

USING SCIENCE TO ENGAGE YOUNGER CHILDREN IN A SELF-REPORTED WELLNESS APP

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Learning Objective

- To learn about the early results for the young children's wellness App



Leveraging the wisdom of older children

- A children's wellness app was co-created with and for Indigenous children in 2011
 - Known as the Aaniish Naa Gegii: the Children's Health and Well-being Measure or ACHWM
 - Completed by children **8 to 18 years of age** on a tablet
 - The app has been tested extensively
 - 11 peer-reviewed publications
 - The app has been shared with Indigenous communities and with agencies who support Indigenous children across Canada
 - With the support of the ACHWM Outreach Team
 - Free for communities to access
- This research builds on the ACHWM foundation

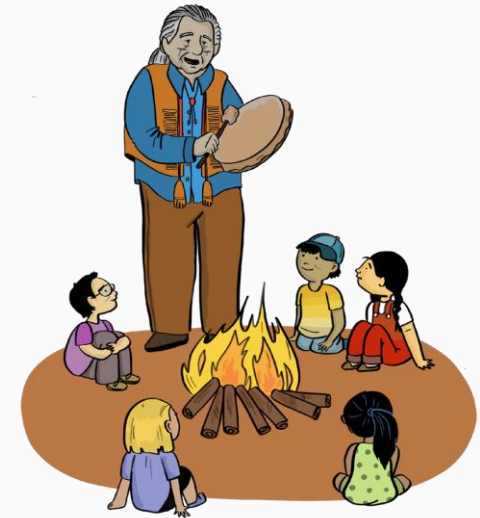


ACHWM

Aaniish Naa Gegii : the **C**hildren's **H**ealth and **W**ell-being **M**easure

A self-reported wellness assessment

1. Gives children a louder voice
2. Connects children to local supports
3. Produces data to inform local decisions



*Reminder: the ACHWM is a **wellness tool**; not a diagnostic tool



Core Values Guiding the ACHWM

1. Consider what is best for each child
 - Children's wisdom guides entire process
 - Every child is deserving of support
2. Respond to the needs of the community
 - Respecting community's autonomy



A request from our partners

- Wiikwemkoong Unceded Territory requested
 - a wellness tool to support younger children
 - 4 to 7 years of age
- Given our core principles; we took this on
 - Since then, other communities have echoed this request



OUR PROCESS



Methods

Challenge #1

- How do we overcome the age limitations associated with self-report?
 - We needed a new process
 - Guided by academic literature
 - Informed by Indigenous wisdom



Methods

Challenge #2

- What is the content?
 - What can we up-cycle from the ACHWM?
 - Analysed data from previous studies
 - Examined the item behaviour
 - Using Rasch analysis
 - Results were reviewed by the research partners
 - Who had expertise in: Anishinaabe culture, measurement science, child self-report, Rasch analysis, mental health
 - Focused on making ensuring the items were written at an appropriate level for children as young as 4 years



Methods

Challenge #3

- Is the existing content relevant and important?
- What is missing
 - We consulted with experts in child development and Indigenous cultures
 - We sent them an online survey with the possible items and asked them to rate?
 - (a) the relevance and
 - (b) importance of each item
 - (c) gave them an opportunity to add new items



Expected Outputs

The HOW:

- A plan to support young child participation
 - Based on the literature and community consultation

The WHAT:

- An **initial version of the Young Child ACHWM**
 - Based on items from the original ACHWM
 - Incorporating expert revisions and potential new items from experts
- To be tested in a sample of child-caregiver pairs



OUR FINDINGS ... SO FAR



Results

Overcoming the Age Limitation

- Academic literature
 - Riley (2004): *“Reports of children as young as 6 years old can be used independently of those of their parents.”*
 - Sturgess et. al. (2002): supports young child report (not down to 4 years)
 - Kobayashi et. al. (2011) : parent-child dyads report quality of life
 - Consultations with community partners confirmed this was a reasonable approach, given that parents have a strong understanding of their children at this stage of their development
- Propose a **child-caregiver dyad approach** to reach those under 6 years of age

Anne W Riley. Evidence that School-Age Children Can Self-Report on their Health. *Ambulatory Pediatrics* 2004; 4 (4); 371-376 <https://doi.org/10.1367/A03-178R.1>.

Sturgess J, Rodger S, Ozanne A. A review of the use of self-report assessment with young children. *British Journal of Occupational Therapy*. 2002 Mar;65(3):108-16.

Kobayashi K, Kamibeppu K. Quality of life reporting by parent-child dyads in Japan, as grouped by depressive status. *Nursing & health sciences*. 2011 Jun;13(2):170-7.



Results


Item content

- Rasch Analysis
 - Data from 402 respondents (mean age 13.5 years, rang 6.9 to 21.8 years)
 - 62 ACHWM items and a global health rating
 - 5 response options
 - **ACHWM summary score mean = 73.7** (SD: 12.9); range: 39.0 to 98.8
 - Spiritual mean = 80.0 (SD: 14.4); range: 31.7 to 100
 - Emotional mean = 72.9 (SD: 15.6); range: 24.4 to 100
 - Physical mean = 76.1 (SD: 14.34); range: 34.4 to 100
 - Mental mean = 61.9 (SD: 14.0); range: 22.2 to 100
 - Identified a set of 25 items focused on wellness
 - Will form the foundation for a young child version of the ACHWM



Rasch Analysis Results

- Barbic et al., 2022



Journal of Clinical Epidemiology 151 (2022) 18–28

ORIGINAL ARTICLE

Rasch Measurement Theory's contribution to the psychometric properties of a co-created measure of health and wellness for Indigenous children and youth

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Abstract

Objectives: To determine how Rasch Measurement Theory (RMT) methods can be used to assess the psychometric properties of the Anish Naa Gegii: the Children's Health and Wellbeing Measure (ACHWM) and Qanuipit.

Study Design and Setting: Indigenous children aged 8–18 years, from five communities, completed the 62-item ACHWM. We applied RMT methods to ACHWM data from 401 children (mean age 13.4 ± 3.4 years; 51% male) from across Ontario to examine how well the items captured the full range (±3 logit) of the concept of interest in each domain, targeted the needs of Indigenous children, and met the criteria for unidimensional and invariant measurement.

Results: RMT results indicated moderate-fit overall fit (raw $\chi^2 = 809$, $P < 0.001$). This model was further improved by aggregating the five response categories into three categories. All four domains showed excellent overall fit to the Rasch model ($P > 0.05$), with items covering between -4.51 and 6.02 logit, with no gaps along the theoretical continua.

Conclusion: This study provides evidence that a set of conceptually derived items was able to produce a measure that fits the Rasch model. These results aid our understanding of wellness by establishing the clinical meaning of the scale scores. © 2022 The Author(s). Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Keywords: Indigenous; Children; Youth; Rasch; Measurement; Validity

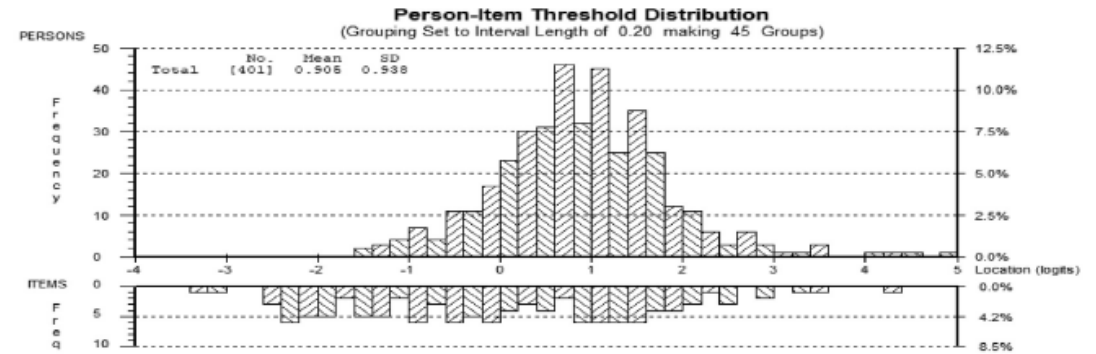
Barbic SP, Young NL, Usuba K, Stankiewicz E. Rasch Measurement Theory's contribution to the psychometric properties of a co-created measure of health and wellness for Indigenous children and youth. Journal of Clinical Epidemiology. 2022 Nov 1;151:18-28.



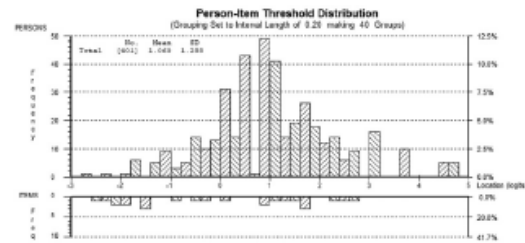
Published Results

- RMT results indicated **moderate-fit** overall fit (raw $\text{Chi}^2 = 809$, $P < 0.001$).
- This model was further improved by aggregating the 5 response categories into **3 categories**.
- All 4 quadrants showed excellent overall fit to the Rasch model ($P > 0.05$).
- Items **covered the range** between 4.51 and 6.02 logit, with no gaps along the theoretical continua.

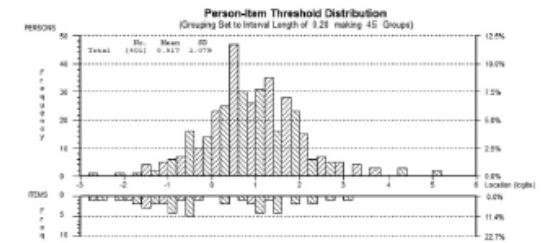
A All ACHWM items



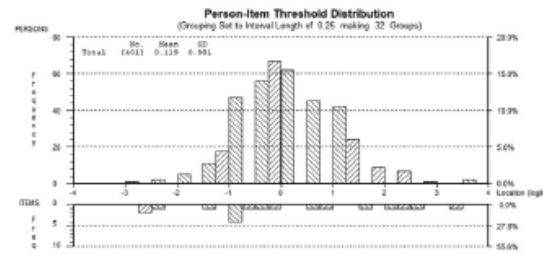
B Physical



C Emotional



D Mental



E Spiritual

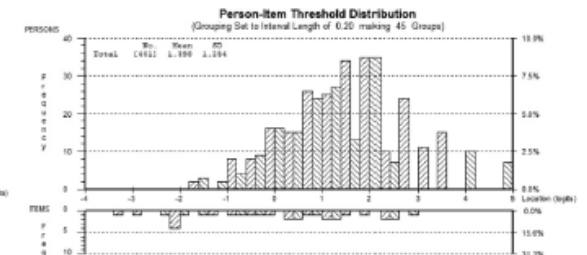


Fig. 1. Distribution of 62 items together (A) and by domain (B-physical, C-emotional, D-mental, and E-spiritual), obtained by converting total raw scores into linear measurements across the measurement continuum in the ACHWM. The distribution above the horizontal axis represents the distribution of the sample (children and youth, aged 8–18 years). The distribution below the horizontal axis represents the distribution of the items from low to high.

New Results

- Rasch analysis identified 41 items that clustered together
 - Focused on **“wellness”**
- The research team and community partner reviewed and revised these with young children in mind
 - 9 did not need any revision
 - example: *I feel connected to Mother Earth*
 - 16 were revised to make lower the reading level
 - example: *I make healthy choices >> I am healthy*
 - 15 were deleted
 - 10 of these were not age appropriate and could not be adjusted
 - 1 was merged with another item
- **25 items remained**



New Results continued ...

- Developed an initial draft version based on those **25 items**
- Applied the **3-category response set** suggested by the Rasch analysis

Original Responses	Young Child Responses
Never	Never
Hardly Ever	
Sometimes	Sometimes
Often	
Always	Always



Sample Questions

Rasch data
suggested 3
responses

ACHWM → Staff ID: ___ → Child ID: ___

We would like to know how you are feeling. The questions below will assess your spiritual, emotional, physical and mental wellness.

Please mark the circle that describes you best.

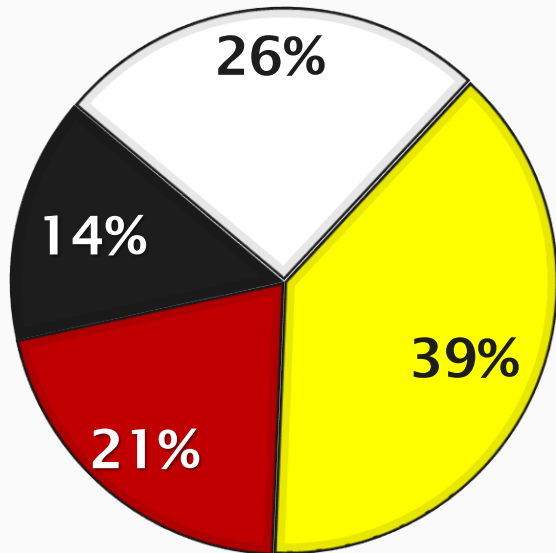
	Never	Some times	Always
1. I laugh and have fun ...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I am physically fit ...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I enjoy exercise...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. I have a <u>lot</u> energy ...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. I like visiting my grandparents, aunts, and uncles...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. I spend time with my family (mom, dad, and siblings)..	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Quadrant comparison

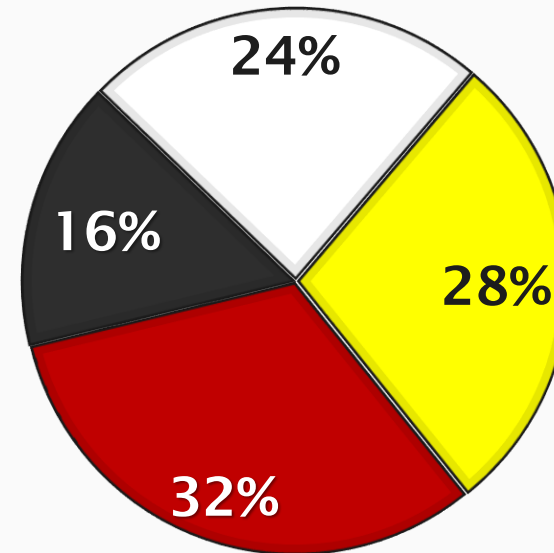
ORIGINAL

- Spiritual
- Emotional
- Physical
- Mental



YOUNG CHILD

- Spiritual
- Emotional
- Physical
- Mental



Revised Brief Assessment for Young Children

Participant ID: _____
 Date Completed: _____
 Potential Risk: _____
 Raised Flags: _____ / 6
 Missed Flags: _____ / 6

Summary Score: _____
 Spiritual Score: _____ Physical Score: _____
 Emotional Score: _____ Mental Score: _____

Please record any potentially concerning responses below.

	Never	Some- times	Always
12. I have someone who helps me when I am sick...	<input type="radio"/>		
24. I feel safe at home ...	<input checked="" type="radio"/>	<input type="radio"/>	
39. I get a good night's sleep ...	<input type="radio"/>		
45. I feel like good things will happen ...	<input type="radio"/>		
46. I can get clean drinking water ...	<input type="radio"/>		

Clinical Assessment Results

Local Team Member: _____ Clinician: _____

Clinical Recommendation: Not In need of further support In need of further support Not Assessed (Refused)

If further support is recommended:

- Local mental health referral made to: _____
- Currently receiving professional support from: _____ (clinician)
 @ _____ (agency)

May I share these results with your clinician? Yes No

Remember: if a child is seeing another professional and requires urgent support, please refer them to a local mental health provider for immediate services.

- Maximum flag count of 6

Results

Expert Evaluation

- Experts (n=3) shared
 - (a) Ratings of cognitive appropriateness
 - 3 items are showing early signs that rewording will be necessary
 - (b) Ratings of importance of each item
 - all items show early signs that they are important
 - (c) Suggestions for new items / revisions
 - None (so far)



Next steps



Next steps

- Initial version of the Young Child ACHWM will be evaluated by a 10 child-caregiver pairs (dyads)
 - We are looking for partners for this step
- Assess the validity of the final version
 - In comparison to the PedsQL



Feedback



Feedback

- What are your thoughts on this process?
 - Do you have questions about the young child version?
- Are you interested in joining this initiative?
 - We are looking for **more expert input**
 - Open to **new partnerships to engage with children & caregivers**
 - **Talk to your community and let us know**
 - **nyoung@cheo.on.ca**





History of the ACHWM

Sydney Chabot-Hamden



ACHWM

Aaniish Naa Gegii : the **C**hildren's **H**ealth and **W**ell-being **M**easure

- A self-reported wellness assessment tool
 - Created with and for Indigenous children & youth 8 to 18 years of age
- Generates health and wellness information for each community
 - Owned by the community
- Completely **free of charge** for community use



*Reminder: It is a **wellness measure**, not a diagnostic tool

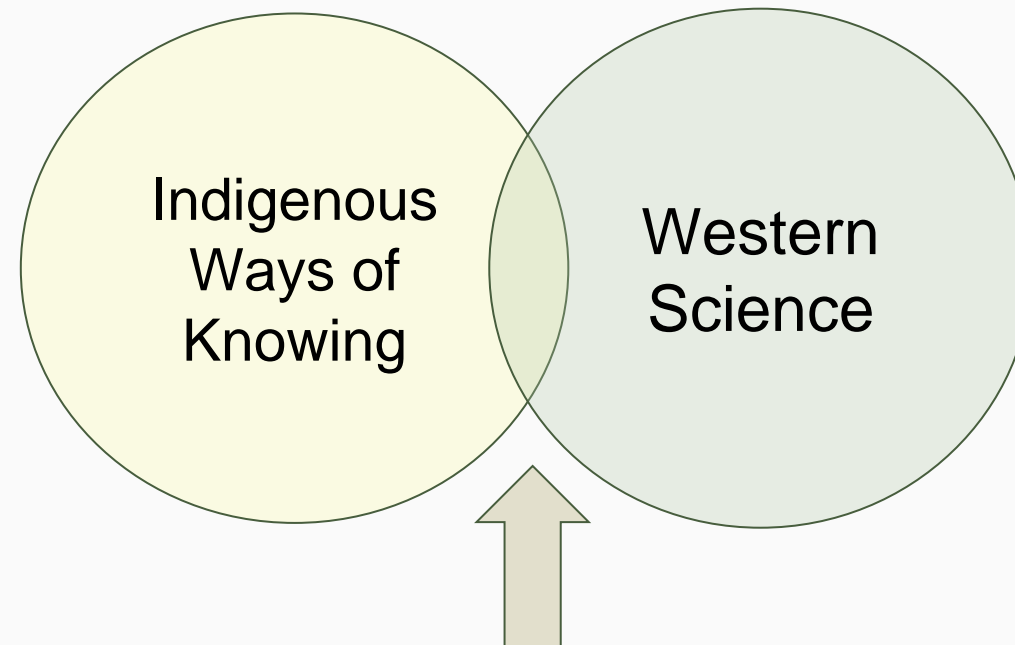


Origin of the ACHWM

- A partnership developed between Indigenous health leaders and academic researchers to incorporate traditional wisdom and ensure scientific credibility
- Intent was to **ensure the relevance for Indigenous children across Canada**



Mary Jo Wabano



Nancy L. Young



Photovoice Activities



Assessed the Fit in Other Communities

- **Weechi-it-te-win Family Services** **June 2014**
- Métis Community in Sudbury July 2014
- M'Chigeeng First Nation August 2014
- Whitefish River First Nation October 2014
- Ottawa Inuit Children's Centre January 2015
(Now: Inuuqatigiit Centre for Inuit Children, Youth and Families)



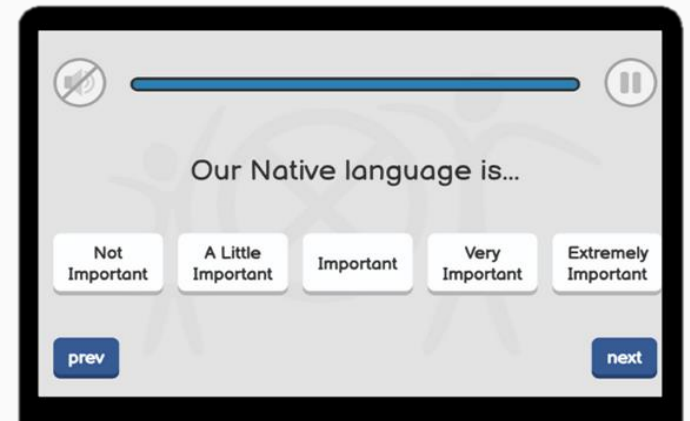
Extensive Community Engagement

- Repeated and continuous feedback from a variety of sources
- Responsive to communities
- Timely changes to ensure relevance
- Help us stay grounded in culture



Co-created a Custom App

- **To enable children to self-report, efficiently**
- Enhances engagement in the process
- Non-judgemental
- No delays in entering data
- Generated reports immediately
- *Stores de-identified data on a REDCap server*
 - *Controlled by agreements*



ACHWM App continued ...

- Completed by children independently using a tablet in **10 to 15 minutes**
 - No data entry
- Produces scores that are:
 - shared with each child on a **balance chart**
 - shared with a local health worker in a **brief report**
 - shared with the community in an **automated report** based on pooled data
- Connects children at “potential risk” to a local safety net

*Reminder: the ACHWM is not a diagnostic tool
The ACHWM is a **wellness tool**

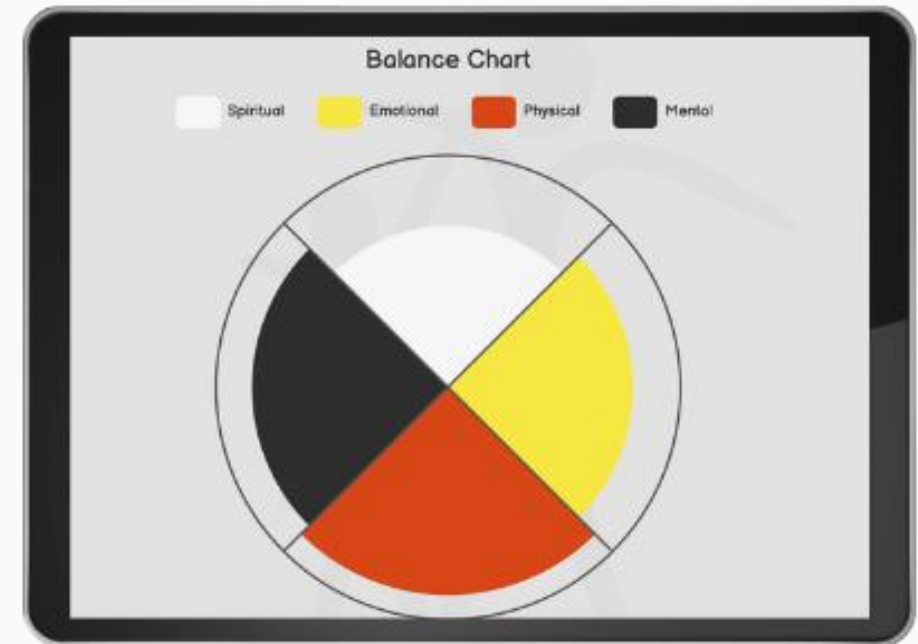


The Balance Chart promotes strengths-based conversations

The Balance Chart provides children/youth a real-time visualization of their strengths and opportunities by highlighting four areas of health:

- Spiritual,
- Emotional,
- Physical, and
- Mental (intellectual)

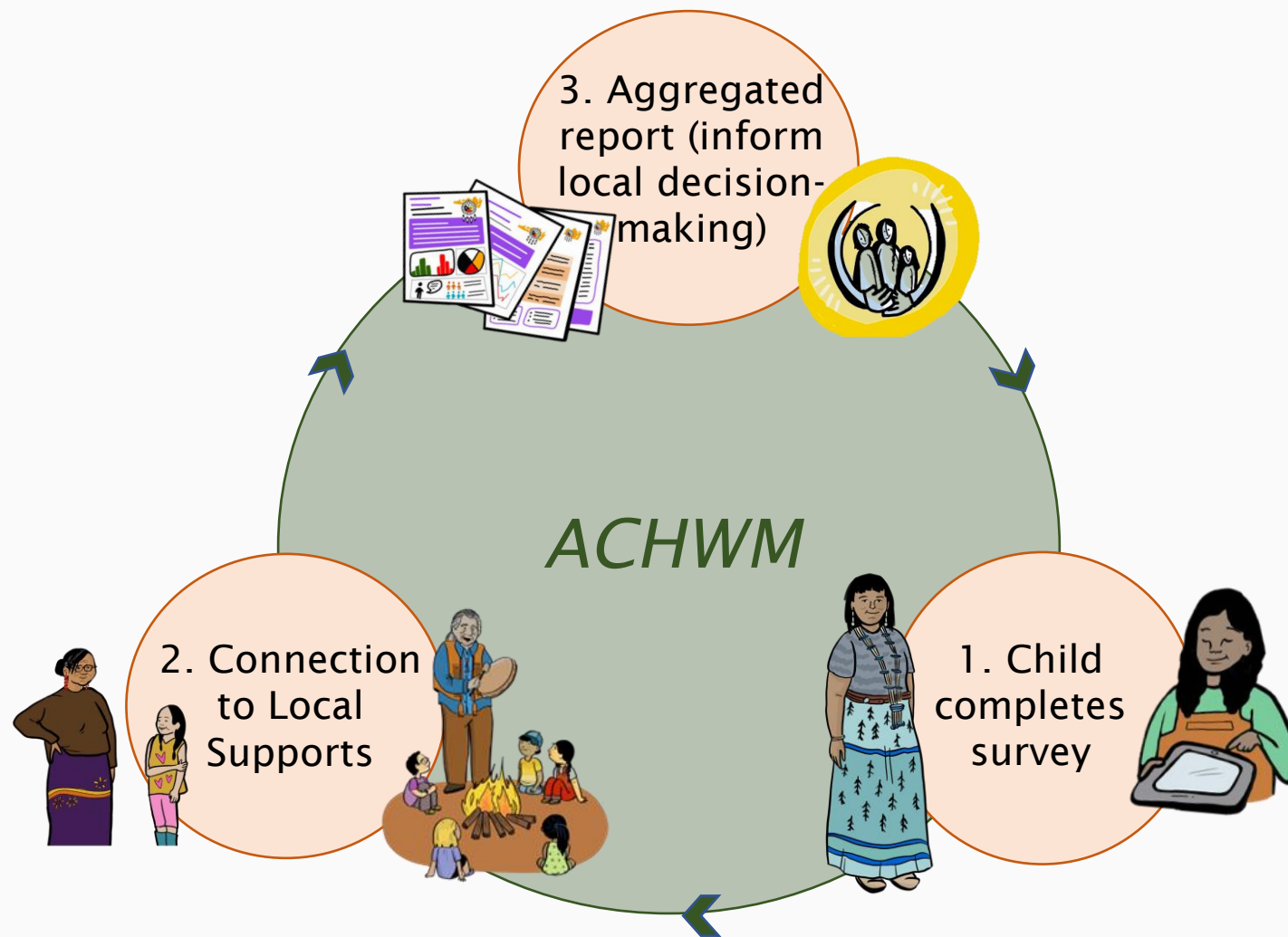
Balance Chart



Purposes

- Clinical assessment / triage / management
 - Utilize ACHWM as a tool to streamline services
- Population health assessment (screening)
 - Assess what the mental health needs are of children/youth in community
- Program evaluation
 - Using the tool in various cycles to assess/improve programming





Chi Miigwetch

- To the many children and youth who shared their vision of health with us through this project;
- The Elders, for their devotion to this project;
- To the Health and Social Well-being Committee and Chief & Council for their ongoing support;
- To the communities who have helped us along our journey
- To the members of the Advisory Committee for their wisdom and guidance



Stay in touch!



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