European Child & Adolescent Psychiatry (2023) 32:101–112
https://doi.org/10.1007/s00787-021-01841-3

ORIGINAL CONTRIBUTION

Self-reported mental health of children known to child protection services: an Australian population-based record linkage study

Kirstie O'Hare[1] · Aniqa Hussain[1] · Kristin R. Laurens[1,4] · Gabrielle Hindmarsh[1] · Vaughan J. Carr[1,2,3] · Stacy Tzoumakis[5] · Felicity Harris[1] · Melissa J. Green[1,2]

Received: 1 February 2021 / Accepted: 28 June 2021 / Published online: 10 July 2021

Abstract

Maltreated children are vulnerable to adverse mental health outcomes. Information about how children's mental health needs vary according to different levels of child protection contact (potentially culminating in out-of-home care [OOHC]) is valuable for the effective provision of services. This study aimed to examine associations between different levels of contact with child protection services before the age of 10 years and self-reported mental health difficulties at age 11 years. Participants ($n = 26{,}960$) were drawn from the New South Wales Child Development Study, a multiagency, multigenerational, longitudinal record linkage study that combines administrative records with cross-sectional survey data. We examined associations between four levels of child protection response (non-threshold reports, unsubstantiated reports, substantiated reports, OOHC; each relative to no report) and six domains of self-reported mental health difficulties (including internalising and externalising symptoms, and psychotic-like experiences). All levels of contact with child protection services were associated with increased odds of mental health difficulties in all domains. Children who had been placed in OOHC and children with substantiated reports had the highest odds of reporting clinical levels of mental health difficulties; 48.1% of children with an OOHC placement and 45.6% of those with substantiated child protection reports showed clinical levels of mental health difficulties in at least one domain. Children with child protection reports that were unsubstantiated, or determined not to meet the threshold for risk-of-significant harm, were also at increased risk of mental health difficulties in middle childhood. These findings underscore the importance of early detection and intervention for all children at risk of maltreatment.

Keywords Child maltreatment · Out-of-home care · Foster care · Psychotic-like experiences · Psychopathology · Data linkage

Introduction

Childhood maltreatment is associated with adverse outcomes in physical health, mental health, and psychosocial adjustment across the lifespan [1]. A large body of evidence has shown that maltreatment during childhood—in particular emotional abuse and neglect—has a substantial adverse impact on mental health in adulthood [2, 3] and is associated with almost every type of adult mental disorder [4]. Children known to child protection services for suspected maltreatment are therefore particularly vulnerable to mental health problems, and the increased risk of adverse mental health outcomes is not limited to maltreated children who have been placed in out-of-home care (OOHC) but extends to any child reported to protection services [5]. The effects of childhood maltreatment on developmental outcomes can emerge immediately following the maltreatment [6] yet the

✉ Melissa J. Green
melissa.green@unsw.edu.au

1 School of Psychiatry, University of New South Wales (UNSW), Sydney, NSW 2052, Australia

2 Neuroscience Research Australia, Sydney, Australia

3 Department of Psychiatry, Monash University, Melbourne, Australia

4 School of Psychology and Counselling, Queensland University of Technology (QUT), Brisbane, Australia

5 School of Criminology and Criminal Justice, Griffith University, Southport, Australia

majority of prospective longitudinal research on the outcomes of childhood maltreatment has focused on later mental health outcomes in adolescence and adulthood [7]. As adult mental disorders are often preceded by childhood psychopathology [8], middle childhood represents an important developmental period where early signs of mental ill-health might be detected and intervention could reduce the risk of later mental disorder.

Children and adolescents known to child protection services have a nearly fourfold greater prevalence of mental disorder than the general population, with nearly one in every two maltreated children identified as meeting criteria for a mental disorder when in childhood or adolescence [9]. The proportion of children known to child protection services with mental health difficulties may be even higher than documented, as many children do not receive appropriate mental health services [10]. In a sample of children entering OOHC in the United States (US), 61% screened above the clinical cut-off for at least one behavioural health screening measure [11]. Children known to child protection services are also more likely to screen above clinical cut-offs for both internalising and externalising symptoms [5] relative to children with no such contact, and externalising symptoms seem to be particularly prominent [12–14].

Less attention has been given to emergent psychotic symptoms in children known to child protection services, despite the knowledge that childhood maltreatment is an important risk factor for psychotic disorders [15, 16]. Psychotic-Like Experiences (PLEs), referring to isolated hallucination- or delusional-like experiences, are relatively common in middle childhood [17], and are a replicated risk factor for later psychotic and other disorders [18, 19]. Children who have experienced trauma (including, but not limited to, maltreatment) are more likely to report PLEs in middle childhood, even when controlling for gender, socioeconomic status, IQ, internalising and externalising difficulties and genetic liability for psychosis [20], and the cessation of traumatic experiences seem to be related to a decrease in the incidence of PLEs [21]. Further, children with substantiated records of childhood maltreatment are more likely to report PLEs at 21 years old and have an increased risk of meeting diagnostic criteria for psychosis [22]. However, relatively little is known about the relationship between different levels of contact with child protection services and PLEs in middle childhood.

Few studies have investigated how children's mental health needs vary depending on the level of child protection response, with most research focused solely on children with substantiated records of maltreatment [23]. It has been suggested that there is little difference between children with substantiated and unsubstantiated cases in terms of existing risk factors or future risk of maltreatment [24]. Children with unsubstantiated reports may be equally at risk of adverse behavioural and developmental outcomes to children with substantiated reports [23, 25]. A further distinction is between children who have been placed in OOHC, versus those who remain in their homes despite substantiated records of maltreatment. Some have argued that a stable OOHC placement can improve mental health outcomes, whilst in-home care can worsen a child's mental health if the child remains in the traumatic home environment [26]. Conversely, others have argued that OOHC is inherently disruptive and traumatic, creating harm to children [27]. Empirical findings on these issues are mixed, with two meta-analyses finding little evidence of differences in various developmental, health, and well-being outcomes between these two groups [28, 29]. Recent evidence from a large population cohort in Australia, however, has shown that the prevalence of mental disorder in childhood increased according to levels of child protection response, with children in OOHC having the highest prevalence of mental disorder and children with unsubstantiated reports the lowest [30]. Notably, entry into OOHC may serve as a gateway to mental health services [31, 32], with children in OOHC twice as likely to use mental health services as children who remain at home [33]. Whether differences in mental health outcomes between children with varying levels of contact with child protection reflect real differences in underlying rates of mental health difficulties or disparities in service utilisation is therefore unknown. Clarifying the mental health needs of all children in contact with child protection services by using self-report data that is not reliant on contact with the health-care system is therefore important for effective targeting of resources according to different levels of involvement with child protection services.

Using record linkage data for a large population cohort of children ($n \sim 27{,}000$) being followed longitudinally within the New South Wales Child Development Study (NSW-CDS) [34, 35], this study aimed to examine associations between levels of child protection response received before the age of 10 years and self-reported psychopathology assessed using a cross-sectional survey administered in middle childhood (age 11 years) [36]. Child protection contact was determined from linked administrative data and was categorised into four mutually exclusive levels: OOHC, substantiated reports, unsubstantiated reports, and non-threshold reports. We predicted that children with any contact with child protection services would report higher rates of clinically significant levels of internalising and externalising difficulties, and higher rates of psychotic-like experiences, compared to children with no previous contact with child protection services. Further, we hypothesised that children who had been placed in OOHC would have the highest likelihood of reporting mental health difficulties, followed by children with substantiated reports, then children with unsubstantiated reports, and children with reports that were

determined not to meet the threshold for risk-of-significant harm expected to have the lowest likelihood.

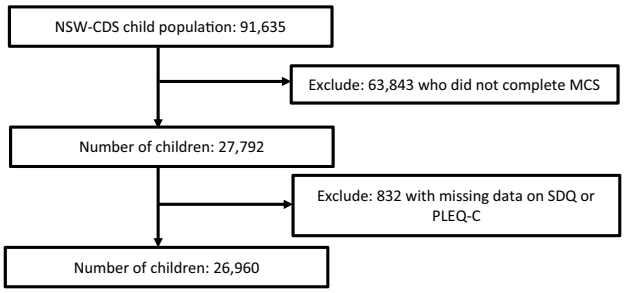
Methods

Study setting and record linkage

Data for this study were drawn from Wave 2 of the New South Wales-Child Development Study (NSW-CDS; http://nsw-cds.com.au/), an Australian longitudinal, multigenerational, population linkage study that combines administrative records from several government agencies with cross-sectional survey data [35]. Record linkage of multi-agency data for child and parent cohorts of the NSW-CDS was conducted by the NSW Centre for Health Record Linkage (CHeReL; www.cherel.org.au) using probabilistic record linkage methods across a set of identifiers, with ethical approval from the NSW Population and Health Services Research Ethics Committee (reference, HREC/15/CIPHS/21). The estimated false-positive linkage rate was < 0.5% [35]. The Wave 2 linkage was conducted in 2016 for 91,635 children, including 27,792 children who completed the Middle Childhood Survey (MCS), a self-report survey of psychosocial and behavioural functioning [36]. The MCS was administered in 2015 to children in their final year of primary school (6th-grade) in 829 NSW schools (35% of eligible schools). Children with special needs were able to complete the MCS with the help of their normal classroom support and/or an audio recording of the survey. The MCS was completed by 31.4% of year 6 children enrolled in NSW at the time [36]. In the present study, we use data from the MCS in combination with linked data from the NSW Registry of Births, Deaths and Marriages (birth registrations 2000–2006), and the NSW Department of Communities and Justice Case Management System—Key Information Directory System (2000–2014).

Participants

Analyses were conducted using data for 26,960 children from the NSW-CDS cohort [34, 35], representing those with all data available on the measures of interest in the MCS (see Fig. 1). The mean age of children at the time of the MCS was 11.9 years (SD=0.38 years). Of the 26,960 children, 7.0% completed the MCS with the assistance of an adult and/or an audio recording. 12.6% of children primarily spoke a language other than English at home.



Note. NSW-CDS: New South Wales-Child Developmental Study; MCS: Middle Childhood Survey; SDQ: Strengths and Difficulties Questionnaire; PLEQ-C: Psychotic-Like Experiences Questionnaire for Children.

Fig. 1 Sample Selection Procedure

Measures

Level of child protection response (by 10 years of age)

Child protection contact (up to the child's age of 10 years) was classified according to the highest level of child protection response based on information available in the NSW Department of Communities and Justice Case Management System—Key Information Directory System (i.e., data spanning 2000-2014) [35, 37]. Each child was assigned to their highest level of child protection response in a hierarchical (mutually exclusive) fashion, with OOHC considered the highest level of response, and reports that did not meet the threshold for risk-of-significant harm (ROSH) the lowest. Levels of child protection contact were: (1) OOHC: Child is placed in care outside of the family home. This was deemed the highest service response as it likely reflects the most severe forms of maltreatment or inability of the family to continue caring for the child; (2) substantiated ROSH report: a report of risk or actual harm that is verified by a caseworker but does not result in removal of the child from the family home. Children were deemed at ROSH if the circumstances causing concern for their safety, welfare or wellbeing were sufficiently serious to warrant a response by a statutory authority, with or without familial consent; (3) unsubstantiated ROSH report: includes reports that initially met the threshold of risk of significant harm, but were not verified during follow-up by the caseworker, or the report was not further investigated because of resource constraints; and (4) non-threshold ROSH report: A report that was determined not to reach the threshold for risk-of-significant harm.

Self-reported psychopathology in middle childhood (age 11 years)

Strengths and difficulties questionnaire (SDQ)

The self-report version of the SDQ is a 25-item questionnaire used to screen internalising and externalising psychopathology in general population samples during childhood and adolescence (ages 11–17 years) [38, 39]. The SDQ contains five subscales: emotional symptoms, conduct problems, hyperactivity-inattention, peer relationship problems, and prosocial behaviour. Reponses are made on a 3-point scale (0 = not true, 1 = somewhat true, and 2 = certainly true), and higher scores indicate more difficulties, except for the prosocial scale where lower scores indicate more difficulties. The four subscales assessing psychopathology (emotional symptoms, conduct problems, hyperactivity-inattention, and peer relationship problems) can be summed to generate a total difficulties score (range 0–40).

To aid interpretability, we used the ternary categorisation of SDQ, where the total difficulties score and all five subscales were categorised using scoring metrics based on UK population norms into abnormal (score in top ~ 10% of the population), borderline (next ~ 10%) and normal (bottom ~ 80%) bands [40]. The self-report version of the SDQ displays good psychometric properties and has good interrater correlations with parent and teacher versions compared to other similar measures [40] The abnormal category displays good criterion validity for mental health disorder diagnosis and is predictive of psychopathology six years later [41, 42].

psychotic-like experiences questionnaire for children (PLEQ-C)

PLEs were assessed using the 9-item PLEQ-C [17, 43]. The PLEQ-C includes two hallucination and seven delusion items that are rated on a 3-point scale (0 = not true, 1 = somewhat true, 2 = certainly true). The PLEQ-C has excellent ordinal alpha reliability ($\alpha = 0.90$) [36] and displays good criterion validity with PLEs determined by interview [44]. In line with the categorisation of the SDQ responses, we summed the total score on the PLEQ-C (range 0–18) and categorised scores into abnormal (score in top ~ 10% of the population), borderline (next ~ 10%) and normal (bottom ~ 80%) bands. Previous research has found the use of a cut-off score (endorsing 2 or more of 7 items) on a PLE screening questionnaire to have good sensitivity and specificity for predicting interview validated psychotic symptoms [45].

Covariates

Child's sex, Aboriginal and Torres Strait Islander (Indigenous) status, and socio-economic disadvantage were included as covariates in adjusted models. Childs' sex was determined from MCS records. Indigenous status was determined on the basis of either the child or their parent(s) being designated as of Aboriginal and Torres Strait Islander background among any available record in the NSW-CDS collection (yes/no) [35]. Socio-economic disadvantage was based on the child's home postcode collected within the MCS, and a binary indicator was defined by the bottom two quintiles in the 2011 Socio-economic Indexes for Areas, using the Index for Relative Socio-economic Disadvantage (SEIFA IRSD) developed by the Australian Bureau of Statistics [46].

Data analysis

Data analysis was conducted using SPSS Version 26 [47]. A series of unadjusted and adjusted multinomial logistic regression analyses were used to estimate associations between the four levels of child protection contact before 10 years of age (relative to no child protection contact), and mental health difficulties at age 11 years (categorised as normal, borderline, or abnormal for each of six independent domains and the SDQ total difficulties score). Analyses resulted in odds ratios (ORs) with 95% confidence intervals (CIs) as measures of effect size. ORs of 1.00–1.49 (or 1.0–0.67) were interpreted as small, 1.50–2.49 (or 0.66–0.40) as medium and 2.50 (or < 0.40) and more as large [48]. Groups were compared in terms of point estimates, and whether 95% confidence intervals were non-overlapping as a means of indicating distinctions between groups in their association with childhood mental health difficulties [49].

Results

Descriptive statistics for the cohort are presented in Table 1. Of the 26,960 children included in analyses, 21.3% had at least one instance of contact with child protection services. Of children with any contact with child protection services, 41.2% were categorised as having *abnormal* levels of difficulties in at least one of the mental health domains measured, compared to 28.1% of children with no child protection contact (Table 2). The proportion of children with at least one *abnormal* categorisation in any domain was greatest for children who had been placed in OOHC (48.1%), followed by those with substantiated ROSH reports (45.6%), those with unsubstantiated ROSH reports (40.4%), and those with non- ROSH reports (36.0%).

Table 1 Prevalence of child protection service contacts, SDQ and PLEQ-C outcomes, and covariates

Characteristic	Number of Children
Total Number of Children	26,960
Contact with child protection service	
Any report	5754 (21.3%)
No report	21,206 (78.7%)
Level of child protection contact during early childhood	
Out-of-home care	551 (2.0%)
Substantiated ROSH report	834 (3.1%)
Unsubstantiated ROSH report	3491 (12.9%)
Non-ROSH report	878 (3.3%)
SDQ response	
Emotional symptoms	
Normal	22,806 (84.6%)
Borderline	1735 (6.4%)
Abnormal	2419 (9.0%)
Conduct problems	
Normal	22,456 (83.3%)
Borderline	2082 (7.7%)
Abnormal	2422 (9.0%)
Hyperactivity	
Normal	21,035 (78.0%)
Borderline	2558 (9.5%)
Abnormal	3367 (12.5%)
Peer relationship problems	
Normal	21,919 (81.3%)
Borderline	3706 (13.7%)
Abnormal	1335 (5.0%)
Prosocial	
Normal	24,455 (90.7%)
Borderline	1502 (5.6%)
Abnormal	1001 (3.7%)
Total Difficulties Score	
Normal	21,551 (79.9%)
Borderline	3107 (11.5%)
Abnormal	2302 (8.5%)
PLEQ-C Response	
Psychotic-like experiences	
Normal	21,625 (80.2%)
Borderline	2947 (10.9%)
Abnormal	2388 (8.9%)
Covariates	
Aboriginal Torres Strait Islander (Indigenous) Status	1124 (4.2%)
Socio-economic Disadvantage	9380 (34.8%)
Sex (Male)	13,563 (50.3%)

ROSH Risk-of-significant-harm, *SDQ* Strengths and Difficulties Questionnaire, *PLEQ-C* Psychotic-Like Experiences Questionnaire for Children

Table 2 Number (%) of children reporting abnormal or borderline levels of mental health difficulties in middle childhood according to any child protection contact and highest level of child protection response

	Child Protection Contact		Highest Child Protection Level			
	No report	Any report	Non-ROSH report	Unsubstantiated ROSH report	Substantiated ROSH report	Out-of-home care
Number of children	21,206	5754	878	3491	834	551
Abnormal[1]	5960 (28.1%)	2372 (41.2%)	316 (36.0%)	1411 (40.4%)	380 (45.6%)	265 (48.1%)
Abnormal or borderline[2]	10,597 (50.0%)	3647 (63.4%)	499 (56.8%)	2207 (63.2%)	555 (66.5%)	386 (70.1%)
Aboriginal Torres Strait Islander (Indigenous) Status	25 (0.1%)	1099 (19.1%)	79 (8.8%)	555 (15.8%)	246 (29.4%)	219 (39.7%)
Socio-economic Disadvantage	6640 (31.5%)	2828 (49.1%)	346 (39.4%)	1855 (53.1%)	357 (42.8%)	270 (49.0%)
Male	10,677 (50.3%)	2886 (50.1%)	417 (47.5%)	1789 (51.2%)	400 (48.0%)	280 (50.8%)

ROSH Risk-of-significant-harm

[1]Number of children that reported abnormal levels of mental health difficulties in at least one of the six measured mental health domains (emotional symptoms, conduct problems, hyperactivity-inattention, peer relationship problems, prosocial behaviour, or psychotic-like experiences)

[2]Number of children that reported either abnormal *or* borderline levels of mental health difficulties in at least one of the six measured mental health domains

Level of child protection service response and self-reported mental health

Internalising and externalising difficulties

The odds of children reporting *borderline* or *abnormal* levels of internalising and externalising difficulties were increased for children who had been in contact with child protection services compared to children who had not, in both unadjusted (Table 3) and adjusted (Table 4) models. Effect sizes for the associations between child protection contact and borderline/abnormal levels of mental health difficulties were small to medium for the emotional symptoms, hyperactivity-inattention, and prosocial behaviour

Table 3 Unadjusted association between highest child protection level and self-reported psychopathology

Self-reported Psychopathology		Highest Child Protection Level			
		Non-ROSH report	Unsubstantiated ROSH report	Substantiated ROSH report	Out-of-home care
SDQ Response					
Emotional Symptoms	Borderline	1.56 (1.22–2.00)	1.57 (1.37–1.79)	1.33 (1.01–1.74)	1.64 (1.21–2.22)
	Abnormal	1.81 (1.48–2.22)	1.66 (1.49–1.87)	1.93 (1.57–2.37)	1.96 (1.53–2.51)
Conduct Problems	Borderline	1.35 (1.06–1.72)	1.70 (1.51–1.92)	2.31 (1.87–2.86)	2.32 (1.78–3.02)
	Abnormal	1.98 (1.61–2.43)	2.34 (2.10–2.61)	3.22 (2.67–3.87)	4.00 (3.24–4.95)
Hyperactivity—Inattention	Borderline	1.39 (1.12–1.72)	1.30 (1.16–1.47)	1.42 (1.13–1.77)	1.81 (1.41–2.32)
	Abnormal	1.29 (1.05–1.57)	1.65 (1.50–1.82)	1.95 (1.63–2.33)	1.56 (1.23–1.98)
Peer-relationship Problems	Borderline	1.20 (0.99–1.46)	1.74 (1.59–1.92)	1.87 (1.57–2.24)	2.17 (1.76–2.69)
	Abnormal	1.69 (1.29–2.23)	1.96 (1.69–2.27)	2.99 (2.36–3.78)	4.04 (3.11–5.25)
Prosocial Behaviours	Borderline	1.35 (1.03–1.78)	1.45 (1.26–1.67)	1.70 (1.32–2.20)	2.05 (1.53–2.75)
	Abnormal	1.19 (0.83–1.69)	1.55 (1.31–1.84)	1.71 (1.26–2.34)	2.53 (1.83–3.50)
Total Difficulties Score	Borderline	1.37 (1.12–1.69)	1.69 (1.52–1.88)	2.29 (1.90–2.76)	2.69 (2.16–3.34)
	Abnormal	2.24 (2.21–2.76)	2.47 (2.21–2.76)	3.70 (3.07–4.45)	3.60 (2.86–4.53)
PLEQ-C Response					
Psychotic-Like Experiences	Borderline	1.19 (0.96–1.47)	1.32 (1.19–1.48)	1.19 (0.96–1.47)	1.67 (1.32–2.11)
	Abnormal	1.29 (1.04–1.62)	1.33 (1.18–1.50)	1.11 (0.87–1.41)	1.32 (0.99–1.75)

Odds Ratio (95% confidence intervals). Light grey text denotes non-significant values

All variables evaluated against the SDQ category 'normal' and the child protection category 'no child protection contact'

ROSH Risk-of-significant-harm, *SDQ* Strengths and Difficulties Questionnaire, *PLEQ-C* Psychotic-Like Experiences Questionnaire for Children

Table 4 Adjusted association between highest child protection level and self-reported psychopathology

Self-Reported Psychopathology		Highest Child Protection Level				Covariates		
		Non-ROSH report	Unsubstantiated ROSH report	Substantiated ROSH report	Out-of-home care	Male	Socio-economic disadvantage	Aboriginal and Torres Strait Islander
SDQ Response								
Emotional Symptoms	Borderline	1.53 (1.20–1.96)	1.54 (1.34–1.77)	1.27 (0.96–1.68)	1.60 (1.16–2.21)	0.64 (0.58–0.70)	1.18 (1.07–1.31)	1.00 (0.78–1.27)
	Abnormal	1.74 (1.42–2.14)	1.61 (1.42–1.81)	1.75 (1.41–2.17)	1.81 (1.39–2.35)	0.50 (0.46–0.55)	1.16 (1.06–1.27)	1.17 (0.96–1.42)
Conduct Problems	Borderline	1.32 (1.03–1.69)	1.59 (1.40–1.81)	2.09 (1.67–2.61)	2.05 (1.55–2.71)	1.67 (1.53–1.84)	1.25 (1.13–1.37)	1.28 (1.04–1.58)
	Abnormal	1.91 (1.55–2.35)	2.10 (1.88–2.36)	2.75 (2.25–3.34)	3.33 (2.65–4.18)	1.93 (1.76–2.10)	1.44 (1.32–1.58)	1.39 (1.17–1.66)
Hyperactivity—Inattention	Borderline	1.37 (1.11–1.70)	1.25 (1.10–1.42)	1.33 (1.06–1.69)	1.67 (1.29–2.17)	1.36 (1.26–1.48)	1.12 (1.02–1.22)	1.16 (0.94–1.42)
	Abnormal	1.27 (1.04–1.55)	1.58 (1.42–1.75)	1.82 (1.51–2.20)	1.43 (1.11–1.83)	1.47 (1.36–1.58)	1.12 (1.04–1.21)	1.19 (1.00–1.42)
Peer-relationship Problems	Borderline	1.16 (0.95–1.41)	1.63 (1.47–1.80)	1.66 (1.38–2.01)	1.91 (1.52–2.39)	1.15 (1.08–1.24)	1.24 (1.16–1.34)	1.24 (1.05–1.46)
	Abnormal	1.66 (1.26–2.19)	1.89 (1.62–2.20)	2.82 (2.20–3.62)	3.92 (2.97–5.18)	0.99 (0.89–1.11)	1.35 (1.21–1.52)	0.93 (0.73–1.20)
Prosocial Behaviours	Borderline	1.32 (1.00–1.73)	1.30 (1.12–1.52)	1.47 (1.12–1.93)	1.69 (1.23–2.32)	2.54 (2.28–2.85)	1.25 (1.12–1.39)	1.48 (1.17–1.87)
	Abnormal	1.15 (0.80–1.63)	1.37 (1.14–1.64)	1.44 (1.04–2.00)	2.04 (1.44–2.90)	2.50 (2.18–2.87)	1.38 (1.21–1.57)	1.47 (1.12–1.94)
Total Difficulties Score	Borderline	1.33 (1.08–1.64)	1.58 (1.41–1.76)	2.04 (1.68–2.48)	2.36 (1.87–2.97)	1.15 (1.07–1.24)	1.23 (1.14–1.33)	1.26 (1.05–1.51)
	Abnormal	2.14 (1.74–2.62)	2.26 (2.01–2.53)	3.17 (2.61–3.86)	3.06 (2.40–3.91)	1.11 (1.02–1.22)	1.39 (1.27–1.52)	1.28 (1.07–1.54)
PLEQ-C Response								
Psychotic-Like Experiences	Borderline	1.19 (0.96–1.47)	1.33 (1.19–1.49)	1.20 (0.96–1.49)	1.70 (1.33–2.18)	0.92 (0.86–1.00)	1.07 (0.99–1.16)	0.91 (0.75–1.12)
	Abnormal	1.27 (1.02–1.59)	1.30 (1.15–1.48)	1.06 (0.82–1.37)	1.26 (0.93–1.69)	0.90 (0.83–0.98)	1.05 (0.96–1.15)	1.10 (0.88–1.36)

Odds Ratio (95% confidence intervals). Light grey text denotes non-significant values

All variables evaluated against the SDQ category 'normal' and the child protection category 'no child protection contact'

All variables adjusted for covariates (socio-economic disadvantage, Aboriginal and Torres Strait Islander and male) and other listed categories of child protection

ROSH Risk-of-significant-harm, *SDQ* Strengths and Difficulties Questionnaire, *PLEQ-C* Psychotic-Like Experiences Questionnaire for Children

domains, and medium to large for the conduct problems, peer-relationship problems, and total difficulties domains. In general, effect sizes were largest for children with substantiated ROSH reports and children who had been placed in OOHC, with smaller effects for children with unsubstantiated or non-ROSH reports; however, the effect sizes for emotional symptoms were near equal across the four levels of child protection response. In addition, children with substantiated ROSH reports as well as those who had been placed in OOHC had a more than three-fold increased odds of being categorised in the *abnormal* band of total difficulties, compared to those with no child protection contact.

Psychotic-like experiences

Non-ROSH and unsubstantiated ROSH reports were associated with *abnormal* levels of reported PLEs in both unadjusted and adjusted models, while substantiated ROSH reports and OOHC were not associated with *abnormal* levels of PLEs. Effect sizes were small for the associations between non-ROSH and unsubstantiated ROSH reports with *abnormal* levels of PLEs. *Borderline* levels of PLEs were associated with unsubstantiated ROSH reports, and placement in OOHC, but not with non-threshold or substantiated ROSH reports.

Covariates

In adjusted models, male sex was associated with increased odds of being categorised as borderline or abnormal in all measured mental health domains, except for emotional symptoms and psychotic experiences which were more common in females. Socio-economic disadvantage and Indigenous status were associated with increased odds of borderline or abnormal categorisation in nearly all mental health domains, with small effect sizes.

Discussion

In a large cohort of Australian children, we examined associations between increasing levels of child protection contact before the age of 10 years, and self-reported mental health at age 11 years. In unadjusted models, all levels of contact with child protection services were associated with a greater likelihood of being categorised as abnormal (i.e., being in the top 10% of responders) in the mental health domains measured, consistent with hypotheses. When associations were adjusted for sex, socio-economic disadvantage, and Indigenous status, the strength of associations was attenuated slightly but the direction and patterns of associations did not change. Findings of associations between child protection contact and adverse mental health outcomes at age 11 years are consistent with a previous study in the US indicating adverse effects of child maltreatment on middle childhood mental health [7]. That the effects of childhood maltreatment on mental health were already evident by middle childhood supports a previous investigation indicating that child maltreatment had immediate effects on adverse behavioural and developmental outcomes [6].

Contrary to our hypotheses about the relationships between level of contact with child protection services and mental health outcomes (where we expected children placed in OOHC would have the highest odds of mental health difficulties), children with substantiated ROSH reports generally showed similar odds of mental health difficulties as children placed in OOHC. Some domains (peer-relationship problems, prosocial behaviours, and conduct problems) were more strongly related to OOHC (95% confidence intervals were not overlapping, suggesting significant differences between groups in the prevalence of these mental health difficulties [49]), and other domains (hyperactivity-inattention, total difficulties) were slightly more strongly related to substantiated ROSH reports (although formal statistical comparisons between child protection subgroups were not undertaken). These findings thus provide further mixed results as to whether children in OOHC experience more mental health difficulties than other maltreated children [28, 29]. While our previous findings reported for the broader NSW-CDS cohort (i.e., not limited to the ~ 30% who completed the MCS) showed that children in OOHC had higher odds of being diagnosed with a mental disorder than children with substantiated reports [30], the different pattern of findings reported here for self-reported mental health difficulties versus diagnostic information obtained from health records may in part reflect NSW policy directives that mandate health screening for children in OOHC [50]. As such, the increased exposure of children in OOHC to health services may increase the rate of mental disorder diagnosis, as evident in health records. Alternatively, it is possible that children with substantiated ROSH reports have more subthreshold symptoms of mental health problems but are less likely than children in OOHC to have a significant functional impairment that would result in a formal diagnosis.

Children with unsubstantiated ROSH reports, and reports that were determined not to meet the threshold for ROSH, each had higher odds of reporting borderline or abnormal levels of mental health difficulties compared to children with no contact with children protection services. Effect sizes for the relationship of mental health with unsubstantiated or non-ROSH reports were generally slightly smaller than for children who had been placed in OOHC or had a substantiated ROSH report, with the exception of emotional symptoms and PLEs where the point estimates were relatively consistent in size across the different levels of reports. Previous research has found little difference in behavioural and developmental outcomes between children with substantiated and unsubstantiated reports [23, 25], though the usage of these terms often varies between agencies (since substantiation refers to a process of validating events in line with a particular agency's standards [51]), making it difficult to directly compare findings across studies from different jurisdictions. Despite this, our findings extend previous research by further differentiating between unsubstantiated ROSH reports (reports that met the threshold for risk of significant harm but where harm or risk of harm was not determined or not followed up) and non-ROSH reports (reports that did not meet the threshold for risk of significant harm). The odds of reporting mental health difficulties were generally equivalent for children with unsubstantiated ROSH and non-ROSH reports, showing that even when children are judged not to be at risk of significant harm, they are still at risk of adverse mental health outcomes. As children with unsubstantiated ROSH and non-ROSH reports made up a significant proportion of our sample (12.9% and 3.3% respectively), the current findings highlight that these children represent a large and potentially under-served population vulnerable for mental health problems.

Relationships between child protection contacts and mental health outcomes were relatively consistent across the six mental health domains measured here. The largest effects were seen for peer-relationship problems and conduct problems, with smaller effects for emotional symptoms, prosocial behaviours, hyperactivity-inattention, and psychotic-like experiences. Child protection contact thus seems to be broadly associated with mental health difficulties, rather than being specific to a certain type of mental health problem, consistent with previous research [4, 52]. The finding that PLEs in middle childhood are associated with most types of child protection contact is consistent with previous reports of contact with child protection services being associated with hallucinations and delusions at age 21 years [22], suggesting that that child protection is associated with psychotic experiences emerging at multiple early life stages. The implications of these findings in relation to the development of future psychotic disorders are unclear, given that the significance of PLEs in adolescence and childhood is not well understood. PLEs are thought to exist on a continuum with the clinical disorder [53], and children who report PLEs are at increased risk of psychotic disorders in adulthood [18, 19]. However, the majority of PLEs are transitory [53], and maybe more broadly related to distress [54, 55]. In the present study, PLEs were very common, with only 12.5% of children endorsing not true to all nine items. Results for PLEs were similar in pattern to those for emotional symptoms (i.e., distress) in that they were more common in females than males, and the effect sizes for the relationship with child protection were small. It is possible that PLEs are primarily indexing general psychological distress rather than specifically psychosis-proneness.

Our results should not be interpreted as implying that contact with child protection services is causing mental health problems, but rather, the factors (e.g., maltreatment, relational difficulties) that led to contact with child protection services are likely to be associated with mental health difficulties. Disentangling the effects of the specific level of child protection contact from the differences in circumstances that led to the different levels of contact is beyond the scope of the current study, therefore our findings should not be interpreted as implying that one type of service response is optimal relative to others. Instead, these results can be taken to provide descriptive information about the mental health difficulties experienced by children with differing levels of contact with child protection, for the purpose of ensuring that all children with increased vulnerability for mental health problems in middle childhood receive appropriate supports.

Strengths of this study include the use of administrative child protection data, which circumvents recall or interviewer biases, in combination with a self-report measure of mental health. The use of self-reported information about mental health problems is an advantage in this age group since the proportion of young people with mental disorders utilising mental health services is low [56], and diagnosis of mental health disorder relies on factors peripheral to the symptoms themselves (e.g., access to appropriate health professionals) [57]. The administration of a mental health screening tool to an unselected population of children also reduces selection bias and captures additional variance (i.e., symptoms that would not meet the threshold for disorder), thus providing a fuller picture of the mental health of the general population. Other strengths include the longitudinal design, large sample size, and the representativeness of the NSW-CDS cohort (and MCS sub-sample) to the NSW population [34–36].

Limitations include not accounting for specific characteristics of child protection contacts, such as the type, severity, or duration of maltreatment. These factors may influence the type and severity of subsequent mental health outcomes [58]. In addition, the characteristics of OOHC placements (e.g., carer type) have been proposed to influence the mental health outcomes of children within that subgroup [59]. Further, while self-reporting of mental health problems is valuable, especially in the case of internalising difficulties where symptoms may not necessarily be apparent to observers, in some cases children may have limited insight into their own symptoms; thus, sole reliance on self-report for measuring mental health outcomes can also be seen as a limitation. Utilising multiple informants would likely strengthen conclusions [60]. Children with lower English proficiency or disabilities affecting reading or communication may have had difficulty with comprehension of the MCS questions leading to inaccurate responding, though steps were taken to mitigate this possibility (i.e., children were able to have an adult helper and/or audio track to assist with survey completion). Lastly, children who had child protection contact after (but not before) age 10 years were included in the reference group, along with children who had experienced maltreatment but had not been reported to child protection services; if these children were excluded from analyses, associations between variables would likely be stronger.

In conclusion, this large population-based study shows that children with any contact with child protection services were more likely, than children with no contact, to self-report mental health difficulties in middle childhood, regardless of whether the report was substantiated or not. This effect extended to a broad range of psychopathology, including internalising and externalising difficulties, and psychotic-like experiences. Children with substantiated ROSH reports and children who had been placed in OOHC care were the most likely to report abnormal levels of mental health difficulties. Children with unsubstantiated ROSH

and non-ROSH reports had smaller, but still increased odds of reporting mental health difficulties compared to children with no contact with child protection. Given that 21% of the children in our sample had contact with child protection services, these findings highlight that early identification and preventative efforts for children at risk of maltreatment could potentially be useful to reduce the burden of mental health problems in the population.

Acknowledgements This research used population data owned by the New South Wales (NSW) Department of Communities and Justice and NSW Registry of Births, Deaths and Marriages. The findings and views reported are those of the authors and should not be attributed to these Departments or the NSW and Australian Government. The record linkage was conducted by the Centre for Health and Record Linkage.

Funding This research was conducted by the University of New South Wales (UNSW, Sydney) with financial support from the Australian Research Council (Linkage Project LP110100150, with the NSW Ministry of Health, NSW Department of Education, and the NSW Department of Communities and Justice representing the Linkage Project Partners; Discovery Project DP170101403; and Future Fellowship [FT170100294 awarded to KRL]); the National Health and Medical Research Council (NHMRC Project Grants APP1058652 and APP1148055 and NHMRC Partnership Project APP1133833).

Declarations

Conflict of interest The authors declare that they have no conflict of interest.

Ethical approval This research has been approved by the NSW Population and Health Services Research Ethics Committee (reference, HREC/15/CIPHS/21) and has therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki and its later amendments.

References

1. Carr A, Duff H, Craddock F (2018) A systematic review of reviews of the outcome of noninstitutional child maltreatment. Trauma Violence Abuse 21(4):828–843. https://doi.org/10.1177/1524838018801334
2. Kisely S, Abajobir AA, Mills R, Strathearn L, Clavarino A, Najman JM (2018) Child maltreatment and mental health problems in adulthood: Birth cohort study. Br J Psychiatry 213(6):698–703. https://doi.org/10.1192/bjp.2018.207
3. Kisely S, Strathearn L, Najman JM (2020) Child maltreatment and mental health problems in 30-year-old adults: A birth cohort study. J Psychiatr Res 129:111–117. https://doi.org/10.1016/j.jpsychires.2020.06.009
4. Carr CP, Martins CMS, Stingel AM, Lemgruber VB, Juruena MF (2013) The role of early life stress in adult psychiatric disorders: a systematic review according to childhood trauma subtypes. J Nerv Ment Dis. https://doi.org/10.1097/NMD.0000000000000049
5. Burns BJ, Phillips SD, Wagner HR, Barth RP, Kolko DJ, Campbell Y, Landsverk J (2004) Mental health need and access to mental health services by youths involved with child welfare: a national survey. J Am Acad Child Adolesc Psychiatry 43(8):960–970. https://doi.org/10.1097/01.chi.0000127590.95585.65
6. Font SA, Berger LM (2015) Child maltreatment and children's developmental trajectories in early to middle childhood. Child Dev 86(2):536–556. https://doi.org/10.1111/cdev.12322
7. Hunt TKA, Slack KS, Berger LM (2017) Adverse childhood experiences and behavioral problems in middle childhood. Child Abuse Negl 67:391–402. https://doi.org/10.1016/j.chiabu.2016.11.005
8. Kim-Cohen J, Caspi A, Moffitt TE, Harrington H, Milne BJ, Poulton R (2003) Prior juvenile diagnoses in adults with mental disorder: Developmental follow-back of a prospective-longitudinal cohort. Arch Gen Psychiatry 60(7):709–717. https://doi.org/10.1001/archpsyc.60.7.709
9. Bronsard G, Alessandrini M, Fond G, Loundou A, Auquier P, Tordjman S, Boyer L (2016) The prevalence of mental disorders among children and adolescents in the child welfare system: a systematic review and meta-analysis. Medicine 95(7):e2622–e2622. https://doi.org/10.1097/MD.0000000000002622
10. Horwitz SM, Hurlburt MS, Goldhaber-Fiebert JD, Heneghan AM, Zhang J, Rolls-Reutz J, Fisher E, Landsverk J, Stein REK (2012) Mental health services use by children investigated by child welfare agencies. Pediatrics 130(5):861. https://doi.org/10.1542/peds.2012-1330
11. Pullmann MD, Jacobson J, Parker E, Cevasco M, Uomoto JA, Putnam BJ, Benshoof T, Kerns SEU (2018) Tracing the pathway from mental health screening to services for children and youth in foster care. Child Youth Serv Rev 89:340–354. https://doi.org/10.1016/j.childyouth.2018.04.038
12. Schmid M, Goldbeck L, Nuetzel J, Fegert JM (2008) Prevalence of mental disorders among adolescents in german youth welfare institutions. Child Adolesc Psychiatry Ment Health. https://doi.org/10.1186/1753-2000-2-2
13. Vanschoonlandt F, Vanderfaeillie J, Van Holen F, De Maeyer S, Robberechts M (2013) Externalizing problems in young foster children: prevalence rates, predictors and service use. Child Youth Serv Rev 35(4):716–724. https://doi.org/10.1016/j.childyouth.2013.01.015
14. Matheson SL, Kariuki M, Green MJ, Dean K, Harris F, Tzoumakis S, Tarren-Sweeney M, Brinkman S, Chilvers M, Sprague T, Carr VJ, Laurens KR (2017) Effects of maltreatment and parental schizophrenia spectrum disorders on early childhood social-emotional functioning: a population record linkage study. Epidemiol Psychiatr Sci 26(6):612–623. https://doi.org/10.1017/S204579601600055X
15. Matheson SL, Shepherd AM, Pinchbeck RM, Laurens KR, Carr VJ (2013) Childhood adversity in schizophrenia: a systematic meta-analysis. Psychol Med 43(2):225–238. https://doi.org/10.1017/S0033291712000785
16. Varese F, Smeets F, Drukker M, Lieverse R, Lataster T, Viechtbauer W, Read J, van Os J, Bentall RP (2012) Childhood adversities increase the risk of psychosis: a meta-analysis of patient-control, prospective- and cross-sectional cohort studies. Schizophr Bull 38(4):661–671. https://doi.org/10.1093/schbul/sbs050
17. Laurens KR, Hobbs MJ, Sunderland M, Green MJ, Mould GL (2012) Psychotic-like experiences in a community sample of 8000 children aged 9 to 11 years: an item response theory analysis. Psychol Med 42(7):1495–1506. https://doi.org/10.1017/s0033291711002108
18. Fisher HL, Caspi A, Poulton R, Meier MH, Houts R, Harrington H, Arseneault L, Moffitt TE (2013) Specificity of childhood psychotic symptoms for predicting schizophrenia by 38 years of age: a birth cohort study. Psychol Med 43(10):2077–2086. https://doi.org/10.1017/S0033291712003091
19. Poulton R, Caspi A, Moffitt TE, Cannon M, Murray R, Harrington H (2000) Children's self-reported psychotic symptoms and adult schizophreniform disorder: a 15-year longitudinal study. Arch Gen

Psychiatry 57(11):1053–1058. https://doi.org/10.1001/archpsyc.57.11.1053
20. Arseneault L, Cannon M, Fisher HL, Polanczyk G, Moffitt TE, Caspi A (2011) Childhood trauma and children's emerging psychotic symptoms: a genetically sensitive longitudinal cohort study. Am J Psychiatry 168(1):65–72. https://doi.org/10.1176/appi.ajp.2010.10040567
21. Kelleher I, Keeley H, Corcoran P, Ramsay H, Wasserman C, Carli V, Sarchiapone M, Hoven C, Wasserman D, Cannon M (2013) Childhood trauma and psychosis in a prospective cohort study: cause, effect, and directionality. Am J Psychiatry 170(7):734–741. https://doi.org/10.1176/appi.ajp.2012.12091169
22. Abajobir AA, Kisely S, Scott JG, Williams G, Clavarino A, Strathearn L, Najman JM (2017) Childhood maltreatment and young adulthood hallucinations, delusional experiences, and psychosis: a longitudinal study. Schizophr Bull 43(5):1045–1055. https://doi.org/10.1093/schbul/sbw175
23. Leiter J, Myers KA, Zingraff MT (1994) Substantiated and unsubstantiated cases of child maltreatment: do their consequences differ? Soc Work Res 18(2):67–82. https://doi.org/10.1093/swr/18.2.67
24. Kohl PL, Jonson-Reid M, Drake B (2009) Time to leave substantiation behind: findings from a national probability study. Child Maltreat 14(1):17–26. https://doi.org/10.1177/1077559508326030
25. Hussey JM, Marshall JM, English DJ, Knight ED, Lau AS, Dubowitz H, Kotch JB (2005) Defining maltreatment according to substantiation: distinction without a difference? Child Abuse Negl 29(5):479–492. https://doi.org/10.1016/j.chiabu.2003.12.005
26. Conn A-M, Szilagyi MA, Jee SH, Blumkin AK, Szilagyi PG (2015) Mental health outcomes among child welfare investigated children: in-home versus out-of-home care. Child Youth Serv Rev 57:106–111. https://doi.org/10.1016/j.childyouth.2015.08.004
27. Font SA, Gershoff ET (2020) Foster care as a problem and a solution. In: Font SA, Gershoff ET (eds) Foster care and best interests of the child: integrating research, policy, and practice. Springer International Publishing, Cham, pp 39–58. https://doi.org/10.1007/978-3-030-41146-6_3
28. Goemans A, van Geel M, van Beem M, Vedder P (2016) Developmental outcomes of foster children: a meta-analytic comparison with children from the general population and children at risk who remained at home. Child Maltreat 21(3):198–217. https://doi.org/10.1177/1077559516657637
29. Maclean MJ, Sims S, O'Donnell M, Gilbert R (2016) Out-of-home care versus in-home care for children who have been maltreated: a systematic review of health and wellbeing outcomes. Child Abus Rev 25(4):251–272. https://doi.org/10.1002/car.2437
30. Green MJ, Hindmarsh G, Kariuki M, Laurens KR, Neil AL, Katz I, Chilvers M, Harris F, Carr VJ (2020) Mental disorders in children known to child protection services during early childhood. Med J Aust 212(1):22–28. https://doi.org/10.5694/mja2.50392
31. Bellamy JL, Gopalan G, Traube DE (2010) A national study of the impact of outpatient mental health services for children in long-term foster care. Clin Child Psychol Psychiatry 15(4):467–479. https://doi.org/10.1177/1359104510377720
32. Stiffman AR, Pescosolido B, Cabassa LJ (2004) Building a model to understand youth service access: the gateway provider model. Ment Health Serv Res 6(4):189–198. https://doi.org/10.1023/B:MHSR.0000044745.09952.33
33. Leslie LK, Hurlburt MS, James S, Landsverk J, Slymen DJ, Zhang J (2005) Relationship between entry into child welfare and mental health service use. Psychiatr Serv 56(8):981–987. https://doi.org/10.1176/appi.ps.56.8.981
34. Carr VJ, Harris F, Raudino A, Luo L, Kariuki M, Liu E, Tzoumakis S, Smith M, Holbrook A, Bore M, Brinkman S, Lenroot R, Dix K, Dean K, Laurens KR, Green MJ (2016) New South Wales Child Development Study (NSW-CDS): an Australian multiagency, multigenerational, longitudinal record linkage study. BMJ Open 6(2):e009023. https://doi.org/10.1136/bmjopen-2015-009023
35. Green MJ, Harris F, Laurens KR, Kariuki M, Tzoumakis S, Dean K, Islam F, Rossen L, Whitten T, Smith M, Holbrook A, Bore M, Brinkman S, Chilvers M, Sprague T, Stevens R, Carr VJ (2018) Cohort profile: the New South Wales Child Development Study (NSW-CDS)—Wave 2 (child age 13 years). Int J Epidemiol 47(5):1396–1397k. https://doi.org/10.1093/ije/dyy115
36. Laurens KR, Tzoumakis S, Dean K, Brinkman SA, Bore M, Lenroot RK, Smith M, Holbrook A, Robinson KM, Stevens R, Harris F, Carr VJ, Green MJ (2017) The 2015 Middle Childhood Survey (MCS) of mental health and well-being at age 11 years in an Australian population cohort. BMJ Open 7(6):e016244. https://doi.org/10.1136/bmjopen-2017-016244
37. Rossen L, Tzoumakis S, Kariuki M, Laurens KR, Butler M, Chilvers M, Harris F, Carr VJ, Green MJ (2019) Timing of the first report and highest level of child protection response in association with early developmental vulnerabilities in an Australian population cohort. Child Abuse Negl 93:1–12. https://doi.org/10.1016/j.chiabu.2019.04.007
38. Goodman R (1997) The strengths and difficulties questionnaire: a research note. J Child Psychol Psychiatry 38(5):581–586. https://doi.org/10.1111/j.1469-7610.1997.tb01545.x
39. Goodman R (2001) Psychometric properties of the strengths and difficulties questionnaire. J Am Acad Child Adolesc Psychiatry 40(11):1337–1345. https://doi.org/10.1097/00004583-200111000-00015
40. Goodman R, Meltzer H, Bailey V (1998) The strengths and difficulties questionnaire: a pilot study on the validity of the self-report version. Eur Child Adolesc Psychiatry 7(3):125–130. https://doi.org/10.1007/s007870050057
41. Becker A, Rothenberger A, Sohn A, Bsg T (2015) Six years ahead: a longitudinal analysis regarding course and predictive value of the strengths and difficulties questionnaire (SDQ) in children and adolescents. Eur Child Adolesc Psychiatry 24(6):715–725. https://doi.org/10.1007/s00787-014-0640-x
42. Goodman A, Goodman R (2009) Strengths and difficulties questionnaire as a dimensional measure of child mental health. J Am Acad Child Adolesc Psychiatry 48(4):400–403. https://doi.org/10.1097/CHI.0b013e3181985068
43. Laurens KR, Hodgins S, Maughan B, Murray RM, Rutter ML, Taylor EA (2007) Community screening for psychotic-like experiences and other putative antecedents of schizophrenia in children aged 9–12 years. Schizophr Res 90(1):130–146. https://doi.org/10.1016/j.schres.2006.11.006
44. Gutteridge TP, Lang CP, Turner AM, Jacobs BW, Laurens KR (2020) Criterion validity of the psychotic-like experiences questionnaire for children (PLEQ-C). Schizophr Res 220:78–84. https://doi.org/10.1016/j.schres.2020.03.067
45. Kelleher I, Harley M, Murtagh A, Cannon M (2011) Are screening instruments valid for psychotic-like experiences? A validation study of screening questions for psychotic-like experiences using in-depth clinical interview. Schizophr Bull 37(2):362–369. https://doi.org/10.1093/schbul/sbp057
46. Pink B (2013) Socio-economic indexes for areas (SEIFA) 2011. Canberra: Australian Bureau of Statistics
47. IBM SPSS statistics for windows (2019) IBM Corp.
48. Rosenthal JA (1996) Qualitative descriptors of strength of association and effect size. J Soc Serv Res 21(4):37–59. https://doi.org/10.1300/J079v21n04_02
49. Cumming G, Finch S (2005) Inference by eye: confidence intervals and how to read pictures of data. Am Psychol 60(2):170–180. https://doi.org/10.1037/0003-066X.60.2.170
50. Services NDoFaC (2018) OOHC health pathway FAQ for children not on the pathway. https://www.facs.nsw.gov.au/providers/child

ren-families/OOHC-Health-resources-and-tools/FAQ-for-children-not-on-the-Pathway. Accessed Dec 2020
51. Drake B, Jonson-Reid M (2000) Substantiation and early decision points in public child welfare: a conceptual reconsideration. Child Maltreat 5(3):227–235. https://doi.org/10.1177/1077559500005003003
52. Ford T, Vostanis P, Meltzer H, Goodman R (2007) Psychiatric disorder among British children looked after by local authorities: comparison with children living in private households. Br J Psychiatry 190(4):319–325. https://doi.org/10.1192/bjp.bp.106.025023
53. Linscott RJ, van Os J (2013) An updated and conservative systematic review and meta-analysis of epidemiological evidence on psychotic experiences in children and adults: on the pathway from proneness to persistence to dimensional expression across mental disorders. Psychol Med 43(6):1133–1149. https://doi.org/10.1017/S0033291712001626
54. DeVylder JE, Burnette D, Yang LH (2014) Co-occurrence of psychotic experiences and common mental health conditions across four racially and ethnically diverse population samples. Psychol Med 44(16):3503–3513. https://doi.org/10.1017/S0033291714000944
55. Kelleher I, Keeley H, Corcoran P, Lynch F, Fitzpatrick C, Devlin N, Molloy C, Roddy S, Clarke MC, Harley M, Arseneault L, Wasserman C, Carli V, Sarchiapone M, Hoven C, Wasserman D, Cannon M (2012) Clinicopathological significance of psychotic experiences in non-psychotic young people: evidence from four population-based studies. Br J Psychiatry 201(1):26–32. https://doi.org/10.1192/bjp.bp.111.101543
56. Sawyer MG, Arney FM, Baghurst PA, Clark JJ, Graetz BW, Kosky RJ, Nurcombe B, Patton GC, Prior MR, Raphael B, Rey JM, Whaites LC, Zubrick SR (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 well-being. Aust N Z J Psychiatry 35(6):806–814. https://doi.org/10.1046/j.1440-1614.2001.00964.x
57. Parslow RA, Jorm AF (2000) Who uses mental health services in Australia? an analysis of data from the national survey of mental health and wellbeing. Aust N Z J Psychiatry 34(6):997–1008. https://doi.org/10.1080/000486700276
58. English DJ, Upadhyaya MP, Litrownik AJ, Marshall JM, Runyan DK, Graham JC, Dubowitz H (2005) Maltreatment's wake: the relationship of maltreatment dimensions to child outcomes. Child Abuse Negl 29(5):597–619. https://doi.org/10.1016/j.chiabu.2004.12.008
59. Tarren-Sweeney M (2017) Rates of meaningful change in the mental health of children in long-term out-of-home care: a seven- to nine-year prospective study. Child Abuse Negl 72:1–9. https://doi.org/10.1016/j.chiabu.2017.07.002
60. Achenbach TM (2006) As others see us: clinical and research implications of cross-informant correlations for psychopathology. Curr Dir Psychol Sci 15(2):94–98. https://doi.org/10.1111/j.0963-7214.2006.00414.x