag' areas for further assessment. Validation of assessment measures in YJ populations and in particular with Aboriginal and Torres Strait Islander young people. Systematic data collection on the needs of young people under YJ supervision.	Implementation of comprehensive screening packages that assess multiple dimensions of need in YJ populations. Screening linked to holistic assessments to better understand the number and characteristics of young people meeting diagnostic criteria for relevant needs. Clearly delineated referral pathways from screening to assessment to treatment, with system oversight to ensure these activities occur and young people are connected with services. Integrated, collaborative and flexible service provision with adequate scope to meet the needs of young people. Resourcing of appropriate treatment options for young people to be referred to.	Systematic data collection and needs assessments for each young person coming into contact with YJ. Intensive case planning, management and service models. Integrated and flexible models of service delivery.

Table 5: Summary of policy and practice implications and considerations for future development (cont.)			
Target area	Considerations for future development		Selected examples
	In research	In policy and practice	
Clinical-level intervention	Development and validation of trauma treatment programs and models, including healing programs for Aboriginal young people. Research into the size and characteristics of populations requiring services and the required resourcing to support need. Research into whether interventions adapted to the developmental and trauma-related needs of young people in adolescence can reduce further contact with the justice system.	Development of therapies that do not rely solely on cognitive modalities and that are appropriate for the trauma-related and developmental needs of young people. Expansion of support services for young people in contact with the YJ system. Implementation of cultural approaches to healing.	Trauma-informed and developmentally aware treatment programs that treat underlying causes of current symptoms.
Milieu characteristics	Evaluation of milieu interventions with a trauma overlay, including in educational, vocational and recreational programs, behaviour management procedures, and crisis response protocols, to assess effectiveness. Development and evaluation of staff training programs. Development of resilience-building models and whether these are effective in promoting post-traumatic growth. Co-design and co-production with young people and staff to bring legitimacy to service design and delivery, and importantly self-determination for Aboriginal and Torres Strait Islander young people.	Implementation of trauma overlay of milieu interventions, including educational, vocational and recreational programs, behaviour management procedures, and crisis response protocols. Staff training that can serve to promote young people's self-rehabilitation through de-escalation strategies, empathy and role modelling. Better understanding phenomenological perceptions of safety and rehabilitation by listening to young people to understand when, where and how each individual feels most safe or unsafe. Staff supervision and reflective practice.	Phase-oriented approaches and models. Workforce development and staff education. Practice frameworks which include trauma-informed and culturally informed guidelines. Co-design and co-production with young people and staff.

Note: ACEs=adverse childhood experiences; YJ=youth justice

Prevention and early intervention

Although it is clear that the links between maltreatment and other childhood adversities are not deterministic (ie the vast majority of young people who are exposed to adversity will not go on to have contact with the justice system; Malvaso, Santiago et al. 2020a), the vast majority of young people being supervised by the youth justice system in South Australia will have experienced a significant number and combination of ACEs. There is nonetheless strong evidence that those with exposure to ACEs are at greater risk for criminal justice involvement compared with non-exposed groups (Malvaso et al. 2021), and so the challenge is in identifying how, when and for whom risk will result. Indeed, for any prevention initiative to be effective, the complex interplay between risk and protective factors underlying offending pathways needs to be addressed. The work by Ross Homel and colleagues on developmental crime prevention is particularly important here, as it clearly demonstrates that whole-of-community prevention models—in which a suite of programs are implemented simultaneously across different developmental contexts, such as in families, schools and communities, and which are targeted at key life transitions (eg school transitions)—may be most beneficial (Freiberg et al. 2005; Homel, Freiberg & Branch 2015; Homel et al. 2006a, 2006b; Manning, Homel & Smith 2010).

Although a strong diversion system is already in place in South Australia, further alternatives to youth justice supervision that can address the sequelae of ACEs might be considered. This may, for example, involve the development of more therapeutic and culturally framed accommodation options for those posing a low risk to the community instead of relying on remand (Commission for Children and Young People 2021). Voluntary therapeutic accommodation placements may be another important system response for young people who may not have access to stable, long-term supported accommodation and whose capacity to engage in therapeutic activities is greatly hindered by a lack of a secure base to reside in.

Understanding what works to prevent reoffending relies on the generation of high-quality evidence to provide insight into intervention effectiveness. However, this is not a straightforward task. There have been few well-designed trials of programs for those in receipt of Australian youth justice services and a tendency to rely on programs with small, non-replicable effects in sub-populations in countries such as the United States, with a vastly different local context to Australia. This seriously limits our ability to improve outcomes for at-risk children and families and overlooks work that highlights the importance of cultural norms and practices in service and program development (eg Koolmatrie & Williams 2000; Sue, Arredondo & McDavis 1992). Nonetheless, our findings emphasise the need for greater attention to be paid to prevention and early intervention and to efforts to reduce exposure to ACEs (through improved family and community supports), to divert young people with these experiences away from the youth justice system, and to better respond to the needs of young people living in OOHC who are displaying challenging behaviours. Together, these efforts will likely result in better outcomes for young people and, more broadly, the criminal justice system and the community.

Screening, assessment and referral

From a systems perspective, the findings of this study have implications for the tertiary prevention of offending behaviour related to screening—an activity which should then be linked with comprehensive assessments and referrals to appropriate treatment. A number of researchers have recommended screening for ACEs in youth justice settings—in particular, for exposure to multiple ACEs—to identify young people who may be experiencing elevated trauma symptoms (Baglivio & Epps 2015; Stimmel et al. 2014). The results from our study suggest that screening for ACEs and trauma is a potentially useful starting point for better understanding the needs of young people under youth justice supervision in a way that can inform case planning and referral to appropriate services. Although individual case managers may have knowledge of documented CP histories, these are questions that may not be routinely asked in the youth justice system. There also appears to be an argument for asking questions beyond the standard ACEs items (such as about neighbourhood violence exposure, bullying, or the death of a close friend or family member) that may be associated with trauma symptoms and related needs. We note here that current ACEs tools have not been validated for use in Indigenous populations and it is not clear whether the few differences observed between Aboriginal and non-Aboriginal young people in this study are accurate or simply reflect differences in perception and reporting. For example, a recent systematic review found that ACEs scales rarely, if ever, include measures of separation from family and culture and entrenched systemic racism as potentially traumatic experiences (Malvaso et al. 2021).

One issue that our study has identified is that the experience of multiple ACEs appears to be the rule rather than the exception. Screening is only useful if it leads to further comprehensive assessments and it may be that assessing trauma symptoms, substance use and social and emotional behavioural problems is more informative (than only screening ACEs) in determining when referral for more comprehensive assessment is needed. More holistic assessments encompassing multiple areas of need would assist in the formulation of case planning and referrals and provide more comprehensive information about the number of young people who, for example, meet the diagnostic criteria for PTSD and related issues (eg dissociative disorders), substance abuse disorders and behavioural health problems.

Clinical-level intervention

Our study demonstrates that, for the majority of young people in youth justice, ACEs, trauma symptoms, substance abuse and social and emotional problems cluster together, even if the direction and causal links between these factors are not clearly delineated. This means that most young people who are under youth justice supervision will present with a constellation of problems that pose significant challenges for treatment and rehabilitation. As mentioned before, if we are able to comprehensively screen, assess and determine the number of young people meeting diagnostic criteria for these problems, we will have a better understanding of the types of treatment and supports that are needed.

However, it is evident that these supports are likely to extend beyond the capacity and remit of youth justice agencies as they currently stand: that is, youth justice systems are responsible for the efficient administration of community and detention orders and for ensuring public safety through social control. Providing support services in other areas of need, such as mental health and wellbeing, might be considered secondary to the statutory responsibility for supervision. There are also logistical challenges that make it difficult for youth justice to deliver more therapeutic interventions: for example, short-term orders and episodes in custody and insufficient resources to address complex health and behavioural problems. These challenges are further exacerbated by a well-documented lack of coordination between justice and other health and welfare agencies, and the difficulties in engaging young people with complex, comorbid conditions in services and therapeutic programs (Malvaso et al. 2016). Mainstream services are unlikely to be responsive to the complex needs of young people under youth justice supervision, with service disengagement being an additional barrier for these young people. A recent assessment of the literature has suggested that changes are needed at the broader systems and service level, as well as at the individual practitioner level, to support service engagement (Klassman et al. forthcoming). At the systems level, this might include greater service flexibility (which includes not excluding young people from services if they have a history of youth justice involvement) and greater interagency collaboration to enhance the provision of holistic services.

In terms of specific treatment programs for traumatic experiences and their sequelae, little systematic development or validation of therapeutic or educative interventions to assist young people has been demonstrated (Ford et al. 2012). Most discrete evaluations of PTSD treatments, for example, are based on samples that do not include young people with a range of complex comorbid diagnoses that are prevalent among young people under youth justice supervision (Cook, Schwartz & Kaslow 2017). Traditional therapeutic interventions for trauma and other mental health disorders, even those conceptualised as 'third-wave cognitive-behavioural therapies', rely heavily on cognitive modalities and may not be sufficiently responsive to the needs of young people under supervision, especially those with disability-related needs (Youth Justice Assessment and Intervention Services 2020). This is especially problematic for young people with speech and communication disorders, as most therapies rely almost exclusively on verbally mediated interventions. It is important here to note that because Youth Justice staff assisted the research team to identify young people who would be able and willing to participate in this study, it is possible that young people with severe cognitive impairments were not approached to participate and are not represented in our data. Given the emerging evidence about rates of neurodevelopmental disability and language disorders among youth justice populations (Baidawi & Piquero 2021; Bower et al. 2018; Snow & Powell 2012), it may be argued that an effective suite of interventions in youth justice must include multi-disciplinary expertise alongside the traditional input of social work and psychology. Furthermore, a recent systematic review of psychological trauma interventions for young people who offend demonstrated that, although the interventions reviewed did show some effectiveness in reducing PTSD symptoms, it was not clear whether the effects of these interventions extended to reducing behavioural problems in this population (Rhoden, Macgowan & Huang 2019).

However, we know that spontaneous, long-term remission of serious mental health problems, such as PTSD, is unlikely. Comorbidity also makes therapeutic engagement in treatment inherently difficult. As noted above, logistical challenges in youth justice settings are also a concern (eg short orders, insufficient resources, limited time to provide evidence-based treatment, lack of coordination between agencies and services, and inability to engage young people and/or their families in therapy), which can make it difficult to address complex health and behavioural problems in a timely and meaningful way. It can be argued that, if we can expand and better fund mental health services and make them accessible through more streamlined referral processes and interagency collaboration, more holistic approaches to treatment may be attainable. It is not just connecting young people to treatment that is important but also ensuring engagement in treatment continues when young people are no longer under the statutory care of youth justice systems. As emphasised by Aalsma and Dir (2021), this is especially critical in the transition period from adolescence to adulthood, when offending, substance use and mental health disorders peak but rates of help seeking, engagement and retention in treatment programs are typically lower. Some researchers have further suggested that problems in the health system may contribute to unmet needs in at-risk populations of young people who ultimately end up in contact with the justice system (Teplin 2021).

Providing interagency support requires both collaborative case management approaches and a way to routinely assess and monitor the processes that can ensure young people's needs are being identified and comprehensively assessed, that young people are referred to appropriate services with whom they are meaningfully connected and engaged and that, ultimately, young people receive the support they need. This is not a straightforward task and requires ongoing data collection, supported by intelligent information infrastructure that is able to provide system-wide oversight of these processes. Similar ideas were recently proposed to support system-wide capacity to prevent child maltreatment (Malvaso, Pilkington et al. 2020), but the reality is that efforts to implement these ideas are inhibited by a lack of information sharing and siloed data collection and information systems. This problem has also been raised by Belenko et al. (2017), who suggest that, for interagency strategies and service provision that cross organisational boundaries to be successful for youth justice clients, a systems-level view is required. These authors describe how interagency collaboration could be enhanced to service high-risk youth justice populations, suggesting that different agencies could be located in the same physical space, share manuals and forms, have dedicated staff members who work across different agencies, conduct joint training sessions, and create shared policy guidelines and operational procedures. This may enhance transitions between services, promote more active case management, enable better matching of needs to services, and improve treatment engagement and retention. Ultimately, these approaches would support the idea that young people who come into contact with the justice system are a population whose needs are not easily met by one agency and who require multi-agency supports. The challenge is to integrate and better connect multi-agency supports, which in many jurisdictions remain siloed and have a narrow focus on their own 'core business'.

Milieu characteristics in youth justice settings

Ford et al. (2012) have identified three domains that are typically addressed through milieu features in youth justice settings: (1) educational, vocational and recreational programs driven by statutory requirements; (2) behaviour management procedures designed to reduce the risk of aggressive and other challenging behaviours; and (3) crisis prevention protocols for enhancing safety and reducing negative outcomes such as suicide. However, as these researchers point out, the ability of many young people to participate successfully in such activities and to respond well to motivational and crisis prevention interventions may be inhibited by their experiences of traumatic events and existing symptoms of complex trauma, such as dissociation or unregulated anger responses. Such symptoms were also observed in this study, which raises questions about the potential effectiveness of milieu interventions that are not underpinned by an understanding of how trauma affects behaviour. Ford and colleagues further suggest that staff are the key assets in these settings and can serve as important role models for self-rehabilitation in the way they interact with young people. The challenge in youth justice settings is that young people, the vast majority of whom we know have been exposed to various traumatic events, may not readily trust and engage with staff in ways that are conducive to these learning opportunities. As this study clearly shows, many young people have had negative experiences with adults, involving abuse, neglect, intimidation, exploitation, deceit, betrayal, abandonment and rejection. Young people may also be distrustful of staff due to their positions of authority, in which power imbalances can be created. However, time in custody can sometimes present a valuable and elusive window of opportunity to engage a young person in treatment that they are otherwise unable to obtain. Finding ways to maximise these opportunities should be explored.

Ford et al. (2012) emphasised that youth justice staff should receive education and training to help them understand and anticipate behaviours that are triggered from traumatic past experiences. They developed the Trauma Affect Regulation: Guide for Education and Therapy (TARGET) to teach emotion regulation skills to both young people and custodial staff and to equip staff with de-escalation strategies for conflict and behavioural problem reduction as a way to reduce injuries and critical incidents, further legal charges and extended detention orders. While quasi-experimental evaluations of this approach have demonstrated that it leads to a reduction in critical incidents and disciplinary seclusion practices, it is unclear whether it also reduces recidivism (Ford & Hawke 2012). Similarly, Greenwald (2009) has proposed a model of working with young people where staff play a key role in what is termed a ‘stabilisation process’. This forms part of a phase-oriented approach whereby staff help young people identify trauma trigger situations and model responses, which then serve as first steps in preparing for treatment and participating in more intensive therapeutic work. To the best of our knowledge, this model has yet to be evaluated.

A one-size-fits-all approach to milieu characteristics, particularly in custodial settings, may not be effective without a trauma-informed overlay. If youth justice systems are to be responsive to the safety needs of young people in their care and effectively manage perceived threats to personal safety, then individually tailored approaches may be needed. Co-design and co-production methods can be used to work alongside young people to gain phenomenological insights into when, where and how each individual will feel most safe or unsafe and which interventions will be most helpful. This idea reflects moves in the medical field to shift from expert-driven towards more participatory approaches to meeting patient needs (Kealy-Bateman, Gorman & Carroll 2021). A next step in this research could be a qualitative study focused on the narratives of young people under supervision. As this was the first study of its kind in South Australia, and because the questions were highly sensitive, we opted for quantitative methods to gain population insights into these factors but also to reduce the burden on young people who have likely told their story many times to professionals they have worked with over the years. We offered face-to-face feedback to participants after the project was completed. While we do not have ethical approval to share these responses, a number of young people opted to participate in a follow-up interview and were willing to share their views on the findings of the study. We believe that this, along with the high response rate in this study, signifies the willingness of young people to engage with research of this nature and gives us confidence that a qualitative follow-up study would be feasible.

Co-design can also occur with staff in youth justice agencies. The role of staff, particularly in custodial settings, can often be viewed as procedural rather than as having the potential to instigate change. The idea of staff as 'facilitators of change' has been explored in a number of studies on post-traumatic growth and resilience building in custodial settings. For example, Hearn, Joseph and Fitzpatrick (2021) reported that staff empathy and positive regard promote post-traumatic growth in these settings, although this finding has yet to be replicated in other studies. Understanding how agencies such as Youth Justice might work to promote post-traumatic growth and resilience in the face of childhood adversity is worthy of further exploration. Concepts of resilience, in particular, may also be relevant to strengthening service responses for Aboriginal young people. As pointed out by Usher et al. (2021), resilience is strengthened through collective experiences of adversity and there is a need to build on strengths, capacities and resources in this population.

Conclusion

This study provides further evidence, and from an Australian sample, that exposure to multiple forms of ACEs is common among young people supervised by the youth justice system. These young people are also characterised by high levels of trauma symptomatology, substance use, and internalising and externalising behaviours. It is suggested that similar studies are conducted in other Australian jurisdictions to determine whether findings can be replicated. Our findings provide further support for the need to understand how life events may alter the course of child and adolescent development. This is consistent with the tenets of DLC, but due to the cross-sectional design of this study it was not possible to elucidate potential causal associations between ACEs and offending behaviour. Longitudinal research is needed to better understand when, how and for whom these experiences lead to an increased risk of offending. Nonetheless, this study has several important implications for policy and practice, specifically in: prevention and early intervention; screening, assessment and referral; clinical-level intervention; and youth justice milieu characteristics. This is an opportunity to effectively address and respond to the needs of young people and improve youth justice service delivery to be effective in keeping both young people and the community safe.

References

URLs correct as at March 2022

Aalsma MC & Dir A 2021. The importance of longitudinal treatment engagement for youths in the juvenile justice system. *JAMA Pediatrics* 175(12). https://doi.org/10.1001/jamapediatrics.2020.5820

Achenbach T 2001. *Child Behavior Checklist Youth Self-Report for Ages 11–18.* Burlington, VT: Research Center for Children, Youth, & Families, University of Vermont

Amato P & Anthony CJ 2014. Estimating the effects of parental divorce and death with fixed effects models. *Journal of Marriage and Family* 76(2): 370–386. https://doi.org/10.1111/jomf.12100

Anda RF et al. 2006. The enduring effects of abuse and related adverse experiences in childhood. A convergence of evidence from neurobiology and epidemiology. *European Archives of Psychiatry & Clinical Neuroscience* 256(3): 174–186. https://doi.org/10.1007/s00406-005-0624-4

Anda RF, Porter LE & Brown DW 2020. Inside the Adverse Childhood Experience Score: Strengths, limitations, and misapplications. *American Journal of Preventive Medicine* 1–3. https://doi.org/10.1016/j.amepre.2020.01.009

Anda RF, Tietjen G, Schulman E, Felitti V & Croft J 2010. Adverse childhood experiences and frequent headaches in adults. *Headache* 50(9): 1473–1481. https://doi.org/10.1111/j.1526-4610.2010.01756.x

Australian Institute of Health and Welfare 2020. *Youth justice in Australia: 2018–19*. Canberra: AIHW

Australian Institute of Health and Welfare 2018. *Youth justice in Australia: 2016–17*. Canberra: AIHW

Australian Institute of Health and Welfare 2016. *Young people in child protection and under youth justice supervision 2013–14*. Data linkage series no. 21. Catalogue no. CSI 22. Canberra: AIHW

Baglivio MT et al. 2014. The prevalence of adverse childhood experiences (ACE) in the lives of juvenile offenders. *Journal of Juvenile Justice* 3(2): 12–34

Baglivio MT & Epps N 2015. The interrelatedness of adverse childhood experiences among high-risk juvenile offenders. *Youth Violence & Juvenile Justice* 14(3): 179–198. https://doi.org/10.1177/1541204014566286

Baglivio MT, Zettler HR, Craig JM & Wolff KT 2021. Evaluating RNR-based targeted treatment and intervention dosage in the context of traumatic exposure. *Youth Violence & Juvenile Justice* 19(3): 251–276. https://doi.org/10.1177%2F1541204020988575

Baidawi S & Piquero AR 2021. Neurodisability among children at the nexus of the child welfare and youth justice system. *Journal of Youth & Adolescence* 50(4): 803–819. https://doi.org/10.1007/s10964-020-01234-w

Baidawi S & Sheehan S 2019. 'Crossover kids': Offending by child-protection-involved youth. *Trends & issues in crime and criminal justice* no. 582. Canberra: Australian Institute of Criminology. https://aic.gov.au/publications/tandi/tandi582

Baldwin JR et al. 2021. Population vs individual prediction of poor health from results of adverse childhood experiences screening. *JAMA Pediatrics* 175(4): 385–393. https://doi.org/10.1001/jamapediatrics.2020.5602

Baranyi G, Cassidy M, Fazel S, Priebe S & Mundt AP 2018. Prevalence of posttraumatic stress disorder in prisoners. *Epidemiological Reviews* 40(1): 134–145. https://doi.org/10.1093/epirev/mxx015

Barra S, Bessler C, Landolt MA & Aebi M 2018. Patterns of adverse childhood experiences in juveniles who sexually offended. *Sexual Abuse* 30(7) 803–827. https://doi.org/10.1177/1079063217697135

Batty GD & Kivimaki M 2021. Adverse childhood experiences and adult health: The need for stronger study designs to evaluate impact. *Journal of Epidemiology & Community Health* 75(6): 485–488. https://doi.org/10.1136/jech-2020-215870

Belenko S et al. 2017. The Juvenile Justice Behavioral Health Services Cascade: A new framework for measuring unmet substance use treatment services needs among adolescent offenders. *Journal of Substance Abuse Treatment* 74: 80–91. https://doi.org/10.1016/j.jsat.2016.12.012

Bennett DC & Kerig PK 2014. Investigating the construct of trauma-related acquired callousness among delinquent youth: Differences in emotion processing. *Journal of Traumatic Stress* 27(4): 415–422. https://doi.org/10.1002/jts.21931

Blackwell DL & Tonthat L 2002. Summary health statistics for the US population; National Health Interview Survey, 1998. United States: National Center for Health Statistics

Bower CM et al. 2018. Fetal alcohol spectrum disorder and youth justice: A prevalence study among young people sentenced to detention in Western Australia. *BMJ Open* 8: 1–9. https://doi.org/10.1136/bmjopen-2017-019605

Briere J 1996. Trauma symptom checklist for children. Odessa, Florida: Psychological Assessment Resources

Centers for Disease Control and Prevention 2015. *Injury prevention and control: Adverse childhood experiences (ACE) study.* https://www.cdc.gov

Chapman DP et al. 2004. Adverse childhood experiences and the risk of depressive disorders in adulthood. *Journal of Affective Disorders* 82(2): 217–225. https://doi.org/10.1016/j.jad.2003.12.013

Charak R, Ford JD, Modrowski CA & Kerig PK 2019. Polyvictimization, emotion dysregulation, symptoms of posttraumatic stress disorder, and behavioral health problems among justice-involved youth: A latent class analysis. *Journal of Abnormal Child Psychology* 47(2): 287–298. https://doi.org/10.1007/s10802-018-0431-9

Chong MD, Forbes A, Francis AP & Fellows J 2020. Gender differentials in the presentation of symptoms, assessment, diagnosis and treatment of mentally ill prisoners. In M Anand (ed), *Gender and mental health*. Singapore: Springer Nature Singapore Pte Ltd: 207–221

Commission for Children and Young People 2021. *Our youth, our way: Inquiry into the over-representation of Aboriginal children and young people in the Victorian youth justice system*. Melbourne: Commission for Children and Young People

Cook S, Schwartz A & Kaslow N 2017. Evidence-based psychotherapy: Advantages and challenges. *Neurotherapeutics* 14(3): 537–545. https://doi.org/10.1007/s13311-017-0549-4

Craig JM, Piquero AR, Farrington DP & Ttofi MM 2017. A little early risk goes a long bad way: Adverse childhood experiences and life-course offending in the Cambridge study. *Journal of Criminal Justice* 53: 34–45. https://doi.org/10.1016/j.jcrimjus.2017.09.005

Craig JM, Trulson CR, DeLisi M & Caudill JW 2020. Toward an understanding of the impact of adverse childhood experiences on the recidivism of serious juvenile offenders. *American Journal of Criminal Justice* 45: 1024–1039. https://doi.org/10.1007/s12103-020-09524-6

Day A 2011a. Current directions in youth justice and young offender programming. *The Open Criminology Journal* 4: 10–12. https://doi.org/10.2174/1874917801104010010

Day A 2011b. The relationship between anger and trauma: Some implications for programs that help manage problematic anger. In JP Welty (ed), *Psychology of anger: Symptoms, causes and coping*. New York: Nova Science Publishers

Day A et al. 2008. Symptoms of trauma, perceptions of discrimination, and anger: A comparison between Australian indigenous and nonindigenous prisoners. *Journal of Interpersonal Violence* 23(2): 245–258. https://doi.org/10.1177/0886260507309343

Day A & Malvaso C 2021. Researching adverse childhood experiences in the youth justice system: Reflections on methodology from members of a non-Indigenous research team. *International Journal of Offender Therapy & Comparative Criminology.* Advance online publication. http://doi.org/10.1177/0306624X211058951

de Andrade D, Elphinston RA, Quinn C, Allan J & Hides L 2019. The effectiveness of residential treatment services for individuals with substance use disorders: A systematic review. *Drug & Alcohol Dependence* 201: 227–235. https://doi.org/10.1016/j.drugalcdep.2019.03.031

de Andrade D, Ritchie J, Rowlands M, Mann E & Hides L 2018. Substance use and recidivism outcomes for prison-based drug and alcohol interventions. *Epidemiological Reviews* 40(1): 121–133. https://doi.org/10.1093/epirev/mxy004

Drapalski AL, Youman K, Stuewig J & Tangney J 2009. Gender differences in jail inmates' symptoms of mental illness, treatment history, and treatment seeking. *Criminal Behaviour & Mental Health* 19: 193–206. https://doi.org/10.1002/cbm.733

Dube SR et al. 2006. Adverse childhood experiences and the association with ever using alcohol and initiating alcohol use during adolescence. *Journal of Adolescent Health* 38(4): 444–454. https://doi.org/10.1016/j.jadohealth.2005.06.006

Farrington DP 2007. Origins of violent behavior over the life span. In D Flannery, A Flannery & L Waldman (eds), *Cambridge Handbook of Violent Behavior and Aggression*. Cambridge: Cambridge University Press

Feiring C, Miller-Johnson S & Cleland CM 2007. Potential pathways from stigmatization and internalizing symptoms to delinquency in sexually abused youth. *Child Maltreatment* 12(3): 220–232. https://doi.org/10.1177/1077559507301840

Felitti V et al. 1998. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. *American Journal of Preventive Medicine* 14(4): 245–258. https://doi.org/10.1016/S0749-3797(98)00017-8

Finkelhor D 2018. Screening for adverse childhood experiences (ACEs): Cautions and suggestions. *Child Abuse & Neglect* 85: 174–179. https://doi.org/10.1016/j.chiabu.2017.07.016

Finkelhor D, Shattuck A, Turner H & Hamby S 2013. Improving the adverse childhood experiences study scale. *JAMA Pediatrics* 167(1): 70–75. https://doi.org/10.1001/jamapediatrics.2013.420

Ford ES et al. 2011. Adverse childhood experiences and smoking status in five states. *Preventive Medicine* 53(3): 188–193. https://doi.org/10.1016/j.ypmed.2011.06.015

Ford JD, Chapman J, Connor DF & Cruise KR 2012. Complex trauma and aggression in secure juvenile justice settings. *Criminal Justice & Behavior* 39(6): 694–724. https://doi.org/10.1177/0093854812436957

Ford JD, Elhai JD, Connor DF & Frueh BC 2010. Poly-victimization and risk of posttraumatic, depressive, and substance use disorders and involvement in delinquency in a national sample of adolescents. *Journal of Adolescent Health* 46(6): 545–552. https://doi.org/10.1016/j.jadohealth.2009.11.212

Ford JD, Grasso DJ, Hawke J & Chapman JF 2013. Poly-victimization among juvenile justice-involved youths. *Child Abuse & Neglect* 37(10): 788–800. https://doi.org/10.1016/j.chiabu.2013.01.005

Ford JD & Hawke J 2012. Trauma affect regulation psychoeducation group and milieu intervention outcomes in juvenile detention facilities. *Journal of Aggression, Maltreatment & Trauma* 21(4): 365–384. https://doi.org/10.1080/10926771.2012.673538

Fox BH, Perez N, Cass E, Baglivio MT & Epps N 2015. Trauma changes everything: examining the relationship between adverse childhood experiences and serious, violent and chronic juvenile offenders. *Child Abuse & Neglect* 46: 163–173. https://doi.org/10.1016/j.chiabu.2015.01.011

Freiberg K et al. 2005. Creating pathways to participation: A community-based developmental prevention project in Australia. *Children & Society* 19: 144–157. https://doi.org/10.1002/chi.867

Garrido EF, Culhane SE, Raviv T & Taussig HN 2010. Does community violence exposure predict trauma symptoms in a sample of maltreated youth in foster care? *Violence & Victims* 25(6): 755–769. https://doi.org/10.1891/0886-6708.25.6.755

Greenland S et al. 2016. Statistical tests, P values, confidence intervals, and power: A guide to misinterpretations. *European Journal of Epidemiology* 31(4): 337–350. https://doi.org/10.1007/s10654-016-0149-3

Greenwald R 2009. *Treating problem behaviors: A trauma-informed approach*. New York: Taylor & Francis. https://doi.org/10.4324/9780203877081

Hardt J & Rutter M 2004. Validity of adult retrospective reports of adverse childhood experiences: Review of the evidence. *Journal of Child Psychology & Psychiatry* 45(2): 260–273. https://doi.org/10.1111/j.1469-7610.2004.00218.x

Hearn N, Joseph S & Fitzpatrick S 2021. Post-traumatic growth in prisoners and its association with the quality of staff-prisoner relationships. *Criminal Behaviour & Mental Health* 31(1): 49–59. https://doi.org/10.1002/cbm.2173

Homel R, Freiberg K & Branch S 2015. CREATE-ing capacity to take developmental crime prevention to scale: A community-based approach within a national framework. *Australian & New Zealand Journal of Criminology* 48(3): 367–385. https://doi.org/10.1177/0004865815589826

Homel R et al. 2006a. The Pathways to Prevention project: Doing developmental prevention in a disadvantaged community. *Trends & issues in crime and criminal justice* no. 323. Canberra: Australian Institute of Criminology. https://aic.gov.au/publications/tandi/tandi323

Homel R et al. 2006b. *The Pathways to Prevention project: The first five years*. Sydney: Mission Australia and the Key Centre for Ethics, Law, Justice & Governance, Griffith University

Hurren E, Stewart A & Dennison S 2017. Transitions and turning points revisited: A replication to explore child maltreatment and youth offending links within and across Australian cohorts. *Child Abuse & Neglect* 65: 24–36. https://doi.org/10.1016/j.chiabu.2017.01.002

Indig D et al. 2011. *2009 NSW Young people in custody health survey: Full report*. Sydney: Justice Health and Juvenile Justice

Kealy-Bateman W, Gorman GM & Carroll AP 2021. Patient/consumer codesign and coproduction of medical curricula: A possible path toward improved cultural competence and reduced health disparity. *SAGE Open* 1–10. https://doi.org/10.1177/21582440211016836

Kenny DT et al. 2006. *NSW Young People on Community Orders Health Survey 203–2006: Key Findings Report*. Sydney: University of Sydney

Kerig PK 2012. Introduction to Part II: Trauma and juvenile delinquency: New directions and interventions. *Journal of Child & Adolescent Trauma* 5(3): 187–190. https://doi.org/10.1080/19361521.2012.697023

Kerig PK & Becker SP 2010. From internalizing to externalizing: Theoretical models on the processes linking PTSD to juvenile delinquency. In SJ Egan (ed), *Post-Traumatic Stress Disorder (PTSD): Causes, symptoms and treatment*. Hauppuage, New York: Nova Science Publishers

Kerig PK, Ward R, Vanderzee K & Moeddel MA 2009. Posttraumatic stress as a mediator of the relationship between trauma and mental health problems among juvenile delinquents. *Journal of Youth & Adolescence* 38(9): 1214–1225. https://doi.org/10.1007/s10964-008-9332-5

King D, Delfabbro P & Day A 2013. The children's court of South Australia. In R Sheehan & A Borowski (eds), *Australia's children's courts: Today and tomorrow*, vol 7, Children's Well-Being: Indicators and Research. Dordrecht: Springer: 85–101. https://doi.org/10.1007/978-94-007-5928-2_6

Kinner SA et al. 2014. Complex health needs in the youth justice system: A survey of community-based and custodial offenders. *Journal of Adolescent Health* 54(5): 521–526. https://doi.org/10.1016/j.jadohealth.2013.10.003

Klassman K, Malvaso C, Delfabbro P, Moulds L & Young J forthcoming. A rapid evidence assessment of barriers and strategies in service engagement when working with young people with complex needs

Koh LL, Day A, Klettke B, Daffern M & Chu CM 2021. Youth violence assessment instruments: Are they sensitive to change and are changes related to recidivism? *Psychology, Crime & Law* 1–18 https://doi.org/10.1080/1068316X.2021.1909019

Koolmatrie J & Williams R 2000. Unresolved grief and the removal of indigenous Australian children. *Australian Psychologist* 35: 158–166. https://doi.org/10.1080/00050060008260338

Lanier P, Maguire-Jack K, Lombardi B, Frey J & Rose R 2018. Adverse childhood experiences and child health outcomes: Comparing cumulative risk and latent class approaches. *Maternal & Child Health Journal* 22: 288–297. https://doi.org/10.1007/s10995-017-2365-1

Lanktree CB et al. 2008. Multi-informant assessment of maltreated children: Convergent and discriminative validity of the TSCC and TSCYC. *Child & Abuse Neglect* 32(6): 621–625. https://doi.org/10.1016/j.chiabu.2007.10.003

Lanza S, Dziak J, Huang L, Wagner A & Collins L 2018. *LCA Stata Plugin users' guide (version 1.2.1)*. University Park, Pennsylvania: The Methodology Center, Pennsylvania State University

Lee J & Taxman FS 2020. Using latent class analysis to identify the complex needs of youth on probation. *Children & Youth Services Review* 115. https://doi.org/10.1016/j.childyouth.2020.105087

Levenson JS & Willis GM 2018. Implementing trauma-informed care in correctional treatment and supervision. *Journal of Aggression, Maltreatment & Trauma* 28(4): 481–501. https://doi.org/10.1080/10926771.2018.1531959

Malvaso CG et al. 2021. Associations between adverse childhood experiences and trauma among young people who offend: A systematic literature review. *Trauma, Violence, & Abuse*. Advance online publication. https://doi.org/10.1177/15248380211013132

Malvaso CG, Day A, Casey S & Corrado RR 2016. Young offenders, maltreatment, and trauma: A pilot study. *Psychiatry, Psychology & Law* 1–12. https://doi.org/10.1080/13218719.2016.1247682

Malvaso CG & Delfabbro P 2015. Offending behaviour among young people with complex needs in the Australian out-of-home care system. *Journal of Child & Family Studies* 24(12): 3561–3569. https://doi.org/10.1007/s10826-015-0157-z

Malvaso CG, Delfabbro P & Day A 2017. The child protection and juvenile justice nexus in Australia: A longitudinal examination of the relationship between maltreatment and offending. *Child Abuse & Neglect* 64: 32–46. https://doi.org/10.1016/j.chiabu.2016.11.028

Malvaso CG, Delfabbro P, Hackett L & Mills H 2016. Service approaches to young people with complex needs leaving out-of-home care. *Child Care in Practice* 22(2): 128–147. https://doi.org/10.1080/13575279.2015.1118016

Malvaso CG, Pilkington R, Montgomerie A, Delfabbro P & Lynch J 2020. A public health approach to preventing child maltreatment: An intelligent information infrastructure to help us know what works. *Child Abuse & Neglect* 106. https://doi.org/10.1016/j.chiabu.2020.104466

Malvaso CG, Santiago P, Pilkington R, Montgomerie A, Delfabbro P, Day A & Lynch J 2020a. *The intersection between the Child Protection and Youth Justice systems in South Australia*. Adelaide: BetterStart Child Health and Development Group, University of Adelaide. https://bettercarenetwork.org/library/social-welfare-systems/child-care-and-protection-policies/the-intersection-between-the-child-protection-and-youth-justice-systems-in-south-australia

Malvaso CG, Santiago P, Pilkington R, Montgomerie A, Delfabbro P, Day A & Lynch J 2020b. *Youth Justice supervision in South Australia*. Adelaide: BetterStart Child Health and Development Research Group, University of Adelaide

Manning M, Homel R & Smith C 2010. A meta-analysis of the effects of early developmental prevention programs in at-risk populations on non-health outcomes in adolescence. *Children & Youth Services Review* 32(4): 506–519. https://doi.org/10.1016/j.childyouth.2009.11.003

McCarthy M 2020. How universal is the youth crime drop? Disentangling recent trends in youth offending through a socio-economic lens. *Victims & Offenders* 1–23. https://doi.org/10.1080/15564886.2020.1855281

McCuish EC 2017. Substance use profiles among juvenile offenders: A lifestyles theoretical perspective. *Journal of Drug Issues* 47(3): 448–466. https://doi.org/10.1177/0022042617699197

Moberg DP 2005. Screening for alcohol and other drug problems using the Adolescent Alcohol and Drug Involvement Scale (AADIS)

Moberg DP 1991. The Adolescent Drug Involvement Scale. *Journal of Adolescent Chemical Dependency* 2: 75–88. https://doi.org/10.1080/10678289109512338

Modrowski C & Kerig PK 2017. Investigating factors associated with PTSD dissociative subtype membership in a sample of traumatized justice-involved youth. *Journal of Child & Adolescent Trauma* 10(4): 343–351. https://doi.org/10.1007/s40653-017-0153-0

Moffitt TE 1993. Adolescence-limited and life-course-persistent antisocial behavior: A developmental taxonomy. *Psychological Review* 100(4): 674–701. https://doi.org/10.1037/0033-295X.100.4.674

Moore E, Gaskin C & Indig D 2013. Childhood maltreatment and post-traumatic stress disorder among incarcerated young offenders. *Child Abuse & Neglect* 37(10): 861–870. https://doi.org/10.1016/j.chiabu.2013.07.012

Morey RD, Hoekstra R, Rouder JN, Lee MD & Wagenmakers EJ 2016. The fallacy of placing confidence in the confidence intervals. *Psychonomic Bulletin & Review* 23: 103–123. https://doi.org/10.3758/s13423-015-0947-8

Mozley MM, Lin B & Kerig PK 2018. Posttraumatic overmodulation, callous–unemotional traits, and offending among justice-involved youth. *Journal of Aggression, Maltreatment & Trauma* 27(7): 744–758. https://doi.org/10.1080/10926771.2017.1420724

Novaco RW 2013. Reducing anger-related offending: What works. In LA Craig, L Dixon & T Gannon (eds), *What works in offender rehabilitation: An evidence-based approach to assessment and treatment*. Hoboken, New Jersey: John Wiley & Sons. https://doi.org/10.1002/9781118320655.ch12

NSW Ministry of Health 2014. *Substance use and young people framework*. Sydney: NSW Government

Papalia NL, Luebbers S, Ogloff JRP, Cutajar M & Mullen PE 2017. Exploring the longitudinal offending pathways of child sexual abuse victims: A preliminary analysis using latent variable modeling. *Child Abuse & Neglect* 66: 84–100. https://doi.org/10.1016/j.chiabu.2017.01.005

Payne J & Piquero AR 2020. *Developmental criminology and the crime decline: A comparative analysis of the criminal careers of two New South Wales birth cohorts*. Cambridge: Cambridge University Press. https://doi.org/10.1017/9781108882149

Phelan P & Oxley R 2021. Understanding the social and emotional wellbeing of Aboriginal LGBTIQ (SB)+ youth in Victoria's youth detention. *Social Inclusion* 9(2): 18–29. https://doi.org/10.17645/si.v9i2.3770

Prichard J & Payne J 2005. *Alcohol, drugs and crime: A study of juveniles in detention*. Research and public policy series no. 67. Canberra: Australian Institute of Criminology. https://aic.gov.au/publications/rpp/rpp67

Raviv T, Taussig HN, Culhane SE & Garrido EF 2010. Cumulative risk exposure and mental health symptoms among maltreated youth placed in out-of-home care. *Child Abuse & Neglect* 34(10): 742–751. https://doi.org/10.1016/j.chiabu.2010.02.011

Rhoden MA, Macgowan MJ & Huang H 2019. A systematic review of psychological trauma interventions for juvenile offenders. *Research on Social Work Practice* 29(8): 892–909. https://doi.org/10.1177/1049731518806578

Richards K 2011. Trends in juvenile detention in Australia. *Trends & issues in crime and criminal justice* no. 416. Canberra: Australian Institute of Criminology. https://aic.gov.au/publications/tandi/tandi416

Rosenman S & Rodgers B 2004. Childhood adversity in an Australian population. *Social Psychiatry & Psychiatric Epidemiology* 39(9): 695–702. https://doi.org/10.1007/s00127-004-0802-0

Ryan J & Testa MF 2005. Child maltreatment and juvenile delinquency: Investigating the role of placement and placement instability. *Children & Youth Services Review* 27(3): 227–249. https://doi.org/10.1016/j.childyouth.2004.05.007

Sawyer M, Arney FM, Baghurst PA & Clarke JJ 2001. The mental health of young people in Australia: Key findings from the child and adolescent component of the National Survey of Mental Health and Wellbeing. *Australian & New Zealand Journal of Psychiatry* 35: 806–814. https://doi.org/10.1046/j.1440-1614.2001.00964.x

Sawyer M, Carbone J, Searle JA & Robinson P 2007. The mental health and wellbeing of children and adolescents in home-based foster care. *Medical Journal of Australia* 186: 181–184. https://doi.org/10.5694/j.1326-5377.2007.tb00857.x

Sawyer M et al. 2010. The mental health and wellbeing of adolescents on remand in Australia. *Australian & New Zealand Journal of Psychiatry* 44: 551–559. https://doi.org/10.3109%2F00048671003601418

Shin SH, McDonald S & Conley D 2018. Patterns of adverse childhood experiences and substance use among young adults: A latent class analysis. *Addictive Behaviors* 78: 187–192. https://doi.org/10.1016/j.addbeh.2017.11.020

Snow P & Powell M 2012. Youth (in)justice: Oral language competence in early life and risk for engagement in antisocial behaviour in adolescence. *Trends & issues in crime and criminal justice* no. 435. Canberra: Australian Institute of Criminology. https://www.aic.gov.au/publications/tandi/tandi435

Stewart A, Ogilvie JM, Thompson C, Dennison S, Allard T, Kisely S & Broidy L 2021. Lifetime prevalence of mental illness and incarceration: An analysis by gender and Indigenous status. *Australian Journal of Social Issues* 56(2): 244–268. https://doi.org/10.1002/ajs4.146

Stimmel MA, Cruise KR, Ford JD & Weiss RA 2014. Trauma exposure, posttraumatic stress disorder symptomatology, and aggression in male juvenile offenders. *Psychological Trauma: Theory, Research, Practice, & Policy* 6(2): 184–191. https://doi.org/10.1037/a0032509

Straus MA & Gelles RJ 1990. *Physical violence in American families: Risk factors and adaptations to violence in 8,145 families*. New Brunswick, New Jersey: Transaction Press. https://doi.org/10.1891/0886-6708.5.4.297

Sue DW, Arredondo P & McDavis RJ 1992. Multicultural counseling competencies and standards: A call to the profession. *Journal of Multicultural Counseling & Development* 20(2): 64–88. https://doi.org/10.1002/j.2161-1912.1992.tb00563.x

Tarren-Sweeney M & Hazell P 2006. Mental health of children in foster and kinship care in New South Wales, Australia. *Journal of Paediatrics & Child Health* 42(3): 89–97. https://doi.org/10.1111/j.1440-1754.2006.00804.x

Teplin LA 2021. Prevalence, comorbidity, and continuity of psychiatric disorders in a 15-year longitudinal study of youths involved in the juvenile justice system. *JAMA Pediatrics*. https://doi.org/10.1001/jamapediatrics.2020.5807

Turner D et al. 2020. The association between adverse childhood experiences and mental health problems in young offenders. *European Child & Adolescent Psychiatry*. https://doi.org/10.1007/s00787-020-01608-2

Tyler N, Miles HL, Karadag B & Rogers G 2019. An updated picture of the mental health needs of male and female prisoners in the UK: Prevalence, comorbidity, and gender differences. *Social Psychiatry & Psychiatric Epidemiology* 54: 1143–1152. https://doi.org/10.1007/s00127-019-01690-1

Usher K et al. 2021. Indigenous resilience in Australia: A scoping review using a reflective decolonizing collective dialogue. *Frontiers in Public Health* 9: 630601. https://doi.org/10.3389/fpubh.2021.630601

Wasserstain RL & Lazar NA 2016. The ASA's statement on p-values: Context, process and purpose. *American Statistician* 70(2): 129–133. https://doi.org/10.1080/00031305.2016.1154108

Westerman T 2021. We must raise the age of criminal responsibility, here is why. https://indigenousx.com.au/we-must-raise-the-age-of-criminal-responsibility-here-is-why/

Wolff KT, Cuevas C, Intravia J, Baglivio MT & Epps N 2018. The effects of neighborhood context on exposure to adverse childhood experiences (ACE) among adolescents involved in the juvenile justice system: Latent classes and contextual effects. *Journal of Youth & Adolescence* 47(11): 2279–2300. https://doi.org/10.1007/s10964-018-0887-5

Wyatt GE 1985. The sexual abuse of Afro-American and white-American women in childhood. *Child & Abuse Neglect* 9: 507–519. https://doi.org/10.1016/0145-2134(85)90060-2

Yang J, McCuish EC & Corrado RR 2017. Foster care beyond placement: Offending outcomes in emerging adulthood. *Journal of Criminal Justice* 53: 46–54. https://doi.org/10.1016/j.jcrimjus.2017.08.009

Youth Justice Assessment and Intervention Services 2020. *Disability Screening Assessment Project Report: Identification of population needs at the Adelaide Youth Training Centre (Kurlana Tapa)*. Adelaide: Department of Human Services

Appendix: Supplementary analyses

Table A1: Summary of the number and proportion of young people experiencing individual ACEs, by sex and cultural background

ACEs	Sex						Cultural background							
	Male (*n*=151)		Female (*n*=29)				Aboriginal (*n*=67)		Non-Aboriginal (*n*=113)				Total sample (*n*=184)	
	n	%	*n*	%	*RR* [CI lower – upper bound]	*p*	*n*	%	*n*	%	*RR* [CI lower – upper bound]	*p*	*n*	%
Physical abuse	106	68.4	22	75.9	1.11 [0.70- 1.76]	0.658	45	65.2	83	72.2	0.90 [0.62–1.30]	0.584	128	69.6
Sexual abuse	20	12.9	11	37.9	2.94 [1.41–6.14]	0.004	12	17.4	19	16.5	1.05 [0.51–2.17]	0.889	31	16.8
Emotional abuse	123	79.4	26	89.7	1.13 [0.74–1.72]	0.572	54	78.3	95	82.6	0.95 [0.68–1.32]	0.751	149	81.0
Physical neglect	67	43.2	12	41.4	0.98 [0.53–1.81]	0.945	28	40.6	51	44.3	0.93 [0.59–1.48]	0.772	79	42.9
Emotional neglect	95	61.3	18	62.1	1.04 [0.63–1.71]	0.893	41	59.4	72	62.6	0.97 [0.66–1.42]	0.872	113	61.4
Any neglect	124	80.0	25	86.2	1.08 [0.70–1.66]	0.733	61	88.4	88	76.5	1.16 [0.83–1.60]	0.368	149	81.0
Family violence	94	60.6	24	82.8	1.40 [0.89–2.18]	0.145	43	62.3	75	65.2	0.95 [0.65–1.39]	0.800	118	64.1
Parental separation	112	72.3	23	79.3	1.08 [0.69–1.69]	0.748	55	79.7	80	69.6	1.14 [0.81–1.61]	0.447	135	73.4
Household member substance use	89	57.4	20	69.0	1.19 [0.73–1.93]	0.491	43	62.3	66	57.4	1.09 [0.74–1.60]	0.653	109	59.2
Household member mental illness	53	34.2	18	62.1	1.79 [1.05–3.06]	0.033	25	36.2	46	40.0	0.91 [0.56–1.48]	0.708	71	38.6
Household member imprisonment	79	51.0	18	62.1	1.20 [0.72–2.01]	0.481	47	68.1	50	43.5	1.58 [1.06–2.35]	0.025	97	52.7
Death of close friend/family member	121	78.1	25	86.2	1.09 [0.71–1.68]	0.695	54	78.3	92	80.0	0.98 [0.70–1.38]	0.925	146	79.3
Neighbourhood violence	111	71.6	19	65.5	0.90 [0.55–1.46]	0.662	49	71.0	81	70.4	1.01 [0.71–1.43]	0.977	130	70.7
Bullying	98	63.2	22	75.9	1.18 [0.75–1.88]	0.473	39	56.5	81	70.4	0.81 [0.55–1.18]	0.272	120	65.2

Note: ACEs=adverse childhood experiences

Table A2: Summary of the number and proportion of young people experiencing selected ACEs frequently, by sex and cultural background														
ACEs (frequent)	Sex						Cultural background							
	Male (*n*=151)		Female (*n*=29)				Aboriginal (*n*=67)		Non-Aboriginal (*n*=113)				Total sample (*n*=184)	
	n	%	*n*	%	RR [CI lower – upper bound]	*p*	*n*	%	*n*	%	RR [CI lower – upper bound]	*p*	*n*	%
Physical abuse	70	45.2	15	51.7	1.15 [0.66–2.00]	0.633	29	42.0	56	48.7	0.86 [0.55–1.35]	0.520	85	46.2
Sexual abuse	8	6.2	<5	–	2.67 [0.81–8.87]	0.108	5	17.2	7	6.1	1.19 [0.38–3.75]	0.766	12	6.5
Emotional abuse	95	61.3	23	79.3	1.29 [0.82–2.04]	0.267	44	63.8	74	64.4	0.99 [0.68–1.44]	0.962	118	64.1
Neglect	93	60.0	21	72.4	1.21 [0.75–1.94]	0.436	42	60.8	72	62.6	0.97 [0.66–1.42]	0.885	114	62.0
Family violence	69	44.5	16	55.2	1.24 [0.72–2.13]	0.439	31	44.9	54	47.0	0.96 [0.62–1.49]	0.845	85	46.2
Neighbourhood violence	61	39.4	<15	<40.0	0.96 [0.51–1.83]	0.910	30	43.5	42	36.5	1.19 [0.75–1.90]	0.466	80	39.1
Bullying	67	43.2	13	44.8	1.04 [0.57–1.88]	0.904	26	37.7	54	47.0	0.80 [0.50–1.28]	0.219	72	43.5

Note: ACEs=adverse childhood experiences. Percentages are presented only where n values are greater than 5

Table A3: Summary of the number and proportion of young people scoring in the clinical and subclinical ranges of the TSCC, by sex

Scale	Males (*n*=141)						Females (*n*=25)							
	Clinical		Subclinical		Total symptomatic		Clinical		Subclinical		Total symptomatic		Difference between total symptomatic	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*RR* [CI lower – upper bound]	*p*
Anxiety	19	13.5	55	39.0	74	52.5	6	24.0	8	32.0	14	56.0	1.06 [0.60–1.89]	0.824
Depression	29	20.6	51	36.2	80	56.7	5	20.0	9	36.0	14	56.0	0.99 [0.56–1.74]	0.964
Anger	25	17.7	58	41.1	83	58.9	5	20.0	11	44.0	16	64.0	1.09 [0.64–1.86]	0.759
Post-traumatic stress	29	20.6	61	43.3	90	63.8	<5	–	<10	<40.0	13	52.0	0.81 [0.46–1.46]	0.490
Dissociation	21	14.9	75	53.2	96	68.1	5	20.0	9	36.0	14	56.0	0.82 [0.47–1.45]	0.239
Overt	33	23.4	70	49.6	103	73.0	7	28.0	8	32.0	15	60.0	0.82 [0.48–1.41]	0.476
Fantasy	20	14.2	33	23.4	53	37.6	<5	–	<10	<40.0	10	38.0	1.06 [0.54–2.09]	0.857
Sexual concerns	15	10.6			15	10.6	<5	–			<5	–	1.50 [0.50–4.53]	0.468
Preoccupation	17	12.1			17	12.1	<5	–			<5	–	1.0 [0.29–3.40]	0.994
Distress	17	12.1			17	12.1	5	20.0			5	20.0	1.65 [0.61–4.50]	0.320

Note: TSCC=Trauma Symptom Checklist for Children. Percentages are presented only where n values are greater than 5

Table A4: Summary of the number and proportion of young people scoring in the clinical and subclinical ranges of the TSCC, by cultural background

Scale	Aboriginal (*n*=56)						Non-Aboriginal (*n*=110)							
	Clinical		Subclinical		Total symptomatic		Clinical		Subclinical		Total symptomatic		Difference between total symptomatic	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*RR* [CI lower – upper bound]	*p*
Anxiety	9	16.1	20	35.7	29	51.8	16	14.6	43	39.1	59	53.7	0.97 [0.62–1.51]	0.877
Depression	12	21.4	20	35.7	32	57.1	22	20.0	40	36.4	62	56.4	1.01 [0.66–1.55]	0.950
Anger	11	19.6	27	48.2	38	67.8	19	17.2	42	38.2	61	55.5	1.22 [0.82–1.83]	0.329
Post-traumatic stress	12	21.4	22	39.3	34	60.7	21	19.1	48	43.6	69	62.7	0.97 [0.64–1.46]	0.876
Dissociation	11	19.6	27	48.2	38	67.9	15	13.6	57	51.8	72	65.5	1.04 [0.70–1.54]	0.857
Overt	15	26.8	23	41.1	38	67.9	25	22.7	55	50.0	80	72.7	0.93 [0.63–1.37]	0.725
Fantasy	8	14.3	18	32.1	26	46.4	14	12.7	23	20.9	37	33.6	1.38 [0.84–2.28]	0.208
Sexual concerns	<5	<10			<5	<10	<20	<20			<20	<20	0.37 [0.11–1.26]	0.112
Preoccupation	5	8.9			5	8.9	15	13.6			15	13.6	0.65 [0.24–1.80]	0.412
Distress	7	12.5			7	12.5	15	13.6			15	13.6	0.92 [0.37–2.25]	0.849

Note: TSCC=Trauma Symptom Checklist for Children

Table A5: Number and proportion of young people endorsing each critical item, by sex and cultural background

Critical item	Male (*n*=141)		Female (*n*=25)				Aboriginal (*n*=56)		Non-Aboriginal (*n*=110)				Total sample	
	n	%	*n*	%	RR [CI lower – upper bound]	*p*	*n*	%	*n*	%	RR [CI lower – upper bound]	*p*	*n*	%
Wanting to hurt myself	46	32.6	11	44.0	1.35 [0.70–2.60]	0.373	23	41.1	34	30.9	1.33 [0.78–2.26]	0.292	57	34.3
Wanting to hurt others	84	59.6	13	52.0	0.87 [0.49–1.57]	0.648	37	66.1	60	54.6	1.21 [0.80–1.82]	0.359	97	58.4
Feeling scared of men	26	18.4	14	56.0	3.04 [1.59–5.82]	0.001	17	30.4	23	20.9	1.45 [0.77–2.72]	0.244	40	24.1
Feeling scared of women	43	30.5	5	20.0	0.66 [0.26–1.66]	0.372	17	30.4	31	28.2	1.08 [0.60–1.95]	0.805	48	28.9
Not trusting people because they might want to have sex	39	27.7	12	48.0	1.74 [0.90–3.31]	0.095	17	30.4	34	30.9	0.98 [0.55–1.76]	0.952	51	30.7
Getting into fights	110	78.0	22	88.0	1.13 [0.71–1.78]	0.606	46	82.1	86	78.2	1.05 [0.74–1.50]	0.787	132	79.5
Feeling afraid someone will kill me	36	25.5	6	24.0	0.94 [0.40–2.23]	0.888	15	26.8	27	24.6	1.09 [0.58–2.05]	0.786	42	25.3
Wanting to kill myself	38	27.0	10	40.0	1.48 [0.74–2.98]	0.267	20	35.7	28	25.5	1.40 [0.79–2.49]	0.247	48	28.9

Table A6: Summary of the number and proportion of young people reporting use of different types of substances, by sex and cultural background

Drug and alcohol use	Sex						Cultural background							
	Male (*n*=154)		Female (*n*=29)				Aboriginal (*n*=69)		Non-Aboriginal (*n*=115)				Total sample (*n*=184)	
	n	%	*n*	%	RR [CI lower – upper bound]	*p*	*n*	%	*n*	%	RR [CI lower – upper bound]	*p*	*n*	%
Tobacco (daily)	75	48.4	20	69.0	1.42 [0.87–2.33]	0.159	38	55.1	57	49.6	1.11 [0.73–1.68]	0.615	95	51.6
Alcohol (weekly)	59	38.1	9	31.0	0.82 [0.40–1.64]	0.568	21	30.4	47	40.9	0.74 [0.45–1.25]	0.261	68	37.0
Alcohol (daily)	<10	<10	<5	<10	1.18 [0.26–5.50]	0.826	<10	<10	<5	<10	0.95 [0.28–3.25]	0.938	11	6.0
Marijuana (weekly)	106	68.4	18	62.1	0.91 [0.55–1.50]	0.704	51	73.9	73	63.5	1.16 [0.81–1.67]	0.404	124	67.4
Marijuana (daily)	82	52.9	14	48.3	0.91 [0.52–1.61]	0.752	43	62.3	53	46.1	1.35 [0.90–2.02]	0.142	96	52.2
Ever used:	61	39.4	<15	<40.0	0.96 [0.51–1.83]	0.910	30	43.5	42	36.5	1.19 [0.75–1.90]	0.466	80	39.1
Hallucinogens	75	48.4	9	31.0	0.64 [0.32–1.28]	0.085	25	36.2	59	51.3	0.71 [0.44–1.13]	0.145	84	45.7
Amphetamines	57	36.8	12	41.4	1.13 [0.60–2.10]	0.710	23	33.3	46	40.0	0.83 [0.51–1.37]	0.475	69	37.5
Powder cocaine	<40	<30	<5	<10	0.27 [0.06–1.14]	0.030	12	17.4	29	25.2	0.69 [0.35–1.35]	0.279	41	22.3
Rock cocaine	30	19.4	6	20.7	1.07 [0.44–2.57]	0.881	15	21.7	21	18.3	1.19 [0.61–2.31]	0.606	36	19.6
Barbiturates	27	16.8	0	0.0	–	–	7	10.1	20	17.4	0.58 [0.25–1.38]	0.220	26	14.1
PCP	8	5.2	0	0.0	–	–	4	5.8	4	3.5	1.67 [0.42–6.66]	0.470	8	4.3
Heroin or other opiates	16	10.3	0	0.0	–	–	<5	<10	<15	<20	0.38 [0.11–1.35]	0.136	16	8.7
Inhalants	<50	<35	<5	<15	0.46 [0.17–1.29]	0.142	21	30.4	29	25.2	1.21 [0.69–2.12	0.512	50	27.2
Tranquilisers	54	34.8	7	24.1	0.69 [0.32–1.52]	0.361	21	30.4	40	34.8	0.88 [0.52–1.48]	0.620	61	33.2
Other	<10	<10	<5	<10	1.07 [0.23–4.89]	0.931	5	7.5	7	6.1	1.19 [0.38–3.75]	0.766	12	6.5

Table A7: Summary of the number and proportion of young people scoring in the clinical and borderline ranges for the CBCL, by sex

Scale	Males (*n*=155)						Females (*n*=29)							
	Clinical		Borderline		Total symptomatic		Clinical		Borderline		Total symptomatic		Difference between total symptomatic	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*RR* [CI lower – upper bound]	*p*
Anxious depressed	39	25.2	20	12.9	59	38.1	11	7.1	0	0.0	11	37.9	1.00 [0.52–1.90]	0.991
Withdrawn depressed	41	26.5	26	16.8	67	43.2	10	6.5	5	17.2	15	51.7	1.20 [0.68–2.09]	0.530
Somatic complaints	35	22.6	14	9.0	49	31.6	<10	<10.0	<5	<15.0	12	41.4	1.31 [0.70–2.46]	0.403
Social problems	33	21.3	21	13.5	54	34.8	10	6.5	5	17.2	15	51.7	1.48 [0.84–2.63]	0.176
Thought problems	60	38.7	14	9.0	74	47.7	<12	<10.0	<5	<12.0	13	16.8	0.94 [0.52–1.69]	0.834
Attention problems	45	29.0	33	21.3	78	50.3	10	6.5	7	24.1	17	58.6	1.16 [0.69–1.97]	0.569
Rule-breaking behaviour	97	62.6	27	17.4	124	80.0	16	10.3	11	37.9	27	93.1	1.16 [0.77–1.76]	0.475
Aggressive behaviour	67	43.2	21	13.5	88	56.8	8	5.2	12	41.4	20	69.0	1.21 [0.75–1.97]	0.432
Internalising problems	71	45.8	30	19.4	101	65.2	16	55.2	1	3.5	17	58.7	0.90 [0.54–1.50]	0.687
Externalising problems	116	74.8	17	11.0	133	85.8	25	86.2	4	13.8	29	100.0	1.17 [0.79–1.74]	0.455
Total problems	111	71.6	17	11.0	128	82.6	19	65.5	5	17.2	24	82.7	1.00 [0.65–1.55]	0.992

Note: CBCL=Child Behaviour Checklist

Table A8: Summary of the number and proportion of young people scoring in the clinical and borderline ranges for the CBCL, by cultural background

Scale	Aboriginal (*n*=69)						Non-Aboriginal (*n*=115)							
	Clinical		Borderline		Total symptomatic		Clinical		Borderline		Total symptomatic		Difference between total symptomatic	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*RR* [CI lower – upper bound]	*p*
Anxious depressed	21	30.4	7	10.1	28	40.6	29	25.1	13	11.3	42	36.5	1.11 [0.69–1.79]	0.666
Withdrawn depressed	21	30.4	13	18.8	34	49.3	30	26.1	18	15.7	48	41.7	1.18 [0.76–1.83]	0.459
Somatic complaints	18	26.1	6	8.7	24	34.8	25	21.7	12	10.4	37	32.2	1.08 [0.65–1.81]	0.766
Social problems	18	26.1	7	10.1	25	36.2	25	21.7	19	16.5	44	38.3	0.95 [0.58–1.55]	0.828
Thought problems	25	36.2	5	7.2	30	43.5	45	39.1	12	10.4	57	49.6	0.88 [0.56–1.36]	0.561
Attention problems	19	27.5	18	26.1	37	53.6	36	31.3	22	19.1	58	50.4	1.06 [0.70–1.61]	0.771
Rule-breaking behaviour	40	58.0	18	26.1	58	84.1	73	63.5	20	17.4	93	80.9	1.04 [0.75–1.44]	0.817
Aggressive behaviour	27	39.1	14	20.3	41	59.4	48	41.7	19	16.5	67	58.3	1.02 [0.69–1.50]	0.921
Internalising problems	34	49.3	4	5.8	38	55.1	53	46.1	27	23.5	80	69.6	0.79 [0.54–1.16]	0.236
Externalising problems	54	78.3	5	7.2	59	85.5	87	75.7	16	13.9	103	89.6	0.95 [0.69–1.31]	0.776
Total problems	45	65.2	7	10.1	52	75.3	85	73.9	15	13.0	100	86.9	0.87 [0.62–1.21]	0.403

Note: CBCL=Child Behaviour Checklist

Table A9: Fit statistics for two-, three-, four- and five-class adverse childhood experiences latent class analysis

Latent classes	G^2	AIC	BIC	CAIC	aBIC	Entropy R^2
2	628.4	678.4	758.8	783.8	679.6	0.888
3	566.8	642.8	765.0	803.0	644.6	0.796
4	541.9	643.9	807.9	858.9	646.4	0.795
5	523.6	651.6	857.4	921.4	654.7	0.814

Table A10: Class membership and item response probabilities for four-class model of ACEs

	High maltreatment/ high household dysfunction (*n*=66, 35.6%)	High maltreatment/ low household dysfunction (*n*=52, 28.3%)	Family/ neighbourhood disadvantage (*n*=45, 24.5%)	High on all adversities (*n*=21, 11.4%)
Latent class membership	0.299	0.309	0.249	0.144
Physical abuse				
Yes	0.796	0.996	0.088	0.896
No	0.204	0.004	0.912	0.104
Sexual abuse				
Yes	0.002	0.191	0.001	0.753
No	0.998	0.809	0.999	0.247
Emotional abuse				
Yes	0.954	0.999	0.294	0.998
No	0.046	0.001	0.706	0.002
Neglect				
Yes	0.955	0.745	0.607	0.998
No	0.045	0.255	0.393	0.002
Witnessed family violence				
Yes	0.845	0.685	0.138	0.995
No	0.155	0.315	0.862	0.005
Parents separated				
Yes	0.962	0.546	0.576	0.935
No	0.038	0.454	0.424	0.065
Family member substance abuse				
Yes	0.981	0.362	0.255	0.865
No	0.019	0.638	0.745	0.135
Family member mental illness				
Yes	0.701	0.191	0.039	0.751
No	0.299	0.809	0.961	0.249

Table A10: Class membership and item response probabilities for four-class model of ACEs (cont.)

	High maltreatment/ high household dysfunction (*n*=66, 35.6%)	High maltreatment/ low household dysfunction (*n*=52, 28.3%)	Family/ neighbourhood disadvantage (*n*=45, 24.5%)	High on all adversities (*n*=21, 11.4%)
Family member imprisoned				
Yes	0.637	0.395	0.342	0.903
No	0.363	0.605	0.658	0.097
Family member or friend died				
Yes	0.848	0.810	0.589	0.997
No	0.152	0.190	0.411	0.003
Witnessed neighbourhood violence				
Yes	0.817	0.720	0.429	0.930
No	0.183	0.280	0.571	0.070
Victim of bullying				
Yes	0.626	0.724	0.446	0.911
No	0.374	0.276	0.554	0.089

Note: ACEs=adverse childhood experiences

CRG reports
CRG 12/18–19

Catia Malvaso is a Senior Research Fellow funded by an Australian Research Council Discovery Early Career Researcher Award in the School of Psychology and School of Public Health, and Paul Delfabbro is a Professor in the School of Psychology, at the University of Adelaide.

Andrew Day and Stuart Ross are Enterprise Professors at the University of Melbourne.

Jesse Cale is an Associate Professor at Griffith University.

Louisa Hackett is Youth Justice's Principal Psychologist in South Australia.

For more information about this study, please contact Dr Catia Malvaso: catia.malvaso@adelaide.edu.au.

www.aic.gov.au/crg