The Resilience Research Centre Adult Resilience Measure (RRC-ARM)

USER'S MANUAL:
Research
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Centre

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There is no cost to reproduce the CYRM-28 and the CYRM-12 including versions of the CYRM adapted for use with younger children and Persons Most Knowledgeable, nor for the ARM-28 and the ARM-12, for research purposes as long as (a) no changes are made other than those authorised by the RRC, (b) the author's are credited (see Ungar & Liebenberg, 2011), and (c) the measure is not sold.

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1. INTRODUCTION

The Resilience Research Centre - Adult Resilience Measure (RRC-ARM) is an adapted version of the Child and Youth Resilience Measure (CYRM), a screening tool designed to measure the resources (individual, relational, communal and cultural) available to individuals that may bolster their resilience. The CYRM was developed as part of the International Resilience Project (IRP) at the Resilience Research Centre (RRC) in 14 communities around the world. The IRP originated in 2002 under Dr. Michael Ungar at the School of Social Work, Dalhousie University, and was funded at the time by the Social Sciences and Humanities Research Council of Canada, as well as the Nova Scotia Health Research Foundation.

The CYRM was originally designed to be used with youth aged 9 to 23 years old. Since its initial validation, the measure has also been adapted into a 26-item version for use with children aged 5 to 9 years old, a 28-item version used to obtain data from a Person Most Knowledgeable (PMK) about a child/youth's life, and a 28-item Adult Resilience Measure (RRC-ARM), which is generally used with participants aged 23 and older (as seen in this manual). For all four versions of the CYRM (child, youth, adult, and PMK), a reduced resilience measure consisting of 12 items is available, as well as versions that offer either a three-point or five-point response scale.

This manual was created to guide users of the RRC-ARM through the preparation and implementation of the measure in their own research. As such, much of the technical research jargon and detail has been removed. More detailed information regarding the CYRM and the RRC-ARM is included in Section Six entitled *Development of the CYRM.*

The manual has eight sections. Section One, the introduction, includes a brief explanation of our own interpretation of resilience. Section Two contains suggestions on how to enhance contextual relevance of the RRC-ARM. While following these suggestions is not mandatory to using the measure in your study, it is strongly recommended given the importance of cultural and contextual relevance in research. Section Three contains four versions of the RRC-ARM (two versions of the 28-item measure and two versions of the 12-item measure). In both cases, the measure is presented as a three-point and a five-point Likert scale. Section Four presents the structure of the RRC-ARM and the SPSS syntax for scoring both the 28- and 12-item versions of the measure. Section Five contains a list of publications relevant to resilience theory; Section Six presents a detailed review of the development of the CYRM; Section Seven discusses the validation of the 28-item measure to date, and Section Eight discusses the validation of the 12-item version to date.

Work continues on validation of both the CYRM and the RRC-ARM. Updates will be sent to users of the measures as they occur.

RESILIENCE

Based on the work of the Resilience Research Centre, we now understand resilience as a social ecological construct. This ecological perspective suggests that, when providing a person with opportunities to realize his or her potential, interventions must involve those mandated to help, such as social workers, nurses and educators, as well as those expected to provide support, namely the person's family, peers and community.

Resilience is defined as:

I. The capacity of individuals to navigate their ways to resources that sustain well-being;
II. The capacity of individuals' physical and social ecologies to provide those resources; and
III. The capacity of individuals and their families and communities to negotiate culturally meaningful ways to share resources.

The following publications provide more detailed information on resilience:

1. Ungar, M., Brown, M., Liebenberg, L., Othman, R., Kwong, W.M., Armstrong, M. and Gilgun, J. (2007). Unique Pathways to Resilience across Cultures. *Adolescence, 42*(166), 287-310.

2. Ungar, M. (2008). Resilience across Cultures. *British Journal of Social Work, 38*(2), 218-235.

3. Ungar, M. (2011). The Social Ecology of Resilience: Addressing Contextual and Cultural Ambiguity of a Nascent Construct. *American Journal of Orthopsychiatry, 81*(1), 1-17.

2. FRAMEWORK FOR IMPLEMENTATION

SUMMARY OF IMPLEMENTATION PROCESS

Recommended components for preparing the CYRM for implementation are summarized in the table below and expanded upon in the following pages. Given the cross-cultural nature of the measure, we recommend these components to help ensure that the measure remains contextually relevant to the community involved in your research.

Component	Task
1	Establish a community advisory committee
2	Prepare the RRC-ARM for local use Step 1: Conduct focus group interviews Step 2: Select site-specific questions for Section B of the RRC-ARM Step 3: Select the appropriate version of the measure for Section C Step 4: Finalize language of the RRC-ARM
3	Administer the RRC-ARM

COMMUNITY INPUT

We strongly advise that researchers hold meetings with select members of the community in which the research is being conducted. A local advisory committee can provide valuable input on the research implementation, such as suggestions on contextually relevant ways of conducting the study and additional site-specific questions to add to the RRC-ARM. They can also comment on findings and help ensure that interpretations of the data are given local context.

It generally works well to consult with a group of about five locals who have something important to say about their community. The group could include people who will complete the survey, such as parents, professionals, caregivers or elders who have overcome challenges themselves.

PREPARING THE RRC-ARM FOR USE

Step 1: Conduct focus group interviews

While the advisory group may suggest questions to include, we also recommend holding focus group interviews with other small groups of people specifically tasked with producing questions that make sense to people locally. The focus group members should be similar to those who will complete the survey. The site-specific questions they suggest will comprise Section B of the RRC-ARM (see Page 13 of this manual).

The following prompts may help generate conversation and questions.

- "What do I need to know to live comfortably here and be safe?"
- "How do you describe people who are able to overcome a lot of adversity here, despite the many problems they face?"
- "What does it mean to you, your family and your community when bad things happen?"
- "What kinds of things are most challenging for you living here?"
- "What do you do when you face difficulties in your life?"
- "What does being healthy mean to you and others in your family and community?"
- "What do you and others you know do to keep healthy?" (Mentally, physically, emotionally, spiritually)

Step 2: Select site-specific questions for Section B

Review the advisory and focus group data and questions that have emerged. With the advisory committee, select up to ten site-specific questions to make up Section B of the RRC-ARM.

Step 3: Select the appropriate version of the measure for Section C

Section C of the RRC-ARM, generally used with ages 23 and up or as is deemed appropriate within the local context, is prepared in two 28-item English versions. Both versions of the RRC-ARM offer the same questions, but they are presented slightly differently. The first version includes a five-point response scale (Not at All, A Little, Somewhat, Quite a Bit, A Lot); the second includes a three-point response scale (No, Sometimes, Yes) at an easier reading level. The first version should be selected when comprehension is not a concern and when seeking greater variance in response; the second should be used when comprehension may be of concern and when simplified responses are preferred. The chosen version should reflect what is most appropriate for local participants. Below is an example of the difference between the two options.

Option 1:

To what extent do the sentences below describe you? Circle an answer for each statement.

	Not at All	A Little	Some -what	Quite a Bit	A Lot
27. I enjoy my community's culture and traditions	1	2	3	4	5

Option 2:

Please circle one answer for each question.

	No	Sometimes	Yes
27. I like my community's culture and the way my community celebrates things (e.g. holidays or festivals)	1	2	3

If a shorter version is required, the 12-item version of the RRC-ARM can be used. The RRC-ARM 12 includes items from all the sub-scales discussed on Page 19 (*Sub-scales and questions clusters on the RRC-ARM-28*) except questions pertaining to physical health (e.g. "if I am hungry, I can get food to eat") and spirituality (e.g. "spiritual beliefs are a source of strength for me"). The RRC-ARM-12 is also available in a three-point and a five-point Likert scale version.

Step 4: Finalize language of the ARM

Review the selected RRC-ARM with the advisory committee to ensure that questions are phrased in a way that makes sense to participants locally. Finalize translation of the RRC-ARM into the local language and, if possible, back-translate the measure into English to increase the accuracy of the translation. For more information on the translation process, see Ungar and Liebenberg (2005).

ADMINISTERING THE RRC-ARM

The RRC-ARM can be administered to participants either in groups or individually. If researchers are concerned about comprehension amongst participants, questions should be read to participants as they work through the measure. But, if participants prefer to complete the questionnaire without such assistance, they should be allowed to do so.

Administration of the RRC-ARM-28 takes approximately 15 minutes, while administration of the RRC-ARM-12 can take slightly less time.

3. RRC-ADULT RESILIENCE MEASURE

For office use only	
Participant Number:	
Site ID:	
Data number:	
Date of administration:	

The Resilience Research Centre
Adult Resilience Measure
(RRC-ARM)

DIRECTIONS

Listed below are a number of questions about you, your family, your community, and your relationships with people. These questions are designed to help us better understand how you cope with daily life and what role the people around you play in how you deal with daily challenges.

There are no right or wrong answers.

SECTION A:

Please complete the questions below

1. What is your date of birth? _____
2. What is your sex? _____
3. What is the highest level of education you have completed? _____
4. Who do you live with? _____
5. How long have you lived with these people? _____
6. How many times have you moved homes in the past 5 years? _____

7. Please describe who you consider to be your family. _____

_____

8. People are often described as belonging to a particular racial group. To which of the following group(s) do you belong? (Mark or check the one(s) that best describe(s) you.)

   - ○ Aboriginal or Native
   - ○ South Asian (*e.g., East Indian, Pakistani, Punjabi, Sri Lankan)*
   - ○ South-East Asian *(e.g., Cambodian, Indonesian, Laotian, Vietnamese)*
   - ○ West Asian to Middle Eastern *(e.g., Armenian, Egyptian, Iranian, Lebanese)*
   - ○ Asian (*e.g., Korean, Chinese, Japanese)*
   - ○ Black (*e.g., African or Caribbean descent)*
   - ○ White or European
   - ○ Filipino
   - ○ Latin American (*e.g., Mexican, South American, Central American)*
   - ○ Other (please specify):_____
   - ○ Mixed Race (please list all groups that apply): _____

9. People are often described as belonging to a particular ethnic or cultural group(s). (For example, Chinese, Jamaican, German, Italian, Irish, English, Ukrainian, Inuit, East Indian, Jewish, Scottish, Portuguese, French, Polish, Vietnamese, Lebanese, etc.) To which ethnic or cultural group(s) do you see yourself belonging? Please list as many groups as you want.

_____

_____

_____

SECTION B:

To what extent do the statements below describe you? Circle one answer for each statement.

	Not at All	A Little	Some-what	Quite a Bit	A Lot
1. (Site-specific question 1)	1	2	3	4	5
2. (Site-specific question 2)	1	2	3	4	5
3. (Site-specific question 3)	1	2	3	4	5
4. (Site-specific question 4)	1	2	3	4	5
5. (Site-specific question 5)	1	2	3	4	5
6. (Site-specific question 6)	1	2	3	4	5
7. (Site-specific question 7)	1	2	3	4	5
8. (Site-specific question 8)	1	2	3	4	5
9. (Site-specific question 9)	1	2	3	4	5
10. (Site-specific question 10)	1	2	3	4	5

SECTION C:

SELECT ONLY ONE OF THE FOLLOWING FOUR RRC-ARM OPTIONS
and ensure that the wording is appropriate given the local context.
For more information, see page 7, "Preparing the RRC-ARM for use".

OPTION 1: SECTION C

To what extent do the sentences below describe you? Circle one answer for each statement.

	Not at All	A Little	Some -what	Quite a Bit	A Lot
1. I have people I can respect in my life	1	2	3	4	5
2. I cooperate with people around me	1	2	3	4	5
3. Getting and improving qualifications or skills is important to me	1	2	3	4	5
4. I know how to behave in different social situations	1	2	3	4	5
5. My family have usually supported me through life	1	2	3	4	5
6. My family know a lot about me	1	2	3	4	5
7. If I am hungry, I can get food to eat	1	2	3	4	5
8. I try to finish what I start	1	2	3	4	5
9. Spiritual beliefs are a source of strength for me	1	2	3	4	5
10. I am proud of my ethnic background	1	2	3	4	5
11. People think that I am fun to be with	1	2	3	4	5
12. I talk to my family/partner about how I feel	1	2	3	4	5
13. I can solve problems without harming myself or others (e.g. without using drugs or being violent)	1	2	3	4	5
14. I feel supported by my friends	1	2	3	4	5
15. I know where to get help in my community	1	2	3	4	5
16. I feel I belong in my community	1	2	3	4	5
17. My family stands by me during difficult times	1	2	3	4	5
18. My friends stand by me during difficult times	1	2	3	4	5
19. I am treated fairly in my community	1	2	3	4	5
20. I have opportunities to show others that I can act responsibly	1	2	3	4	5
21. I am aware of my own strengths	1	2	3	4	5
22. I participate in organized religious activities	1	2	3	4	5
23. I think it is important to support my community	1	2	3	4	5
24. I feel secure when I am with my family	1	2	3	4	5
25. I have opportunities to apply my abilities in life (like skills, a job, caring for others)	1	2	3	4	5
26. I enjoy my family's/partner's cultural and family traditions	1	2	3	4	5
27. I enjoy my community's culture and traditions	1	2	3	4	5
28. I am proud to be a citizen of _____ (insert country)	1	2	3	4	5

1. Ungar, M., and Liebenberg, L. (2011). Assessing resilience across cultures using mixed-methods: Construction of the Child and Youth Resilience Measure-28. *Journal of Mixed Methods Research, 5*(2), 126-149.
2. Liebenberg, L., Ungar, M., and Van de Vijver, F. R. R. (2012). Validation of the Child and Youth Resilience Measure-28 (CYRM-28) Among Canadian Youth with Complex Needs. *Research on Social Work Practice, 22*(2), 219-226.

OPTION 2: SECTION C

To what extent do the sentences below describe you? Circle one answer for each statement.

	No	Sometimes	Yes
1. I have people in my life who I can respect	No	Sometimes	Yes
2. I share/cooperate with people around me	No	Sometimes	Yes
3. Getting and improving qualifications and skills is important to me	No	Sometimes	Yes
4. I know how to behave in different social situations (such as at work, home, or other public places)	No	Sometimes	Yes
5. My family is supportive towards me	No	Sometimes	Yes
6. My family knows a lot about me (for example, who my friends are, what I like to do)	No	Sometimes	Yes
7. If I am hungry, I can usually get enough food to eat	No	Sometimes	Yes
8. I try to finish activities that I start	No	Sometimes	Yes
9. Spiritual beliefs are a source of strength for me (for example, believing in God or Allah)	No	Sometimes	Yes
10. I am proud of my ethnic background (for example, I am proud of where my family comes from or know a lot about my family's history)	No	Sometimes	Yes
11. People think that I am fun to be with	No	Sometimes	Yes
12. I talk to my family/partner about how I feel (for example, when I am sad or concerned)	No	Sometimes	Yes
13. When things don't go my way, I usually fix it without hurting myself or other people (e.g. without using drugs or being violent)	No	Sometimes	Yes
14. I feel supported by my friends	No	Sometimes	Yes
15. I know where to go if I need help	No	Sometimes	Yes
16. I feel that I belong in my community	No	Sometimes	Yes
17. My family cares about me when times are hard (for example, when I am ill or in trouble)	No	Sometimes	Yes
18. My friends cares about me when times are hard (for example, when I am ill or in trouble)	No	Sometimes	Yes
19. I am treated fairly	No	Sometimes	Yes
20. I have opportunities to show others that I can act responsibly	No	Sometimes	Yes
21. I know what I am good at	No	Sometimes	Yes
22. I participate in religious activities (like going to church or mosque)	No	Sometimes	Yes
23. I think it is important to help out in my community	No	Sometimes	Yes
24. I feel secure when I am with my family	No	Sometimes	Yes
25. I have opportunities to apply my abilities in life (like using skills, working at a job, or caring for others)	No	Sometimes	Yes
26. I like my family's culture and the way my family celebrates things (e.g. holidays)	No	Sometimes	Yes
27. I like my community's culture and the way my community celebrates things (e.g. holidays or festivals)	No	Sometimes	Yes
28. I am proud to be a citizen of _____ (insert country)	No	Sometimes	Yes

1. Ungar, M., and Liebenberg, L. (2011). Assessing resilience across cultures using mixed-methods: Construction of the Child and Youth Resilience Measure-28. *Journal of Mixed Methods Research, 5*(2), 126-149.
2. Liebenberg, L., Ungar, M., and Van de Vijver, F. R. R. (2012). Validation of the Child and Youth Resilience Measure-28 (CYRM-28) Among Canadian Youth with Complex Needs. *Research on Social Work Practice, 22*(2), 219-226.

OPTION 3: SECTION C

To what extent do the sentences below describe you? Circle one answer for each statement.

	Not at All	A Little	Somewhat	Quite a Bit	A Lot
1. I have people I can respect in my life	1	2	3	4	5
2. Getting and improving qualifications or skills is important to me	1	2	3	4	5
3. My family know a lot about me	1	2	3	4	5
4. I try to finish what I start	1	2	3	4	5
5. I can solve problems without harming myself or others (e.g. without using drugs or being violent)	1	2	3	4	5
6. I know where to get help in my community	1	2	3	4	5
7. I feel I belong in my community	1	2	3	4	5
8. My family stands by me during difficult times	1	2	3	4	5
9. My friends stand by me during difficult times	1	2	3	4	5
10. I am treated fairly in my community	1	2	3	4	5
11. I have opportunities to show others that I can act responsibly	1	2	3	4	5
12. I enjoy my family's/partner's cultural and family traditions	1	2	3	4	5

Liebenberg, L., Ungar, M., and LeBlanc, J. C. (2013). The CYRM-12: A brief measure of resilience. *Canadian Journal of Public Health, 104*(2), 131-135.

OPTION 4: SECTION C

To what extent do the sentences below describe you? Circle one answer for each statement.

	No	Sometimes	Yes
1. I have people in my life who I can respect	No	Sometimes	Yes
2. Getting and improving qualifications and skills is important to me	No	Sometimes	Yes
3. My family knows a lot about me (for example, who my friends are, what I like to do)	No	Sometimes	Yes
4. I try to finish activities that I start	No	Sometimes	Yes
5. When things don't go my way, I usually fix it without hurting myself or other people (e.g. without using drugs or being violent)	No	Sometimes	Yes
6. I know where to go if I need help	No	Sometimes	Yes
7. I feel that I belong in my community	No	Sometimes	Yes
8. My family cares about me when times are hard (for example, when I am ill or in trouble)	No	Sometimes	Yes
9. My friends cares about me when times are hard (for example, when I am ill or in trouble)	No	Sometimes	Yes
10. I am treated fairly	No	Sometimes	Yes
11. I have opportunities to apply my abilities in life (like using skills, working at a job, or caring for others)	No	Sometimes	Yes
12. I like my community's culture and the way my community celebrates things (e.g. holidays or festivals)	No	Sometimes	Yes

Liebenberg, L., Ungar, M., and LeBlanc, J. C. (2013). The CYRM-12: A brief measure of resilience. *Canadian Journal of Public Health, 104*(2), 131-135.

4. SCORING AND UNDERSTANDING THE RRC-ARM

SUB-SCALES AND QUESTION CLUSTERS ON THE RRC-ARM

Confirmatory Factor Analysis conducted on data gathered in three international sites has confirmed that the 28-item Child and Youth Resilience Measure (from which the RRC-ARM-28 is derived) has three sub-scales: individual capacities/resources, relationships with primary caregivers, and contextual factors that facilitate a sense of belonging (see Page 22, Fit Statistics). For adults, we see the three scales to be individual capacities, personal relationships with key individuals, and contextual factors that facilitate a sense of belonging. Certain questions in the survey provide insight into certain sub-scales. To score each sub-scale, simply sum responses to the relevant questions, which are identified in the clusters below[1]. From experience using the survey with youth, we have found that the higher the score, the more these resilience components are present in the lives of participants. The question clusters have not been tested specifically with the adult version of the resilience measure, but because the questions mirror those in the Youth Resilience Measure, we recommend that these question clusters be included when analyzing results from the RRC-ARM[2].

Individual

Individual: Personal Skills

2. I cooperate with people around me
8. I try to finish what I start
11. People think that I am fun to be with
13. I can solve problems without harming myself or others (e.g. without using drugs or being violent)
21. I am aware of my own strengths

Individual: Peer Support

14. I feel supported by my friends
18. My friends stand by me during difficult times

Individual: Social Skills

4. I know how to behave in different social situations
15. I know where to get help in my community
20. I have opportunities to show others that I can act responsibly
25. I have opportunities to apply my abilities in life (like skills, a job, caring for others)

[1] Please note that work continues on the CYRM-28 with regards to scoring and interpretation of results. As this information becomes available, this manual will be updated and distributed.

[2] Please note that while normative data is available an Appendix (separate from this document), these are from a Canadian sample of youth only. As data collection internationally continues, these norms will be revised and distributed. Should you be interested in seeing these data, please contact the RRC.

Relationship with Primary Caregiver

Caregiver: Physical Caregiving

5. My family has usually supported me through life
7. If I am hungry, I can get food to eat

Caregiver: Psychological Caregiving

6. My family knows a lot about me
12. I talk to my family/partner about how I feel
17. My family stands by me during difficult times
24. I feel secure when I am with my family
26. I enjoy my family's/partner's cultural and family traditions

Context

Context: Spiritual

9. Spiritual beliefs are a source of strength for me
22. I participate in organized religious activities
23. I think it is important to support my community

Context: Education

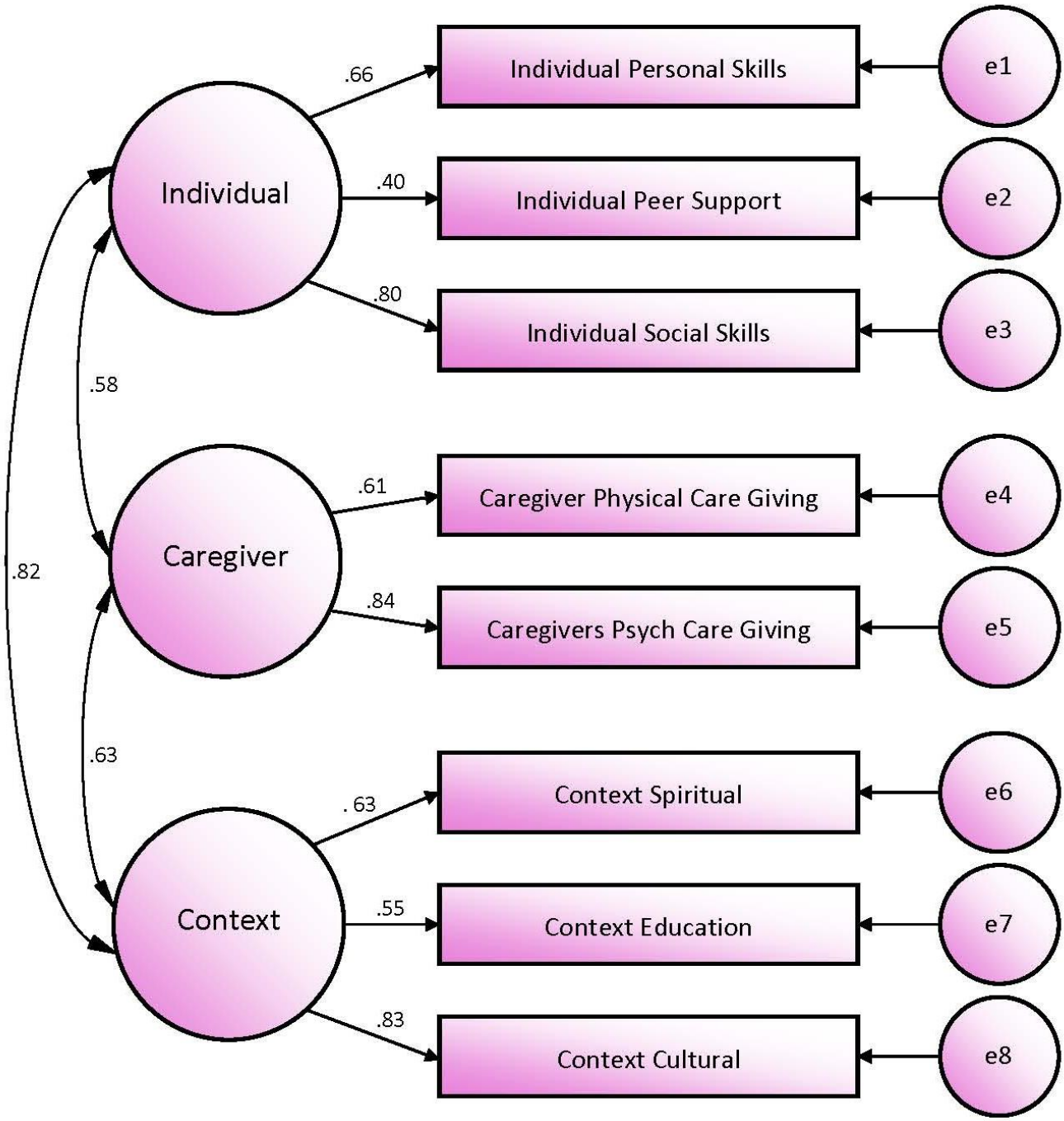
3. Getting and improving qualifications or skills is important to me
16. I feel I belong in my community

Context: Cultural

1. I have people I can respect in my life
10. I am proud of my ethnic background
19. I am treated fairly in my community
27. I enjoy my community's culture and traditions
28. I am proud to be a citizen of _____ (insert country)

CYRM Sub-Scale Fit Statistics

[$\chi^2(53, N = 410) = 98.00, p < .001$; TLI = .957; CFI = .979; RMSEA = .046]



SPSS SYNTAX FOR SCORING THE RRC-ARM-28

To compute a total RRC-ARM-28 score

```
*Higher scores indicate higher levels of characteristics associated with resilience*.
COMPUTE ARMscore = SUM (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28) .
VARIABLE LABELS ARMscore 'RRC-ARM Score'.
EXECUTE .
```

To compute total scores on the three RRC-ARM-28 sub-scales

```
*Higher scores indicate higher levels of characteristics associated with each of the sub-scales*.
**Individual**.
COMPUTE ARM_I_score = SUM (2, 4, 8, 11, 13, 14, 15, 18, 20, 21, 25).
VARIABLE LABELS ARM_I_score 'Individual Sub-Scale RRC-ARM Score'.
EXECUTE.
**Personal relationships with key individuals**.
COMPUTE ARM_R_score = SUM (5, 6, 7, 12, 17, 24, 26).
VARIABLE LABELS ARM_R_score 'Personal relationships with key individuals Sub-Scale RRC-ARM Score'.
EXECUTE.
**Context/Sense of belonging**.
COMPUTE ARM_C_score = SUM (1, 3, 9, 10, 16, 19, 22, 23, 27, 28).
VARIABLE LABELS ARM_C_score 'Context Sub-scale RRC-ARM Score’.
EXECUTE.
```

To compute mean scores on the three RRC-ARM-28 sub-scales

```
*The mean score for each sub-scale will give you a score out of either three or five, depending on the response scale used. These scores will represent the participant's average response to the questions included on that particular sub-scale*.
**Individual**.
COMPUTE MARM_I_scr = MEAN (2, 4, 8, 11, 13, 14, 15, 18, 20, 21, 25) .
VARIABLE LABELS MARM_I_scr ' Mean Individual Sub-Scale RRC-ARM Score' .
EXECUTE .
** Personal relationships with key individuals **.
COMPUTE MARM_R_scr = MEAN (5, 6, 7, 12, 17, 24, 26) .
VARIABLE LABELS MARM_R_scr ' Mean Personal relationships with key individuals Sub-Scale RRC-ARM Score' .
EXECUTE .
**Context/Sense of belonging**.
COMPUTE MARM_C_scr = MEAN (1, 3, 9, 10, 16, 19, 22, 23, 27, 28).
VARIABLE LABELS MARM_C_scr ' Mean Context Sub-Scale RRC-ARM Score' .
EXECUTE .
```

*** To compute total scores on the RRC-ARM-28 sub-scale question clusters***

Higher scores indicate higher levels of characteristics associated with each of the clusters.

**The Individual Sub-scale of the ARM-28 has three clusters of questions*.*

```
COMPUTE IndPS=SUM (2, 8, 11, 13, 21).
VARIABLE LABELS  IndPS 'Individual Personal Skills'.
EXECUTE.
COMPUTE IndPeer= SUM (14, 18).
VARIABLE LABELS IndPeer 'Individual Peer Support'.
EXECUTE.
COMPUTE IndSS= SUM (4, 15, 20, 25).
VARIABLE LABELS IndSS 'Individual Social Skills'.
EXECUTE.
```

**The Personal relationships with key individuals Sub-scale of the RRC-ARM-28 has two clusters of questions*.*

```
COMPUTE CrPhys= SUM (5, 7).
VARIABLE LABELS CrPhys 'Physical Caregiving'.
EXECUTE.
COMPUTE CrPsyc= SUM (6, 12, 17, 24, 26).
VARIABLE LABELS CrPsyc Psychological Caregiving'.
EXECUTE.
```

**The Contextual Sub-scale of the RRC-ARM-28 has three clusters of questions*.*

```
COMPUTE CntS= SUM (9, 22, 23).
VARIABLE LABELS CntS 'Context Spiritual'.
EXECUTE.
COMPUTE CntEd= SUM (3, 16).
VARIABLE LABELS CntEd 'Context Education'.
EXECUTE.
COMPUTE CntC= SUM (1, 10, 19, 27, 28).
VARIABLE LABELS CntC 'Context Cultural'.
EXECUTE.
```

*** To compute mean scores on the RRC-ARM-28 Sub-scale question clusters***

***The following scoring will produce a score out of three or five, depending on the response scale used, for each of the question clusters. These scores will represent the participant's average response to the questions included in that cluster.*

**The Individual Sub-scale of the RRC-ARM-28 has three clusters of questions*.*

```
COMPUTE MIndPS=MEAN (2, 8, 11, 13, 21).
VARIABLE LABELS  MIndPS 'Individual Personal Skills Mean Score'.
EXECUTE.
COMPUTE MIndPeer= MEAN (14, 18).
VARIABLE LABELS MIndPeer 'Individual Peer Support Mean Score '.
EXECUTE.
COMPUTE MIndSS= MEAN (4, 15, 20, 25).
VARIABLE LABELS MIndSS 'Individual Social Skills Mean Score '.
```

```
EXECUTE
*The Personal relationships with key individuals Sub-scale of the RRC-ARM-28 has two clusters of questions*.
COMPUTE MCrPhys= MEAN (5, 7).
VARIABLE LABELS MCrPhys 'Physical Caregiving Mean Score '.
EXECUTE.
COMPUTE MCrPsyc= MEAN (6, 12, 17, 24, 26).
VARIABLE LABELS MCrPsyc 'Psychological Caregiving Mean Score '.
EXECUTE.
*The Contextual Sub-scale of the RRC-ARM-28 has three sub-clusters of questions*.
COMPUTE MCntS= MEAN (9, 22, 23).
VARIABLE LABELS MCntS 'Context Spiritual Mean Score '.
EXECUTE.
COMPUTE MCntEd= MEAN (3, 16).
VARIABLE LABELS MCntEd 'Context Education Mean Score '.
EXECUTE.
COMPUTE MCntC= MEAN (1, 10, 19, 27, 28).
VARIABLE LABELS MCntC 'Context Cultural Mean Score '.
EXECUTE.
```

SPSS SYNTAX FOR SCORING THE RRC-ARM-12

The syntax below creates a total score for the RRC-ARM-12. As of yet, no sub-scales have been identified for the RRC-ARM-12.

The following syntax can be copied into an SPSS syntax file and used to score your RRC-ARM-12 data.

To compute a total RRC-ARM score
Higher scores indicate higher levels of characteristics associated with resilience.

```
COMPUTE ARMscore = SUM (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12) .
VARIABLE LABELS ARMscore 'RRC-ARM Score'.
EXECUTE .
```

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6. DEVELOPMENT OF THE CYRM-28

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Assessing Resilience Across Cultures Using Mixed Methods: Construction of the Child and Youth Resilience Measure

Michael Ungar[1] and Linda Liebenberg[1]

Abstract

An international team of investigators in 11 countries have worked collaboratively to develop a culturally and contextually relevant measure of youth resilience, the Child and Youth Resilience Measure (CYRM-28). The team used a mixed methods design that facilitated understanding of both common and unique aspects of resilience across cultures. Quantitative and qualitative stages to its development ensure the CYRM-28 has good content-related validity across research sites. Crossover comparison analyses of the findings from the quantitative administration of the pilot measure with 1,451 youth and qualitative interviews with 89 youth support the CYRM-28 as a culturally sensitive measure of youth resilience. The implications of this mixed methods approach to the development of measures for cross-cultural research are discussed.

Keywords

resilience, cross-cultural collaboration, multisite research, youth, Child and Youth Resilience Measure, mixed methods instrument development

Studies of resilience have most often relied on quantitative methods with samples of children and youth who face significant disadvantage in countries that Kagitçibasi (2007) describes as Minority World. The Minority World (also referred to as the West or Developed World) includes people who form the dominant culture in countries that are numerically small but exert a Eurocentric bias in areas of politics, economics, science, and art. Majority World cultures, which include economically underdeveloped nations, former East Block nations with economies in transition, and marginalized populations such as immigrants and native peoples living in the Minority World, have yet to be systematically included in studies of resilience. Most commonly, Minority World researchers describe resilience as a quality of individuals that reflects their capacity to engage in processes that make it likely they will overcome adversity and achieve normal or exceptional levels of psychosocial development (e.g., they will go to school, maintain a prosocial peer group, and avoid delinquency; Garmezy, 1983; Masten, 2001; Murphy & Moriarty, 1976; Rutter, 1987). As a consequence, and with only a few notable exceptions such as Werner and Smith's (1982) work on the Island of Kuaii and studies of African Americans and Native

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American's by McCubbin et al. (1998), the study of individual resilience and its resulting shift in focus from psychopathology to the protective processes that are associated with positive development has occurred with relatively little attention to cultural and contextual differences (Ungar, 2011). When cultural variation has been accounted for, most often through the study of African American or Latina/Latino youth (i.e., Parke et al., 2004), the effect of cultural immersion within the dominant culture, and heterogeneity among ethnoracial minorities themselves, has been largely overlooked. This raises questions as to whether resilience as it is measured represents a universal construct. Furthermore, although other psychological measures, such as Achenbach's Child Behavior Checklist (Achenbach, 2008), may demonstrate high-factorial invariance across cultures, such measures have relied on the export of psychological concepts from the Minority World. It is unclear whether indigenous concepts in Majority World contexts that are not being measured may better account for variability between ethnocultural groups and produce more valid findings. Without taking the time to contextualize measures and grow them through dialogue within and between cultures, we cannot know whether resilience researchers have overlooked unique aspects of psychological functioning related to positive development under stress (Greene & Hill, 2005).

The purpose of the Resilience Research Centre (RRC) and its network of collaborators globally has been to explore both etic (homogeneous) and emic (heterogeneous, indigenous) conceptualizations of resilience (Ungar, Lee, Callaghan, & Boothroyd, 2005; Ungar & Liebenberg, 2005). Rather than a quality of the individual, a social ecological interpretation of resilience is hypothesized:

> In the context of exposure to significant adversity, resilience is both the capacity of individuals to *navigate* their way to the psychological, social, cultural, and physical resources that sustain their well-being, and their capacity individually and collectively to *negotiate* for these resources to be provided and experienced in culturally meaningful ways. (Ungar, 2008, p. 225)

Understood this way, resilience is the qualities of both the individual and the individual's environment that potentiate positive development. Good outcomes are negotiated benchmarks of psychosocial growth co-constructed through interaction between marginalized ethnic and racial groups and those who control the psychological discourse that defines what doing well means in stressful contexts. When examined across cultures, however, potential indicators of resilience (synonymous with meeting expectations for functional competence in culturally relevant ways) must be negotiated. Different internal and external assets (e.g., a sense of humor, social support, and a safe community) contribute differently to positive development depending on the stressors in a child's life (Luthar, Cicchetti, & Becker, 2000). Consequently, resilience is understood to be particularly susceptible to contextual variation, access to the resources available to support positive development in Minority and Majority World settings, and the differences in power between individuals and groups to define their own well-being (Bottrell, 2009).

In this article, our objective is to detail the initial development of the Child and Youth Resilience Measure-28 (CYRM-28).[1] In designing the CYRM-28, our goals were threefold. First, we sought to create a tool for the cross-cultural study of resilience that could account for the psychosocial resources available to youth globally, making cross-cultural comparison of developmental outcomes associated with resilience possible. Second, we were seeking a way to discern which internal and external assets most influence successful developmental outcomes across all the cultural groups included in the study. And third, we wanted to identify the elements of a mixed methodology that was effective in the development of culturally sensitive psychological measures that avoided the exporting of concepts from Minority to Majority World contexts.

The RRC's mixed methods approach to measurement development was informed by Mertens's (2003) transformative–emancipatory research paradigm. Mertens's approach emphasizes the participation of respondents in all phases of the research as well as understanding the values and meaning that are part of both the research process and people's experiences of the phenomenon under study. In asking questions across cultures, and in an effort to avoid the imposition of Minority World bias, a team of researchers from 14 communities in 11 countries used their resources to develop the measure. By including more communities from Majority World contexts than Minority ones, the research was able to reflect the experiences of non-Western youth who, globally, outnumber their Western peers. Mixed methods were necessary to identify emic factors (including community values related to resilience) relevant to young people in cultures and contexts that are underrepresented in the Minority World literature. The use of mixed methods also allowed us to compare the results of our quantitative findings with young people's descriptions of their experiences of complex interactions to nurture and maintain well-being within their challenging social ecologies. We agree with Mertens's assertion that ontologically, sensitivity to the experiences of marginalized, stressed, populations requires methods that capture the diversity of people's viewpoints with regard to their social locations. As such, by having begun with exploratory qualitative data, the questions contained in the quantitative measure are rooted in the experiences of individuals from multiple cultures and contexts. Findings from the analysis of additional qualitative data also informed the quantitative analysis and findings, affecting the structure of the CYRM-28. In this way, the CYRM-28 is designed to demonstrate good content validity within each research site in which it was piloted while still sharing enough homogeneity to make it useful for cross-national comparisons.

Previous Research on Resilience Measures

Studies of resilience either employ standardized measures such as the subscales of the Strengths and Difficulties Questionnaire (Goodman, 2001) to measure the prevalence of behaviors and cognitions thought to be congruent with positive development or develop their own scales based on reviews of the literature most often published in Minority World journals. Examples of these measures include the Resilience and Youth Development Module (RYDM; http://www.wested.org/cs/chks/print/docs/hks_resilience.html) of the California Healthy Kids Survey and Wagnild and Young's (1993) Resilience Scale, among others (e.g., Biscoe & Harris, 1994; Donnon & Hammond, 2007; Hjemdal, 2007; Jew, Green, & Kroger, 1999; Oshio, Nakaya, & Kaneko, 2002; Springer & Phillips, 1997). Though the word resilience is often used in their titles, most measures provide an assessment of strengths that are relevant to all young people regardless of the degree of adversity they face. In designing the CYRM-28, we sought to include an audit of the strengths that were the most relevant to populations under stress by conducting focus groups (and later qualitative interviews) with youth and those responsible for their well-being from Minority and Majority World contexts where their youth are exposed to extreme adversity. We reasoned that internal and external assets (like high school engagement among racialized minorities in the United States and a personality trait such as shyness in China) would predict successful child development differently depending on the interaction between the asset, the risks facing the child, and the context in which the interaction takes place (Chen, DeSouza, Chen, & Wang, 2006; Shernoff & Schmidt, 2008). The resulting measure shows marked differences from others that assess resilience. Although individual and relational/family factors are just as prominent, community supports, values, and culturally distinct factors are unique features of the CYRM-28.

The RYDM, for example, measures 11 external and 6 internal assets. Surveys of more than 300,000 students in California show direct relationships between higher asset scores and lower rates of problem behaviors like delinquency, drug abuse, and truancy. Questions, however, are

biased toward a Minority World middle-class context. Children are assumed to have opportunities for self-actualization through afterschool recreational activities and postsecondary education. Questions in the Module include "I am involved in music, art, literature, sports or a hobby" and "I plan to go to college or some other school after high school." Issues of social justice, food security, cultural hegemony, the necessity of children to work, do chores, or develop coping strategies appropriate to marginalized communities are not reflected in the RYDM's questions despite the administration of the measure to many cultural minorities.

To design culturally sensitive measures, Saakvitne, Tennen, and Affleck (1998) advise researchers to strike a balance between nomothetic and ideographic research methods, roughly equivalent to the differences between qualitative life narratives and quantitative population-based research. Van de Vijver and Leung (1997) argue that culture must be replaced by its constituents, or context variables, and that problems of equivalence (Does a measure in one culture relate to the measure of the same factor in another?) need to be addressed if measures are to retain their content validity.

Education, for example, appears in most studies of cultural minorities as a valued asset. How much education, and its protective function, however, depends on the degree of marginalization a young person experiences. For example, Black students in the United States are more likely to report engagement at school than their White peers, but school attendance and a sense of belonging at school does not necessarily mean higher GPAs for Black students (Shernoff & Schmidt, 2008). Understood with attention to the intersectionality of class and race, how educational engagement protects Black students is different from how it protects Whites. In this regard, Swartz (1999) argues that cross-cultural studies must avoid the tendency to test one set of biased indicators (typically originating in the Minority World) in diverse cultural contexts. Cross-national studies face a related problem: How do we balance assumptions of homogeneity across Minority and Majority World contexts with the need for sensitivity to within group and between group heterogeneity?

Mixed Methods and the Study of Resilience Across Cultures

Though an increasing number of researchers call for greater cultural relativism in studies of resilience (American Psychological Association, Task Force on Resilience and Strength in Black Children and Adolescents, 2008; Robinson, 2007), there remains little evidence of methodological innovation. Consequently, quantitative methods may be avoided altogether in favor of qualitative methods that are more amendable to capturing the nuances of hidden resilience locally (Tudge, 2008).

Mixed methods, however, can help address concerns related to the internal validity and generalizability of the resilience construct. According to Onwuegbuzie, Bustamante, and Nelson (2010), mixed research is particularly useful for measurement development when seeking to ensure construct validity across cultures. Their 10-step process for instrument development and construct validation (IDCV) emphasizes multiple sources of data and crossover analyses. In reports detailing the development of resilience measures, we find evidence of qualitative inquiry only during the earliest phases of item generation. In contrast, our goal when constructing the CYRM-28 was to build a more culturally sensitive measure with face and item validity (we wanted a measure that was perceived as relevant by all our global partners and showed the potential for discriminant validity in multiple contexts). Achieving this goal meant a more reciprocal research design congruent with mixed methods as used within a transformative paradigm. To challenge the cultural bias of existing Minority World theories and measures of resilience, and develop ones that demonstrate greater cultural relevance to Majority World populations, we included qualitative phases of research to facilitate the inclusion of questions regarding culturally relevant (and typically marginalized) assets.

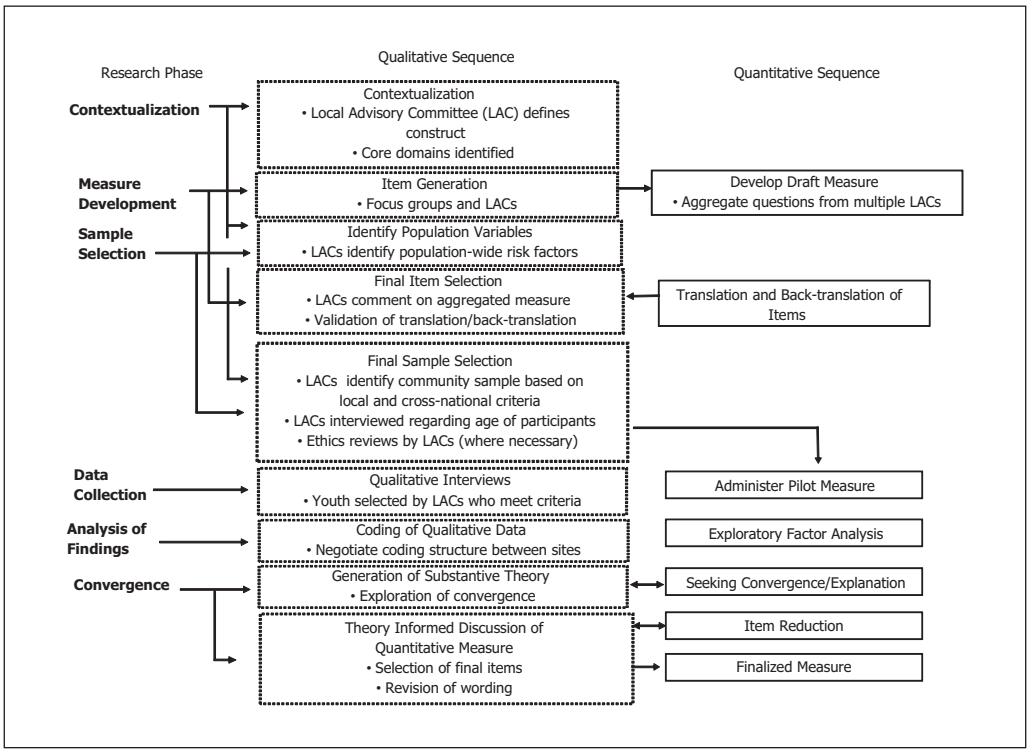

Figure 1. Qualitative and quantitative dimensions of the CYRM development

A purely emic approach to research would have resulted in distinct measures for each culture, whereas a purely etic approach would have ignored cultural relevance, superimposing a narrow understanding of resilience on the CYRM's development across cultures (Tweed & DeLongis, 2006). Sanchez, Spector, and Cooper (2006) argue that when language and culture are not accounted for in scale development and their application, sample comparisons become problematic "because we cannot be certain that the degree of the construct represented by the scale values associated with each item is equivalently calibrated across countries" (p. 189). Exploration of local understandings of the research topic is recommended before finalizing designs, necessitating a more qualitative and dialogical process that facilitates integration of the target population's voice. Reflecting Tashakkori and Creswell's (2007) definition of mixed methods research as one of integration, data emerging from one phase of the RRC study was used to inform subsequent phases of the research (see Figure 1). Specifically, we borrowed from the fields of population studies, family planning, and reproductive health as well as Cialdini's (1980) notion of "full-cycle" research and Mertens's (2003) transformative–emancipatory approach to research. In practice, this meant that comment and review by local advisory committees (LACs) informed each phase of the research. These community-based oversight committees helped interpret findings from each of the qualitative and quantitative data collection activities identified in Figure 1.

Developing the Child and Youth Resilience Measure

Setting

As the goal of the study was to investigate tensions between homogeneity and heterogeneity in outcomes associated with resilience, research sites were purposefully chosen to maximize

variability between youth populations (Ungar & Liebenberg, 2005). Research sites included the following: Sheshatshiu, an Aboriginal Innu community in Northern Canada; Hong Kong, China; East Jerusalem and Gaza, Palestine; Tel Aviv, Israel; Medellín, Colombia; Moscow, Russia; Imphal, India; Tampa, Florida; Serekunda, the Gambia; Njoro, Tanzania; Cape Town, South Africa; Halifax, Canada; and Winnipeg, Canada (two sites, one with urban Aboriginal youth and the other with non-Aboriginal youth in residential care). Participating communities were purposefully selected based on (a) cultural differences, (b) differences in the nature of the risks facing individual youth (all participants were sampled from one population of youth-at-risk identified locally, such as youth living in poverty, exposed to violence, or racially marginalized), and (c) the ability of the principal investigator to locate an academic partner with the capacity to supervise the research locally. A small amount of funding was provided by the RRC to facilitate the research and travel to meetings. It was anticipated that the variability of the sample would help the team document differences in young people's navigations and negotiations for resources and the related traits and processes associated with positive development in each community.

The Research Team

Assembling an international and multicultural research team furthered our move away from what Tweed and DeLongis (2006) describe as "the problems of imposed-etic research" (p. 215). The international research team consisted of at least one academic from each of the 14 research sites. Additionally, each site had its own local research team comprising the academic team member, a local site researcher (ordinarily a younger individual hired from the community in which the research was to be conducted), and an LAC consisting of approximately five individuals, both community members and professionals, who were seen as having something important to contribute to our understanding of young people locally (they were informally nominated to the LAC by their peers based on personal or professional knowledge of issues related to youth-at-risk). Committee members were typically drawn from the organizations that provided access to youth in their communities (e.g., youth-oriented nongovernmental organizations, schools, orphanages, and state-sponsored programs for disadvantaged youth) and also included at least one academic from an RRC partner institution. Where possible, a parent, teacher, or other community professional (usually known to the community youth organization or school from where the youth were sampled) was also invited to join the LAC. Coordination of the research across sites was facilitated by the principal investigator and a project manager based at the RRC in Halifax, Canad.

Ethics

Ethics approval for the entire study was obtained from the host institution of the RRC. Approval was also obtained from academic institutions, government departments, or the LACs themselves as required by the research policies applicable to each site. Local ethics approval ensured that norms required by Minority World institutions were reviewed for appropriateness in each context. LAC approval underscored cultural appropriateness of the research in each site. Given the complexities of working safely with high-risk youth populations, approval was granted by the RRC's institutional Research Ethics Board to not require parental consent if seeking this consent prevented youth from participating in the study. In such instances, another adult known to the youth was required to be present during the consent process. This ensured the ethical disclosure by the researcher of the conditions for the youth's participation, including the voluntary nature of the research. Adoption of this protocol meant that youth who may ordinarily be excluded from the research—often those youth most marginalized in communities—were able to participate. It also meant that the autonomy of youth living independently (e.g., youth living on the street or in

child-headed households) was respected. Youth were reimbursed for their participation in the study.

Initial Development of the CYRM

Initial team meetings facilitated a cultural decentering of the research by overrepresenting Majority World participants (Van de Vijver & Leung, 1997). Face-to-face consultations over 3 days in 2003 between all members of the international research team were used to establish the design of the mixed methods study as well as a preliminary understanding of the term *resilience* (building on the comments received from the community LACs prior to the meeting). It was at this meeting that team members began to refer to resilience as "doing well despite adversity" and identifying both unique and common ways young people "do well" in their communities (e.g., staying in school, avoiding the use of illegal drugs, maintaining attachment to their caregivers, avoiding early sexual activity/pregnancy, preparing for adult responsibilities). As our goal was to create a single measure of resilience, 32 similar domains of inquiry were identified as common across all 14 communities. Each contributes to the positive development of at-risk youth (see Ungar & Liebenberg, 2005, for details). The 32 domains were then grouped into four clusters that reflected individual (e.g., assertiveness, problem-solving ability), relational (e.g., social competence, quality of parental monitoring), community (e.g., rites of passage, safety, and security), and cultural (e.g., affiliation with a religious organization, a life philosophy) aspects of resilience.

On their return home, each academic partner led two focus groups (one with youth and one with adults) in their respective communities asking what would be the most important ways youth thrive when faced with adversity. The goal of these groups was to generate questions for inclusion in the quantitative measure based on youth and adult community voice rather than a survey of literature already dominated by Minority World perspectives. Groups varied in reported size from 3 to 15 participants, selected from community organizations and schools with which LAC members were affiliated. Individuals who were seen as having something important to say about growing up well in their community and who were knowledgeable about the risks faced by youth were invited to participate. Adult participants included frontline staff, professionals, parents, and individuals who were considered by their community to be resilient. Youth participants included young people who were considered by their community to be doing well in spite of facing significant adversity. Members of the LAC were sometimes included in the focus groups, though they were more often invited to comment on initial findings afterwards and to synthesize the questions suggested by the focus groups into a single comprehensive list that was then shared between research sites.

All questions were worded positively to ensure cross-site comparisons and facilitate aggregation. Questions suggested by each site were tagged with a site identifier and sorted thematically, using the original 32 domains and the four clusters (individual, relational, community, and cultural factors) as a guide. Questions that did not fit under one of these domains, but were felt important by members of an LAC, were retained for discussion. Using electronic communication, the principal investigator merged all 14 sets of questions into one universal set (site identifiers allowed the team to trace item origin) and then negotiated a final list of items based on team consensus. Within each cluster, questions common to a majority of sites were identified and retained. Questions that were unique or relevant only to one or two sites were included in a separate site-specific section of the CYRM that allowed researchers to ask up to 15 questions of local importance.

Fifty-eight common questions were finally selected for their overarching applicability to contexts and representativeness of the diversity of cultures included in the study. For example, in the original 58-item version of the CYRM, Question 8 ("Do you need to cooperate with people

around you if you want to succeed?") originated from India and measures dependence on others. Question 34 ("Do you feel supported by your friends?") originated from The Gambia and measures relationship traits. Commitment to community well-being is measured by CYRM Question 47 ("Do you think it is important to serve your community?") originated in Hong Kong. In many cases, the underlying meaning of questions was explored through cross-site conversations resulting in the revision or rewording of the original item. For example, CYRM Question 25 ("Are you proud of your ethnic background?"), originating from Russia and measuring cultural and/or ethnic identification, was originally phrased as "Do you like Russian folk traditions?" Duplication, redundancies, and questions that were too specific to one culture were excluded. The final 58 items that remained were then returned to the LACs in each site for comment and critique.

Finally, questions were arranged into a "To what extent . . ." format incorporating a 5-point Likert-type rating scale (1 = *Not at all*; 2 = *A little*; 3 = *Somewhat*; 4 = *Quite a bit*; and 5 = *A lot*). Person-related context variables included at the start of the CYRM provided demographic data on participating youth. Questions establish racial and ethnic backgrounds as well as living arrangements with family members (kin and nonkin).

The reading level for the questions was decided by local site researchers and made appropriate to their setting (Bell, 2007; Borgers, de Leeuw, & Hox, 2000). Where necessary, the CYRM was translated into the local language and then back-translated into English to ensure accuracy (Brislin, 1970). Although local academic team members were responsible for the translation at each site (our budget did not include sufficient funds for professional translators), the process included the entire local research team (research assistants and members of the LACs) and the principal investigator in a process where possible translations of all items were negotiated. Central to translation of the CYRM was a dialogical process ensuring that each item retained its intended meaning rather than its literal meaning. The presence of research teams that included the LACs meant that subtleties of language were accounted for in the translation. As Sanchez et al. (2006) argue, translators should be selected for their knowledge of local expressions of attitudes and emotions as "a linguistically imperfect translation may provide better psychological equivalence than a linguistically perfect one" (p. 193). There was extensive conversation between sites when complex (e.g., multiple meanings in the course of translation) or troubling (e.g., questions with a lack of cultural sensitivity, such as those relating to sexual behavior and drug use) items were identified.

The inclusion of Majority World researchers and community members in large numbers helped ensure a plurality of perspectives and the content validity of the 58 items chosen for the pilot version of the CYRM. This polyphony is evident in the uniqueness of some of the questions chosen (many of these questions had not previously been the focus of resilience research in the Minority World). Among the topics covered are social equality ("Are you treated fairly in your community despite how others see you?" "Do you have opportunities to show others that you are becoming an adult?"), access to resources ("Do you eat enough most days?" "Do you have opportunities to develop job skills that will be useful later in life?"), and cultural adherence ("Do you enjoy your family and community's traditions?" "Are you proud of your ethnic background?").

Youth Sample: Quantitative

Within each site, 60 or more youth participated in the pilot administration of the CYRM. Final sample size at each site was determined by the local research team's capacity to conduct the research. Participants were purposively selected by local research teams, including the LAC. The participants all faced at least three culturally significant risk factors based on informal assessment by members of the LACs (as a group, risks were identified and then youth identified in the community who met the selection criteria). Risks included, but were not limited to, exposure to

Table 1. Youth Participants by Site, Age and Gender

Site	Qualitative Participants	Quantitative Participants		Male		Female		Age	
		N	%	*N*	%	*N*	%	Mean	*SD*
The Gambia	2	81	5.6	31	4.5	50	6.6	20	2.35
Russia	4	82	5.7	43	6.2	39	5.2	18	2.97
Tanzania	10	75	5.2	28	4	47	6.2	15	1.36
India	2	60	4.1	32	4.6	28	3.7	15	2.06
Northern Canada[a]	2	60	4.1	30	4.3	30	4	16	1.87
South Africa[b]	3	60	4.1	29	4.2	29	3.8	19	1.86
Palestine	3	122	8.4	81	11.7	41	5.4	16	2.34
Southern Canada[c]	17	124	8.5	81	11.7	43	5.7	16	2.54
China[b]	2	344	23.7	188	27.1	155	20.6	13	0.81
Southern USA	16	110	7.6	0	0	110	14.6	19	0.99
Israel	24	251	17.3	110	15.9	141	18.7	15	1.42
Colombia	4	82	5.7	41	5.9	41	5.4	17	1.98
Total[b]	89	1451	100	694	47.9	754	52.1	16	2.62

a. Sheshatshiu, Labrador.
b. Gender of three participants unspecified (South Africa: $n = 2$; China: $n = 1$).
c. Consisting of three sites, Halifax, and Winnipeg (Aboriginal and non-Aboriginal).

war and violence; family breakdown; poverty; social or economic dislocation; marginalization because of race, ethnicity, or ability; and experience of addiction in the family. Participants were identified either by their organizational affiliation (they participated in a program for youth-at-risk), school (they attended school in a community where there was heightened risk and high rates of school dropout), or were part of a community sample of young people referred individually by LAC members and selected specifically for their exposure to risk and perception by others as coping adequately with age-appropriate life tasks.

Equal numbers of boys and girls were sought with the exception of Tampa, Florida, where only girls were sampled (here validation of the CYRM formed part of a related study of teenage mothers already underway). Participants were between 12 and 23 years of age.[2] Though the age differences were unusual, selection reflects divergent constructions of youth across cultures (Lesko, 2001). The international team reasoned that since our goal was to understand resilience as a more ecological and cultural construct, respect for culturally normative patterns of social expectations and role fulfillment within each site was necessary. Research teams at each site were asked to sample youth at an age, which would best represent this transition to adulthood. This age was identified by the academic partner at each site together with the local site researcher and LAC. Team members were asked: "At what age do children locally make decisions about whether they attend school?" "Choose work or careers?" "Control their sexuality?" "Move toward independent living?" and "Have responsibilities for others?" Academic team members established these questions at the 2003 team meeting, arguing that at all sites they would sample youth facing the same developmental challenges despite the chronological differences in the ages of participants that would result. It was felt that by interviewing youth undertaking the same tasks there would be greater comparability of the results across research sites. Within each research site, participants were drawn from a single homogeneous community, meaning that youth at each site tended to represent a single racial group and one set of relatively common cultural norms. In this manner, the youth's developmental stage (rather than chronological age) was controlled for based on the local culture and description of milestones. Data were gathered from a total sample of 1,451 youth (694 boys = 47.9%, 757 girls = 52.1%). Boys and girls were not significantly different in age (mean age = 16 years, $SD = 2.653$; see Table 1).

Youth Sample: Qualitative

To help contextualize the results from the CYRM administration, at least two youth (one boy and one girl) who had completed the CYRM were interviewed. Sites purposefully selected for interviews as few as 2 and as many as 24 youth (depending on their research capacity) identified by the LACs to be doing well despite facing severe risk. Definitions of "doing well" were set out by LACs within each site. Youth were asked about the risks they face and the resources they had that contribute to good developmental outcomes relevant to them and their communities rather than assuming one set of homogeneous outcomes as is typical of Minority World research on resilience. Eighty-nine youth participated in these interviews (32 boys and 57 girls; see Table 1). In most cases, interviews were recorded, transcribed, and, when necessary, translated into English.

Data Collection and Analysis

The CYRM was administered in a manner appropriate to the sample (i.e., either individually or in groups) by the local site researchers. Each question on the measure was read out loud to ensure illiteracy was not a barrier to participation. Qualitative interviews with the subsample of youth were conducted individually, using a standard interview guide (see Appendix A). Where appropriate, and where youth provided consent, interviews were audio-recorded and later transcribed. In all instances, detailed notes were taken by the site researcher detailing verbal and nonverbal aspects of the participant's narrative. Both quantitative and qualitative interviews were conducted in a public setting such as a school or youth center, or when necessary, in the youth's home.

Although each site retained its own original data, English versions of all quantitative and qualitative data were compiled into two complete data sets and shared between sites. Both the qualitative and quantitative data sets were analyzed simultaneously.

Quantitative data were analyzed using two exploratory factor analyses. Although the a priori assumption of the four clusters of items (what we termed *the ecological model* based on Bronfenbrenner's [1979] work that described micro-, meso-, macro-, and exo-systemic factors, which match our individual, relational, community, and cultural clusters) served as a guide in the generation of items for inclusion in the CYRM, the team believed that the interpretation of items would vary the groupings across sites. Given the dearth of prior cross-cultural studies of resilience, the team recognized the need for an alternative ontological perspective of resilience. Consequently, the first exploratory factor analysis was used to identify the structure of youth interpretations of the CYRM. Analysis of the quantitative data in this manner aligned well with the RRC's use of a transformative paradigm in the construction of the measure. A second analysis was then used to reduce the number of items to those that best represented the focal construct (resilience) across all 14 sites (DeVellis, 2003; Noar, 2003). This process included calculation of nonresponse rates and variance, the use of communality criterion, and an unrotated factor analysis to identity questions relevant to youth in all research sites.

Analysis of the qualitative data were guided by Glaser and Strauss's (1967; Strauss & Corbin, 1990) grounded theory approach, together with constructionist advances (Charmaz, 2006; Clarke, 2005). Initial coding structures were developed by the research team in Halifax, and then shared, along with interview transcripts, with the broader international team for recoding. In this way, the final coding structure was negotiated across sites (for details, see Ungar et al., 2007). Results from the analysis of the qualitative data were used by members of the research team to investigate the validity of the CYRM allowing youth voices to inform interpretation of the quantitative data.

Table 2. The Seven Qualitative Aspects of Resilience (Tensions)

Tension	Explanation
1. Access to material resources	• Availability of financial, educational, medical and employment assistance, resources, or opportunities, as well as access to food, clothing and shelter
2. Relationships	• Relationships with significant others, peers and adults within one's family and community
3. Identity	• Personal and collective senses of purpose, self-appraisal of strengths and weaknesses, aspirations, beliefs and values, including spiritual and religious identification
4. Power and control	• Experiences of caring for one's self and others; ability to affect change in one's social and physical environment in order to access health resources
5. Cultural adherence	• Adherence to one's local and/or global cultural practices, values and beliefs
6. Social justice	• Experiences related to finding a meaningful role in community and social equality
7. Cohesion	• Balancing one's personal interests with a sense of responsibility to the greater good; feeling of being a part of something larger than one's self socially and spiritually

Note: Reprinted from Ungar et al. (2007).

Exploring Variable Factor Structures in the 58-Item CYRM

Appropriateness of the data for use with factor analysis was first assessed. As a first step in validating the CYRM, we examined whether the sample size was sufficiently large for the purpose of our analysis. The Kaiser–Meyer–Olkin measure of sampling adequacy is .902, indicating adequacy. Furthermore, Bartlett's test of sphericity is significant ($\chi^2 = 8787.325$, $df = 1{,}378$, $p < .000$). We then assessed variance of responses. With the exception of six items, all questions have a mean score between 3.0 and 3.99, suggesting that the response categories were appropriate for use in factor analysis. On an average, participating youth were able to place themselves near the center, avoiding extreme floor or ceiling constraints. Standard deviations range from 0.95 to 1.54, suggesting that items captured variability in different aspects of youth resilience.

Initial explorations of the data centered on the four clusters that informed the development of the CYRM. Using exploratory factor analysis and calculating Cronbach's alphas for questions associated with each level of the model, the original 58-item version of the CYRM suggested reliability with Cronbach's alpha scores for designated subsets of questions as follows: individual (24 items; .84), relational (7 items; .66), community (15 items; .79), and culture (12 items; .71). However, given the variability in sample selection across sites, we were not surprised to find no valid factor structure could be identified that retained the hypothesized four clusters. Findings from our qualitative data helped explain the lack of validity. Developing a substantive theory of resilience across cultures, we identified seven aspects of resilience evident in the narratives of the 89 youth interviewees (see Table 2). Rather than discrete categories, axial coding showed that multiple aspects of resilience co-occur and are mutually dependent on one another. To be successful, youth appear to balance success in each area in order to maximize their navigations to resources and negotiations for those resources to be provided in ways meaningful to them. Therefore, a youth's expression of personal efficacy (coded as power and control) will depend for its expression on cultural norms (cultural adherence), the nature of the child's relationships with others (relationships), and even aspects of social justice. We called these seven

Table 3. Thematic Content of Each Factor by Factor Structure[a]

Factor Loading	Minority World Girls and Boys (n = 234)	Majority World Girls (n = 601)	Majority World Boys—High Social Cohesion (n = 513)	Majority World Boys—Low Social Cohesion (n = 100)
1	The way I live my life reflects the values of my community (13 items; .86)	I experience self-efficacy individually and in community relationships (15 items; .82)	I have a respected place in my community (12 items; .77)	My health and social needs get met (19 items; .70)
2	My future is mine to create alone and with the help of others (13 items; .84)	Solutions to life's challenges are rooted in relationships (8 items; .72)	I experience self-efficacy (9 items; .75)	I am confident (15 items; .91)
3	I am socially mature (12 items; .80)	I have my emotional and instrumental needs met (12 items; .79)	I have emotional maturity (7 items; .56)	I can express myself in ways I value and others value about me (11 items; .92)
4	I do things adults do (8 items; .78)	My life philosophy is rooted in my culture (10 items; .75)	I feel responsible for my community (6 items; .61)	I have a life philosophy (3 items; .82)
5	I experience intergenerational respect (8 items; .79)	I experience intergenerational expectations (7 items; .70)	I live my spirituality (2 items; .61)	I am attached to my local culture (6 items; .73)
6	I have values that guide my life, reflecting the social institutions around me (5 items; .68)	I show adherence to my local culture (5 items; .63)	I am socially competent (5 items; .55)	I am responsible for myself and others (2 items; .103)
7	I experience social acceptance of my peers (3 items; .55)	I balance dependence and independence with my family (4 items; .56)	I behave like an adult (2 items; .47)	I have cultural and familial roots (4 items; .67)
8			I have a life philosophy (3 items; .48)	My community functions well (3 items; .57)
9			I have self-worth (2 items; –.23)	I am emotionally mature (3 items; .55)

a. With number of items loading on each factor and Cronbach's alpha.

homogeneous aspects of resilience "tensions" to signify their dynamic negotiated expression across cultures (Ungar et al., 2007).

The variability in how young people express common aspects of resilience suggests that items on the CYRM may all show content validity but low invariance to their factor structure (van de Vijver & Leung, 1997). A quantitative solution that would account for this variance was sought. Exploratory factor analyses using varimax orthogonal rotation were conducted to test for reproduction of rational item groupings and internal consistency within domains of the CYRM. Four separate factor structures resulted reflecting four separate groupings of participating youth (see Table 3). Most notably, youth living in Minority and Majority World contexts

confound the findings, with distinctive patterns of resilience discernible among these two groups. Minority World boys and girls show similarities (Halifax and Winnipeg in Canada and Tampa in the United States). However, Minority versus Majority status did not allow us to account for the pattern of responses among the Majority World youth themselves. No consistent factor structure could be identified for all the Majority World youth when analyzed together.

A second logical sort separated girls from boys for all Majority World sites, including a North American Aboriginal site. Specifically, the sites included in this phase of the analysis were Sheshatshiu, Northern Canada; Medellín, Colombia; Serekunda, the Gambia; Njoro, Tanzania; Delft, Cape Town, South Africa; East Jerusalem, Palestine; Tel Aviv, Israel; Imphal, India; Moscow, Russia; and Hong Kong, China. Following the lead of other researchers, we reasoned that gender (Moffitt, Caspi, Rutter, & Silva, 2001), especially in cultures with more stereotypically differentiated roles for boys and girls, would influence response patterns. This was in fact the case, with girls showing similar response patterns across many different Majority World sites.

Accounting for the responses of Majority World boys, however, proved more complex. A series of sorts were attempted based on themes emerging from the qualitative data including the degree of economic hopefulness, levels of violence in the youths' communities, and the degree of social cohesion in their communities (see Table 3). Socially cohesive communities were defined as communities that share a common purpose or are united by a system of values that emphasize inclusion and mutual betterment. Sorting Majority World boys into two groups (those from communities with high vs. low social cohesion as defined by members of LACs) produced the third and fourth factor structures with a logical sort of items. Boys in the Majority World sites with high social cohesion included those in Palestine, Russia, China, the Gambia, India, Israel, and Tanzania. Those in low-cohesion settings included Colombia, South Africa, and Northern Canada.

Descriptors in each cell of Table 3 are representative titles of the items that load onto each factor for each grouping of youth. Titles were generated through a thematic analysis of the loading items by a subset of team members and then sent to all academic team members for comment. Descriptors reflect concepts borrowed from the analysis of the qualitative data, though are not exclusively matched to that coding structure. Effort was initially made to see if a seven-factor solution to the data could be obtained. No good model could be found that suggested congruence between the qualitative and quantitative findings. The best we could achieve was a comparison of the findings and identification of common themes. Table 3 includes Cronbach's alphas for each group's factors.

Reducing the CYRM's Length

Although these four population groups contributed to our understanding of the variability of resilience across cultures, and matched the complexity we had found in the qualitative data (the seven tensions), we still did not have a valid measure of resilience useful in multiple contexts. The second phase of our work sought to identify which items on the CYRM (now referred to as the CYRM-58) were most effective in differentiating between common and unique aspects of resilience across all four subpopulations. Questions to be eliminated from the CYRM-58 were first identified by exploring the nonresponse rates and variance on all questions and imposing the communality criterion. We then conducted an additional factor analysis using an unrotated solution to identify those items that load best on the first factor. We first analyzed the data set as a whole and then each of the four groups. Those items that loaded best on the first factor for all five analyses were retained in the final version of the CYRM.

Nonresponse Rates and Variance

Four items were identified as having unacceptable nonresponse rates of approximately 10% or higher and were therefore deleted from further analysis. These items were Question 27 ("Do your

parent(s) respect how you express yourself sexually?"), Question 40 ("Are you comfortable with how you express yourself in close relationships with others your own age?"), Question 57 ("Is there a difference between your family's values and those of most others in your community?"), and Question 58 ("Do you think that you are at least as good [or better] than other youth you know?"). Two further questions were identified for deletion due to lack of variance but were left in the instrument based on the importance of each during qualitative interviews. Inclusion of both has helped ensure the CYRM's face validity. Question 10 ("Is getting an education important to you?") has a mean of 4.35 and a standard deviation of 0.983, suggesting that almost all participants believe that education is important. This question, however, has a relatively high communality (.562) and was therefore justifiably retained. Question 11 ("Do you know how to behave in different social situations?" $M = 3.87$, $SD = 0.994$), despite demonstrating a relatively low communality (.453), was nevertheless considered theoretically important to understanding resilience based on our qualitative findings and therefore remains in the questionnaire as well.

The Communality Criterion

To identify other questions that could be excluded, we used an arbitrary cutoff point where at least 45% of the variance of any item would be captured by all factors with an eigenvalue greater than one. Although an exploratory, cross-cultural study such as this would perhaps be justified in using rates as low as .30 as a cutoff mark, we chose a more conservative cutoff point of .45. Using this criterion, an additional five items on the CYRM were eliminated. These included Question 7 ("Do you understand others' feelings?"—0.42), Question 17 ("Does your culture teach you to become a better person?"—0.41), Question 23 ("Do you feel free and comfortable to talk to your teachers and/or other adults about your problems?"—0.43), Question 26 ("Do you have a vision of how the future should be?"—0.42), and Question 41 ("Are you able to avoid violent situations at home, school, or in your community?"—0.30). With these questions removed, Question 15 ("Do you believe that life should be lived in a certain way?") formed a factor on its own and showed low communality. It too was deleted.

The Unrotated Factor Analysis Solution

An unrotated factor analysis solution was used to extract the most universal measure of resilience from the remaining questions, accounting for most of the variance on the first factor. An unrotated factor solution allows for the maximization of the sum of square factor loadings, where the first component accounts for the largest share of the total variance in the data, yielding those items of the measure that perform best for the sample in question (Blunch, 2008; Pett, Lackey, & Sullivan, 2003). This process ensured that all questions included in the final version of the CYRM (the CYRM-28—see Appendix B) would resonate with youth across all 14 sites.

Using this criterion, the factor solution found for the total group highlighted a possible set of 36 items for inclusion on a revised CYRM. When comparing this set of items with the results of the unrotated factor analyses for each of the four groupings of youth, the list of possible items for inclusion is reduced to 20 (these are highlighted in Table 4). This possible reduction was, however, made with caution, as some of the items excluded from the measure have higher loadings on the first factor of the solution than items which were included.

It is likely that the alphas reported for each of the five groups in Table 4 are inflated due to the number of items included in the scale. However, given that both the qualitative and quantitative data sets have clearly demonstrated that the construct of resilience is not unidimensional, we expected that the 20 items that were isolated represent several subscales of a single measure. Weak mean interitem correlation coefficients for each of the groups support this expectation. The

Table 4. Factor Scores for Selected Child and Youth Resilience Measure (CYRM) Questions[a]

CYRM Question	Total Sample	Minority World Youth (Boys and Girls)	Majority World Girls	Majority World Boys (Low Social Cohesion)	Majority World Boys (High Social Cohesion)
1		0.47			
2	0.38		0.39	0.47	
3	0.46		0.43	0.55	0.45
4				0.65	
5		0.45			
6	0.46	0.48	0.46	0.56	0.44
8	0.41	0.41	0.37	0.53	0.35
9	0.42	0.46		0.51	
10	0.53	0.58	0.47	0.82	0.43
11	0.54	0.47	0.50	0.74	0.49
12		0.39		0.64	
13	0.42	0.53	0.38	0.78	
14	0.37	0.49	0.32	0.43	
16	0.38	0.46		0.60	0.37
18				0.62	
19				0.42	
20	0.44	0.55	0.39		0.39
21	0.42	0.42	0.39	0.58	0.34
22	0.55	0.54	0.55	0.66	0.51
24		0.43		0.61	
25	0.54	0.46	0.53	0.69	0.49
28	0.57	0.44	0.58	0.63	0.55
29	0.53	0.64	0.50	0.54	0.44
30	0.40		0.40	0.57	
31	0.51		0.55	0.52	0.60
32			0.40		
33	0.23	0.49			
34	0.51	0.42	0.52	0.51	0.45
35	0.47	0.50	0.44		0.42
36		0.57	0.32	0.57	
37	0.54	0.56	0.54	0.67	0.50
38	0.57	0.68	0.54	0.59	0.54
39		0.42		0.50	
42	0.52	0.61	0.49	0.59	0.44
43	0.52	0.59	0.50	0.58	0.47
44	0.44		0.40	0.62	0.44
45	0.52	0.60	0.50	0.62	0.48
46				0.48	
47	0.50	0.57	0.52	0.64	0.45
48	0.60	0.65	0.55	0.76	0.58
49	0.40	0.48		0.61	
50	0.58	0.56	0.57	0.65	0.50
51	0.52	0.61	0.50	0.70	
52	0.56	0.71	0.52	0.59	0.46
53	0.53	0.52	0.48	0.70	0.56
54	0.39	0.59	0.35	0.43	

(continued)

Table 4. (continued)

CYRM Question	Total Sample	Minority World Youth (Boys and Girls)	Majority World Girls	Majority World Boys (Low Social Cohesion)	Majority World Boys (High Social Cohesion)
55	0.41		0.41	0.48	0.34
56					0.33
α	0.88	0.88	0.86	0.84	0.93
γ	0.26	0.27	0.24	0.20	0.39
N	620	106	252	223	37

Note: Shaded rows indicate 20 items that load on the first dimension for all groups.
a. Items loading on the first dimension of an unrotated factor analysis for the total sample and by typology grouping of participants.

coefficients suggest that subscales within the CYRM will need to be further assessed using confirmatory factor analysis (CFA) in future validations of the measure (this work is underway now with RRC partners in five countries).

Exceptional Questions Included on the CYRM

In total, five questions have been included in the final version of the CYRM despite findings suggesting their removal. In all instances, these decisions have been made given the theoretical value of the questions themselves and informed by the qualitative data gathered with both the participants and our LACs. Question 20 ("Do you feel that your parent(s) watch you closely and know a lot about you?") loads on the first factor for all groups except Majority World boys from communities with low social cohesion. However, the loading for this question on the remaining three groups is respectable ranging from 0.39 to 0.55. Less satisfactory, but still acceptable is Question 35, "Do you know where to go in your community to get help?" This item loads in a similar pattern as Question 20 (i.e., values range from 0.42-0.50). Questions 24, 33, and 46 have also been included in the CYRM-28. Although all three of these questions failed to reach significance on the first factor of most of the groupings, their theoretical importance warrants further investigation. In all three instances, these questions do load onto one of the factors in each of the factor analyses with good factor loadings.

Of the 25 items selected for inclusion on the CYRM, three were split into two questions, generating an additional three items for inclusion. The wording on an additional five questions was revised based on feedback from community partners. To conclude, by converting each of the 25 items that remain from version one of the CYRM (the CYRM-58) to a standard score and obtaining the mean of the standard scores, it is still possible to discriminate well between the four different groups (Minority World boys and girls, Majority World girls, Majority World boys' high and low social cohesion), accounting for 40% of the variance.

Discussion

Using a mixed methods design beginning with qualitative focus group interviews, and followed by quantitative and additional qualitative components that included the active participation of the LACs, we were able to identify the 58 questions of the pilot version of the CYRM that relate to resilience across all cultural groups participating in the study. However, although all questions showed relevance to each geographic subpopulation, the varying factor structures observed in response patterns indicate heterogeneity in how resilience is understood and negotiated across cultures and contexts. Furthermore, as the qualitative data showed, not all constructs held the

same importance in all cultures (Ungar et al., 2007). In this regard, we find qualified support for our initial hypotheses: global aspects of resilience (the 32 domains agreed to by the research team) can be identified, though culturally diverse populations of youth show unique patterns in how resilience is understood and manifested. Specifically, resilience comprises the interplay between individuals and their context as reflected by the seven tensions (see Table 2). Our results support an understanding of resilience as the capacity of individuals to navigate toward resources and negotiate for these resources to be provided in culturally relevant ways that reflect their availability and accessibility within the social and physical ecologies of the individual. By using a transformative research paradigm that promoted the inclusion of a cultural polyphony of voices from Majority and Minority World contexts, we were able to balance the influence of predominantly Minority World researchers who have exerted the greatest power in the discourse that theorizes the meaning of resilience.

As Mertens (2003) has shown, transformative research raises ontological, epistemological, and methodological challenges to the heterogeneity of scientific inquiry. In this regard, efforts to build a measure that did not rely on a priori assumptions that reflected already published investigations of positive development in the Minority World presented a radical departure from typical modes of instrument development. The mixed methods employed facilitated this more engaged, iterative approach at each phase of the CYRM-28's development:

- *Defining the problem:* Although we operationalized resilience as "doing well" despite adversity, more specific features of the construct and the mechanisms that contribute to "doing well" were negotiated across cultures.
- *Identifying the research design:* The inclusion of qualitative methods and a design that encouraged discussions of variability in the sample resulted in tolerance for more ambiguity than is typical in the literature on measurement development (e.g., the chronological age of the youth varied, though they were matched by the developmental tasks they faced).
- *Identifying participants:* LACs were used to identify youth who faced adversity in ways relevant to each context. We avoided exporting a singular notion of risk that may have been culturally irrelevant. Doing so may have biased selection of youth toward those who show patterns of resilience typical of young people in the Minority World.
- *Construction of the measure:* Questions were all phrased positively. Though this may have decreased the reliability of the CYRM-28, it addressed the complexity of implementing a study in multiple contexts with significant language barriers to overcome. It also responded to concerns of local advisors that reverse scored questions may confuse young people unfamiliar with formal testing.
- *Analysis and interpretation:* The use of mixed methods encouraged the co-construction of meaning of the resilience construct and helped to refine the selection of items. Face-to-face meetings within sites and between sites helped ensure the measure demonstrates high face validity across cultures.

By mixing qualitative and quantitative approaches to the development of a standardized measure, we have been able to identify both unique and common aspects of resilience that ensures the validity of a measure designed for use across cultures. Given both the homogeneity and heterogeneity of our sample, we would argue that resilience (like other psychological constructs) needs to be understood as both an emic, culturally and contextually embedded, construct as well as an etic one that shares commonalities across populations. The use of mixed methods appears to facilitate the design of a quantitative measure that reflects this complexity.

Although we are disappointed that at no point in the process were we able to demonstrate convergence between our qualitative and quantitative findings, the concurrent and sequential use

of both methods was very useful to creating a measure with high content validity. The low invariance of the CYRM-58 factor analysis, for example, is synergistic with the dynamic nature of the seven tensions identified through our qualitative work (see Table 2). The excellent performance and retention of cultural and contextual questions in the CYRM-28 reflects social and political themes found through our qualitative interviews. This is not surprising given that we included a very large number of Majority World participants in the CYRM's development to avoid the imposition of Minority World bias or the bias of one set of scholarly assumptions. The constant checking in with the LACs helped ensure the authenticity of the findings and the empowerment of voices largely absent from the resilience discourse in Minority World publications.

Methodological Limitations

In developing the CYRM, we broke with procedures typically used for instrument design where validity is sought through validity coefficients (testing a new measure against existing measures) or group comparisons (comparing the results of youth who are doing well with those youth who are not doing well). We chose instead to avoid using existing measures (developed in the Minority World) that might reintroduce biased notions of what resilience should look like among those at risk. Conventional practices for scale development would identify this as a potentially serious shortcoming. However, we chose to engage with our community partners through focus groups and mixed methods data collection to compensate for this limitation. Though the CYRM demonstrates content validity, convergent validity remains unknown. Similar concerns exist regarding measurement of risk and the degree to which our sample were in truth, at-risk youth. No standardized test of risk was used to select youth across all 14 research sites. Future research employing the CYRM will need to ensure samples of young people are somehow discriminated into two groups: those who LACs say are doing well and not doing well. This will help demonstrate the CYRM's discriminant validity. The import of existing (Minority World) measures to accomplish this must proceed with caution if bias is to be avoided.

Other limitations include the positive wording of all CYRM questions. When discussed with our partners, it was felt that it was too confusing to translate the CYRM into so many different languages, and explain to the LACs the concept of resilience, when questions were both positively and negatively scored. As the concept of resilience is better understood across cultures, CYRM items may be changed to address this weakness.

Furthermore, we realize that we did not employ CFA in the development of the CYRM, a possible weakness in our design. However, given that among the final 25 items selected for inclusion, three were split into two (resulting in six new questions) and the wording was revised on an additional five questions, both actions taken based on the reciprocity we had with our LACs, CFA may not be warranted with the current data set. Indeed, Byrne (2010) cautions against the application of CFA procedures when instruments are still in their initial stages of development. This approach is widely reflected in publications where initial instrument development incorporating EFA is followed by readministration of measures to new samples of youth, the data of which is assessed with a CFA (Ang, Chong, Huan, & Yeo, 2007; Morokoff et al., 1997; Noar, 2003). This continued validation of the CYRM-28 is currently underway.

Despite these threats to the CYRM's internal and external validity, we remain confident that our use of mixed methods has increased the measure's content validity.

Conclusion

Our experience demonstrates the need for developers of psychological tools to acknowledge their social locations and the power they hold. It is helpful when Minority World researchers show awareness of their role sustaining dominant world views (Chilisa, 2005; Smith, 1999). Our

efforts mirror those of Mertens (2003, 2007), who writes, "Mixed methods are preferred for working toward increased social justice because they allow for the qualitative dialogue needed throughout the research cycle, as well as the collection of quantitative data as appropriate" (2007, p. 224). Authors such as Berry (1980) and Waszak and Sines (2003) remind us that accurate development of psychological theory necessitates a combination of qualitative and quantitative approaches so as to more accurately account for contextual factors. Stated differently, triangulation through the use of mixed methods data increases both the reliability and validity of findings (Fine & Elsbach, 2000; Haase, Heiney, Ruccione, & Stutzer, 1999).

Without mixed methods, there is the danger of importing constructs and associated research tools from dominant cultures into those that are marginalized, ignoring contextual nuances that are often more relevant to indigenous communities (Chow, 1993; Smith, 1999). Through both the sequential and concurrent integration of qualitative data in the development of a quantitative measure, we have shown that it is possible to work respectfully across cultures. Most important, the uniqueness of some of the items on the final CYRM-28 show that it is possible to reverse the flow of information and ensure that Majority World voices inform the benchmarks of successful human development in the Minority World. In this manner, the homogeneity of Minority World (North American and European) psychological discourse surrounding the measurement of concepts related to positive psychosocial functioning can be expanded. Without this expansion and contextualization, we anticipate important negative implications for policy and practice such as the imposition of cultural hegemony on program development (Blackstock & Trocmé, 2005; Nsamenang, 2002).

Our results, informed by our qualitative findings, suggest that the CYRM-28 can provide a reliable representation of common factors related to resilience across all 14 research sites and a more specific understanding of which resources are associated with resilience as an outcome in different contexts. Although all items on the CYRM-28 are reliable measures of resilience across cultures, formation of subscales vary according to the respondents' culture, gender, and/or the social cohesion of their community. Arguably, the mixed methods procedures demonstrated through the development of the CYRM-28 may contribute to the methods used to design other measures that will ensure face validity of child and youth development measures across cultures.

Appendix A

Individual Interview Guide

- "What would I need to know to grow up well here?"
  - Probing Questions:
    1. What role do religious organizations play in your life?
    2. What do other members of your family think about the way you live your life, your beliefs (such as regarding gender roles, etc.)
    3. How do you handle change, both at an individual level and the changes taking place for everyone in your community?
    4. How do you contribute to your community?
    5. What is it like for you when people around you succeed?
    6. Do you have a life philosophy and if you feel comfortable sharing it, can you tell me what it is?
    7. Do you identify in any way(s) with your culture. Can you describe your culture? Can you describe (or show me) day to day activities that are part of your culture and the way things are done in this community?
- "How do you describe people who grow up well here despite the many problems they face? What word(s) do you use?"

(continued)

Appendix A (continued)

- "What does it mean to you, to your family, and to your community, when bad things happen?"
  - Probing Questions:
    1. Can you tell me what some of these bad things are?
    2. What do people do to cope?
    3. What do they say about these things when they happen?
    4. Who talks about them most? Least? And who is most likely to come up with the solution to problems when they occur?
    5. What do other people think of these solutions?
    6. Can you give me examples?
- "What kinds of things are most challenging for you growing up here?"
  - Probing Questions:
    1. Are there opportunities for age-appropriate work?
    2. Are you or people you know exposed to violence? How do you avoid this in your family, community, and when with peers?
    3. How does the government play a role in providing for your safety, your recreation needs, housing, and jobs now and when you get older?
    4. Do have opportunities to experience meaningful "rites of passage"? What are these? Do they present you with an amount of risk that you can handle?
    5. How tolerant is your community of problem behaviors among people your age?
    6. What are some of these behaviors?
    7. Do you feel safe and secure here? How do others protect you?
    8. Do you feel equal to others? Are there others you do not feel equal to? How do these others make you feel? What do they do that makes you feel this way?
    9. Do you have access to school and education and any other information you need to grow up well? How do you get this access? Who provides it to you?
- "What do you do when you face difficulties in your life?"
- "What does being healthy mean to you and others in your family and community?"
  - Probing Questions:
    1. Could you describe the way your parents or caregivers look after you?
    2. How does your family express themselves and what they think of you?
    3. How does your family monitor you, keep track of what you are doing?
    4. How do you know how to act with other people? How well do you do socially? Are you thought of well by others, popular, liked?
    5. Do you have some you consider a mentor or role model? Can you describe them?
    6. Do you have other meaningful relationships with people at school, home, or in your community?
- "What do you do, and others you know do, to keep healthy, mentally, physically, emotionally, spiritually?"
  - Probing Questions:
    1. Are you assertive? How do you show this?
    2. Can you describe your ability to problem-solve? Are you better or worse than others? How do you know this?
    3. Do you have a sense of control over your world? How does this affect your life?
    4. How much uncertainty are you able to live with?
    5. Do you value self-awareness, insight? How does this affect your life and what you do day to day?
    6. Would you describe yourself as optimistic or pessimistic about life?
    7. Do you have personal goals and aspirations? What are these?
    8. How much can you be independent and how much do you have to rely on others in your life for your survival?
    9. How much do you use substances like alcohol and drugs? What do others around you think about this?
    10. What role does humor play in your life?
- "Can you share with me a story about another child who grew up well in this community despite facing many challenges?"
- "Can you share a story about how you have managed to overcome challenges you face personally, in your family, or outside your home in your community?"

Appendix B

Child and Youth Resilience Measure—CYRM-28

To what extent . . .

1. Do you have people you look up to?
2. Do you cooperate with people around you?
3. Is getting an education important to you?
4. Do you know how to behave in different social situations?
5. Do you feel that your parent(s) watch you closely?
6. Do you feel that your parent(s) know a lot about you?
7. Do you eat enough most days?
8. Do you strive to finish what you start?
9. Are spiritual beliefs a source of strength for you?
10. Are you proud of your ethnic background?
11. Do people think you are fun to be with?
12. Do you talk to your family about how you feel?
13. Are you able to solve problems without using illegal drugs and/or alcohol?
14. Do you feel supported by your friends?
15. Do you know where to go in your community to get help?
16. Do you feel you belong at your school?
17. Do you think your family will always stand by you during difficult times?
18. Do you think your friends will always stand by you during difficult times?
19. Are you treated fairly in your community?
20. Do you have opportunities to show others that you are becoming an adult?
21. Are you aware of your own strengths?
22. Do you participate in organized religious activities?
23. Do you think it is important to serve your community?
24. Do you feel safe when you are with your family?
25. Do you have opportunities to develop job skills that will be useful later in life?
26. Do you enjoy your family's traditions?
27. Do you enjoy your community's traditions?
28. Are you proud to be (Nationality: _____)?

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Notes

1. Validation of the CYRM continues with the Pathways to Resilience Research Program.
2. We include the word *Child* in the name of the measure in keeping with the international nature of this research and the United Nations *Convention on the Rights of the Child.* The UNCRC defines a child as

"every human being below the age of 18 years unless under the law applicable to the child, majority is attained earlier."

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7. VALIDATION OF THE CYRM-28

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Validation of the Child and Youth Resilience Measure-28 (CYRM-28) Among Canadian Youth

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Abstract

Objectives: This article presents the validation of the 28-item Child and Youth Resilience Measure (CYRM-28) among two Canadian samples of youth with complex needs. Method: The CYRM-28 was administered to two groups of concurrent service using youth in Atlantic Canada ($n_1 = 497$; $n_2 = 410$) allowing for use of exploratory and confirmatory factor analysis. Results: Reproducibility agreement is achieved and subscales of the measure are confirmed and show adequate psychometric properties. Conclusions: Findings add support to the CYRM-28 as a reliable and valid self-report instrument that measures three components of resilience processes in the lives of complex needs youth. Advanced statistical modeling yielded evidence that the scale, originally developed for use in various countries, can be used to assess resilience in youth from various ethnocultural backgrounds in Atlantic Canada.

Keywords

scale validation, child and youth resilience measure, resilience, youth, protective processes

It is now widely accepted that resilience is the capacity of individuals to overcome adversity and do well in spite of exposure to significant adversity: resilience has a functional aspect in relation to the presence of risk as an atypical developmental process (Cicchetti, 2003; Luthar, 2006; Masten, 2001; Rutter, 2000; Ungar, 2008). It is also accepted that resilience is associated with individual capacities (such as the capacity to form attachments, self-regulate, cognitive skills, and personality or temperament), relationships (with family, friends, peers, and the ability to interact in socially appropriate ways with members of the broader community), and the availability of community resources and opportunities (including educational, health, recreational, and social services) (Luthar, 2006; Masten, 1999; Ungar, 2011).

Studies of these components and how they function in the lives of those confronted by risk have affirmed that resilience is not a static state, an outcome or an inherent trait within the individual. Rather, the interactions between an individual's environment and an individual's assets generate processes that help people to overcome adversity. As Ungar (2008) explains, "in the context of exposure to significant adversity, whether psychological, environmental, or both, resilience is both the capacity of individuals to navigate their way to health-sustaining resources, including opportunities to experience feelings of wellbeing, and a condition of the individual's family, community, and culture to provide these health resources and experience in culturally meaningful ways" (p. 225). Understanding resilience in this way helps us to see resilience as a multidimensional process that mediates the effects of stressors and the achievement of positive outcomes (Gunnar, 2006; Ungar, Liebenberg, Armstrong, Dudding, & Van de Vijver, under review). Many authors have discussed the interactive nature of resilience: how it is impacted by personal, relational, and contextual factors in the lives of youth (Bottrell, 2009; Luthar, 2006).

Given the multiple processes involved in resilience, there are also multiple pathways to resilience, embedded in varying contexts that require our attention and understanding (Masten & Obradović, 2006). In this regard, our understanding is that "resilience has global as well as culturally and contextually specific aspects" (Ungar, 2008, p. 226). The reasons for this are twofold. First, youth are confronted by contextually specific risks related to their exposure to acute and chronic stressors. And second, how risks are managed individually, within families or as communities is influenced by contextual and cultural resources. So, while there may be global aspects of resilience relevant to youth internationally, resilience related patterns of functioning and expression are contextually distinct, impacted

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by sex, race, ethnicity, and culture (Tricket & Burman, 2000; Ungar & Liebenberg, 2009; Wyman, 2003). Such understandings of resilience correspond to findings in anthropology which challenge understandings of youth development as a homogenous experience (Brown, Larson, & Saraswathi, 2002). Our previous work, for example, has identified seven themes, or what we termed ''tensions,'' related to resilience. Our work has also demonstrated that while all seven tensions are present across multiple cultures and contexts, how they are resolved across these cultures and contexts can be very different (Ungar et al., 2007). This same study also underscored the differences that are present among youth within seemingly homogenous settings but where varying cultural heritage underlies and impacts youth experiences and resilience processes (Ungar, Brown, Liebenberg, Cheung, & Levine, 2008).These findings reflect the conclusions of other researchers who have investigated positive outcomes among youth (Dei, Massuca, McIsaac, & Zine, 1997; Elliott et al., 2006; Morris, 2007), as well as ethnic identity development (Chan, 2007; Hallett et al., 2008; Phinney, 2008).

In spite of these developments, Masten (2007) notes that discrepancies surrounding the definition of resilience and subsequent difficulties in operationalizing the construct have plagued the short history of resilience research. She argues that while much of this may stem from a lack of capacity in research skills to address these concerns, subsequent development in disciplines researching human resilience now stand to address these issues well. The limitations in resilience research development are evident in the apparent lack of valid youth focused measures, as well as measures that have emerged out of, and account for, the heterogeneity of culture and experiences of youth (Clauss-Ehlers, 2008). In a recent review by Windle and colleagues (Windle, Bennett, & Noyes, 2011), 19 measures of resilience were identified (15 core measures with four adapted versions). The authors conclude that additional validation work is required on all existing scales, those aimed at youth in particular. These gaps are particularly troublesome given the increased inclusion of the concept in interventions with youth that aim to promote competence and wellness (Cicchetti, Rappaport, Sandler, & Wessberg, 2000; Liebenberg & Ungar, 2008; Luthar, 2006; Luthar & Cicchetti, 2000). As Masten (2007) further argues ''Resilience research always had a pragmatic mission: to learn better ways of preventing psychopathology and promoting healthy development among children at risk for problems'' (p. 926).

Initial Development of the CYRM-28

The CYRM-28) is a 28-item measure whose development was prompted by the need for a more inclusive understanding of resilience across cultures and contexts (Seccombe, 2002; Ungar, 2005). The CYRM was initially developed using a mixed-methods (qualitative and quantitative) design in 11 countries with 1,451 youth aged 13–23. Sites and youth were purposefully selected to maximize diversity regarding social context and the risks these youth face (Ungar & Liebenberg, 2005, 2011). The measure accounts for individual, peer, family, and community resources implicated in resilience processes (see Masten, 2001; Rutter, 1987).

Using an iterative community-based process of consultations, 58 items related to ''doing well'' were generated for inclusion in the first version of the measure. Qualitative focus groups were conducted across all participating sites and included youth and adults. All participants were considered to have something important to say about youth in their own communities and the risks these youth face. This first iteration of the CYRM, the CYRM-58, was then administered to at least 60 youth in each of 14 sites. Resulting data were analyzed for item reduction using exploratory factor analysis (EFA) supported by findings from additional individual qualitative interviews with youth and adults at each site, conducted following the quantitative data collection (Ungar & Liebenberg, 2011). This process resulted in a 28-item measure, the CYRM-28. All items are rated on a 5-point scale from 1 = *does not describe me at all* to 5 = *describes me a lot*, with higher scores indicated increased presence of resilience processes.

Of note in the initial analysis was that no single factor solution could be found for all 58 items for the total sample of youth. Using a multistep process of EFAs where four subgroups of youth were identified (boys and girls of the majority culture in western contexts; girls in non-Western contexts; and boys in non-Western contexts living in high- and low-cohesion communities), we were able to determine which of the items were important to youth across all sites. Meaningful solutions could be found for each of the four groups. An unrotated EFA was then used to identify those items that loaded onto the first factor for each of the four subgroups of youth, as well as the combined total sample. Those items that were consistent across all five analyses (i.e., the four subgroups of youth and the total sample of youth) were retained in the CYRM-28 (for a detailed explanation of the process see Ungar & Liebenberg, 2011).

While initial development of the measure has ensured inclusion of items that account for the multiple components of resilience and the measure's relevance cross culturally, identification and validation of subscales were not conducted at the time of the measure's initial development. Given the multidimensional construct of resilience, it is anticipated that the CYRM-28 has multiple subscales.

Confirmation of the CYRM-28's structure would also address the concerns raised by Windle, Bennett, and Noyes (2011) and increase its relevance for use in research that seeks to better understand functioning of resilience processes among specific groups of youth and, or, programming that aims to improve positive outcomes for youth. Following on our previous instrument development work, we anticipated that while there would be high factorial invariance of the CYRM-28 subscales across various populations, there would be significant differences in terms of how youth score across ethnoracial, age, and gender groups, reflecting the differential functioning of resilience processes (Ungar et al., 2007, 2008).

Phase 1: Subscale Identification and Reproducibility of the CYRM-28

Sample and Data Collection

The CYRM-28 was administered to a purposive sample of 497 youth who were identified as concurrent users of multiple services (child welfare, mental health, juvenile justice, special educational supports, and community programs) in rural and urban communities of Atlantic Canada participating in the *Pathways to Resilience* study (www.resilienceresearch.org). Youth known to be multiple service users were nominated to the study by service providers. Following provision of informed consent, the Pathways to Resilience Youth Measure (PRYM) was administered to participating youth. The PRYM is a compendium of measures used to explore the individual, family, school, and community risks youth face, the formal and informal resources available to youth (including an audit of the services they use and their service use satisfaction) and resilience. All items of the CYRM-28 are included in the PRYM. The PRYM was administered to youth individually or in groups smaller than five. All questions were read to the youth. Administration took between 45 and 60 min.

The mean age of youth was 16.85 years ($SD = 1.868$); 281 (56.5%) of the participants were male and 220 (44.3%) participants self-identified as visible minorities. At the time of the study, 194 (40%) participants were living with both parents and 80 (16%) were living with a single parent. Seventy-nine (16%) youth were living in care and 144 (28%) were living independently. All participants were referred to the study by participating service providers. All youth were known to have used at least two services within the 6 months prior to participation. The data were gathered between January 2008 and December 2009.

The PRYM was administered twice to a subsample of youth from a single participating organization providing services to street engaged youth. Data were used to establish reproducibility of the CYRM-28. Fifty-three youth, 22 girls, and 31 boys were met with 3- to 5-weeks apart for repeat administration of the measure. The mean age of these youth was 18 years ($SD = 2.005$).

Data Analysis and Results

The data were analyzed using Predictive Analytics Software (PASW) Statistics 18 and AMOS 18 for Windows. An EFA was conducted on all items of the CYRM-28 with obliquerotation (Direct Oblimin) using the covariance matrix. The Kaiser–Meyer–Olkin measure verified the sampling adequacy for the analysis (KMO = .883). Bartlett's test of sphericity, $\chi^2_{(378)} = 4433.291$, $p < .001$, indicated that correlations between items were sufficiently large for an EFA. An initial analysis was run to obtain eigenvalues for each component in the data. Seven components had eigenvalues greater than one and in combination explained 59% of the variance. The scree plot, however, contained two points of inflection, suggesting retention of three or seven components for the final analysis. A three-factor structure best reflects the theoretical models of resilience as explained by Garmezy (1985), Luthar, Cicchetti, and Becker (2000), Masten (2001), Rutter (2000), and Werner (2000). Table 1 shows the factor loadings of the three-factor solution after rotation. While most item loadings were in line with expectation, 10 items loaded on two components. Strength of loading combined with theoretical grouping of other items on the components clearly aligned seven of the items with particular components. Three items however, had poor item loadings in addition to appearing on two components (I have people I look up to, I know where to go to get help, and I am proud of my citizenship). Decisions regarding on which components items should be retained were theoretically informed. So, while *I have people to look up to* appeared on both Components 1 (.363) and 3 (.211), the notion of mentors as a factor associated with community capacity meant it was included on Component 3 (Contextual aspects of resilience). The item *I know where to go to get help* loaded on Components 1 (.215) and 2 (−.259). Theoretically, this item is better aligned with notions of self-efficacy and as such was included on Component 1 (Individual aspects of resilience). Finally, *I am proud of my citizenship* appeared on Components 1 (.259) and 3 (−.233). As the item investigates an individual's sense of connection to context, in this case, country, it was retained on Component 3. Specifically, item clustering suggests that Component 1 represents individual characteristics of resilience, Component 2 relational resources with parents or primary caregivers, and Component 3 contextual resources that facilitate a sense of belonging. The first three factors explained 40.4% of the variance for the total model, with each component explaining 26.2%, 8.0%, and 6.3% of the variance, respectively. Reliability of subscales was assessed using Cronbach's α (see Table 1).

Internal reliability of the three components on the CYRM-28 was assessed using Cronbach's α, paired sample *t* tests, and interclass correlation coefficients on Time 1 and Time 2 responses. Cronbach's α ranged from .65 to .91 and was acceptable in all cases. For all three components, the paired sample *t* tests showed no significant differences between Time 1 and Time 2 (see Table 2), which suggests that scores show good cross-temporal stability. Finally, the interclass correlation coefficients (absolute agreement) showed high values for all three components, ranging from .583 to .773. The computations converge in that the scale's components have adequate psychometric properties.

Given the theoretical understanding that the major categories of resilience (i.e., individual; relationship with caregivers; and community and contextual resources) have subcomponents or indicators such as self-efficacy, sociability, and cultural connection (Garmezy, 1985; Luthar et al., 2000; Masten, 2001; Rutter, 2000; Werner, 2000), further analysis was conducted on each of the three subscales. An EFA using oblique rotation (Direct Oblimin) supported mean clustering of items within each factor of the model. Oblique rotation was used given the correlations between indicators on each of the three individual subscales. Analysis of the 11 items on the individual factor revealed three components with eigenvalues exceeding 1, explaining 54.17% of the variance. Five items

Table 1. Patternmatrix of the Three-Factor Solution for the CYRM-28

	Component		
	1. Individual	2. Relational	3. Contextual
I cooperate with people around me	**.572**		
I aim to finish what I start	**.508**		
People think I am fun to be with	**.580**		
I solve problems without drugs or alcohol	**.491**		
I am aware of my own strengths	**.491**		
Spiritual beliefs are a source of strength for me			**–.688**
I think it is important to serve my community			**–.614**
I feel supported by my friends	**.508**		–.243
My friends stand by me during difficult times	**.512**		
My caregivers watch me closely	–.202	**–.635**	
My caregivers know a lot about me		**–.733**	
I eat enough most days		**–.668**	.222
I talk to my caregivers about how I feel		**–.678**	
My caregivers stand by me during difficult times		**–.822**	
I feel safe when I am with my caregivers		**–.775**	
I enjoy my caregivers' cultural and family traditions		**–.459**	–.370
Getting an education is important to me	.239		**–.372**
I feel I belong at my school	.279		**–.398**
I have people I look up to	.363		**–.211**
I know how to behave in different social situations	**.718**		
I am given opportunities to become an adult	**.629**		
I know where to go to get help	**.215**	–.259	
I have opportunities to develop job skills	**.501**		
I am proud of my ethnic background			**–.513**
I am treated fairly in my community	.311		**–.436**
I participate in organized religious activities			**–.726**
I enjoy my community's traditions			**–.745**
I am proud of my citizenship	.259		**–.233**
α	.803	.833	.794

Note. Boldface values indicate on which factor item were retained. Extraction method: Principal component analysis. Rotation method: Oblimin with Kaiser Normalization.

reflecting personal skills (Component 1) explained 32.84% of the variance, while the 2 items reflecting peer support (Component 2) explained 11.66% and the 4 items reflecting social skills (Component 3) explained 9.97% of the variance. Analysis of the seven relationship with caregiver items revealed two components explaining 62.77% of the variance collectively: physical care giving (2 items; Component 1) and psychological care giving (5 items; Component 2). These two components explained 10.92% and 51.84% of the variance, respectively. Finally, analysis of the 10 items on the contextual factor sorted into three components, explaining 57.59% of the variance. Components included 3 spiritual items (Component 1), 2 educational items (Component 2), and 5 cultural items (Component 3) explaining 12.01%, 8.88%, and 36.71% of the variance, respectively.

Phase 2: Scale Confirmation and Identification of Group Differences

Sample and Data Collection

A second sample of 410 multiple service using youth, participating in a second phase of the pathways to resilience research program in the same Atlantic Canadian sites, were next introduced into the analysis. These youth were nominated to the study and completed the PRYM using the same procedures as during the first phase of the research. The mean age of youth was 15.96 years ($SD = 1.785$). Just over half of the sample was boys (235, 57.3%) with approximately two thirds identifying as visible minority youth (269, 66%). Data were gathered between January and December 2010.

Table 2. Paired Sample *t* Test of Three CYRM-28 Components Between Time 1 and Time 2

				Time 1		Time 2	
	t	*df*	*p*	*M*	*SD*	*M*	*SD*
1. Individual	.507	50	.614	43.11	5.302	42.74	6.870
2. Relational	−1.446	50	.154	22.59	7.852	24.21	6.374
3. Contextual	.630	50	.630	33.44	7.212	33.03	7.384

Data Analysis and Results

A confirmatory factor analysis was undertaken on the three-factor structure of the CYRM-28, with the clustered items (see

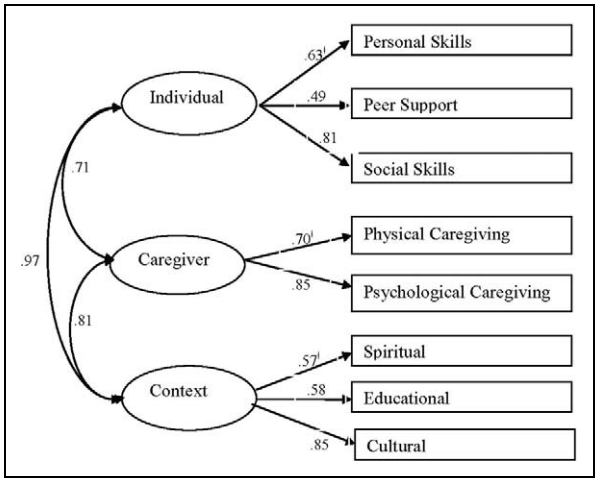

Figure 1. Confirmatory factor analytic model of the child and youth resilience measure (all depicted parameters are equal for both visible minority and visible majority youth)*. ‡Refers to a loading that was fixated at a value of 1 in the nonstandardized solution. *All reported coefficients differ significantly from 0 ($p < .01$).

Figure 1). Using multigroup analysis, we tested the invariance of the CYRM-28. The measurement model tested comprised the three latent variables (individual characteristics; relationship with primary caregivers; and contextual components that facilitate sense of belonging) as found in the EFA reported in the previous section. In the model, all three latent variables were allowed to covary.

The most restrictive model with good fit was the measurement residuals model (see Table 3), implying that all factor loadings and correlations are identical in the two groups. A good fit was obtained, $\chi^2(53, N = 410) = 98.00$, $p < .001$; Tucker-Lewis index (TLI) = .957; comparative fit index (CFI) = .979; root mean square error of approximation (RMSEA) = .046.

As could be expected all factor loadings were positive. Moreover, the three latent variables showed very high and significant positive correlations, suggesting that all components of resilience are positively correlated in this sample. Standardized loadings are high (.55 or higher; Tabachnick & Fidell, 2007) for all but peer support, where the loading is fair (.45 or higher). The strong correlations also suggest the presence of resilience as an underlying construct of the model. Subscale correlations ranged between .555 and .705 supporting both the positive relationship between the resilience components and their distinctiveness.

A multivariate analysis of variance (MANOVA) was conducted to test our hypothesis that significant differences exist between different ethnic, gender, and age groups of youth. The analysis was conducted with gender (two levels), age (two levels: youth 16 years and younger, and 17 and older), and visible minority/majority status as independent variables and the eight groupings of CYRM-28 questions as the dependent variables. Table 4 shows the effects. Significant multivariate main effects were found for gender, Wilks' $\lambda = .958$, $F(8, 395) = 2.167$, $\eta^2 = .042$, and visible minority/majority status, Wilks' $\lambda = .822$, $F(8, 395) = 10.694$, $\eta^2 = .178$.

Girls and visible minority youth consistently scored higher on all eight variables, than boys and visible majority youth (see Table 5). While we see significant differences between boys and girls, the key differences are found between visible minority youth and visible majority youth. Although there is a statistically significant difference between boys and girls on the combined dependent variables: $F(8, 395) = 2.167$, $p = .029$;Wilks' $\lambda = .958$; $\eta^2 = .042$, sex of youth only accounts for 4% of the variance. When considered separately, the only difference to reach statistical significance, using a Bonferroni adjusted α level of .006, was perceived level of psychological caregiving youth are receiving. Girls score slightly higher ($M = 4.309$; $SD = .758$) than boys ($M = 3.858$; $SD = 1.070$). The effect size however is small (3%; Cohen, 1988).

By contrast, differences between visible minority youth and visible majority youth account for 18% of the variance on combined dependent variables: $F(8, 395) = 10.964$, $p < .001$; $\lambda = .822$; $\eta^2 = .178$. Significant differences, again using a Bonferroni adjusted α level of .006, are seen on six of the eight dependent variables, with visible majority youth scoring consistently lower than visible minority youth (see Table 5).

Discussion and Applications to Social Work

Despite theoretical advances to our understanding the construct of resilience, validated assessments that will allow for rigorous review of resilience processes are still not well developed (Masten, 2007; Windle et al., 2011). This article documents the continued validation of the CYRM-28, building on the measure's initial development involving a mixed-methods iterative design with youth at multiple international sites (Ungar & Liebenberg, 2005, 2011). While initial work on the measure underscored high levels of face validity and relevance to youth across cultures and contexts, a global scale of resilience limits understanding of the various resilience attributes and their related processes.

Results suggest that the CYRM-28 has three subscales reflecting the major categories of resilience. Furthermore, each subscale has its own groupings of questions that serve as indicators of the construct's major categories. The first subscale reflects an individual factor that includes personal skills (5 items), peer support (2 items), and social skills (4 items). The second subscale deals with caregiving, as reflected in physical caregiving (2 items) as well as psychological caregiving (5 items). The third subscale comprises contextual components that facilitate a sense of belonging in youth, components related to spirituality (3 items), culture (5 items), and education (2 items). Reliability analyses demonstrate that the CYRM-28 and its subscales are internally consistent, while results from the CFA providing strong support for the model. Furthermore, no floor or ceiling effects were detected (Terwee et al., 2007). No participants scored the lowest possible score of 28 in either sample of youth. Only one participant (.2%) scored 140, the

Table 3. Model Fit Summary Statistics of CYRM-28 Confirmatory Factor Analysis

	CMIN	*df*	*p*	TLI	CFI	ΔCFI	RMSEA
Configural invariance	53.789	34	.017	.971	.982	—	.038
Measurement weights	62.433	39	.010	.970	.979	.003	.038
Structural covariances	68.412	45	.014	.974	.979	.000	.036
Measurement residuals	98.000	53	.000	.957	.959	.020	.046
Independence model	1164.961	56	.000	.000	.000		.220

Note. CFI = comparative fit index; DF = degrees of freedom; RMSEA = root mean square error of approximation.

Table 4. Results of a MANOVA Testing Sex, Age, and Ethoracial Differences (Cells Contain Effect Sizes)

	Source						
Dependent variables	Sex (S)	Age (A)	Ethnoracial (ER)	S × A	S × ER	A × ER	S × A × ER
Personal skills	.002	.001	.027***	.002	.002	.007**	.000
Peer support	.003	.003	.014*	.008	.006	.000*	.000
Social skills	.011*	.000	.009*	.001	.000	.001*	.001
Physical care giving	.005	.004	.051***	.001	.002	.000*	.000
Psychological care giving	.033***	.000	.059***	.007	.000	.000	.000
Spiritual	.004	.001	.144***	.000	.004	.006	.006
Educational	.003	.002	.024**	.000	.002	.001	.004
Cultural	.020**	.001	.061***	.001	.003	.000	.005

Note. ***$p < .001$. **$p < .01$. *$p < .05$.

Table 5. Estimated Marginal Means for CYRM-28 Subscales by Gender and Ethnoracial groups

	Girls		Boys		Visible Majority		Visible Minority	
	M	*SE*	*M*	*SE*	*M*	*SE*	*M*	*SE*
Individual personal skills	4.011	.056	3.957	.041	3.867	.059	4.101	.037
Individual peer support	4.219	.089	4.089	.066	4.024	.094	4.284	.059
Individual social skills	4.307	.089	4.122	.066	4.132	.073	4.298	.046
Physical caregiving	4.295	.075	4.157	.056	4.009	.079	4.442	.049
Psychological caregiving	4.197	.086	3.802	.064	3.730	.091	4.269	.057
Context spiritual	3.188	.103	3.025	.076	2.577	.109	3.636	.068
Context education	4.049	.099	3.965	.073	3.834	.104	4.224	.065
Context cultural	4.251	.067	4.010	.050	3.917	.071	4.345	.044

maximum score in the first sample of youth, and four (1%) scored 140 in the second sample of youth.

Interestingly, the confirmatory factor analysis shows that context and individual components are more closely correlated than are individual and caregiver components or caregiver and context. This may be due to higher order systemic relationships (Bronfenbrenner, 1979) where caregiving, and the capacity to provide physical and psychological nurturance, occurs within the broader context and reflects the qualities therein. Stated differently, how caregivers are able to carry out their caregiving tasks is impacted on by the resources available to them as well as the stressors they face (Ungar, 2011; Werner & Smith, 1982). Context is also important because of its potential to compensate for reduced experiences of positive caregiving. Where capacity for caregiving is restricted, youth may find alternative sources of care in their communities. Criss, Pettit, Bates, Dodge, and Lapp (2002), for example, demonstrated how meaningful connections derived from positive peer relationships compensated for a lack of secure attachment with caregivers. In this way, context impacts both youth and those caring for youth. Therefore, context is important to both individual and caregiving subscales.

The CYRM-28's structure facilitates our ability to understand not only the dynamics and presence of the three subscales at play in the lives of youth but also has the potential to provide a more detailed understanding of the subtle characteristics of these processes. As illustrated in the MANOVA, ethnoracial status clearly plays a much larger role in differences across groups of youth than gender or age.

Furthermore, resilience is a hierarchical construct with different interrelated components: while all measures of resilience tend to be correlated they tend to be more strongly correlated within factors than across factors. Because resilience components present an additive model to counterbalance the

effects of adversity, the more service providers can increase the presence of the various components associated with resilience, the better we would expect the outcomes for youth to be. Presenting a measure that identifies resilience processes in this detailed manner facilitates our ability as clinicians and researchers to examine the processes at play in the lives of youth exposed to adversity, and importantly, explain how these processes operate in different contexts. Consequently, the CYRM-28 has potential for use in both clinical practice and research. The measure's composition of 28 questions that provide eight indicators of three resilience components provides clinicians with a short, yet detailed review of the resilience components that youth are drawing from, as well as those components that are lacking in their lives. In this way, existing strengths can be integrated into clinical work and drawn on to facilitate the bolstering of areas where supports and processes are not as strong.

When used in research and evaluation, the CYRM-28 complements need and risk assessments of populations of youth, identifying existing components available to youth that can be built on through intervention and changes to social policy. Furthermore, the instrument could be used longitudinally to measure effectiveness of programs preintervention and postintervention.

While this article lends further support to the CYRM-28 as a valid measure of resilience two limitations should be noted. Although it includes cross-ethnic analysis, the study presented here is based only on a Canadian sample of youth. As such there is a need to replicate the study samples of youth internationally in order to maintain the instrument's distinction as a cross culturally relevant measure of resilience.

Second, although the sample size is large, participants were not randomly selected. Given the narrow sample included in the study, the measure's discriminant validity still needs to be established using alternative samples of youth. Cutoff scores, convergent validity, and predictive validity would also still need to be established (Terwee et al., 2007).

As statistical evidence around the CYRM-28 grows, it lends confidence to use of the measure as either a global scale of resilience and, or, the use of its subscales to measure specific processes associated with resilience.

Declaration of Conflicting Interests

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8. VALIDATION OF THE CYRM-12

The CYRM-12: A Brief Measure of Resilience

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ABSTRACT

OBJECTIVES: This article details the reduction of the Child and Youth Resilience Measure (CYRM) from a 28-item to a 12-item measure. The CYRM-28 is a measure of youth resilience that accounts for cultural and contextual diversity across youth populations. A reduced version of the CYRM is better suited to inclusion in omnibus surveys.

METHODS: Data from two samples of youth from Atlantic Canada are included in the analysis: a) a sample of multiple-service-using youth (n=122; mean age = 18); b) a school-based sample of youth (n=1494; mean age = 15).

RESULTS: Three iterations of an Exploratory Factor Analysis were conducted on data from the first sample of youth to identify items for inclusion in the CYRM-12. In the third analysis, a varimax rotated factor analysis of the 12 items resulted in a four-factor solution, with 10 of the items loading well. Reliability of this grouping of questions is satisfactory (α=0.754). Confirmatory factor analysis was then conducted on the second sample of youth. A satisfactory fit was obtained (χ^2 (51, N=1540) = 255.419, p=0.0001; Adjusted Goodness of Fit Index = 0.960; Comparative Fit Index = 0.957; Root Mean Square Error of Approximation = 0.050). Cronbach's Alpha for the 12 items was also satisfactory (α=0.840).

CONCLUSION: Results show sufficient content validity of the CYRM-12 to merit its use as a screener for resilience processes in the lives of adolescents.

KEY WORDS: Child and Youth Resilience Measure (CYRM); adolescents; adversity; validity; risk; positive development

La traduction du résumé se trouve à la fin de l'article.

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Children and youth develop into mature adults depending on the extent of intrinsic assets such as perseverance, efficacy, self-esteem, and active avoidance of risk-taking behaviours, and extrinsic assets such as living in a nurturing environment with supportive parents, having a non-delinquent peer group and experiencing a healthy school climate.[1-3] When faced with adversity and risk, some youth will survive and even thrive while others will succumb to risky and possibly self-destructive behaviour. Those who thrive under adversity (e.g., poverty, maltreatment, loss of a parent) exhibit engagement in processes described as resilience.[4,5] Measurement of resilience can enable identification of modifiable factors that can be used to inform research and policy initiatives to help youth develop the capacity they require to cope with adversity during normative and non-normative developmental transitions.[6]

The complexity of resilience as a construct, however, makes it challenging to measure. Resilience can be defined as an individual's capacity to navigate to health-enhancing resources that nurture individual, relational, and community assets, as well as the capacity of individuals to negotiate with others for these resources to be provided to them in culturally meaningful ways.[7] This socio-ecological definition implies that individual-, peer-, family-, school- and community-level resources protect and promote good outcomes by helping individuals engage in interactive processes within complex, multi-level environments that make it possible for them to avoid potential threats to their development.[8] Positive development, however, is contextual since a youth may thrive under one adverse circumstance but succumb under another.[9] As well, a youth's ability to cope over time may vary,[1,2,10] particularly during growth and development, and when processes associated with resilience interact with specific risk factors associated with culture, ethnoracial status, ability, gender, and socio-economic status.[11]

The 28-item Child and Health Youth Resilience Measure (CYRM)[12,13] was designed to measure youth resilience while accounting for diverse social contexts across numerous cultures. The CYRM-28 is a self-report instrument validated originally with a purposeful sample of 1,451 youth growing up facing diverse forms of adversity in 11 countries (Canada, USA, Colombia, China, India, Russia, Palestine, Israel, Tanzania, the Gambia, and South Africa). Items are rated on a 5-point scale from 1=*does not describe me at all* to 5=*describes me a lot*. Higher scores indicate higher levels of resilience. The final validated CYRM incorporates both cultural homogeneity and heterogeneity in how individuals, families and communities support successful development among youth aged 13-23.[13]

This article details the reduction of the CYRM-28 to a 12-item measure that is better suited for use in omnibus surveys with youth where the full 28-item version of the measure may be unacceptably long. In their recent review of measures of resilience, done before publication of the full validation of the CYRM-28, Windle, Bennet and Noye[14] found 15 published measures (including the CYRM) that captured processes related to resistance to risk impact.

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The best-performing measures were all adult-focused. None, Windle et al. note, had included the range of cultural diversity in their development reflected in the CYRM. Most overemphasize individual characteristic without adequately addressing the quality of the social ecology around individuals that provides the trigger for the realization of latent capacity or the development of new coping skills. It is particularly noteworthy that even the best-performing of the measures provided only moderately good validity scores and that most showed a lack of theoretical rationale for their selection of items. Many were developed to measure strengths across an entire population, both those at risk and those not at risk, and are therefore measures of developmental assets rather than resilience. For the most part, the measures are also quite long, frequently with more than 25 items.

METHODS

Two samples of youth were included in the analysis. The first sample of youth consisted of 122 multiple-service-using youth participating in the Pathways to Resilience Study (www.resilienceresearch.org), a cross-sectional, multi-site Atlantic Canadian investigation of youth who use multiple services (child welfare, mental health, juvenile justice, community programs, and special educational supports) and are nominated to the Pathways study by their service providers (see Table 1). Thirty-seven percent of the sample were female and participants were between the ages of 14 and 22 (M = 18 years; SD = 2.017). Data from this sample were used to establish a 12-item version with acceptable validity, using exploratory factor analysis (EFA).

A second sample, drawn from the Survey of Resilience and Risky Behaviours, included 1,574 students from rural and urban public schools in one Atlantic Canadian province, attending grades 7 to 12 and aged between 10 and 18 years (M = 15 years; SD = 1.715); 862 (53%) were girls. Data from this sample were used to conduct a confirmatory factor analysis.

In the Pathways to Resilience study, all youth completed the Pathways to Resilience Youth Measure (PRYM), comprising a battery of validated measures of risk, resilience, service use history, and experiences with caregivers. The CYRM was included. In all instances, the PRYM was administered in a face-to-face interview where each question was read out loud to participants, with explanation of ambiguous terms where necessary and giving participants the option of filling in their responses themselves or having the researcher do it for them. Participants were also given the opportunity to ask for clarification before responding to questions.

In the Survey of Resilience and Risky Behaviours among Youth, all consenting students in class on the day of the survey were administered the Student Drug Use Survey in the Atlantic Provinces (SDUSAP) and the 12-item version of the CYRM developed using EFA on the first sample of youth.

In both studies, Research Ethics Board (REB) approval was obtained from the host institution as well as all participating services and school boards. In all instances, informed consent was obtained in accordance with the requirements of the host organization. For youth nominated to the Pathways to Resilience study through nominating services where the state was acting guardian of the youth, only informed consent from youth was required. In all other instances, active consent of the parent/legal guardian of youth was obtained in addition to that of the youth.

Table 1. Youth Nominations of Sample One by Service Provider

	Frequency	Percent
Community-based service provider	47	38.5
Justice	51	41.8
Education	1	0.8
Child and Family Services	17	13.9
Mental Health and Addictions	6	4.9
Total	122	100.0*

* Percent column does not add to 100% due to rounding.

A multi-step procedure that included review of non-response rates, item variance and EFA with unrotated solutions was conducted repeatedly on the first sample of youth in a process of item reduction. Three iterations of this process were conducted on the first sample of youth, with unrotated EFAs being used in the first two iterations, and varimax rotation during the third iteration. This was followed by a confirmatory factor analysis (CFA) of the remaining 12 items using maximum likelihood estimation and multiple fit indices on a second sample of youth. All analysis was conducted using SPSS (Version 12), PASW Statistics (Version 18) and AMOS (Version 18) for Windows.

RESULTS

In the first iteration of the EFA procedure (n=122), six items were identified as having unacceptably high non-response rates (≥10%; see Table 2). A further five items were then identified for elimination due to their lack of variance (see Table 2). An additional five items with extreme means were also identified for deletion. Using the remaining 12 questions, the Kaiser-Meyer-Olkin (KMO) statistic (.652) indicated adequacy of the sample size, and the Bartlett's test was significant ($p<0.001$) for factor analysis. All 12 items had communality of at least .423 and above. An unrotated solution was used to identify the 10 best-performing items from the original 28-item version of the CYRM (using cut-off values of .45; α=0.780; see Table 3). While there was good statistical justification for these 10 items, they did not address all domains in our conceptual model of resilience as captured by the CYRM-28. Specifically, none of the 10 items captured concepts related to family and culture – prominent dimensions in the CYRM-28. As such, we reviewed data used in the initial analysis in order to identify why these domains may have been excluded from the EFA. Thirteen youth responded to family-oriented questions as not applicable and all 13 indicated that they lived either on their own or with friends. Recognizing the relationship between these youth and the rates of missing data, these cases were removed from the data set and the data were reanalyzed.

Once again, preliminary data from the 28-item version of the CYRM as administered in the Pathways to Resilience Study (n=122) was used in the analysis with the replacement of the 13 youth with 13 demographically matched participants who had answered the family-oriented questions. Again, non-response and variance on the 28 items was explored. No items could be identified for elimination due to non-response. However, six questions were removed due to their lack of variance, and a further six questions were removed due to extreme means (see Table 2). Using the remaining 16 questions, the KMO statistic (.761) again indicated adequacy of the sample size, and the Bartlett's test was significant ($p<0.001$) for factor analysis. While 15 of the 16 remaining items have communality of at least .443 and above (see Table 3), "I have people I look up to" could potentially have been considered for elimination as its communality criterion is .332; the item was however included in

Table 2. Descriptive Statistics for CYRM-12 Version One and Version Two

		Version 1				Version 2			
		N	Mean	Std. Deviation	Missing	N	Mean	Std. Deviation	Missing
1.	I have people I look up to	123	3.63	1.307	0	122	3.77	1.983	0
2.	I cooperate with people around me	123	3.62	.928*	0	122	3.66	.879*	0
3.	Getting an education is important to me	123	3.96	1.162	0	122	3.98	1.178	0
4.	I know how to behave in different social situations	123	4.11†	1.002	0	122	4.18	.936*	0
5.	My caregiver(s) watch me closely	107	2.94†	1.459	16‡	118	3.03	1.461	4
6.	My caregiver(s) know a lot about me	109	3.44	1.410	14‡	121	3.46	1.414	1
7.	If I am hungry, there is enough to eat	118	3.79	1.232	5	122	3.84	1.213	0
8.	I try to finish what I start	123	3.71	1.022	0	122	3.75	.990*	0
9.	Spiritual beliefs are a source of strength for me	122	2.52†	1.300	1	121	2.45†	1.323	1
10.	I am proud of my ethnic background	123	4.12†	1.120	0	122	4.12†	1.154	0
11.	People think that I am fun to be with	123	4.06†	.813*	0	122	4.05	.822*	0
12.	I talk to my caregiver(s) about how I feel	109	2.86†	1.494	14‡	121	2.90†	1.491	1
13.	I am able to solve problems without harming myself or others (for example by using drugs and/or being violent)	122	3.65	1.272	1	121	3.65	1.283	1
14.	I feel supported by my friends	123	3.76	1.064	0	122	3.75	1.103	0
15.	I know where to go in my community to get help	123	3.94	1.189	0	122	3.93	1.179	0
16.	I feel I belong at my school	123	3.21	1.433	0	122	3.38	1.439	0
17.	My caregiver(s) stand(s) by me during difficult times	107	3.51	1.463	16‡	119	3.56	1.459	3
18.	My friends stand by me during difficult times	123	3.84	1.112	0	122	3.84	1.153	0
19.	I am treated fairly in my community	122	3.66	1.218	1	122	3.68	1.201	0
20.	I am given opportunities to show others that I am becoming an adult and can act responsibly	123	4.11†	.857*	0	122	4.11	.855*	0
21.	I am aware of my own strengths	123	3.85	.989*	0	122	3.83	1.042	0
22.	I participate in organized religious activities	122	1.92†	1.289	1	122	1.94†	1.344	0
23.	I think it is important to serve my community	122	3.03	1.304	1	122	2.98†	1.298	0
24.	I feel safe when I am with my caregiver(s)	110	3.62	1.478	13‡	122	3.65	1.454	0
25.	I have opportunities to develop skills that will be useful later in life (like job skills and skills to care for others)	123	3.89	1.115	0	122	3.89	1.122	0
26.	I enjoy my caregiver(s)' cultural and family traditions	104	3.49	1.488	19‡	114	3.50	1.489	8
27.	I enjoy my community's traditions	120	2.99†	1.381	3	119	2.98†	1.402	3
28.	I am proud to be a citizen of Canada	123	4.57†	.967	0	122	4.57	.971*	0

* Items identified for elimination due to lack of variance.
† Items identified for elimination due to extreme means.
‡ Items identified for deletion due to non-response rates.

Table 3. Communalities, Factor Loadings* and Cronbach's Alpha Values for Version One and Version Two

		Version 1			Version 2		
		Extraction	Factor Loading	Cronbach's Alpha if Item Deleted	Extraction	Factor Loading	Cronbach's Alpha if Item Deleted
1.	I have people I look up to	.635	.684	.750	.332	.354	–
3.	Getting an education is important to me	.658	.537	.767	.593	.539	.838
5.	My caregiver(s) watch me closely	–	–	–	.629	.558	.837
6.	My caregiver(s) know a lot about me	–	–	–	.671	.725	.821
7.	I eat enough most days	.784	–	–	.623	.426	–
8.	I try to finish what I start	.713	–	–	–	–	–
13.	I solve problems without drugs or alcohol	.423	.470	.775	.583	.360	–
14.	I feel supported by my friends	.764	.731	.746	.710	.577	.837
15.	I know where to go to get help	.606	.466	.773	.618	.494	.846
16.	I feel I belong at my school	.442	.527	.771	.443	.452	.852
17.	My caregiver(s) stand(s) by me during difficult times	–	–	–	.801	.811	.806
18.	My friends stand by me during difficult times	.819	.708	.748	.753	.602	.836
19.	I am treated fairly in my community	.454	.575	.758	.429	.392	–
21.	I am aware of my own strengths	–	–	–	.566	.419	–
23.	I think it is important to serve my community	.458	.573	.762	–	–	–
24.	I feel safe when I am with my caregiver(s)	–	–	–	.818	.794	.807
25.	I have opportunities to develop job skills	.620	.488	.764	.666	.379	–
26.	I enjoy my caregiver(s)' cultural and family traditions	–	–	–	.677	.688	.822

* Extraction method: Principal component analysis.

the analysis. An unrotated factor solution was again used on the remaining 16 items. From this, 10 questions were identified (using cut-off values of .45; α=0.845; see Table 3) for inclusion in the measure.

Two issues became apparent when comparing the two reduced versions of the CYRM. First, the manner in which items loaded on the various factors was noticeably different when replacing the 13 youth who lived on their own or with friends and who indicated that caregiver questions were not relevant to their lives. While inclusion of these youth meant that family or caregiver questions were not included in the analysis, replacing them with 13 similarly matched youth with different constructions of family meant that these questions featured prominently in the factor analysis loadings. Interestingly, the question "I have people to look up to" appears to have replaced the family and caregiver questions for youth who do not identify caregivers in their lives. Second, questions relating to community supports and self-sufficiency featured more prominently in the factor loadings of the first group of youth (i.e., those not identifying caregivers). These questions include, "I am able to solve problems without harming myself or others (for example by using drugs and/or being violent)", "I think it is important to serve my community", "I am treated fairly in my community", and "I have opportunities to develop skills that will be useful later in life (like job skills and skills to care for family)." Conversely, where family questions did feature prominently in the factor

Table 4. Communalities, Factor Loadings*† and Cronbach's Alpha Values for Version Three‡

		Extraction	Component				Cronbach's Alpha if Item Deleted
			1	2	3	4	
1.	I have people I look up to	.996		.525			.759
3.	Getting an education is important to me	.616			.752		.733
6.	My parent(s)/caregiver(s) know a lot about me	.739	.844				.725
8.	I try to finish what I start	.264		.462	.388		.759
13.	I solve problems without harming myself or others (by using drugs and/or being violent)	.528		.608			.744
15.	I know where to go in my community to get help	.275				.803	.740
16.	I feel I belong(ed) at my school	.830			.816		.735
17.	My family will stand by me during difficult times	.820	.885				.714
18.	My friends stand by me during difficult times	.535		.703			.727
19.	I am treated fairly in my community	.549		.744			.736
25.	I have opportunities to develop skills that will be useful later in life	.233				.769	.744
26.	I enjoy my cultural and family traditions	.748	.773				.724

* Extraction method: Principal component analysis.
† Rotation method: Varimax with Kaiser normalization.
‡ Rotation converged in 6 iterations.

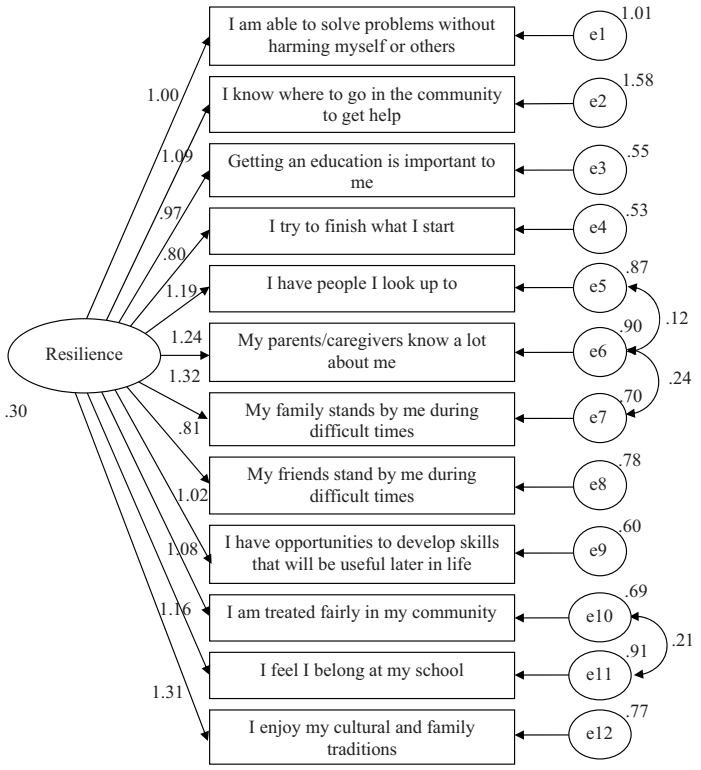
analysis loadings, these community and self-sufficiency questions did not.

Comparing the two versions, it became evident that in order to establish a brief screening measure that would account for all four components of an ecological resilience model and for variations in youth connection to family and culture, a combination of questions from version 1 and version 2 would need to be included. A third version of the measure was therefore constructed containing three questions included in both version 1 and version 2 ("I know where to go to get help"; "Getting an education is important to me"; and "My friends stand by me during difficult times"). "I feel supported by my friends" was not included because it has a high correlation with "My friends stand by me during difficult times" in both version 1 and version 2 (r=.779 and r=.795, respectively; contact the authors for more information regarding these findings). In order to account for variations in connection to family – specifically parents and caregivers – "I have people to look up to", "My parents/caregivers know a lot about me" and "My family will stand by me during difficult times" were included. "My parents/caregivers watch me closely" and "I feel safe when I am with my family" were excluded due to high correlations with "My parents/caregivers know a lot about me" and "My family will stand by me during difficult times". In addition, there were thematic overlaps. Finally, three questions from version 1 were included to measure connection to community: "I think it is important to serve my community", "I have opportunities to develop skills that will be useful later in life (like job skills and skills to care for family)", and "I am treated fairly in my community".

A varimax rotated factor analysis of the 12 items identified for inclusion in the third version resulted in a four-factor solution, with 10 of the items loading well (see Table 4). While communalities on three of the items are very low, they still share at least 23% of the variance with the extracted component. While the reliability of this third grouping (α=0.754) is not as high as in version 2 (α=0.845), it is still satisfactory. Combined with the improved content-validity of the measure, it can be argued that version 3 represents a more sophisticated cross-cultural screener of resilience.

A CFA was then undertaken on the 12-item CYRM ("CYRM-12") using data from the second sample of youth who had participated in the Survey of Resilience and Risky Behaviours among Youth (n=1494). Given the requirement for a brief screener of resilience, the analysis was of a model with a single latent variable structure containing all 12 items. Maximum likelihood estimation was used together with multiple fit indices.

Figure 1. Confirmatory Factor Analysis Model of CYRM-12*



* Reported coefficients differ significantly from 0 (p<0.01).

Modification Indices suggested allowing the variables "I am treated fairly in my community" and "I feel I belong at my school" to co-vary, as well as allowing "I have people I look up to" and "My parents/caregivers know a lot about me", and "My parents/caregivers know a lot about me" and "My family stands by me during difficult times" to co-vary (see Figure 1). Once these changes were made to the model, a satisfactory fit was obtained (χ^2(51, N=1540) = 255.419, p=0.0001; Adjusted Goodness of Fit Index = 0.960; Comparative Fit Index = 0.957; Root Mean Square Error of Approximation = 0.050). Cronbach's Alpha for the 12 items was also satisfactory (α=0.840).

DISCUSSION

Increasingly, definitions of resilience emphasize processes that occur at multiple systemic levels, with individual, relational, community and cultural factors interacting to produce positive developmental outcomes among populations facing significant adversity.[15] Screening for the most likely individual and contextual capacities that predict positive outcomes has not been possible due to a lack of validated measures that have demonstrated sufficient internal and external validity. Both the CYRM-28 and the briefer CYRM-12 address this gap in the research. Based on two separate samples, one at high risk, the other a population-based sample of school children, the CYRM-12 demonstrates sufficient validity to merit its use as a screener for key resilience characteristics among youth. While the full CYRM-28 provides a more comprehensive understanding of the multiple dimensions of resilience,[13] the 12-item version is well designed for inclusion in larger omnibus studies or smaller clinical trials where researchers seek to document the capacity of adolescents and their social ecologies. This in fact follows a practice seen with many instruments where, for administration in settings with limited resources, brief versions have been developed. For example, the original 93-item Conners Parent Rating Scale for behaviour problems in children[16] was reduced to a 10-item version[17] and the 16-item Kutcher Adolescent Depression Scale was reduced to 6 items.[18]

A strength of the CYRM-12 is that it has been validated on two distinct groups of youth. The first sample is comprised of youth exposed to adversity who have accessed some type of health or community service. One would expect measures designed to capture adversity and resilience to perform well in a sample where exposure to adversity is common. The second is a school-based sample with no attempt to sample based on adversity or access to care. Rates of adversity, mental health conditions, assets and resilience in this sample should be typical of the general population of North American youth since the schools, while not randomly selected, are typical of schools in the province of Nova Scotia. That the confirmatory factor analysis demonstrated good performance of an instrument developed in a clinical sample supports the use of the CYRM-12 in both clinical and non-clinical settings.

Further study will examine whether the CYRM-12 has the potential to inform studies of resilience and risk where the focus is on screening for processes that predict resistance to problem behaviours and other coping strategies. Further study is required, however, to investigate whether the CYRM-12 is appropriate for use with other youth populations across cultures and contexts internationally. While the overall age range in this analysis is 10 to 22, validation of the measure was only conducted on youth aged 10 to 18. Future studies should include a broader age range. A program of research is continuing to investigate these questions.

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RÉSUMÉ

OBJECTIFS : Cet article traite de la réduction de l'indicateur CYRM (*Child and Youth Resilience Measure*) de 28 à 12 éléments. Le CYRM-28 est un indicateur de la résilience des jeunes qui tient compte de la diversité culturelle et contextuelle dans les populations de jeunes. La version réduite du CYRM est plus susceptible d'être incluse dans les enquêtes omnibus.

MÉTHODE : Notre analyse englobe les données de deux échantillons de jeunes du Canada atlantique : a) un échantillon de jeunes utilisant plusieurs services (n=122; âge moyen = 18 ans) et b) un échantillon de jeunes en milieu scolaire (n=1 494; âge moyen = 15 ans).

RÉSULTATS : Trois itérations d'une analyse factorielle exploratoire ont été menées sur les données du premier échantillon de jeunes afin de repérer les éléments à inclure dans le CYRM-12. La troisième, une analyse factorielle des 12 éléments avec rotation Varimax, a donné une solution à quatre facteurs avec 10 éléments se chargeant bien. La fiabilité de ce groupe de questions est satisfaisante (α=0,754). Nous avons ensuite mené une analyse factorielle confirmatoire sur le second échantillon de jeunes. Nous avons obtenu un ajustement satisfaisant (χ^2 (51, N=1 540) = 255,419, p=0,0001; Indice de qualité de l'ajustement = 0,960; Indice comparatif d'ajustement = 0,957; Erreur moyenne quadratique d'approximation = 0,050). Le coefficient alpha de Cronbach pour les 12 éléments était également satisfaisant (α=0,840).

CONCLUSION : Les résultats font état d'une validité de contenu suffisante pour que le CYRM-12 soit utilisé comme « crible » des processus de résilience dans la vie des adolescents.

MOTS CLÉS : *Child and Youth Resilience Measure* (CYRM); adolescent; adversité; validité; risque; développement positif

10. CYRM-28 REPORT FOR THE RRC WEBSITE WRITING AND FORMATTING GUIDELINES

RRC-ARM Report for the RRC Website Writing and Formatting Guidelines

If you would like to have your RRC-ARM related findings shared on the RRC website, please feel free to send us a word document containing the following information, and we will be sure to add the findings in a report format.

1) Provide the location of your research site, as well as contact information for your research team leader. Please include a mailing address, contact name, telephone number and e-mail address.

2) Please also include a map depicting your site location and one or two photographs relevant to your site and research. Please make sure you have permission to share any photographs, including release forms for any people that appear in them. If you would like to include a photo credit, please indicate how you would like it to appear.

3) Provide a quote from a participant drawn from your research that is relevant to, and descriptive of, your research and/or its findings. Alternatively, you could include a summary statement of no more than 15 words.

4) In approximately 200 words, outline the context (geographic, political, economic, etc.) within which your participants live, and describe the risk factors they may face. Conclude this portion with a brief description of the typical outcomes of your participants to these contextual risks.

5) In approximately 100 words, describe your research participants, including the gender ratios of the youth, the range and mean age and education level, as well as the way in which they are perceived as a group by their community. Alternatively, this information can also be provided in a table.

6) In approximately 150 words, address the question of what resilience means at your particular site. Explain how this was demonstrated and consider including a quote from youth that expresses the general sense you get from your data of what resilience means in your site's context.

7) Provide the mean scores and standard deviations of the RRC-ARM in a table, distinguishing between three sub-scales (individual, relational, and contextual) as well as relevant sub-clusters of questions. The following table provides an example of the format you can use.

RRC-ARM Scale	Mean	Standard Deviation
Individual		
Personal Skills		
Peer Support		
Social Skills		
Relational		
Physical Caregiving		
Psychological Caregiving		
Contextual		
Spiritual		
Educational		
Cultural		

8) If you have used site-specific questions, provide them in a separate table, together with their mean scores and standard deviations. The following table provides an example of the format you can use.

Site-Specific Questions	Mean	Standard Deviation

9) In approximately 300 words, summarize and provide analysis of your findings. Identify the mean of your site RRC-ARM. Identify the highest and lowest scoring questions. Offer some consideration of what these scores mean with regards to the participants in your study and the resilience process that surround them.

10) Provide any necessary footnotes.

What is resilience?

Resilience is the capacity of individuals to overcome adversity and do well in spite of exposure to significant adversity. Resilience is not a static state, an outcome or an inherent trait within the individual. Rather, resilience is a set of processes that include individual, relational and contextual components and is shaped by the interactions between an individual and their environment. It is the interaction of theses sets of processes that mediate the effects or stressors and facilitate the achievement of positive outcomes[3].

[3] [3] Liebenberg, L., Ungar, M., and Van de Vijver, F. R. R. (2012). Validation of the Child and Youth Resilience Measure-28 (CYRM-28) Among Canadian Youth with Complex Needs. *Research on Social Work Practice,* 22(2), 219-226. DOI: 10.1177/1049731511428619.

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