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BMJ Open Development of a multidimensional culturally and socially inclusive measure of factors that support resilience: Child Resilience Questionnaire-Child report (CRQ-C) – a community-based participatory research and psychometric testing study in Australia

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ABSTRACT

Objective Development and testing of a comprehensive and social and culturally inclusive child-report measure of resilience factors supporting positive outcomes in the face of adversity.

Design The measure is based on a socioecological model of resilience and was developed and revised using community-based participatory research methods with Aboriginal and refugee background communities. Pilot testing and validation of the child-report version (Child Resilience Questionnaire-Child report (CRQ-C)) is described in this paper.

Setting Australia.

Participants Children aged 7–12 years from culturally and socially diverse backgrounds completed the CRQ-C in the pilot (n=387) and validation study (n=775). Families recruited via hospital clinics, Aboriginal and refugee background communities and nested follow-up of participants in an existing cohort study.

Analysis The factor structure and construct validity of CRQ-C scales were assessed using exploratory and confirmatory factor analyses. Preliminary assessment of criterion validity was conducted using the Strengths and Difficulties Questionnaire (SDQ). Internal consistency of final scales was assessed using Cronbach's alpha.

Results Conceptually developed CRQ-C was over inclusive of resilience factors and items. Exploratory factor analyses and confirmatory factor analyses supported 10 subscales reflecting personal resilience factors (positive self/future, managing emotions) and connectedness to family, school and culture. Excellent scale reliability ($\alpha=0.7-0.9$) for all but one scale (*Friends*, $\alpha=0.6$). Significant negative correlation between CRQ-C and SDQ total difficulty score supporting criterion validity ($r_s=-0.317$, $p<0.001$).

Conclusion The CRQ-C is a new culturally and socially inclusive self-report measure of resilience factors in childhood, with demonstrated content, construct and scale reliability. Further testing of criterion validity required.

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ Use of participatory methods and codesign processes to ensure content validity and a measure that is culturally and socially inclusive of diverse populations.
- ⇒ Use of gold-standard psychometric approaches, including confirmatory factor analysis to establish construct validity, and testing of criterion validity against the Strengths and Difficulties Questionnaire.
- ⇒ One of only two child self-report measures of resilience factors available at ages 7–12 years, with advantage of being culturally and socially inclusive of children with diverse backgrounds.
- ⇒ Criterion validity supported using the Strengths and Difficulties Questionnaire as a proxy measure of resilience. Further criterion validity testing against a child resilience measure would provide stronger evidence (not available at the time of the study conception).

Availability of child and parent report CRQ supports broad applications in clinical, research and intervention work. Socially inclusive and culturally appropriate tools are fundamental to create the evidence needed to assess and guide intervention efforts.

Resilience was first seen as a static personal characteristic—unique individuals able to do remarkable things despite exposure to adversity or hardship.¹ Subsequent research has moved the field to an understanding of resilience as a more 'ordinary magic',² a dynamic process of an individual drawing on internal and external resources to navigate adversity. Similarly, while resilience has historically been assessed using



a positive outcome (eg, academic success) in the face of an adverse exposure (eg, childhood sexual abuse), new measurement approaches are needed—multidimensional measures that reflect real-world complexity where strengths and vulnerabilities existing in all relevant socioecological domains—within the child but also in their relationships and environment. *‘With this expanded focus, research on resilience will be able to shift clinical work away from building rugged individualism (emphasising personal recovery and adaptation), and towards interventions that create individuals with adequate resources and the external supports required to manage adversity well.’*³

Sandwiched between early childhood and adolescence, middle childhood (age 5–12 years) represents a neglected period in research and clinical work. It is a key period for the development of self-control, social skills, self-regulation and identify. Antecedents to a number of disorders and psychopathologies such as depression, self-injury, substance use and eating disorders are increasingly being identified in childhood.^{4 5} Adversity in childhood is not uncommon⁶ and there is robust evidence on the impacts on brain development, mental and physical health in both the short and long term.^{7–10} While resilience factors have been identified that support positive outcomes despite adversity exposure in adolescents and adults,^{11–14} there has been less attention paid to children. However, there is a growing interest in the incorporation of resilience and strength-based approaches in education, clinical and research settings.^{15–17}

Better evidence for what resilience factors support positive child outcomes in the face of adversity is urgently needed to guide effective early intervention efforts. Children with born with biological advantages (neurobiological systems not impacted in utero or infancy by ‘toxic stress’^{7 18}), and psychological, social, and ecological resources will be more able to ‘regain, sustain or improve their mental well-being’ or development when challenged by one or more risk factors.³ However, resilience research has been widely criticised for a lack of scientific rigour and standardised approaches to definition and ongoing issues associated with inadequate measurement approaches.^{19–21} The few resilience measures currently available are almost universally adult or youth focused and developed without adequate consideration of cultural diversity.^{19 21–23} Some social or cultural communities experience a significantly higher cumulative load of early life stress and adversity. For First Nations peoples and refugee families, this arises from the impacts of colonisation, persecution, discrimination experiences of war, social disadvantage and intergenerational trauma. Despite significant adversity, many First Nations and refugee communities demonstrate highly resilient outcomes^{24–27} but are poorly represented in the existing child resilience literature.¹¹ Greater scientific rigour and consistency in resilience measurement is needed, particularly for children, including the

development and validation of culturally and socially inclusive tools.^{19 21 28} Tools that are socially inclusive and culturally appropriate are fundamental to creating the evidence needed to guide interventions to support child resilience.

A recent review of how studies measure child resiliency (as an outcome) noted that few studies used validated measures. Of those that did, the parent report Strengths and Difficulties Questionnaire (SDQ) and the Child Behaviour Checklist were the most common.¹⁹ Validated child measures that reflect the current definition of resilience as a process of drawing on resources are even rarer. A systematic review of child-report measures identified two,²⁹ The Social Emotional Assets and Resources Scale and the Child and Youth Resilience Measure. The former is limited to personal strengths only (self-regulation, responsibility, social competence and empathy). As resilience has been shown to vary in different domains (self, family community, etc), assessing strengths and vulnerabilities across all relevant socio ecological domains is essential. The Child and Youth Resilience Measure addresses both internal and external resources (access to material resources, relationships, identity, power and control, cultural adherence, social justice and cohesion). While this measure was developed via a comprehensive multi-country process, the development of the three factor CYRM-child 12 item version was conducted with children aged 10 years or older³⁰ with the wording revised for the younger version (ages 5–9). The one validation study of the child CYRM for 5–9 years identified (sample mean aged 7.6 years) did not support a three-factor solution. A single factor was identified, with a mean total resilience score of 33 out of a possible 36, suggesting ceiling effects and minimal variation in scores.³¹ The lack of a psychometrically validated multidomain resilience measure that was developed with the target population (children aged 5–12 years) remains a significant limitation to advances in the field of child resilience.

This paper describes development of the child-report Child Resilience Questionnaire (CRQ-C), a culturally and socially inclusive multidimensional measure of child resilience factors. The CRQ was developed based on an ecological-transactional model of resilience.^{32 33} The child is at the centre, surrounded by their family, the community and societal factors and each level of the environment contains risk and protective factors. The child and these contexts (eg, family, school) mutually influence each other,³² that is, the child is an active agent, both shaping and being shaped by their world. As a lifelong process, resilience needs to be considered within the context of life course development and across these socioecological domains. The developmental tasks of childhood and adolescence differ greatly. During middle childhood, children spend the majority of time within the family environment and make a major transition to school. Therefore, the primary socioecological domains will comprise family and school, with resilience factors in

these domains expected to have the greatest salience. In adolescence, a key developmental drive for greater independence and self-identity leads to an increase in the salience of the peer and social domains.

The codesign of this measure is described elsewhere. Briefly, important child resilience factors were identified through discussion groups with socially and culturally diverse parents and children; staff working with 'at-risk' families³⁴; and a systematic review.¹¹ Community-based participatory research methods and codesign with Aboriginal and refugee-background communities were employed to create a measure with high cultural acceptability, reliability and effectiveness for use in diverse contexts.^{35 36} There is a child, parent and school report CRQ. The child-report measure (CRQ-C) is the focus of this paper.

The aims of this paper include: (1) pilot and validation testing to assess the structure and performance of conceptually developed items and scales and (2) describing the psychometric properties of the CRQ-C, including structural validity, scale internal reliability, criterion validity and gender differences.

METHOD

Study design and context

As described elsewhere,^{37 38} the study aimed to develop an inclusive, multidimensional measure of resilience in children that was relevant to a range of contexts in which children may encounter adversity and show resilience. Two methodological approaches were used to ensure participation by families with *diverse social and cultural backgrounds, adversity exposures and resilience factors*: (1) the questionnaire was codesigned with Aboriginal and refugee background communities, populations with high levels of historic and current discrimination, intergenerational trauma and violence exposures and (2) families with a child suffering an illness or injury were recruited from outpatient clinics in a large public Victorian tertiary hospital.³⁸ Public hospitals provide free healthcare, and the clinics are attended by large numbers of families everyday, including urban and rural based families, with significant variation in economic, cultural and social backgrounds. The targeted inclusion of socially and culturally diverse families ensured that not only resilience factors identified in majority populations were included but also broader social, economic, cultural and linguistic factors. Such factors may contribute to resilient outcomes for children growing up in different contexts, for example, connectedness to a specific cultural community and/or language.³⁸

Two rounds of psychometric testing and revision comprised: (1) a pilot study to identify the underlying structure of the questionnaire and reduce length by selecting the best scales and items and (2) the revised CRQ-C was validated using a larger sample of children

to confirm the factor structure, reduce the length and undertake criterion testing against the SDQ.

Throughout the study, we maintained a strong commitment to consultation, engagement and codesign. This included: guidance from an Aboriginal Advisory Group; establishment of an Aboriginal working group of Aboriginal investigators, Advisory Group members and Aboriginal study staff to guide the research relating to Aboriginal families; establishment of a refugee working group of investigators and study staff expert in refugee health to guide work with families of refugee background. Aboriginal staff and bicultural workers were employed to conduct the research in their communities and were consulted on findings at every stage.

Participants

Pilot study—testing of items and CRQ-C structure

Parents and children aged 5–12 years were recruited to the study from three sources from June to December 2016. Researchers and bicultural workers talked with potential families in their homes, at community spaces or events or on the phone. They went through the study information statement in English or a preferred language (in refugee background communities). Families could ask questions before deciding to participate. Parents provided written or verbal consent for themselves and/or their child to participate. Where verbal consent was provided, the researcher completed a written consent form confirming that active verbal consent for participation had been gained. Children aged 7 or older were invited to provide verbal or written assent to self-complete the CRQ-C. Younger children (aged 5–6) were considered unlikely to have sufficient literacy skills to read and understand the questionnaire.

1. Aboriginal families were recruited via the community networks of Aboriginal investigators and researchers in South Australia, and children completed the draft CRQ-C on paper.
2. Community networks of bicultural researchers facilitated recruitment of refugee-background families in four diverse communities: Assyrian Chaldean (from Iraq and Syria), Karen (from Burma); Tamil (from Sri Lanka) and Sierra Leone communities. Children completed the paper CRQ-C in English, Karen or Arabic, with assistance from the bicultural researcher as needed.
3. Families were recruited in specialist outpatient clinics at a large tertiary children's hospital. Researchers approached families waiting for appointments and explained the study. Children in consenting families completed the CRQ-C on paper. If called in to their appointment, families could leave the finished/unfinished questionnaires in an anonymous box or with researcher and return to complete them after their appointment.



Co-designed draft CRQ-C	Pilot Study	Validation Study
INDIVIDUAL		
Self identity (9 items) I think I am a good friend I am a brave person		
Positive sense of self (7 items) I feel good about myself I like to try new things	Positive Self/future (7 items) I feel good about myself I am hopeful about my life	Positive Self/future (7 items) I feel good about myself I am hopeful about my life
Hopes /Expectations (9 items) I look forward to growing up I am hopeful about my life		
Personal agency /self-efficacy (12 items) If I have a problem, I can work it out I don't try things if I might make a mistake	Managing emotions/problems (6 items) When I feel angry I know how to calm down It is easy for me to work out how I am feeling	Managing emotions/problems (6 items) When I feel angry I know how to calm down It is easy for me to work out how I am feeling
Coping Skills (11 items) I have someone I can share my worries with When I feel angry I know how to calm down		
FAMILY		
Parent role / guidance (10 items) My family talks about what is right and wrong My family has routines	Guidance (5 items) My family talks about what is right and wrong My family has routines	
Parent-child relationship (9 items) ..grown up in my family I can share feelings... I love spending time with my family	Connectedness (5 items) ..grown up in my family I can share feelings We talk things through in our family	
Communication (9 items) ..grown up in family.. talk to about anything We talk things through in our family		Connectedness (5 items) ..grown up in my family I can share feelings I feel safe at home The place I live in feels like home
Basic needs – family (8 items) I feel loved by my family My family makes sure I have what I need e.g.	Basic needs (6 items) The place I live in feels like home I feel safe at home	
Basic needs – home (7 items) I feel safe at home The place I live in feels like home		
Friends (9 items) I have a close friend I would like to have more friends	Friends (2 + 3 new items) I have a close friend I would like to have more friends	
SCHOOL & FRIENDS		
Belonging and safety (13 items) I feel I belong at my school I get bullied or teased at school	Belonging (4 + 2 new items) There are other people like me at my school I get bullied or teased at school	Belonging (7 items) I have a close friend I would like to have more friends There are other people like me at my school I get bullied or teased at school
Engagement (10 items) I am interested in what I learn at school I like learning at school	Engagement (3 + 2 new items) I am interested in what I learn at school I like learning at school	Engagement (6 items) I am interested in what I learn at school I like learning at school
Teacher-child relationships (9 items) My teachers help me when I need it Teachers let me know when I am doing well..	Teacher Support (6 items) My teachers help me when I need it Teachers let me know when I am doing well..	Teachers (6 items) My teachers help me when I need it Teachers let me know when I am doing well...
Environment (9 items) My school or teachers celebrate student I think my school is a good school		
COMMUNITY AND CULTURE		
Connection to culture (16 items) My culture is important to me I am strong because of my culture	Connection to culture (7 items) My culture is important to me I am strong because of my culture	Connection to culture (6 items) My culture is important to me I am strong because of my family stories ...
Religion/spirituality/beliefs (7 items) I am strong because of my religion or beliefs ..connected to people through church,mosque	Religion/Spirituality (2 + 5 revised items) I am strong because of my religion or beliefs I am strong because of my family stories ...	
Community spaces/places (5 items) I go to a group or activity in my community, e.g. I enjoy going to community events/activities e.g.		
Basic needs (9 items) I feel safe in the area where I live My family is happy living where we live	Opportunity to learn (6 new items) ...opportunity to learn this language Learning this language is important to me	Language (6 items) ...opportunity to learn this language Learning this language is important to me I like to talk to our family/relatives ...
	Connectedness (6 new items) I understand when/are talking in this lang... I like to talk to our family/relatives ...	

Figure 1 Summary of CRQ-C scale revisions across the pilot and validation studies. CRQ-C, Child Resilience Questionnaire-Child report.

VALIDATION STUDY—CONFIRMATION OF FACTOR STRUCTURE AND PRELIMINARY CRITERION TESTING

Families with children aged 7–12 years were recruited between September 2017 and March 2020. Recruitment process replicated that described above. Additionally, an existing cohort study was used to recruit families as described below.

1. Aboriginal families were recruited via community networks of Aboriginal investigators and researchers and children completed the CRQ-C on a study iPad or paper.
2. Refugee-background families were recruited via the community networks of the bicultural workers in four diverse communities: Assyrian Chaldean (from Iraq and Syria), Hazara (from Afghanistan), Karen (from Burma and Thailand) and Sierra Leone communities. Children completed the CRQ-C on a study iPad or paper, in English, Karen, Arabic or Dari as preferred.
3. Families were recruited in the specialist clinics in a tertiary children's hospital as described above. Families were randomised to complete the CRQ-C on an iPad or paper.
4. Children were recruited via the Maternal Health Study, a cohort study of 1507 first-time mothers and their first-born child followed up over 10 years.³⁹ Mothers in the cohort were informed about the Child Resilience Study in a regular Maternal Health Study newsletter. Mothers with multiple children were then invited to participate, and to invite a younger child aged 7–12 years (not the study child) to complete the CRQ-C. Children completed the CRQ-C online via an emailed personalised REDCap link.

Measures

Child Resilience Questionnaire

The CRQ-C comprises multiple scales across the individual, family, school and community domains. [Figure 1](#) provides an outline of the domains, subscales and example items in the draft CRQ-C, pilot and final CRQ-C. The conceptually developed draft CRQ-C was over inclusive for testing purposes.

Children were asked 'How often are the following true for you?' with response options 0 'not at all', 1 'not often', 2 'sometimes', 3 'most of the time' 4 'all of the time'. The response options were accompanied by a pictogram of a glass that was empty ('not at all') through to a full glass ('all of the time') to assist the child in responding. The CRQ was available in English, Arabic, Karen and Dari. Translations were conducted by accredited translators. The translated versions were assessed by study bicultural workers and revised to ensure words and language style were appropriate for the local community involved. Children completing the CRQ on iPad had the option of listening to the questions on headphones in their preferred language through the CRQ APP.

Scale scores were calculated by summing scale items (scored 0/4) for children with none or 1 missing item. The total CRQ score was calculated by summing all scales.

Parent report SDQ

Child emotional and behavioural functioning was measured using the parent report SDQ,⁴⁰ a 25-item measure for 4–16-year olds. Attributes are rated as not true, somewhat true or certainly true. The SDQ comprises five subscales and a total difficulty score. It has been validated for use with Australian children.^{40 41} A cut-off score of ≥ 15 on the total difficulties score was used to identify children with clinical level emotional and/or behavioural difficulties.^{40 41}

The study was formulated in 2012, with stage 1 data collection beginning in 2013.³⁸ At this time, there were no child resilience measures available.²¹ The SDQ was a commonly used measure for identifying positive child outcomes in contexts of adversity and has been successfully used in both Australian Aboriginal and refugee contexts. It was included as a proxy indicator of criterion validity.

Analysis

Analyses for the pilot study and validation study are described below. Descriptive statistics were used to summarise the characteristics of the participants.

Pilot study—testing of items and CRQ-C structure

Item response distribution and missing data were examined. Items were deleted for the following reasons: limited response sets, skewness, high proportion of missing data or ambiguity as identified by respondents or in consultations. Exploratory factor analyses (EFA) with maximum likelihood and varimax rotation in STATA (16)⁴² was used to examine the factor structure within each domain.⁴³ Determination of the number of factors and items to retain was guided: by eigenvalues > 1 (Kaiser's rule), scree plot, variance explained by the model (values of 50% or higher deemed acceptable⁴⁴), pattern of factor loadings, interpretability of the scale and the conceptual underpinning of the scales.^{45 46}

Preliminary validation study—confirmation of construct validity and criterion testing

Confirmatory factor analyses (CFA) were conducted using MPlus with robust maximum likelihood estimation on the covariance structures on the revised CRQ-C scales within each domain. The adequacy of the models was assessed using goodness-of-fit χ^2 , and practical fit indices including the comparative fit index, Goodness-of-Fit index (GFI) and Adjusted GFI with estimates of 0.90 or above indicating acceptable model fit.⁴⁷ The root mean square error of approximation with values close to or below 0.05 within the 90% CI also indicated good model fit.⁴⁶ Standardised factor loadings, standardised residual covariances and modification indices were examined to identify model misfit. All modifications were theoretically

**Table 1** Description of participants and recruitment in the pilot and validation studies

	Pilot study	Validation study
	n (%)	n (%)
Self-reported child gender		
Female	181 (47.9)	367 (47.9)
Male	197 (52.1)	400 (52.2)
Child country of birth		
Australia	268 (77.9)	659 (85.1)
Overseas	76 (22.1)	115 (14.9)
Parent/carer country of birth		
Australia	166 (44.4)	440 (57.5)
Overseas	208 (55.6)	325 (42.5)
Age mean (SD)	9.7 (1.6)	9.9 (1.7)
5–6 years	5 (1.3)	15 (1.9)
7–8 years	91 (24.3)	165 (21.4)
9–10 years	146 (38.9)	259 (33.6)
11–12 years	123 (32.8)	325 (42.2)
13 years	10 (2.7)	7 (0.9)
Aboriginal and/or Torres Strait Islander	24 (6.2)	85 (11.0)
Refugee background families		
Community		
Assyrian Chaldean (Iraq, Syria)	31 (40.3)	24 (25)
Karen (Burma, Thailand)	25 (32.5)	30 (31.3)
Tamil (Sri Lanka)	7 (9.1)	
Sierra Leonean (Sierra Leone)	14 (18.2)	30 (31.3)
Hazara (Afghanistan)		12 (12.5)
Years in Australia		
Born in Australia	14 (22.2)	28 (30.8)
1–2 years	11 (17.5)	29 (31.9)
3–5 years	19 (30.2)	19 (20.9)
6+ years	19 (30.2)	15 (16.5)
Recruitment source		
Hospital specialist clinics	294 (76)	407 (52.5)
Refugee background communities	78 (20.2)	100 (12.9)
Aboriginal and Torres Strait Islander Communities	15 (3.9)	75 (9.7)
General population Mother–Child cohort		193 (24.9)
Questionnaire format		
Paper	387 (100)	268 (34.6)
iPad		325 (41.9)
Online (REDCap)		182 (23.5)
Total	387 (100)	775 (100)

driven based on the relevance of items to the scale and degree of redundancy.^{43 45 46}

Criterion validity of the CRQ-C was assessed by examining correlation with the total SDQ difficulty score using Spearman Rank correlation. Substantial and high correlations are required for criterion validity (>0.45). However, as the SDQ is not a resilience measure, moderate negative correlations will be accepted as preliminary support for criterion validity. Differences in the mean CRQ-C scores for children with and without emotional/behavioural

difficulties were assessed using a t-test. To account for potential gender differences, a linear regression of mean CRQ-C scores by emotional/behavioural difficulties was conducted, adjusting for child gender. Internal scale consistency was examined using Cronbach's alpha, with 0.7–0.9 deemed good to excellent.^{48 49}

Public/patient involvement

This study grew from community consultations being conducted in Aboriginal communities in rural, regional

and remote South Australia, and refugee communities in Victoria. Community members wanted to better understand why some children and families were doing well, while others in similar situations were not doing so well. Representatives from the public were consulted at each stage, for example, the study recruitment and conduct of the study were guided by an Aboriginal Advisory Group, an Aboriginal Working Group and a refugee background working group, each of which included community members. Community Aboriginal staff and bicultural workers were employed to guide and conduct the research and consult on the findings at each stage. Authors on this paper include representatives from all of these groups (with the exception of our bicultural workers).

RESULTS

Participants

The characteristics and recruitment sources of participants are outlined in [table 1](#) for the pilot and validation studies. A majority of children were Australian born, with a mean age of 9.7 (SD 1.6) in the pilot and 9.9 (SD 1.7) in the validation study, and boys and girls fairly evenly represented. Targeted recruitment in the pilot and validation studies was successful in engaging a significant proportion of Aboriginal and/or Torres Strait Islander children (6.2% and 11.0%, respectively) and refugee-background children (20.2% and 12.9%, respectively).

Pilot study—testing of items and CRQ-C structure

To ensure variation in the type and severity of adversity experienced, and the individual, family and community-level resilience factors that would be identified, families from diverse social and cultural backgrounds underpinned the questionnaire development. The development process has been described elsewhere,^{37 38} in brief, resilience factors were identified in a systematic review of the existing literature¹¹ and in discussion groups with people working with higher risk families and parents and children of diverse backgrounds. These factors were grouped by the first author into socioecological domains (individual, family, friends, school and community). Conceptual scales and items were codesigned and three versions were created for different respondents; a parent/caregiver version (CRQ-P/C) relevant to children aged 5–12 years; a self-report version for children aged 7–12 years (CRQ-C) and a school staff version for children aged 5–12 years (CRQ-S). All development processes involved iterative consultation and community engagement as described above. This paper describes the CRQ-C.

The conceptually developed draft CRQ-C was developed on a socioecological model of resilience, comprised 19 scales and 178 items. The domains and scales described below are summarised in [figure 1](#). Examination of item distributions, missing values, duplication and participant feedback guided the exclusion of 74 items (self-domain–21; school–20, family–23; community–10). A very brief description of the factor analyses is provided below,

with comprehensive details prioritised for the validation study (factor solutions, item loadings and a record of decisions are detailed in online supplemental table 1).

Personal domain

A seven-factor solution was identified explaining 58.5% of the variance in scores. However, the scree plot, pattern of factor loadings, interpretability of the factors and the conceptual underpinning of the scales suggested a four-factor solution better fit the data. Factor 1 comprised items from the *Positive self* and *Positive Future* scales, with the second factor comprising *Personal Agency* and *Coping skills* items. The two-factor solution was accepted for validation. This model explained lower than the desired variance (44.9%) but had strong conceptual and face validity. The first two factors had high loadings and >3 items. Seven items were retained to form the *Positive self/Future scale* (6 items removed due to low communalities, low/multiple factor loadings and/or conceptual overlap). Two items were dropped (conceptual overlap and low factor loading) from factor 2 to form the 6 item *Self-regulation* scale.

Family domain

A four-factor solution was identified explaining 55.3% of the variance in scores. The first factor comprised *Positive parent–child relationship* items, with some *Communication* items. One item was dropped (conceptual overlap) to create the *Connectedness* scale. The second factor comprised items from the two *Basic Needs* scales, with one item dropped for low face validity ('I am lonely'). The third factor comprised *Parent role/Guidance* items, renamed *Guidance*. The final factor incorporated four *Friends* items, with two items cross-loading on the *Basic Needs* factor. This scale was revised in consultations as described below.

School domain

A five-factor solution was identified explaining 61.1% of the variance in scores. A four-factor analysis was conducted following criteria specified above explaining 55.6% of variance. Factor one comprised *Teacher Support* and *School Environment* items. The five highest loading items were teacher-related items, which were retained and named *Teacher support* scale. The next two factors comprised items from the *Engagement* and *Belonging* scales, respectively. Two items were deleted from each factor due to low/cross-loading. The fourth factor comprised <3 items. Other changes made in this domain are described below.

Community domain

A four-factor structure was identified explaining 66.1% of the variance. Two scales were retained—*Connection to culture, Religion and Spirituality*. Six items were deleted due to low loadings, conceptual overlap or loading on the third factor (<3 items). In consultations, it was agreed that *Connection to culture* and *Community* scales also overlapped conceptually. Other changes made in this domain are described below.

Table 2 CRQ-C item summary, including standardised factor loadings from initial and final confirmatory factor models (CFA) for personal and family domains (n=795)

Domain Item	N	M (SD)	Skewness	Kurtosis	Model fit/factor loadings			
					Initial congeneric CFA	Final congeneric CFA		
Personal domain								
Positive self/future					$\chi^2(14)=41.55$, $p<0.001$, RMSEA=0.05 (.03, .07), CFI=0.99, TLI=0.98		$\chi^2(5)=31.43$, $p<0.001$, RMSEA=0.08 (.06, .11), CFI=0.99, TLI=0.98	
I feel good...	794	3.1 (0.7)	-0.6	3.6	0.71	0.72		
I believe I will have a happy...	793	3.4 (0.8)	-1.5	5.2	0.77	0.77		
I am hopeful...	790	3.4 (0.8)	-1.4	5.2	0.73	0.73		
I am proud...	790	3.3 (0.8)	-1.2	4.3	0.78	0.78		
I am a confident...	792	3.0 (1.0)	-0.9	3.4	0.63	0.62		
I keep trying even...	792	3.0 (0.9)	-0.9	3.5	0.48	-		
It is easy for me to think of things...	793	3.1 (1.0)	-0.9	3.2	0.49	-		
Managing emotions/problems					$\chi^2(9)=27.14$, $p=0.001$, RMSEA=0.05 (.03, .07), CFI=0.99, TLI=0.98		$\chi^2(5)=23.27$, $p<0.001$ RMSEA=0.07 (.04, .10), CFI=0.99, TLI=0.97	
When things go wrong...	793	2.7 (1.0)	-0.6	3.0	0.50	0.51		
I know how to make myself feel better...	791	2.5 (1.1)	-0.4	2.6	0.66	0.67		
I know what to do when...	791	2.8 (0.9)	-0.6	3.1	0.66	0.64		
When I feel angry I know how to...	793	2.6 (1.0)	-0.5	2.7	0.60	0.60		
It is easy for me to work out....	790	3.0 (1.0)	-0.9	3.4	0.57	0.57		
People ask me to help them...	792	2.7 (1.1)	-0.6	2.7	0.48	-		
Family domain								
Connectedness					$\chi^2(9)=22.26$, $p=0.008$, RMSEA=0.04 (.02, .07), CFI=0.99, TLI=0.99		$\chi^2(2)=4.23$, $p=0.121$, RMSEA=0.04 (.00, .09), CFI=1.00, TLI=0.99	
There is a grown up in my family who I can....	739	3.5 (0.9)	-2.0	6.9	0.71	0.66		
My family listens...	740	3.3 (0.9)	-1.2	4.3	0.80	0.82		
I think the rules in my family...	736	3.2 (0.9)	-1.3	4.3	0.65	0.66		
We talk things through...	747	3.2 (0.9)	-1.1	4.0	0.62	-		
My family is interested....	737	3.1 (1.0)	-0.8	3.1	0.60	-		
My family makes me feel...	740	3.8 (0.6)	-2.8	12.4	0.72	0.72		
Basic needs					$\chi^2(5)=2.88$, $p=0.728$, RMSEA=0.00 (.00, .04), CFI=1.00, TLI=1.00		$\chi^2(2)=1.88$, $p=0.391$, RMSEA=0.00 (.00, .07), CFI=1.00, TLI=1.00	
I feel safe at home	746	3.7 (0.7)	-2.7	11.3	0.82	0.82		
The place I live in...	735	3.7 (0.6)	-2.9	13.5	0.85	0.85		
I feel I belong in the place...	742	3.7 (0.6)	-2.1	8.0	0.86	0.86		
I have what I need in...	734	3.6 (0.6)	-2.0	7.4	0.71	0.71		
My friends come to...	740	2.4 (1.2)	-0.3	2.2	0.29	-		
Guidance					$\chi^2(5)=51.40$, $p<0.001$, RMSEA=0.11 (.09, .14), CFI=0.96, TLI=0.91		No model fit indices available	
I am given responsibilities...	743	3.1 (1.1)	-1.0	3.2	0.66	0.68		
I help my family with things like...	740	3.0 (1.0)	-0.7	2.9	0.66	0.77		
My family teaches me life skills...	734	3.3 (0.9)	-1.3	4.6	0.72	0.61		
My family talks about what is...	739	3.5 (0.8)	-1.7	5.8	0.61	-		
My family has routines...	735	3.0 (1.1)	-1.1	3.6	0.48	-		

CFI, comparative fit index; CRQ-C, Child Resilience Questionnaire-Child report; RMSEA, root mean square error of approximation; TLI, Tucker-Lewis index.

Consultation driven revisions

Working group, community and investigator consultations on the face and content validity of the revised CRQ-C resulted in several revisions.

The wording in the family basic needs scale was revised to include a mix of *house/home/place where I live* to be more inclusive of different living arrangements, including not

having a house. The refugee working group added an item to capture a sense of belonging: 'I feel I belong in the place where I live'. Two items were added to each of the school scales to (1) increase congruence with CRQ-P/C, the parent/carer version (Gartland *et al*⁵⁰) and (2) the Aboriginal working group added an item to capture acknowledgement of culture in the school setting.

Table 3 CRQ-C item summary, including standardised factor loadings from initial and final confirmatory factor model (CFA) for school and community domains (n=795)

Domain item	N	M (SD)	Skewness	Kurtosis	Model fit/factor loadings	
					Initial congeneric CFA	Final congeneric CFA
School domain						
Teacher support					$\chi^2(5)=33.5, p<0.001, RMSEA=0.09 (.06, .11), CFI=0.99, TLI=0.98$	
My teachers listen to me...	766	3.2 (1.0)	-1.4	4.5	0.88	No changes made
My teachers help me...	773	3.3 (0.9)	-1.4	4.6	0.79	
My teachers are fair...	754	3.2 (1.0)	-1.3	4.5	0.70	
My teachers let me know when...	758	3.1 (1.0)	-1.2	4.0	0.62	
I have a teacher I can talk to when...	761	3.0 (1.2)	-1.0	3.0	0.68	
Academic engagement					$\chi^2(9)=44.4, p<0.001, RMSEA=0.07 (.05, .09), CFI=0.99, TLI=0.99$	
I like learning at...	780	3.0 (1.0)	-1.2	4.1	0.87	0.87
I like going to school	760	2.9 (1.2)	-1.0	3.3	0.89	0.89
I am interested in....	757	2.9 (1.0)	-0.9	3.5	0.81	0.81
Trying hard at school....	758	3.3 (1.0)	-1.5	4.7	0.66	0.64
I finish work on time...	756	2.9 (0.9)	-0.8	3.4	0.48	-
I like doing the extra...	765	3.3 (1.1)	-1.5	4.7	0.32	-
Belonging					$\chi^2(9)=41.17, p<.001, RMSEA=.07 (.05, .09), CFI=.93, TLI=.88$	
My school acknowledges...	746	3.5 (0.9)	-1.8	5.8	-0.70	-0.76
I feel comfortable talking about my culture...	761	2.9 (1.2)	-1.0	3.0	-0.56	-0.60
There are other people like me...	754	2.7 (1.3)	-0.7	2.4	-0.46	-0.44
I get bullied or teased at school...	775	3.1 (1.2)	-1.3	3.8	0.45	-
I feel different to the other children...	756	2.2 (1.4)	-0.2	1.8	0.33	-
I get into trouble at school...	760	3.0 (1.0)	-1.0	3.8	0.33	-
Friends					$\chi^2(5)=52.56, p<0.001, RMSEA=0.11 (.09, .14), CFI=0.92, TLI=0.84$	
I have a best/close...	764	3.6 (0.9)	-2.7	10.2	-0.79	-0.82
I have a group of friends....	773	3.6 (0.7)	-2.4	9.6	-0.68	-0.69
I have a friend I can talk....	765	3.1 (1.2)	-1.3	3.8	-0.64	-0.64
I find it hard... (reversed)	766	2.9 (1.2)	-0.9	2.7	0.42	0.37
I would like to have more...(reversed)	759	1.9 (1.5)	0.1	1.6	0.27	-
Community domain						
Culture					$\chi^2(20)=95.40, p<0.001, RMSEA=0.07 (.06, .09), CFI=0.99, TLI=0.99$	
My family culture makes me feel....	678	3.0 (1.2)	-1.0	3.2	0.83	0.79
My family culture or values help...	676	2.8 (1.2)	-0.7	2.5	0.84	0.85
I am strong because of my family stories...	672	2.8 (1.3)	-0.87	2.75	0.86	0.87
I am strong because of my...	683	3.0 (1.1)	-1.2	3.9	0.78	0.79
I am connected to my family...	680	3.2 (1.0)	-1.3	4.1	0.77	0.78
My family culture is important...	673	3.3 (1.1)	-1.5	4.7	0.80	-
I look to my elders (a respected older person)...	676	3.0 (1.1)	-0.9	3.0	0.71	-
I like going to events...	674	3.2 (1.1)	-1.4	4.1	0.74	-
Multilingual families						
Opportunity to learn					Not Calculated	
Learning this language is important...	298	1.6 (0.6)	-1.3	3.5		
I would like to learn...	297	1.7 (0.5)	-1.7	4.9		
I have had the opportunity...	299	1.6 (0.6)	-1.1	3.1		
My parents encourage me...	299	1.6 (0.6)	-1.4	3.9		

Continued

Table 3 Continued

Domain item	N	M (SD)	Skewness	Kurtosis	Model fit/factor loadings	
					Initial congeneric CFA	Final congeneric CFA
Connectedness					$\chi^2(9)=82.8$, $p<0.001$, RMSEA=0.17 (.13, .20), CFI=0.97, TLI=0.95	$\chi^2(2)=2.59$, $p=0.274$, RMSEA=0.03 (.00, .12), CFI=1.00, TLI=0.99
I can speak this language	301	1.4 (0.6)	-0.3	2.3	-	
I can understand this language	302	1.5 (0.6)	-0.7	2.5	-	
I can easily talk to elders...	296	1.2 (0.8)	-0.4	1.8	0.90	0.92
I like to talk to my family...	296	1.3 (0.7)	-0.6	2.0	0.90	0.91
Understanding this language makes me feel...	292	1.6 (0.7)	-1.4	3.6	0.85	0.74
I understand when people in my family/ community...	296	1.5 (0.7)	-1.0	2.8	0.83	0.81
Someone in my family speaks...	298	1.6 (0.6)	-1.2	3.2	0.81	-
Understanding this language...	293	1.5 (0.7)	-1.1	3.1	0.78	-

CFI, comparative fit index; CRQ-C, Child Resilience Questionnaire-Child report; RMSEA, root mean square error of approximation; TLI, Tucker-Lewis index.

In the community domain, many respondents indicated they 'didn't have a culture' and/or skipped the domain. Mean missing data were 12.9 (SD=17.1) compared with 5.1 (SD=11.6) in the school domain. Therefore, a preamble was added asking respondents to tick a list of factors important to their family that reflected a diverse interpretation of culture (eg, the food you eat, family celebrations, family traditions, religion). It was hoped this would highlight the broad relevance of the section and encourage completion. Similarly, the religion/spirituality items were revised to increase relevance to a broader section of the population by using the words 'spiritual beliefs, values and/or family stories'.

Consultations also identified language as an important way in which children and families can be connected to their culture. While several items had addressed this, they were not retained in the revised CRQ-C. Therefore, two new language scales (*Opportunity to learn* and *Connectedness*) were created for multilingual families through iterative consultations (see figure 1).

Peer relationships have been identified as an important resilience factor,¹¹ but the two scales addressing them (*Friends* and *School Belonging*) were not supported in the factor structure. These scales were revised and expanded through an iterative process of consultation (see figure 1).

Validation study—confirmation of factor structure and criterion testing

The revised CRQ-C comprised 77 items in 13 subscales (see figure 1). Scale items, item descriptives (mean, SD, skewness and kurtosis), initial and final confirmatory factor model fit and loadings are provided in table 2 (self and family domains) and table 3 (school and community domains). Actions taken to improve model fit in CFA are described below.

Personal domain

The CFA one-factor congeneric *Positive Future/Future* model was an excellent fit to the data; however, the two lowest loading items were removed to produce a shorter

5-item scale with acceptable model fit and high factor loadings. The one-factor congeneric *Managing Emotions* model showed excellent fit to the data. The item with lowest factor loading was removed to produce a 5-item subscale, with excellent factor loadings for the remaining items.

Family domain

The one-factor congeneric model for *Connectedness* was a good fit to the data. There was some redundancy between the lowest loading items and other items, so the two lowest loading items were removed. Model fit was good and the remaining items had excellent factor loadings. In the *Basic Needs* scale, one poorly loading item was removed, with the resulting one-factor congeneric model showing close fit to the data. The one-factor congeneric *Guidance* model showed poor model fit indices. Items 4 and 5 were sequentially removed due to the low factor loadings, and ambiguity (item 4) and the younger children not understanding 'routines' (item 5) as identified in consultations. The factor loadings for the remaining three items were excellent (model fit indices not possible for three items).

School domain

The one-factor congeneric model for *Teacher support* showed good fit to the data, with all items loading at more than 0.6. The *Engagement* one-factor congeneric model fit the data well; however, two items with the low factor loadings were dropped to reduce the length of the measure. Fit indices showed adequate fit to the data, with high factor loadings. The one-factor congeneric models for the *Belonging* and *Friends* scales showed poor fit indices. Three and four factor CFA models were tested for this domain. The Teacher support and School engagement factors were consistent in both models, but the Belonging and Friends items were mixed across a third factor. With compatibility between the two concepts, the decision was made to test a one-factor congeneric model with the Belonging and Friends items combined, retaining items that loaded on the three-factor model. Eight items were

Table 4 Correlations of CRQ-C subscales with the SDQ total difficulties score (n=507)

Domain	Correlations with SDQ total difficulties score		
	Scale	n	Spearman's rank P value
Individual			
Positive self/future	507	-0.317	0.000
Managing emotions	507	-0.363	0.000
Family			
Connectedness	493	-0.287	0.000
Basic needs	492	-0.243	0.000
Guidance	493	-0.168	0.000
School			
Teacher support	499	-0.177	0.000
Engagement	499	-0.245	0.000
Friends	500	-0.075	0.094
Culture			
Connectedness	458	0.095	0.042
Language	208	0.073	0.297
CRQ total score	507	-0.317	0.000

CRQ-C, Child Resilience Questionnaire-Child report; SDQ, Strengths and Difficulties Questionnaire.

retained, but the model still had very poor fit to the data. As shown in [table 3](#), removal of the two lowest loading items on the original *Belonging* scale resulted in good model fit indices, but poor conceptual validity in terms of the original scale. Removal of the worst performing item in the *Friends* scale resulted in adequate model fit, high factor loadings (bar one item) with excellent conceptual validity. After consultations, the *Friends* scale was retained as best representing the original intent of this domain.

Cultural domain

The added preamble to the culture section appeared to work well, with fewer missing items (mean=2.3, SD=5.1). The one-factor congeneric model of the Connectedness scale showed good fit to the data. To produce a brief 5-item scale, two items with the lowest factor loadings (items 7 and 8) were dropped, plus item 6 to increase consistency with the CRQ-Parent report questionnaire.⁵⁰

An EFA was conducted to assess the underlying factor structure for the two new language scales. Scree plot and eigenvalues supported a one-factor structure, explaining 21% of the variance, comprising the six *Connectedness* items. The one-factor congeneric model of these six items showed poor model fit. Dropping items 5 and 6 (conceptual overlap with item 2 and 3, respectively) resulted in excellent model fit indices, with high item factor loadings.

Criterion validity

Preliminary criterion validity of the CRQ-C was assessed using the parent report SDQ as a proxy measure of

'resilient outcomes'. Parents of 507 children completed the SDQ. As shown in [table 4](#), criterion validity was partially supported with the CRQ-C scales in the individual, family and school domains showing low to moderate significant negative correlations with the SDQ total difficulties score ($r_s = -0.2$ to -0.3 , $p < 0.001$). The friends, cultural connectedness and language scales were not correlated with the SDQ total difficulty score. This was expected as the SDQ prosocial scale is not included in the difficulties score, nor does the SDQ address language factors. The SDQ prosocial scale and CRQ friends scale were not correlated (0.072, $p = 0.109$).

Psychometrics description of the new CRQ-C

The scale summary statistics and reliability are shown in [table 5](#). The final scales showed good to excellent internal consistency (Cronbach's $\alpha = 0.67$ to 0.87), with the exception of the friends scale, which was only adequate (Cronbach's $\alpha = 0.55$), with high internal consistency for the questionnaire as a whole (Cronbach's $\alpha = 0.91$).

There were no gender differences observed in the CRQ-C scale scores, with the exception of a lower mean *School Engagement* scale score for boys ($t_{(764)} = 3.9$, $p = 0.001$).

DISCUSSION

The CRQ-C is a new self-report measure of factors supporting resilience in children across diverse contexts, doubling the number of multidomain child measures available. Development of the CRQ-C drew on extensive community-based participatory research methods to ensure the measure has excellent content validity and most importantly addresses a broad range of factors that can support child resilience in diverse contexts. The pilot testing and validation involved large samples, with targeted recruitment of families from diverse backgrounds, including families known to experience greater social disadvantage, adversity and resilience.^{51 52} The final CRQ-C comprises 10 scales across the socioecological domains most relevant to children—the domains of personal, family, school and culture. Good psychometric properties were attained. Subscale internal consistency reliability was good to excellent (with the exception of the *Friends* scale, $\alpha = 0.55$). With the companion CRQ-parent report,⁵⁰ these new resilience measures will have wide-ranging applications, including research, clinical and intervention contexts.

Preliminary criterion validity was only moderately supported. Individual scales were low to moderately negatively correlated with the SDQ total difficulty score. The SDQ was selected as a 'proxy measure' of resilience as there were no alternative child resilience measures available at the time the study was developed. Further psychometric testing will be conducted using a resilience measure such as the Child and Youth Resilience Measure.

During the data collection phase, bicultural workers and Aboriginal researchers working with families reported that it started conversations about children and what is

Table 5 Psychometric description of the Child Resilience Questionnaire — Child report

Domains	CRQ-C total sample					T test	P value		
	Items (range*)	n	Range	Mean (SD)	Cronbach α			Girls (n=421)	Boys (n=471)
Individual									
Positive self/future	5 (0–20)	774	0–20	16.2 (3.1)	0.79	16.2 (3.0)	16.2 (3.2)	$t_{(764)}=0.1$	0.943
Managing emotions	5 (0–20)	775	2–20	13.6 (3.4)	0.70	13.7 (3.4)	13.6 (3.5)	$t_{(765)}=0.3$	0.736
Family									
Connectedness	4 (0–16)	723	0–16	13.7 (2.5)	0.70	13.8 (2.3)	13.6 (2.6)	$t_{(713)}=0.8$	0.411
Basic needs	4 (0–16)	722	0–16	14.7 (2.0)	0.78	14.7 (2.0)	14.7 (2.1)	$t_{(712)}=-0.1$	0.858
Guidance	3 (0–12)	726	1–12	9.3 (2.3)	0.67	9.4 (2.1)	9.1 (2.5)	$t_{(699)}=1.4$	0.167
School									
Teacher support	5 (0–20)	743	0–20	15.7 (3.8)	0.80	15.9 (3.7)	15.4 (4.0)	$t_{(733)}=1.6$	0.120
Engagement	4 (0–16)	745	0–16	12.2 (3.4)	0.84	12.7 (3.1)	11.7 (3.7)	$t_{(764)}=3.9$	0.001
Friends	4 (0–16)	749	2–16	10.9 (2.2)	0.55	11.0 (2.1)	10.8 (2.3)	$t_{(735)}=1.2$	0.382
Culture									
Connectedness	5 (0–20)	660	0–20	14.6 (4.7)	0.87	14.4 (4.7)	14.8 (4.8)	$t_{(650)}=-0.9$	0.365
Language	4 (0–8)	290†	0–8	5.6 (2.4)	0.85	5.4 (2.5)	5.6 (2.3)	$t_{(282)}=-0.8$	0.235
CRQ total score	39 (0–156)	775	8–153	114.5 (25.7)	0.91	115.8 (24.8)	113.1 (26.7)	$t_{(765)}=1.4$	0.148
CRQ total score (including lang)†	43 (0–164)	775	8–160	116.5 (26.6)	0.91	117.8 (25.8)	115.1 (27.4)	$t_{(765)}=1.4$	0.153

*Response options ranged from 0 'not at all' to 4 'all of the time', with exception of language where response options ranged from 0 'not at all' to 2 'a lot'.

†Completed by multilingual families only.

CRQ-C, Child Resilience Questionnaire-Child report.

needed for 'children to grow up strong'. Parents reported that doing the CRQ-Parent/Carer made them to stop and think about their child and what was going on for them. Many refugee parents have been focused on basic needs such as safety, food and housing for a long time. Bicultural workers reported that doing the CRQ together became a valuable starting point for discussions about the child's developmental needs. Similarly, the CRQ-C could be used as a positive way of starting a conversation with a child or family, highlighting their existing strengths and where support might be helpful. This could be valuable in schools or clinical settings. The CRQ-C will support evaluation of interventions aimed at building resilience or child skills such as emotion regulation or social connections, by quantitatively showing improvements between pre-intervention and post-intervention scores (or lack thereof) in the targeted resources. Standardised tools that are socially inclusive and culturally appropriate are fundamental to creating the evidence needed to guide interventions to support child resilience. The availability of a standardised measure developed in this way will facilitate comparisons with other populations, including within research and other contexts, for example, in clinical settings.

The importance of cultural factors for resilient outcomes is not new.^{11 27 53 54} The CRQ-C is the first measure to include assessment of both *connectedness* to culture and *language* as a form of connection to culture/community. The CRQ-C is also unique as the first measure of the resilience factors developed to be relevant and effective for Australian Aboriginal and refugee background children. Further research is required to assess if the measure is relevant for specific groups or cultures such as other First Nations peoples.

More than a quarter of the children rated their *Family Connectedness* at the highest score (205/723, 28.4%) and more than half on for the *Family Basic Needs* scale (399/722, 55.3%). In assessment scales, this implies ceiling effects. However, as a measure of the resources available to children, this is a valid outcome. These results suggest that children who score lower on these two scales are likely to represent a particularly vulnerable subset of children.

Despite several attempts to strengthen the *Friends* subscale, the final scale had lower internal consistency reliability (0.55) than any other scale. It may be that the existing items represent diverse aspects of friendships in this age group, or that friendships are a developing skill for middle school children, with greater variation across and within respondents. Adolescence is a known for the increasing influence and importance of peers, with positive peer relationships an identified resilience factor⁵⁵⁻⁵⁷ with positive outcomes reported for grade six students.⁵⁸ However, there is little evidence for younger children (partly due to the lack of standardised measures available). It may be a less salient resilience factor for 5-12 year olds. Further research with the CRQ-C will allow greater investigation and understanding of the role of friends in child resilience across diverse contexts and adversities.

There are a number of strengths in this study, including strong participatory methods and codesign processes to ensure content validity and cultural acceptability; rigorous psychometric approaches, including CFA. Strong engagement of culturally diverse participants and the community consultations and codesign approaches ensure broad relevance and effectiveness. Some limitations are also important to consider. Development of the CRQ-C was based on children aged 5-12, and the measure may not be as effective for older children. The families taking part represent a cross-section of the Australian community; however, the CRQ may not work as well in other settings, or in communities not represented in our study sample. It is important to acknowledge the significant limitation of using the SDQ to assess criterion validity. Further research will further assess criterion and construct validity (whether the CRQ-C does measure resilience) using more appropriate tools that have become available since the conduct of this study, for example, the Child and Youth Resilience Measure. Assessment of test-retest reliability and the psychometric properties of the CRQ-P/C in different populations (such as Aboriginal children or refugee background children), child ages and contexts are planned.

CONCLUSION

The CRQ-C doubles the number of multidomain resilience measures available to assess resilience factors for children aged 5-12, across diverse contexts and settings. It is a rare culturally and socially inclusive self-report measure for children in this age group, with demonstrated content, construct validity, reliability and criterion validity. The measure will facilitate investigation of a child's strengths or vulnerabilities across different aspects of their socioecological world, allowing more nuanced examinations of child resilience. The self-report measure, with a companion parent form, allows for wide-ranging applications. For example, for starting conversations in clinical settings; programme evaluation; and research.

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