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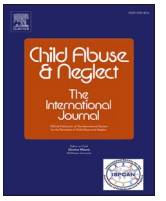

Adaptation and validation of the Juvenile Victimization Questionnaire-R2 for a national study of child maltreatment in Australia

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ABSTRACT

Background: To establish national prevalence of child maltreatment, reliable, valid and contextually appropriate measurement is needed. This paper outlines the refinement, adaptation and testing of child maltreatment sections of the Juvenile Victimization Questionnaire (JVQ)-R2 for use in the Australian context.

Methods: Three phases were undertaken: 1) Conceptual analysis of the five forms of child maltreatment (physical abuse, sexual abuse, emotional or psychological abuse, neglect, and experience of domestic violence), item mapping and review, item development, and independent expert review; 2) Cognitive testing with members of the general population, and individuals who have experienced maltreatment; and 3) Pilot testing and quantitative psychometric assessment with a random sample of Australians aged 16–65+ years.

Results: The final measure included a total of 17 child maltreatment screener items, assessing Physical Abuse (2 items), Sexual abuse (5 items (including 2 non-contact items and 3 contact items), Emotional Abuse (3 items), Neglect (3 items), and Experience of Domestic Violence (4 items). Screener items were also included on corporal punishment (1 item), and internet sexual

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victimization (2 items). The final 17-item revised JVQ had high face and conceptual validity and good internal reliability ($\alpha = 0.86$ and $\Omega = 0.87$). Test re-test reliability was moderate to high for individual screeners ranging from $k = 0.45$ to 0.89.
Conclusions: Results indicate the *Juvenile Victimization Questionnaire-R2: Adapted Version* (*Australian Child Maltreatment Study*) is a suitable instrument for assessing population-wide prevalence of maltreatment. It is congruent with conceptual models of maltreatment and shows good reliability and validity in this Australian sample.

1. Background

Violence against children (VAC) is a significant global issue with an estimated one billion children globally affected per year (Hillis, Mercy, Amobi, & Kress, 2016). VAC is associated with negative long term physical and mental health outcomes across the life span including cardio-vascular disease, sexually transmitted diseases, suicidal ideation and substance use (Hughes et al., 2017). The United National Sustainable Development Goals (SDGs) recognize VAC as a major public health concern and include, in Goal 16 a target to end all forms of VAC (United Nations, 2015). To achieve this target, regular national prevalence surveys on VAC are recommended to establish the prevalence and contextual characteristics of VAC in each country. Prevalence surveys require the existence of valid and reliable instruments to measure relevant dimensions of violence against children, which in contemporary social science and public health encompass both the generally recognized domains of child maltreatment – physical abuse, sexual abuse, emotional or psychological abuse, neglect, and experience of domestic violence – and other forms of violence such as child exploitation, peer bullying, sibling violence, community violence, and civil conflict.

Studies of violence against children are expanding but take different forms and have different areas of focus, as shown for example by the Violence Against Children surveys (Nguyen et al., 2019), and those conducted using versions of the ISPCAN Child Abuse Screening Tools (ICAST) (Meinck, Murray, Dunne, Schmidt, & the BECAN Consortium, 2020). A systematic review found that only two nations – the United Kingdom, and Saudi Arabia – had conducted nationally representative surveys of the prevalence of all five forms of child maltreatment up to age 18, highlighting massive global gaps in the evidence (Mathews, Pacella, Dunne, Simunovic, & Marston, 2020). An additional challenge is presented because to advance the SDGs and enable informed prevention efforts, nations need to establish baseline evidence of both the prevalence of child maltreatment, and of its contextual characteristics. Both dimensions are important, since a public health approach to maltreatment prevention requires an understanding of not only the scale of the problem, but of its characteristics, including the frequency of specific acts, the ages of onset and cessation, the severity of maltreatment, and the relationship of the child to the person(s) inflicting the maltreatment.

Accordingly, these epidemiological studies face a complex task. A threshold question involves the selection and customisation of appropriate survey instrumentation. Instruments must be valid, reliable, and the items must be congruent with sound conceptual models of each type of child maltreatment to avoid the generation of both underestimates and overestimates of prevalence (Mathews et al., 2020). Several non-proprietary questionnaires and screening tools exist which can be used to establish the prevalence of VAC, including those dimensions of violence related to child maltreatment (Meinck et al., 2022). However, with exceptions such as the ICAST (Meinck et al., 2020; Zolotor et al., 2009), few instruments have been subjected to extensive testing for validity and psychometric properties (Meinck et al., 2022; Saini, Hoffmann, Pantelis, Everall, & Bousman, 2019; Steele et al., 2023), and even the ICAST testing did not measure test-retest reliability. Another well-recognized and established questionnaire is the Juvenile Victimization Questionnaire (JVQ) (Finkelhor, Hamby, Ormrod, & Turner, 2005).

2. The Juvenile Victimization Questionnaire

The JVQ was originally developed in the United States for use with a random sample at the population level, in the Developmental Victimization Survey (Finkelhor et al., 2005). Its initial formulation underwent rigorous development and psychometric testing, demonstrating its content validity, reliability including adequate test re-test reliability and good construct validity correlating well with other measures of trauma (Finkelhor et al., 2005). The JVQ was designed to measure a range of violence and victimization. It comprises several modules that can be used in isolation or in combination including conventional crime exposure (Module A), child maltreatment (Module B), peer and sibling victimization (Module C), sexual victimization including assault (Module D), and witnessing violence at home and in the community (Module E). In its first version, to measure child maltreatment, the JVQ employed seven screeners for sexual abuse, one for physical abuse, one for emotional or psychological abuse, one for neglect, and two for experience of domestic violence (Finkelhor et al., 2005). It measures timing, pattern and location of victimization, severity, impact, perpetrator characteristics, disclosure and victim characteristics of witnessed events of violence exposure through 34 screeners with additional follow-up questions.

The JVQ has since been used in three further population studies in the USA, the National Survey of Children Exposed to Violence (NatSCEV) studies. The research team has adopted a reflective dynamic approach to continuous improvement in measurement, refining the instrument each time to better capture prevalence of child maltreatment, informed by results of prior studies and ongoing consideration of conceptual developments and practical concerns (Finkelhor, Vanderminden, Turner, Hamby, & Shattuck, 2014; Finkelhor, Turner, Shattuck, & Hamby, 2015; Steiger et al., 2017). Accordingly, in measuring maltreatment, the first enhanced JVQ added six more screeners to assess the prevalence of experience of domestic violence (Finkelhor, Turner, Ormrod, & Hamby, 2009).

The second enhanced JVQ added four more screeners to assess the prevalence of neglect (Finkelhor et al., 2014). The third enhanced JVQ added one item on sexual abuse (Finkelhor et al., 2015). This current version of the JVQ is the *Juvenile Victimization Questionnaire-2nd Revision* (*JVQ-R2*).

In either its original form, an adapted form, or a short form, the JVQ has been used across the globe in countries such as China (Chan, Fong, Yan, Chow, & IP, 2011), the UK (Radford, Corral, Bradley, & Fisher, 2013), Switzerland (Averdijk, Mueller-Johnson, & Eisner, 2012), Israel (Lev-Wiesel, Eisikovits, First, Gottfried, & Mehlhausen, 2018), South Africa (Ward, Artz, Leoschut, Kassanjee, & Burton, 2018), Pakistan (Bashir, 2015), Spain (Forns, Kirchner, Soler, & Paretilla, 2013; Pereda, Gallardo-Pujol, & Guilera, 2016) and Portugal (Almeida, Ramos, Brito, & Cardoso, 2020). As shown by a systematic review (Mathews et al., 2020), the adapted versions of the JVQ usually retain the core maltreatment screener items without substantively revising their nature, while sometimes adding new items from other instruments (Lev-Wiesel et al., 2018; Radford et al., 2013; Ward et al., 2018).

The JVQ has typically been used in retrospective self-report surveys with samples of children of varying ages, and sometimes with younger children's parents as proxies (Mathews et al., 2020). This has the benefit of obtaining information about experiences of maltreatment in relatively proximate temporal periods of life and is therefore less prone to recall bias (Baldwin et al., 2019; Buffarini et al., 2021; Finkelhor et al., 2009; Le, Holton, Nguyen, Wolfe, & Fisher, 2016; Ward et al., 2018). However, prevalence data obtained from samples of children and youth can produce underestimates since they will not capture information over the entire span of childhood up to age 18; nor can such data indicate changes in experience to violence across different age groups in a nation's populace. Apart from the UK study by Radford et al. (2013), which administered the JVQ with three samples including 1761 adults aged 18–24, to our knowledge the JVQ has not been used in a large nationally representative prevalence survey using a sample of adults for the primary purpose of obtaining retrospective self-report data about the experience of all five forms of child maltreatment across the entire span of childhood up to age 18.

A systematic review of national prevalence studies of all five or four forms of child maltreatment, which included a critical analysis of the nature and robustness of instruments measuring child maltreatment, concluded that the JVQ-R2 was the best available instrument to measure both the national prevalence and contextual characteristics of child maltreatment up to age 18 (Mathews et al., 2020). Reasons for this included its coverage of all five forms of maltreatment, its use in multiple studies, its careful development over time, the general congruence of its screener items with sound conceptual models of each type of child maltreatment, and its inclusion of both behaviourally-specific screener items which ask participants about whether they had experienced a particular type of event (which correlates to a form of maltreatment), and follow-up items asking participants for further contextual details about the nature of the maltreatment (e.g., frequency, age of onset, severity, and relationship of the child to the person inflicting the maltreatment).

In addition, the original JVQ youth and adult retrospective questionnaires had demonstrated robust psychometrics, which included testing for construct validity, test-retest reliability, and internal consistency reliability (Meinck et al., 2022). Psychometric results were both strong and salient for: percentage agreement when administered on two occasions; test-retest reliability; and construct validity. Testing for internal consistency reliability (via Cronbach's alpha) was both less strong, and less salient, due to the JVQ's concern to measure life events rather than assessing components of a single psychological construct. (Finkelhor et al., 2005; Meinck et al., 2022).

3. The first Australian study of the prevalence and associated outcomes of child maltreatment

Due to its demonstrated strengths, the JVQ-R2 was selected as the instrument to be used in the Australian Child Maltreatment Study (ACMS). The ACMS is the first national, representative study of the prevalence and characteristics of all five forms of child maltreatment ever undertaken in Australia. The methodology of the ACMS has been reported elsewhere (Mathews et al., 2021), however a brief summary is provided here for context. The primary aims of the ACMS are to: 1) assess the prevalence and characteristics of all five forms of child maltreatment; 2) examine the mental disorders, physical health problems and health risk behaviors associated with maltreatment across the lifespan; and 3) assess the burden of disease attributable to maltreatment.

The ACMS surveyed a random sample of 8503 Australians aged 16 years and older, using computer-assisted telephone interviewing. The sample included an oversample of young adults aged 16–24 ($n = 3500$) and 1000 participants from each of the following age cohorts: 25–34; 35–44; 45–54; 55–65; and 65 and older (Haslam et al., 2023). Unlike many prevalence studies which focus primarily on youth (Centers for Disease Control and Prevention, 2015; Ward et al., 2018), the ACMS uses a retrospective, cross-sectional design to gather data from both child (16–17 years) and adult participants (18+ years). This methodology allows analysis of associations between different child maltreatment types and contextual characteristics and adverse health and behavioural outcomes throughout life, and of prevalence in different age cohorts.

The ACMS survey instrument development process included the design and testing of a range of modules to meet the various study aims, including the comprehensive measurement of the prevalence and nature of child maltreatment throughout childhood up to age 18, with a large sample of adults in an Australian setting. This article outlines the process of review and adaptation of child maltreatment items from the JVQ for use in the ACMS, and presents initial psychometric results from a pilot study. Overall, we aimed to adapt the JVQ for use in Australia to measure maltreatment, and ensure that the adapted instrument: 1) was congruent with conceptual models of each maltreatment type, 2) possessed face validity, 3) was reliable and consistent over time, 4) was behaviourally specific and able to be used with participants across a range of ages, and 5) was culturally appropriate and comprehensive in an Australian setting.

4. Methods

Ethical approval for the ACMS was obtained from the Human Research Ethics Committee of the administering organization

(#1900000477). All participants gave informed verbal or written consent.

4.1. Approach

We used a three-phase approach to adapt and validate the JVQ-R2 for use in Australia. The adapted instrument is entitled the *Juvenile Victimization Questionnaire-R2: Adapted Version* (*Australian Child Maltreatment Study*) (Mathews et al., 2021). This approach is outlined below.

4.1.1. Phase 1: conceptual analysis and mapping, item review and development, and independent expert review

4.1.1.1. Phase 1a: conceptual analysis and mapping, and item review and development

4.1.1.1.1. Conceptual analysis and mapping. The ACMS team comprises experts in child maltreatment, epidemiology, public health, sociology, social work, law, psychiatry, and psychology, and includes one of the authors of all versions of the JVQ. This team reviewed the existing JVQ screener items for each type of child maltreatment – from Module B Child Maltreatment; Module D Sexual Victimizations; and Module E Witnessing and Indirect Victimizations – to assess congruence with current conceptual models of the five forms of maltreatment (Dubowitz et al., 2005; Kairys, Johnson, & the Committee on Child Abuse and Neglect, 2002; MacMillan & Wathen, 2014; Mathews & Collin-Vézina, 2019; World Health Organization and International Society for the Prevention of Child Abuse & Neglect, 2006), and for corporal punishment (Straus & Donnelly, 2005), building on a process adopted in an earlier systematic review (Mathews et al., 2020). Achieving conceptual precision in operational definitions of maltreatment as embodied in the screeners is essential to respond to the general problem of technical imprecision in violence research (Hamby, 2014), and to ensure accurate measurement of prevalence by avoiding overestimates and underestimates produced by definitions of maltreatment that are either unjustifiably wide or narrow (Barnett, Manly, & Cicchetti, 1993; Manly, 2005). This process generated a comprehensive document recording the analysis and mapping, which was used to inform item review and development, and further independent expert review in Phase 1b. Reference to legal definitions was also considered to check the validity of our intended approach to most types of maltreatment, and this was particularly helpful when refining items on corporal punishment, sexual abuse and exposure of domestic violence. This analysis will be presented in forthcoming work but we present the essence of the conceptual models adopted as a result of this analysis (Supplement 1).

4.1.1.1.2. Item review and development. In addition to this process of conceptual analysis and mapping of the JVQ items against the conceptual models of each maltreatment type, the research team was informed by seven guiding principles in the process of item review and development. These were: 1) not to make any changes to the JVQ screeners unless it was concluded to be necessary or highly desirable; 2) to comply with the general principle that use of multiple behaviourally specific questions reflecting the operational manifestations of the maltreatment type is essential to obtain reliable results and avoid underestimates of prevalence (Bolen & Scannapieco, 1999; Cook, Gidycz, Koss, & Murphy, 2011; Fisher, 2009); 3) to avoid the use of a single question to measure the prevalence of any of the five maltreatment types, given this is not well matched to a study aiming to measure the prevalence of not only the general experience of each type of maltreatment, but also their discrete sub-dimensions (Fisher, 2009; Sarstedt, Diamantopoulos, Salzberger, & Baumgartner, 2016); 4) to accept that there remain limits to how many screeners an instrument can have, for reasons of cost, participant burden, and feasibility (e.g., administration time); 5) to ensure screeners did not overlap; 6) to be informed by items used in other established measures, and by results of the JVQ re-analyses, as done by the JVQ team (Finkelhor et al., 2015; Steiger et al., 2017); 7) to make minor wording changes for clarity and to suit local linguistic customs only where required.

Finally, we note that the primary focus of this process of instrument adaptation was on the JVQ maltreatment screener items, rather than the JVQ follow-up items. However, the standard core follow-up items were tested to confirm their validity, and two minor modifications to these were also tested (temporal duration of emotional abuse and neglect using periods of days, months or years rather than number of times; and use of school level rather than age of onset and cessation of maltreatment, where a participant could not identify a specific age). New follow-up items on disclosure of sexual abuse and physical abuse were also tested; these will be detailed separately in forthcoming work.

4.1.1.2. Phase 1b: independent expert review. Fifteen members of the ACMS Technical Expert Panel reviewed the draft maltreatment questions, including the original JVQ items and the proposed additions and revisions, for face validity, conceptual validity, and cultural appropriateness. These independent experts came from five countries (USA, UK, Australia, Canada, and South Africa), and are leaders in child maltreatment survey research and conceptual models of the different types of child maltreatment. Members were given summary documents explaining the background and development of the items, and rationales for the proposed new items. Most provided written feedback on this document but some gave feedback via Zoom.

4.1.2. Phase 2: cognitive testing

4.1.2.1. Phase 2a: general population. Thirteen participants (6 male/7 female) were purposefully selected between March and April 2020 for cognitive testing of the instrument. Participants represented a diverse range of age groups and socio-economic and educational backgrounds including 61 % (8/13) having a culturally and linguistically diverse background (CALD), and 23 % (3/18) coming from a non-English speaking background (NESB) (Supplement 2). Two rounds of cognitive testing were conducted, with eight and five participants respectively. The second round enabled further testing, including testing of revisions made to questions by the research

team in response to findings from the first round. Questions were designed by the Social Research Centre lead qualitative interviewer and by the ACMS Lead Investigator, who attended in person and provided directions for iterative testing of key questions and themes. Amendments to the questionnaire were made after each round to reflect feedback by the interviewers and participants. Interviews were carried out by the Social Research Centre's qualitative research unit in Melbourne, lasted approximately 1 h, and were conducted in person in round 1 and online in round 2 due to COVID-19 restrictions. Online video conferencing software allowed the researcher to observe the participant's body language and identify confusion or hesitancy. All participants gave full informed consent (either written or online) for participation and recordings and received a reimbursement of AUD $80 (in person) or AUD$50 (online) for participation at the start of the session to avoid coercion.

The aim of the cognitive testing was to identify questions and response options which participants might find difficult to answer, were prone to be misunderstood, posed difficulties for cognitive processing and recall, or caused distress (Willis, 2005). Interviewers used a concurrent probing technique to test questionnaire items, and spent additional time considering items which appeared to present any difficulty. This involved reading the relevant screener or follow-up to the participant and then asking questions followed by a series of probes to explore the aspects of the items (Collins, 2015). Informed by the research team's prior deliberations on aspects of the questions that were of particular interest, probing focused on the following aspects of cognitive testing: comprehension, retrieval of information, judgement, and response. For comprehension, we tested whether the item was fully understood by participants and understood in the way it was intended to be understood (for example, by asking words to the effect of: "Do you have any difficulty understanding this question, or any specific words used in it?"). For retrieval, we tested whether the participant could recover the answer from memory (for example, by asking "Is it difficult to recall this?"). For judgement, we tested if information could be accurately recalled, and if not, what judgments participants make to arrive at a response (for example, by asking "Is this information hard to classify like this, or do you have to take some time to figure it out?"). Finally, for response, we tested if the response given by the participants was listed as a response option, and whether any options appeared more socially desirable. In all cases, further questioning was flexibly developed as required to explore areas where participants' initial responses indicated questions may have been challenging to answer.

4.1.2.2. Phase 2b: involvement of people with lived experience of maltreatment. Four people with lived experience of all five types of child maltreatment reviewed the draft questionnaire for face validity, comprehensibility, and potential for distress. While recent reviews have found participation in surveys about child maltreatment does not cause significant distress, even for those who have experienced maltreatment (Mathews et al., 2022), we deemed it important to consider this possibility. Survivors were men and women purposefully recruited from personal contacts and advocacy groups, invited to participate based on their individual experience of multiple types of child maltreatment in both family and other settings, and their general awareness of the experience and perspectives of people who have experienced child abuse and neglect (obtained through working for advocacy groups or in a professional capacity). Survivors were provided (either in person or via email) with written copies of items and were asked to provide feedback about the nature of the questions, the ideal order of the items (e.g., preference for sequencing items by increasing severity versus decreasing severity), how well items captured experiences, whether they were understandable, presented any cultural issues, and the potential for distress. Feedback on items was provided either in person, via telephone or via email, depending on participant preference. Survivors were offered debriefing with a clinical psychologist, but none requested this, and all reported the process was not unduly distressing.

4.1.3. Phase 3: pilot testing and psychometric assessment

A pilot survey was conducted with 100 participants recruited through random digit dialling of mobile and landline phones to ensure a random sample. The sample slightly favoured older people, however all age groups were represented. The survey was administered by trained interviewers at the Social Research Centre in Melbourne, using computer-assisted telephone interviewing (CATI) which utilised a programmed software platform. Participants completed the entire *JVQ-R2: Adapted Version* (*Australian Child Maltreatment Study*) interview, including the adaptations made during Phases 1and 2, as well as a battery of other questionnaires reported elsewhere (Mathews et al., 2021). All participants were invited to complete a second interview 3–4 weeks later to establish test-retest reliability of the maltreatment items. Of the original sample 74 % of participants agreed to participate in this second interview, in which only the core maltreatment screeners were re-administered.

4.2. Analysis

4.2.1. Phase 1: conceptual analysis and mapping, and item review and development

Building on the analysis in a systematic review of maltreatment instruments (Mathews et al., 2020), and using methods adopted to analyse the nature of child sexual abuse (Mathews & Collin-Vézina, 2019), we conducted conceptual analysis of the JVQ maltreatment screeners for each form of maltreatment first as a whole and then by each individual item. This analysis used the selected conceptual models of each maltreatment type as a reference point and evaluative measure to determine whether each form of maltreatment was assessed by the JVQ screeners in sufficient depth and specificity. In this way, the JVQ screeners for each maltreatment type both as domains of maltreatment, and on an individual basis, were evaluated to identify both potential gaps in measurement of a maltreatment type (which may lead to underestimates of prevalence), and potential over-inclusion of events classed as maltreatment (which may lead to overestimates of prevalence). In addition, the guiding principles referred to above were important reference points in this analysis, with particular salience afforded to the principles of avoiding the use of a single question to measure a maltreatment type, and the use of multiple behaviourally-specific questions to capture different operational manifestations of a maltreatment type. This

Table 1
JVQ-R2 (Adapted Version (Australian Child Maltreatment Study) child maltreatment screeners – development process.

JVQ-R2 Screener Number	JVQ – R 2 Screener Text	ACMS screeners after Phase 1 conceptual analysis and mapping, and item development	ACMS revised screeners after Phase 2 Cognitive testing	Final version after Phase 3 pilot
Physical abuse				
Mx	Not including spanking on your bottom, when you were a child did a grown-up in your life hit, beat, kick, or physically hurt you in any way?	Did an adult ever beat you up, hit you on the head or face, try to choke you, or burn you?	Did an adult ever beat you up, hit you on the head or face, choke you, or burn you?	No change (except order)
M1		Did an adult ever hit, punch, kick, or physically hurt you in any other way, not counting acts done to discipline you for misbehaviour?	Did an adult ever hit, punch, kick, or physically hurt you?	No change (except order)
NEW Corporal punishment	Sometimes kids listen to their parents pretty well and sometimes they do not. Thinking of the past year, about how often have you had to spank or slap your child to get him/her to behave?	Did an adult ever smack you or physically punish you to discipline you for your behaviour?	Did an adult ever smack you or physically punish you to discipline you for your misbehaviour?	No change
Sexual abuse				
NEW		Did anyone ever force you to have sex?	No change	No change
S4	At any time in your life, did anyone try to force you to have sex; that is, sexual intercourse of any kind, even if it didn't happen?	Did anyone ever try to force you to have sex, even if it didn't happen?	No change	No change
S1	At any time in your life, did a grown-up you know touch your private parts when they shouldn't have or make you touch their private parts? Or did a grown-up you know force you to have sex?	Did anyone ever touch your private parts when they shouldn't have, or make you touch their private parts?	No change	Did anyone ever touch your private parts when they shouldn't have, or make you touch their private parts?
S5	At any time in your life, did anyone make you look at their private parts by using force or surprise, or by "flashing" you?	Did anyone ever make you look at their private parts, or look at yours, when they shouldn't have, or by using force or in an upsetting way?	Did anyone ever make you look at their private parts, or look at yours, when they shouldn't have?	Did anyone ever look at your private parts when they shouldn't have, or make you look at their private parts?
S2	At any time in your life, did a grown-up you did not know touch your private parts when they shouldn't have, make you touch their private parts or force you to have sex?	**Dropped**		
S3	Now think about other kids, like from school, a boy friend or girl friend, or even a brother or sister. At any time in your life, did another child or teen make you do sexual things?	**Dropped**		
S6	At any time in your life, did anyone hurt your feelings by saying or writing something sexual about you or your body?	Did anyone ever say, write or do something sexual to you that was offensive or intimidating?	No change	No change
S7	Suggested for children aged 12 and older.) At any time in your life, did you do sexual things	**Dropped**		

	with anyone 18 or older, even things you both wanted?			
S8	) Has anyone ever had sex or tried to have sex with you when you didn't want it, when you were very high, drunk, or drugged?	**Dropped**		
NEW (internet victimisation 1)		Did anyone ever use the internet or a mobile phone to share sexual images of you or sexual information about you that you did not want shared?	Did anyone ever use the internet or a mobile phone to share sexual images of you without your consent?	No change
NEW (internet victimisation 2)		Did an adult ever use the internet or mobile phone to try to get you to do sexual things?	Did an adult ever ask you over the internet or a mobile phone to talk about sex or send sexual images?	No change
Emotional abuse				
NEW	At any time in your childhood did you get scared or feel really bad because grown-ups in your life called you names, said mean things to you, or said they didn't want you? (only asked of parents of kids aged 0-9)	Did any of your parents insult you, humiliate you, or call you hurtful names?	No change	No change
NEW		Did any of your parents tell you they hated you, didn't love you, wished you were dead or had never been born? Or, did they threaten to abandon you or kick you out of home?	Did any of your parents tell you they hated you, didn't love you, wished you were dead or had never been born?	No change
NEW		Did any of your parents often put unfair pressure on you about your performance in school, sport, jobs at home, or other activities?	No change	**Dropped**
NEW		Did any of your parents often ignore you, or not show you love, affection or care?	Did any of your parents often ignore you, or not show you love and affection?	No change
Neglect				
M5		Did you often have to look after yourself when a parent should have been looking after you, because they were not willing or able to do so?	Did you often have to look after yourself when a parent should have been looking after you?	**Dropped**
M8		Did you live in a home that was often unsafe or unhealthy? For example, it had toilets or sinks that didn't work, rubbish piled up, and things like that?	Was your home often unsafe or unhealthy? For example, it had toilets or sinks that didn't work, rubbish piled up, and things like that?	No change
M9		Were you often not provided with regular meals, baths or showers, or clean clothes?	No change	No change
NEW		Did your parents often fail to make sure you went to school, or fail to encourage you in your education?	No change	**Dropped**
NEW		When you were sick or injured, did your parents ever fail to get you medical care or take care of you?	No change	No change
Exposure to domestic violence				
W1	Witness to Domestic Violence At any time in your life, did you SEE a parent get pushed, slapped, hit, punched, or beat up by another parent, or their boyfriend or girlfriend?	Did you ever see or hear one of your parents get pushed, hit, choked, or beaten up by your other parent?	Did you ever see or hear one of your parents get pushed, hit, choked, or beaten up by your other parent or their partner?	No change
W2	Witness to Parent Assault of Sibling At any time in your life, did you SEE a parent hit, beat, kick, or physically hurt your	Did you ever see or hear one of your parents intentionally hit or physically hurt your brother or sister, other than minor discipline for misbehaviour?	Did you ever see or hear one of your parents, or their partner, hit or physically hurt your brother or sister?	**Dropped**

	brothers or sisters, not including a spanking on the bottom?			
EF1	Parent Verbally Threatened At any time in your life, did one of your parents threaten to hurt another parent and it seemed they might really get hurt?	Did you ever see or hear one of your parents threaten to hurt your other parent, and it seemed like they might get really hurt?	Did you ever see one of your parents seriously threaten to hurt your other parent?	No change
EF2	Parental Displaced Aggression At any time in your life, did one of your parents, because of an argument, break or ruin anything belonging to another parent, punch the wall, or throw something?	Did you ever see or hear one of your parents damage any property or pets belonging to your other parent?	During an argument, did any of your parents ever damage any property or pets, punch the wall, or throw something?	No change
NEW		Did you ever see or hear one of your parents intimidate or control your other parent, either verbally, sexually, financially, or by isolating them from friends or family?	No change	No change
EF3	At any time in your life, did one of your parents get pushed by another parent?	**Dropped**		
EF4	At any time in your life, did one of your parents get hit or slapped by another parent?	**Dropped**		
EF5	At any time in your life, did one of your parents get kicked, choked, or beat up by another parent?	**Dropped**		
EF6	Now we want to ask you about fights between any grown-ups and teens, not just between your parents. At any time in your life, did any grown-up or teen who lives with you push, hit, or beat up someone else who lives with you, like a parent, brother, grandparent, or other relative?	**Dropped**		

Orange cells in column 2 indicate original woridng of JVQ-R2 screeners. Orange cells in column 3 (ACMS Screeners after Phase 1) show initial developments after conceptual analysis. Green cells in column 4 indicate revision of wording of screeners after cognitive testing. White cells in column 5 show final version after full pilot.

process identified the most important areas where it appeared items could usefully be added or removed or combined.

4.2.2. Phase 2: cognitive testing

We used a similar approach to analyse the cognitive testing in Phase 2a with members of the general population, and Phase 2b with survivors of maltreatment. In all interviews, as well as observations of participant reactions and responses, handwritten notes were taken by both the Social Research Centre's qualitative research team and the ACMS Lead Investigator. This documentation of interviews was analysed to code data and extract themes for analysis according to salience and weight. Coding of themes was done iteratively, and with the care and reflection required of any thorough and unbiased in-depth qualitative analysis to attain validity, authenticity, and credibility (Braun, Clarke, & Terry, 2014; Creswell, 2009; Maxwell, 2009; Whittemore, Chase, & Mandle, 2001). Extensive documentation of these themes was provided to the research team, along with findings on identified issues, proposals for revisions, and consideration of benefits and disadvantages of proposed revisions. The research team then discussed these proposals and reached agreement by consensus on required revisions.

4.2.3. Phase 3: pilot testing and psychometric assessment

The quantitative data analysis of the pilot study followed seven steps. First, socio-demographic characteristics of the sample were examined. Second, refusal data were examined for each revised screener item and follow-up question. Third, percentage agreement

was calculated for the individual dichotomous questions (i.e., the revised screeners). Fourth, test-retest-reliability of dichotomous items (the revised screeners) was assessed using Cohen's kappa. Kappa ranges in values from −1 to 1, with 0.00–0.20 showing slight agreement, 0.21–0.40 showing fair agreement, 0.41–0.60 showing moderate agreement, 0.61–0.80 showing substantial agreement and 0.81–1.00 showing almost perfect agreement (de Vet, Terwee, Mokkink, & Knol, 2011). For test-retest reliability between total scores, intra cluster correlations (ICCs were calculated). An ICC of >0.7 was considered sufficient at the group level (Nunally, 1994). Internal consistency is less important for child maltreatment measures, particularly if they are screening tools, such as the JVQ (Finkelhor et al., 2005). However, internal consistency was assessed using McDonald's omega and Cronbach's alpha, with values >0.7 generally considered as sufficient (Dunn, Baguley, & Brunsden, 2014) as a fifth step in the analyses. Sixth, we assessed estimates of prevalence to consider whether responses were within reasonably expected ranges. Seventh, we examined construct validity through hypothesis testing. Analyses were carried out in Stata 16 and Mplus 8.

5. Results

5.1. Phase 1: conceptual analysis and mapping, and item review and development

Informed by the analysis in Phase 1, we concluded that overall, the JVQ was generally congruent with conceptual models of each form of child maltreatment, while leaving scope for enhancement, especially in relation to emotional abuse. Our conceptual analysis and application of guiding principles produced recommendations to remove or combine a number of screener items, which were further informed and supported by the JVQ team's own analysis and recommendations (Steiger et al., 2017).

Accordingly, this process resulted in several initial revisions to the JVQ screeners. For emotional abuse, we replaced the existing single JVQ screener with four screeners to capture multiple subdomains of emotional abuse. For physical abuse, we replaced the existing single JVQ screener, with two modified screeners to differentiate between more severe and less severe acts. For corporal punishment, we developed a new, differently worded item. For neglect, we added two screeners to capture educational and medical neglect, and removed some screeners that were consequently no longer required. For exposure to domestic violence, we retained some of the JVQ's eight screeners while removing some that were not required due to duplication given our refinements. We also made a wording change to four screeners to capture EDV through hearing, as well as seeing, the relevant events. We added a new screener to capture other aspects of coercive control which can constitute important different dimensions of EDV beyond physical assault and property damage. For sexual abuse, we retained most of the JVQ screeners, while removing two that were not required due to duplication given our refinements. We added a separate screener to capture sexual intercourse (distinct from other contact sexual abuse), adapted the screener on sexual harassment, and added two new screeners to capture online victimization. These revisions are shown in Table 1, Column 1.

5.2. Phase 2: cognitive testing

Cognitive testing of the revised screeners indicated highly positive findings about all cognitive domains. Overall, participants exhibited a high capacity to comprehend the items in the way intended; were able to retrieve memories and recall if they had experienced the events embodied by the maltreatment screeners (including participants of more advanced years); did not provide responses influenced by perceptions of social desirability; gave responses according to listed response types; and did not indicate distress.

Nevertheless, analysis identified several salient thematic findings. These were: 1) some screeners with compound elements presented difficulties for comprehension; 2) some longer screeners caused difficulty for comprehension; 3) the screener on internet sexual victimization (adult solicitation/grooming) was the single most clearly problematic item; 4) the screener on EDV through threats was also problematic for comprehension.

Informed by these results in the first round of cognitive testing, we made further revisions to the wording of screeners to enhance clarity, brevity, and comprehensibility. For those screeners that were particularly problematic, we devised several alternative forms for testing in the second round. We also made changes to the sequencing of maltreatment sections, so that instead of the sequence used in round one (physical abuse; corporal punishment; sexual abuse; internet sexual victimization; emotional abuse; neglect; experience of domestic violence) we commenced with sections that may be thought to be less confronting, placed the most confronting section penultimately, and had a less confronting section to end (emotional abuse; neglect; corporal punishment; physical abuse; internet sexual victimization; sexual abuse; experience of domestic violence). We also changed the sequencing of items within maltreatment sections (namely, placing corporal punishment before physical abuse; and sequencing physical abuse and sexual abuse items in ascending order of severity). These revisions were tested in Stage 2, with positive results. The revisions made through this process are shown in Table 1, Column 3.

The standard JVQ follow-up questions were also well tolerated, confirming their validity in participants across age ranges. The two minor modifications to these were also well tolerated and indicated their optimal form. Temporal duration of emotional abuse, and of neglect, was determined to be best assessed using periods of days, weeks, months or years rather than number of times. In relation to the age of onset of maltreatment, this process also determined that where a participant could not identify a specific age, the use of school level was appropriate (not yet attending school, primary school, or high school).

5.3. Phase 3: pilot testing and psychometric assessment

5.3.1. Sample characteristics

The quantitative pilot involved 100 participants from all eight Australian States and Territories, with over half in New South Wales and Victoria (Table 2). Participants covered all age ranges eligible for inclusion in the study and were predominantly English-speaking with 77 % from Australia and 9 % born in non-English speaking countries. The majority were married or living with a partner and 57 % identified as women. The majority had a college, undergraduate or post-graduate qualification.

5.3.2. Refusal rates

Refusal rates for each screener were low (see Supplement 3), as was the selection of 'don't know' as a response. The highest refusal rates were for sexual abuse items, with 4 refusals for three items. Follow-up questions were included in the pilot testing, and had similarly low numbers of refusals and 'don't know' responses: questions on frequency and cessation of physical abuse had up to 3 'don't know' responses, and questions on age of onset and perpetrators had up to 1 refusal. The corporal punishment item generated 9 'don't know' responses on age of onset and age of cessation.

5.3.3. Percentage agreement

Percentage agreement was high across items over the two time points with a minimum agreement of 85 % for the moderate physical abuse and sexual harassment item (Table 3). The highest percentage agreement of 97 % was observed for items assessing severe physical abuse, emotional abuse by rejection, environmental neglect, nutritional neglect, and witnessing physical violence between parents.

5.3.4. Test-retest reliability

Individual item-agreement for the dichotomous screeners was moderate to sufficient (Table 3). Items with moderate test-retest reliability with $k > 0.40 < 0.60$ were those focused on moderate physical abuse, corporal punishment, attempted forced sexual intercourse, environmental neglect, and medical neglect. All other items showed substantial agreement (0.61–0.80). Items showing almost perfect agreement were: contact sexual abuse (touching), emotional abuse by denigration, emotional abuse by rejection, emotional abuse by unavailability, and witnessing physical domestic violence. Test-retest reliability for dichotomously coded maltreatment sub-scales was sufficient for physical abuse, and was substantial or near perfect for all other maltreatment types (Table 4). Test-retest reliability for the total score of maltreatment items in each sub-scale was considered sufficient with all ICC's >

Table 2
Socio-demographic characteristics of the pilot sample ($n = 100$).

		N (%)
Age		
	18–24 years	18 (18 %)
	25–34 years	17 (17 %)
	35–44 years	8 (8 %)
	45–54 years	11 (11 %)
	55–64 years	15 (15 %)
	Over 65	31 (31 %)
State		
	NSW	29 (29 %)
	VIC	28
	QLD	15
	SA	6
	TAS	12
	NT	8
	ACT	1
Country of birth		1
	Australia	77
	English speaking country outside Australia	13
	Non-English speaking country	9
Marital status		
	Married/living together	56
	Separated/divorced	8
	Single	32
Gender identity		
	Man/cisgender	43
	Woman/cisgender	57
Highest education		
	Lower secondary school	20
	Technical/trade certificate	12
	Higher secondary school	13
	College certificate/undergraduate	40
	Postgraduate	15

Table 3
Item level percentage agreement and test-retest reliability using Cohen's kappa at re-administration 3–4 weeks after baseline for specific screeners.

Screener items	N	k	% agreement
Physical abuse			
Moderate physical abuse	71	0.45***	85
Severe physical abuse	73	0.79***	97
Sexual abuse			
Sexual harassment	71	0.62***	85
Abusive exposure or voyeurism	72	0.79***	92
Contact sexual abuse (touching)	73	0.87***	96
Attempted forced sex	72	0.58***	90
Forced sex	72	0.64***	96
Emotional abuse			
Hostile interaction/denigration	74	0.89***	96
Rejection	73	0.84***	97
Unreasonable expectations[a]	74	0.75***	92
Emotional unavailability	72	0.82***	94
Neglect			
Supervisory neglect[a]	72	0.73***	90
Environmental neglect	74	0.49***	97
Nutritional or physical neglect	73	0.79***	97
Educational neglect	71	0.64***	96
Medical neglect	73	0.55***	96
Exposure to domestic violence			
Actual physical violence	72	0.89***	97
Threats	72	0.77***	94
Damage to property or pets	71	0.71***	89
Intimidation or control	72	0.70***	90
Physical violence against siblings[a]	71	0.71***	89
Corporal punishment			
Corporal punishment	73	0.60***	88
Internet victimization			
Online sexual abuse (image sharing)	11	Cannot run because of too few rating categories	
Online sexual abuse (grooming)	11	0.62*	91

Asterisks indicate significant at $p < 0.001$.
[a] These items were included in the pilot test but removed from the final survey due to space limitations. This decision was made on a conceptual basis.

Table 4
Percentage agreement and test-retest reliability using Cohen's kappa at re-administration 3–4 weeks after baseline for each maltreatment subscale and coded dichotomously: yes, no.

Any type of specific maltreatment	N	k	% agreement
Any physical abuse	74	0.57***	86
Any noncontact sexual abuse excluding IV	74	0.77***	89
Any contact sexual abuse	74	0.69***	88
Any emotional abuse	74	0.77***	90
Any neglect	74	0.68***	95
Any EDV	74	0.67***	85
Any corporal punishment	73	0.60***	88
Any internet victimization	11	0.62*	91

Note: Subscales only include final items.
Asterisks indicate significant at $p < 0.001$.

0.70 (Supplement 4).

5.3.5. Internal consistency

Internal consistency assessed through Cronbach's alpha and McDonald's Omega was poor for physical abuse and internet

victimization, but moderate to excellent for all other abuse types and for the overall maltreatment score consisting of 17 items (Table 5).

5.3.6. Prevalence estimates

While the pilot study's prevalence estimates are not representative and it is therefore not appropriate to cite them, the estimates obtained for each maltreatment type were within expected ranges. This added a further level of reassurance that the items were framed neither too broadly nor too narrowly.

5.3.7. Final review

A final review of the instrument was required to accommodate requirements of significance, feasibility, cost and participant burden. Two non-substantive syntactical revisions were made for further clarity. More notably, the pilot indicated average administration time exceeding desirable levels. This required discussions and judgments about areas where sections of the draft instrument as piloted could be removed or condensed. Some reductions to the maltreatment section were made, including to some non-essential follow-up items, but also to some screeners that were in the research team's judgement less important, less reliable, or both. This led to the decision to remove four of the piloted screeners, being two of the new screeners (on educational neglect, and emotional abuse through unreasonable expectations and failure to recognize a child's individuality) and two of the modified JVQ screeners (on supervisory neglect, and experience of domestic violence involving siblings). The list of final changes in screeners is shown in Table 1, Column 4. Table 6 shows the final screeners in the *JVQ-R2: Adapted Version* (*Australian Child Maltreatment Study*).

6. Discussion

This article outlined the review and adaptation process of the JVQ-R2 for use in the ACMS. We aimed to ensure that the *JVQ-R2 Adapted Version* (*Australian Child Maltreatment Study*) is congruent with conceptual models of child maltreatment, has face validity, is reliable and consistent over time, is behaviourally specific, suitable for all age ranges 16+, and culturally appropriate and comprehensive for the Australian setting. This work adds to a growing number of much needed studies on the development and validation of child maltreatment measures with a particular focus on content validity (Neelakantan, 2020), filling a gap in research into the robustness of the psychometric properties of child maltreatment instruments (Meinck et al., 2022).

We aimed to provide an in-depth overview of our procedures to guide researchers on stages they may wish to include in their own adaptation and piloting, a vital first step when employing a measure for the first time to establish its validity in the target population (Meinck et al., 2022). Our adaptation and review process were conducted in three stages. These involved a conceptual analysis of the five types of child maltreatment, item mapping, development and independent expert review, cognitive testing with members of the general population and survivors of child maltreatment, and pilot testing and psychometric assessment with a random sample of Australians aged 16 and older using CATI.

The JVQ-R2 was subjected to substantial revisions as part of this review process. These included item removal, item rephrasing, item new development and changes in sequencing. The robust review process of conceptual models resulted in changes to, deletion and addition of screeners in all abuse subdomains of the JVQ-R2 in line with congruence of conceptual models. Overall, our cognitive testing phase showed that participants found the items easily comprehensible by participants, were able to recall childhood events as intended, had low social desirability, and did not experience distress. Survivors are rarely specifically asked for feedback in piloting processes or measurement development (Meinck et al., 2022). The involvement of survivors to ensure wording and sequencing was appropriate for those with high burden of child maltreatment adds to the robustness of content validity assessment in this study.

Table 5
Internal consistency for any maltreatment subscale categories at first and second interview (T1 n = 100; T2 *n* = 74) using final items only.

Type of maltreatment	Time 1			Time 2		
	No. of items	Cronbach's alpha	McDonald's omega[a]	No. of items	Cronbach's alpha	McDonald's omega[b]
Physical abuse	2	0.31	0.48	2	0.65	0.78
Sexual abuse	5	0.81	0.73	5	0.75	0.85
Noncontact sexual abuse[1]	2	0.74	0.74	2	0.68	0.63
Contact sexual abuse[1]	3	0.62	0.56	3	0.64	0.82
Emotional abuse	3	0.74	0.63	3	0.81	0.74
Neglect	3	0.60	0.56	3	0.57	0.65
Exposure domestic violence	4	0.82	0.77	4	0.87	0.87
Corporal punishment (not included in main scale)	1	N/A	N/A	N/A	N/A	N/A
Internet victimization (youth only; not included in main scale)	2	0.18	N/A	t2_m_iv1 constant in analysis sample, dropped from analysis too few variables specified N/A		
Maltreatment scale	**17**	**0.86**	**0.87**	**17**	**0.89**	**0.91**

[1] These items are subcategories of sexual abuse not additional items. However data is provided as these categories are typically reported separately and their internal consistency is therefore important.

[a] Based on 83 completed cases in round 1.

[b] Based on 65 completed cases in round 2.

Table 6
Final items in the JVQ R2- (Australian Child Maltreatment Study) after revision.

Item wording	Conceptual mapping	Revised Item number	Original JVQ R2 number
Emotional abuse			
Did any of your parents insult you, humiliate you, or call you hurtful names?	Hostile interaction/ denigration	M_EA1	New
Did any of your parents tell you they hated you, didn't love you, wished you were dead or had never been born?	Rejection	M_EA2	New
Did any of your parents OFTEN ignore you, or not show you love and affection?	Emotional unavailability	M_EA3	New
Neglect			
Was your home OFTEN unsafe or unhealthy? For example, it had toilets or sinks that didn't work, rubbish piled up, and things like that?	Environmental neglect	M_Neg1	M8
Were you often not provided with regular meals, baths or showers, or clean clothes?	Nutritional and physical neglect	M_Neg2	M9
When you were sick or injured, did your parent ever fail to get you medical care or take care of you?	Medical neglect	M_Neg3	New
Corporal punishment[a]			
Did an adult ever smack you or physically punish you to discipline you for your misbehaviour?	Corporal punishment	M_CP1	New
Physical abuse			
Did an adult ever beat you up, hit you on the head or face, choke you, or burn you?	Severe physical abuse	M_PA1	New
Did an adult ever hit, punch, kick, or physically hurt you?	Moderate physical abuse	M_PA2	M1
Internet victimisation[b]			
Did anyone ever use the internet or a mobile phone to share sexual images of you without your consent?	Internet sexual victimization	M_IV1	New
Did an adult ever ask you over the internet or a mobile phone to talk about sex or send sexual images?	Grooming	M_IV2	New
Sexual abuse			
Did anyone ever say, write or do something sexual to you that was offensive or intimidating?	Sexual harassment	M_SA1	S6
Did anyone ever make you look at their private parts, or look at yours, when they shouldn't have?	Abusive exposure or voyeurism	M_SA2	S5
Did anyone ever touch your private parts when they shouldn't have, or make you touch their private parts?	Contact abuse short of intercourse	M_SA3	S1
Did anyone ever try to force you to have sex, even if it didn't happen?	Attempted intercourse	M_SA4	S4
Did anyone ever force you to have sex?	Abusive intercourse	M_SA5	New
Exposure to domestic violence			
Did you ever see or hear one of your parents get pushed, hit, choked, or beaten up by your other parent or their partner?	Exposure to physical violence between parents	M_EDV1	W1 (modified)
Did you ever see or hear one of your parents seriously threaten to hurt your other parent?	Serious threats	M_EDV2	EF1
During an argument, did any of your parents ever damage any property or pets, punch the wall, or throw something?	Damage property or pets	M_EDV3	EF2 (modified)
Did you ever see or hear one of your parents intimidate or control your other parent, either verbally, sexually, financially, or by isolating them from friends or family?	Intimidation and control	M_EDV4	New

Note: Final items may be used only with permission of authors.
[a] This is included as a screener but not included in overall abuse subscales as it is not currently conceptualised as child maltreatment.
[b] Internet victimization items is only recommended for young people (<24 years).

Modifications were made to 14 screeners for a range of reasons, many of which aligned with revisions recommended by the original JVQ team. Some item modifications were made to achieve brevity and simplicity; others to remove compound elements; and others indicated as more complex by participants. The most notable developments to the JVQ were the measurement of emotional abuse through three new items, and addition of new items to measure corporal punishment, severe and moderate physical abuse, internet sexual victimization, and experience of domestic violence through coercive control. Sequencing was also modified by placing less confronting sections first, those more confronting penultimate, and finishing with another less confronting section; in addition, within physical and sexual abuse sections, screeners were sequenced in from least severe to most severe. Overall, the cognitive interviews demonstrated robust content validity of the *JVQ-R2 Adapted Version* (*Australian National Child Maltreatment Study*). This applied to participants of varied ages and ethnic backgrounds, demonstrating achievement of the fourth and fifth objectives of the testing process.

In-depth pilot testing using the mode of planned deployment for the main study revealed very low refusal rate, indicating the

appropriateness of the screeners. Again, this demonstrated achievement of the fourth and fifth objectives of the testing process, given the sample (Table 2). Even the items with the highest numbers of refusals, the sexual abuse screeners, had remarkably low refusal rates of <5 %. Follow-up items with the highest selection of 'don't know' were those focused on onset and cessation of corporal punishment, highlighting some difficulty with recall for these acts, which was the type of violence most frequently reported in the pilot study. This may be because corporal punishment is widespread in Australia as it is a lawfully permissible strategy of child discipline and children may experience it from a very young age (Poulsen, 2019).

Psychometric testing revealed high percentage agreement of items when re-applied 3–4 weeks after first interview and moderate to sufficient test-retest reliability, increasing confidence in the robustness of the screeners. Internal consistency was poor for physical abuse and internet victimization but moderate to excellent for other types of abuse. This is due to the fact that physical abuse and internet victimization were each assessed using only two items, and internal consistency estimates tend to increase with number of items per sub-scale (Tavakol & Dennick, 2011). Further, as the JVQ-R2 is a screening tool and not a scale, it does not make any assumptions about underlying constructs of abuse and deals with actual life events rather than experiences which may be expected to have high inter-correlation between items, and low internal consistency is therefore expected; this applies particularly to child maltreatment screening tools (Finkelhor et al., 2005; Meinck et al., 2022). Findings are corroborating the psychometric validity of the JVQ-R2 established in other countries (Steele et al., forthcoming).

In a final review round, two of the piloted screeners on neglect and one screener on emotional abuse and domestic violence exposure respectively were removed following concerns about length and participant burden in the study. The final *JVQ-R2 Adapted Version* (*Australian Child Maltreatment Study*) included a total of 17 child maltreatment screener items, assessing Physical Abuse (2 items), Sexual abuse (5 items (including 2 non-contact items and 3 contact items), Emotional Abuse (3 items), Neglect (3 items), and Experience of Domestic Violence (4 items). Screener items were also included on corporal punishment (1 item), and internet sexual victimization (2 items, only applied to ages 16–24). The algorithms used by the ACMS team in deriving prevalence estimates for each maltreatment type from the ACMS survey conducted in 2022 are published in forthcoming work.

This research is subject to several limitations. First, sample size of the pilot study was too small to examine structural validity of the JVQ-R2 in the Australian context, nor were we able to examine measurement invariance across sex and age cohorts. Second, due to the small sample size, prevalence estimates could not be reported even though they were within expected ranges. Third, we did not examine the full psychometric properties of the final version of the questionnaire, as this will be subject to future analysis using data from the sample surveyed in the Australian Child Maltreatment Study.

Overall, this study suggests that the *JVQ-R2 Adapted Version* (*Australian Child Maltreatment Study*) is a valid measure of all five types of child maltreatment, comprising physical abuse, sexual abuse, emotional abuse, neglect, and experience of domestic violence. The conceptual congruence of screener items, cognitive testing, pilot testing, screener endorsement rates, and low number of refusals suggest the adapted JVQ-R2 is an acceptable measure for the cultural context and meets the scientific purposes for which it was designed. Further research is needed to examine the structural validity of the JVQ-R2 and establish criterion validity of the JVQ-R2.

Data availability

The data that has been used is confidential.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.chiabu.2023.106093.

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