

Report 1 of 3

BRAIN STORY: USING THE RESILIENCE SCALE AS A TOOL FOR INDIVIDUALS

TRAINING EXERCISE

Validation and Evaluation
October 2023

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A NOTE TO OUR READERS

This report outlines the design, assessment, and evaluation of the Resilience Scale Toolkit. The Toolkit is designed to offer individuals the opportunity to practice building a person's Resilience Scale using three unique scenarios designed by the Alberta Family Wellness Initiative's team of evaluators. We acknowledge that these scenarios are not exhaustive of the human experience and that there is an opportunity for individual interpretation in the assessment of these scenarios. To reiterate, the goal of the Toolkit is to offer service providers the opportunity to understand how the Resilience Scale can be used in practice, which we envision to be a collaborative process whereby the individual and service provider work together to create the individual's Resilience Scale. Therefore, we believe the Toolkit to be a powerful tool for teaching about the Resilience Scale and its use in practice to improve health outcomes for individuals and communities. We would like to note that we believe the Toolkit is most robust when combined with the entirety of the Resilience Scale Masterclass, including parts two (What Do Organizations Do?) and three (What Does the System Have?). The complete Masterclass exemplifies how community resources and assets come together and can work collaboratively to build capacity in our communities. We believe this training is key to communicating the foundational knowledge of the Brain Story in an efficient and understandable manner and will be critical to the AFWI's future progress.

EXECUTIVE SUMMARY

In 2023, the Palix Foundation and Alberta Family Wellness Initiative (AFWI) set in motion the **Resilience Scale Framework**, a three-part approach to applying the Resilience Scale at the level of individuals, organizations, and systems. The Resilience Scale Framework is communicated in a series of three reports prepared by the AFWI. This is *Report 1 of 3: Brain Story: Using the Resilience Scale as a Tool with Individuals*.

In early 2022, the AFWI developed a new strategy to strengthen resilience for individuals, organizations, and communities using the Resilience Scale metaphor. The Resilience Scale conceptualizes resilience as the dynamic interaction between our exposure to adversity (i.e., red boxes that pile up on the left side of our Resilience Scale), our access to positive supports (i.e., green boxes that pile up on the right side of our Resilience Scale), and the functioning of our skills and abilities (i.e., the position of the Scale's fulcrum, which can be shifted over time). Members of the community represented by health, education, children's services, and justice, among others, are introduced to this strategy during a three-hour training called the Resilience Scale Masterclass. During the Masterclass, participants are also introduced to the Resilience Scale Toolkit, an exercise designed to offer service providers the opportunity to learn about and use the Resilience Scale in practice. This report details the development, validation, and evaluation of the Resilience Scale Toolkit using the data collected from participants of the Resilience Scale Masterclass between February and June of 2023.

The Resilience Scale Toolkit consists of three scenarios that provide a snapshot of an individual's life. Angela is a stably employed single mother whose father has an advanced case of Parkinson's Disease. Aram is an 11-year-old boy from Syria who recently immigrated to Canada with his family and has developed friendships and hobbies at the local multicultural center. Douglas is a young man dealing with a tumultuous childhood who recently secured a spot in an addiction treatment program. The exercise asks participants to first identify and name all the sources of adversity (i.e., red boxes), positive supports (i.e., green boxes), and skills and abilities related to the fulcrum that appear in the story, and then to provide a rationale for each item, detailing why each item strengthens or weakens the individual's resilience by using the science of the Brain Story as presented in the Resilience Scale Masterclass. In tandem, they are asked to visually construct the individual's Resilience Scale by drawing these labeled red and green boxes, as well as sketching and positioning the fulcrum.

This report uses data from 308 Toolkit worksheets completed by participants from nine Resilience Scale Masterclasses to validate and evaluate the use of the Resilience Scale Toolkit as a training exercise for service providers interested in using the Resilience Scale as a practical tool. The objective of this analysis was twofold. The first objective was to determine if the

Toolkit accurately assesses understanding of the Brain Story and Resilience Scale concepts. The second objective was to evaluate the feasibility and acceptability, and therefore useability, of the Toolkit among a population of service providers. Both Toolkit performance and survey responses were used to evaluate these objectives.

Overall, the Resilience Scale Toolkit was shown to be valid, feasible, and acceptable. With respect to validity, on average over 90% of the rationales participants provided were appropriately aligned with the science of the Brain Story and Resilience Scale. Regarding feasibility and acceptability, the Toolkit boasted a high completion rate (93% of participants), 85% of identified Scale elements were rationalized, and participants commented that they found the exercise useful, clear, and applicable to their work.

This report presents the Resilience Scale Toolkit as a useful training exercise that is valuable to and effective for practitioners who are intending to use the Resilience Scale as a practical tool with the populations they serve.

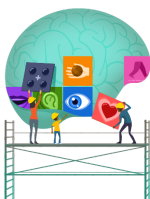
BACKGROUND

The **Palix Foundation** is a private foundation based in Calgary, Alberta, Canada that works to mobilize the science of childhood development, mental health, and addiction from the related disciplines of developmental neuroscience, behavioural neuroscience, genetics, and epigenetics. In 2007, the Foundation founded the **Alberta Family Wellness Initiative (AFWI)** to turn ‘what we know’ about addiction and mental health into ‘what we do’ in practice and service delivery.

The Brain Story

At the heart of the work of the AFWI is the **Brain Story**, a collection of metaphors that were crafted by the National Scientific Council on the Developing Child, Harvard Center on the Developing Child,¹ and the FrameWorks Institute² to close the gap between what the public understands about brain development, mental health, and addiction and what science has informed us about these topics. The AFWI shares the Brain Story via the **Brain Story Certification Course**,³ a free, self-paced online resource that blends the metaphors with scientific lectures and readings.

The metaphors of the Brain Story are as follows.



Brain Architecture⁴: Brains are not simply born, they are built over time. Just like a house, a brain requires a sturdy foundation to support all future development. This highlights the importance of early childhood experiences and the seriousness of adverse childhood experiences (ACEs), which compromise the brain’s foundation.

Serve and Return⁵: The most important mechanism of building a sturdy brain foundation is attentive, responsive, serve and return interactions between a child and caregiver. Just like in a game of tennis, a child serves by making eye contact, smiling, laughing, or babbling, and the caregiver returns the serve by sharing in the exchange.



¹ Center on the Developing Child at Harvard University. (n.d.). *Center on the Developing Child*. Retrieved August 2023, from <https://developingchild.harvard.edu/>

² FrameWorks Institute. (n.d.). *FrameWorks*. Retrieved August 2023, from <https://www.frameworksinstitute.org/>

³ Alberta Family Wellness Initiative. (n.d.). *Training*. Retrieved August 2023, from <https://albertafamilywellness.org/training/>

⁴ Alberta Family Wellness Initiative. (n.d.). *Brain Architecture*. Retrieved August 2023, from <https://albertafamilywellness.org/what-we-know/brain-architecture/>

⁵ Alberta Family Wellness Initiative. (n.d.). *Serve and Return*. Retrieved August 2023, from <https://albertafamilywellness.org/what-we-know/serve-and-return/>

Understanding the Resilience Scale

The Resilience Scale is dynamic and illustrates how these three principles interact to influence lifelong physical and mental health outcomes.

Red boxes

Negative experiences in life can cause adversities to pile up on the left side of the beam (represented as red boxes), tipping the Scale and causing the blue arrow at the Scale's center to point towards a negative outcome.

Green boxes

By adding positive supports in the form of safe, stable, and supportive environments and safe, stable, and supportive relationships to the right side of the Scale (represented as green boxes), the Scale can be tipped in the positive direction causing the blue arrow to point towards a positive outcome.

Purple Fulcrum

The starting position of the fulcrum (represented as a purple triangle) can be understood as our original capacity for resilience and is determined by genetic and epigenetic factors. However, the fulcrum can shift to the left or right over time. With training to build our skills and abilities—such as serve and return, air traffic control, and reward motivation—that fulcrum can shift to the left, giving less leverage to negative experiences. The Resilience Scale is a robust tool that helps people identify the many factors that create or reduce their capacity for change, including a tool for self-reflection to enhance self-efficacy and hope.¹²

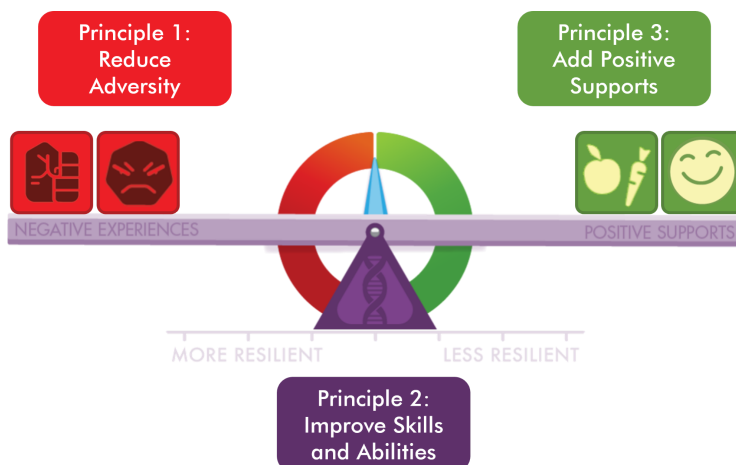


Figure 1. The Resilience Scale can be used to visualize how three principles (reducing adversity, adding positive supports, and improving skills and abilities) contribute to lifelong physical and mental health outcomes.

¹² National Scientific Council on the Developing Child. (2015). *Supportive Relationships and Active Skill-Building Strengthen the Foundations of Resilience: Working Paper 13*. <http://www.developingchild.harvard.edu>

Applying the Resilience Scale

Early learnings indicate that beyond its use as a metaphor, the Resilience Scale is an effective visual **tool** to facilitate communication between service providers and their clients or patients.¹³ When used as a practical tool, the Resilience Scale provides a picture of a service user's current functioning and helps the service provider match them with appropriate supports.

Loading the Resilience Scale can be accomplished through serve and return interactions between service provider and users. Because it is universal and non-stigmatizing, the Resilience Scale can help an individual communicate their story and form an understanding of their own resilience. Questions like the ones below will help the service provider identify red and green boxes, as well as fulcrum-related skills and abilities.

- Has the individual encountered adversity or toxic stress in their past or present?¹⁴
- What relationships and/or environments in their life are safe, stable, and supportive?¹⁵
- Have they developed well-functioning skills and abilities in the areas of air traffic control,¹⁶ serve and return,¹⁷ and reward motivation?¹⁸

The interaction between these experiences and skills and abilities shapes an individual's capacity for resilience. Once the individual's Resilience Scale is created, service providers can suggest targeted programming and interventions that will help move the Scale in a direction that supports better outcomes. An individual's Scale can then be used to track change over time, as they access services to address red boxes, add green boxes, and improve skills and abilities. By contextualizing this information using the Resilience Scale, we can better understand the trajectory of lifelong physical and mental health outcomes.

THE RESILIENCE SCALE MASTERCLASS

In 2022, the Palix Foundation began field testing a new strategy to work towards systems integration using the Resilience Scale. The strategy demonstrated how the Resilience Scale can

¹³ McCann, C., Cook, J., & Loiseau, E. (2021). *Early Learnings About Uses for the Resilience Scale Metaphor in Practice*. Alberta Family Wellness Initiative

¹⁴ Garner, A., Yogman, M., & Committee on Psychosocial Aspects of Child and Family Health, Section of Developmental and Behavioral Pediatrics, Council on Early Childhood. (2021). Preventing childhood toxic stress: Partnering with families and communities to promote relational health. *Pediatrics*, *148*(2), e2021052582

¹⁵ Garner, A., Yogman, M., & Committee on Psychosocial Aspects of Child and Family Health, Section of Developmental and Behavioral Pediatrics, Council on Early Childhood. (2021). Preventing childhood toxic stress: Partnering with families and communities to promote relational health. *Pediatrics*, *148*(2), e2021052582

¹⁶ National Scientific Council on the Developing Child. (2011). Building the Brain's "Air Traffic Control" System: How Early Experiences Shape the Development of Executive Function: Working Paper No. 11. <http://www.developingchild.harvard.edu>

¹⁷ National Scientific Council on the Developing Child. (2004). Young Children Develop in an Environment of Relationships: Working Paper No. 1. www.developingchild.harvard.edu

¹⁸ National Scientific Council on the Developing Child. (2018). Understanding Motivation: Building the Brain Architecture That Supports Learning, Health, and Community Participation: Working Paper No. 14. www.developingchild.harvard.edu

be applied at the individual level (What Do Individuals Need?), the organizational level (What Do Organizations Do?) and the community level (What Does the System Have?). Early participants in the strategy, representing diverse fields of practice including health, education, children's services, justice, and more expressed excitement with this new way of thinking and were eager to take this knowledge and apply it in their everyday practice. With this feedback, the Palix Foundation began developing a toolkit of scenarios that could be used to teach service providers how to create and explore an individual's Resilience Scale. This **Resilience Scale Toolkit**, in combination with the three-part presentation, is delivered as the **Resilience Scale Masterclass**; a new approach to introduce the Resilience Scale to people unfamiliar with the Brain Story and provide additional training to organizations that already integrate the knowledge into their work.

In addition to introducing the Brain Story to community members and professionals from the health, education, children's services and justice systems, the Masterclass provides an introduction on how to use the Resilience Scale in practice to improve the lives of individuals in our community and achieve systems change. The Resilience Scale Masterclass consists of three components:

Part 1: What Do Individuals Need?

- Introduce the Resilience Scale as a tool to assess resilience and monitor change in an individual over time.
- Explore the utility of the Resilience Scale to help individuals identify their needs and the types of services they require to strengthen their resilience.

Part 2: What Do Organizations Do?

- Introduce the Frontiers of Innovation¹⁹ template as a tool for organizations to code their programs and interventions.
- Explore how the template can facilitate a referral network by fostering a common language and approach to thinking about interventions.

Part 3: What Does the System Have?

- Explore systems-level resilience by identifying organizations that primarily target red boxes (i.e., reduce adversity) and those that primarily target green boxes (i.e., add positive supports) using data from the Brain Story Certification Course.

Following "Part 1: What Do Individuals Need?" which introduces the concepts and principles of the Resilience Scale (**Figure 1**), participants complete the Resilience Scale Toolkit

¹⁹ Center on the Developing Child at Harvard University. (n.d.). *Frontiers of Innovation*. Retrieved August 2023, from <https://developingchild.harvard.edu/https://developingchild.harvard.edu/innovation-application/frontiers-of-innovation/>

exercise. During the session, evaluators move throughout the room to listen to the discussions taking place about the exercise and offer clarification and feedback.

The Resilience Scale Masterclass is sometimes offered during an extended event that brings together multiple organizations in a community at a central location and includes additional presentations and working sessions. These events are called “Resilience Days.”

THE RESILIENCE SCALE TOOLKIT

OBJECTIVES

The purpose of the Resilience Scale Toolkit is to provide an opportunity for service providers to apply the knowledge they obtained from the Masterclass and practice using the Resilience Scale as a practical tool, with the intention they then integrate the tool into their daily work with service users.

The objectives of this report include:

1. Evaluate the validity of the Resilience Scale Toolkit – does the Toolkit assess understanding of the Brain Story and Resilience Scale concepts such that service providers can incorporate the tool into their practice?
2. Evaluate the feasibility and acceptability of the Resilience Scale Toolkit – is the Toolkit a useful, desirable, applicable resource for service providers in their work with the populations they serve?

THE WORKSHEETS

The original iteration of the Resilience Scale Toolkit was piloted at Calgary Resilience Day in May 2022 and consisted of 12 scenarios. Data from 84 participants were evaluated and prepared in a report that was shared with our partners at the University of Oxford Child and Adolescent Psychiatry Group (Drs. Louise Dalton and Elizabeth Rapa). In consideration of the feedback provided, the team of evaluators (Appendix 1) amended the worksheets, developed a new scoring guide (see below), and tested the scenarios at nine Masterclass presentations between February and June 2023.

The second iteration of the Toolkit consists of three re-designed scenarios (Appendix 2).

- **Angela** is a stably employed single mother whose father has an advanced case of Parkinson’s Disease.
- **Aram** is an 11-year-old boy from Syria who recently immigrated to Canada with his family and has developed friendships and hobbies at the local multicultural center.

- **Douglas** is a young man dealing with a tumultuous childhood who recently secured a spot in an addiction treatment program.

The scenarios are written in first-person narrative to allow a closer approximation of the clinical/practice setting in which the tool will be used. The first-person perspective also enables the character to express their thoughts and feelings associated with their experiences, which lessens ambiguity in interpretation on the part of the participant completing the exercise.

In the first iteration of the Toolkit, the worksheets were scored based on whether the red boxes, green boxes, and fulcrum skills and abilities identified by the participant were reasonable and aligned with the Brain Story. In the second iteration of the Toolkit, the worksheets were scored based on the *rationale* the participant provided for the identified red or green boxes or fulcrum elements and whether those rationales aligned with the Brain Story. To accommodate this change, the redesigned worksheets were expanded from one page to four pages.

1. Page one includes the instructions, the scenario, and provides a space to draw the individual's Resilience Scale.
2. Page two offers space for participants to name each red box element they identify in the scenario as well as provide a rationale as to why they interpreted that story element as a red box.
3. Page three offers space for participants to name each green box element they identify in the scenario as well as provide a rationale as to why they interpreted that story element as a green box.
4. Finally, page four offers space for participants to name the elements of the scenario they identify as contributing to the placement of the fulcrum as well as provide a rationale as to why they believe those story elements contribute to the placement of the fulcrum.

SCORING GUIDES

To generate the scoring guides, a team of four evaluators -- all trained in and intimately knowledgeable about the Brain Story -- first reviewed the scenarios and generated a broad list of adversities (red boxes), positive supports (green boxes), and skills and abilities related to the fulcrum that were identified in the scenarios.

Evaluators then designed a guide as to how each story element could be best rationalized based on the knowledge of the Brain Story. The goal of this system of scoring is to evaluate participants' understanding of the Brain Story and Resilience Scale; therefore, the scoring system is based on the participant's ability to connect the scenario element back to the Brain Story content and language. To improve the usability of the scoring guides, each guide

contains key language that participants must include in their rationale in order to receive a given score (Appendix 3).

Accepted rationales were defined using a four-point scoring system:

- 0 points (0pt): Rationale given is irrelevant to the point. Rationale does not relate to the subject of the story.
- 1 point (1pt): Basic identification. Uses elements of the scenario as a rationale for other elements with no connection to aspects of the Brain Story. Gives rationale without using the language of the Brain Story (e.g., protective factor).
- 2 points (2pt): Basic understanding of the material. Able to relate the scenario details to aspects of the Brain Story as covered in the Masterclass.
- 3 points (3pt): Advanced understanding of the material. Able to relate the scenario details to the science of the Brain Story as covered in the Brain Story Certification Course more fully.

Note: Named boxes/skill and abilities without rationales were not scored.

To better address the potential diversity in interpretation of the scenarios, the scoring guides represent scenario elements as red, green, purple or a combination thereof based on any possible interpretation with a justifiable rationale (e.g., “stay at home mom” could be a red box, if the participant interprets and subsequently rationalizes it as a source of toxic stress due to an unsafe relationship between the mother and child, or a green box, if the participant interprets and subsequently rationalizes it as a safe, stable, and supportive relationship between the mother and child).

While a significant effort was made to consider many perspectives in the design of these scoring guides, the evaluators recognize that the scoring guides do not necessarily contain every item that could be identified by a participant completing the exercise. Rationales given by participants that were not included in the scoring guide were scored at the evaluator’s discretion according to their feasibility and alignment with the Brain Story, as per the remainder of the scoring guide.

SCORING GUIDE EVALUATION

To assess the reliability of the scoring guides, four evaluators independently scored five examples of each of the three scenarios collected from the Lethbridge Masterclass hosted on March 1st, 2023. As previously mentioned, evaluators scored the worksheets by assigning a score of zero to three points to each rationale that was provided by the participant for the red

boxes, green boxes, and fulcrum elements. The assigned scores were then compared across evaluators to measure the inter-rater reliability of the scoring guides.

The evaluation process was as follows:

- All four evaluators independently scored five example worksheets for each scenario.
- Inter-rater reliability was evaluated using the intraclass correlation (ICC, Cronbach's alpha) using IBM SPSS Statistics version 29.
- The evaluators then discussed the individual scoring to evaluate the clarity and usefulness of the scoring guide and make necessary adjustments. While the descriptions included in the scoring guide were finalized by consensus, it was acknowledged that consensus was not a requirement for each individual rationale of each individual worksheet. The goal was to create a scoring guide that enabled consistent scoring across evaluators but offered room for interpretation by the evaluator.
- Finally, evaluators individually re-scored the same five examples according to the finalized scoring guide and conducted the ICC between the four evaluators with the goal of obtaining at least .90.²⁰

EXAMPLE SCORING RESULTS

The following section shares the ICC for each scenario following the initial and second round of scoring and outlines significant changes that were made to the scoring guides following the initial coding and discussion.

SCENARIO: ANGELA

- Initial ICC between four evaluators = .849
- Rescored ICC between four evaluators = .912
- ICC between each possible group of 3 of evaluators for the rescored data:
 - Evaluators 1, 2, and 3 = .852
 - Evaluators 1, 2, and 4 = .926
 - Evaluators 1, 3, and 4 = .852
 - Evaluators 2, 3, and 4 = .908
- Important changes to the scoring guide resulting from group discussion:
 - Rather than requiring "safe, stable, supportive relationship/environment," evaluators agreed to accept safe, stable, OR supportive relationship/environment (or any version of these keywords).

²⁰ Bobak, C., Barr, P. & O'Malley, A. (2018). Estimation of an inter-rater intra-class correlation coefficient that overcomes common assumption violations in the assessment of health measurement scales. *BMC Medical Research Methodology*, 18 (93), <https://doi.org/10.1186/s12874-018-0550-6>

- Green boxes can be rationalized as “opportunity for....” conveying a learning opportunity to build skills and abilities.
- Both the name of the box/fulcrum element and the rationale will be scored, such that if the necessary language appears in the box name but not the rationale, points will still be awarded.
- Rationales must clearly explain how the item impacts the resilience of the subject of the scenario, not of other characters in the scenario (e.g., the impact of Angela’s father’s illness on Angela’s resilience, not her mother’s resilience).

SCENARIO: ARAM

- Initial ICC between four scorers = .940
- ICC between each possible group of 3 of evaluators:
 - Evaluator 1, 2, and 3 = .912
 - Evaluator 1, 2, and 4 = .939
 - Evaluator 1, 3, and 4 = .900
 - Evaluator 2, 3, and 4 = .931
- Second round of scoring was not completed due to exceptionally high ICC between four evaluators following the first round of scoring.
- No significant changes to the scoring guide were identified following the group discussion.

SCENARIO: DOUGLAS

- Initial ICC between four evaluators = .864
- Rescored ICC between four evaluators = .922
- ICC between each possible group of 3 of evaluators for the rescored data:
 - Evaluators 1, 2, and 3 = .887
 - Evaluators 1, 2, and 4 = .920
 - Evaluators 1, 3, and 4 = .888
 - Evaluators 2, 3, and 4 = .899
- Important changes to the scoring guide resulting from group discussion:
 - Purple rationales (e.g., relevant Brain Story metaphors or reference to skills and abilities) for green or red boxes will be allocated 0 points. Similarly, green and red rationales for fulcrum elements will be allocated 0 points.
 - Using the absence of a green box (i.e., lack of a safe, stable, supportive relationship or environment) as a rationale for a red box will be allocated 2 points.

- Stating a mental health issue (e.g., anxiety, depression, grief, and loss) as a rationale for a red box will be allocated 2 points.

DATA COLLECTION

Data used for the evaluation and validation of the Resilience Scale Toolkit was collected from nine Resilience Scale Masterclass presentations held in-person between February and June 2023 ($N = 308$).

- Alberta 211 Masterclass, February 2nd, 2023 ($n = 18$)
- Lethbridge Resilience Day, March 1st, 2023 ($n = 64$)
- Simon House Masterclass, March 17th, 2023 ($n = 14$)
- Big Brother Big Sisters of Calgary and Area Masterclass, April 17th, 2023 ($n = 22$)
- Canmore Resilience Day, May 11th, 2023, ($n = 28$)
- Red Deer Resilience Day, May 15th, 2023 ($n = 56$)
- Bow Valley College Masterclass, May 24th, 2023 ($n = 44$)
- Shared Mental Health Care (Alberta Health Services) Resilience Masterclass, June 14th, 2023 ($n = 30$)
- Calgary Police Service Resilience Masterclass, June 27th, 2023 ($n = 32$)

DATA ANALYSIS

OBJECTIVE 1: VALIDITY

During the process of verifying inter-rater reliability, it was determined that each worksheet would need to be scored in triplicate for the complete dataset to consistently obtain a sufficiently high ICC; for the complete dataset, the target ICC was set as .75 or higher, corresponding to good inter-rater reliability.²¹ Worksheets were randomly distributed across four evaluators to ensure that every worksheet was scored three times. Raw scores were used to evaluate the ICC for the entire dataset. The remainder of the analyses were conducted using the average scores from the three evaluators for each rationale.

The worksheets were analyzed with respect to how well the red and green boxes and fulcrum elements were rationalized (using the zero-to-three-point scoring scheme). This process served to validate the Toolkit as an exercise to practice applying the knowledge taught in the Masterclass. **Therefore, the outcome variable is worksheet performance in terms of the proportion of rationales of each point value for each participant.** For the Toolkit to be

²¹ Bobak, C., Barr, P. & O'Malley, A. (2018). Estimation of an inter-rater intra-class correlation coefficient that overcomes common assumption violations in the assessment of health measurement scales. *BMC Medical Research Methodology*, 18 (93), <https://doi.org/10.1186/s12874-018-0550-6>

considered valid, there should be a high proportion of rationales receiving one or more points, meaning that at a minimum, participants are properly mapping story elements onto the Resilience Scale, even if not always employing the language of the Brain Story, which is nonetheless an encouraging outcome.

In order to determine what factors influenced performance, a number of explanatory variables were included: 1) **which scenario the participant completed**; 2) **whether participants were providing a rationale for red boxes, green boxes, or purple fulcrum skills and abilities**; 3) **the participant's Brain Story Certification status**; 4) **whether the goal of the participant's organization/place of work is to reduce sources of adversity or add positive supports**; 5) **the participant's sector of work**; and 6) **the participant's general role within their organization**.

During data analysis, it occurred to the team of evaluators that the number of rationales could be related to worksheet performance. To explore this possibility, evaluators examined: 1) the presence of outliers with respect to worksheet performance and if they were systematically associated with high or low numbers of rationales; and 2) correlations between worksheet performance and the number of rationales. The results of this data exploration are presented in Appendix 4. In brief, no concerning outliers were observed in worksheet performance when plotted against the number of rationales, which indicates there were no unexpectedly low or high scores that could affect the interpretation of the overall analysis. There was generally no correlation between worksheet performance and the number of rationales provided, the exception being a positive correlation between the number of rationales and the proportion of three-point rationales, indicating that the more rationales provided, the greater the proportion that received three points. This single correlation is not concerning considering the very small proportion of three-point rationales overall (0.8%, see Results). Evaluators concluded from this data exploration that worksheet performance was not influenced by the number of rationales provided and did not include the latter in the analysis.

OUTCOME VARIABLE

Worksheet Performance: To evaluate how well the Toolkit requires participants to apply their understanding of the Resilience Scale and the Brain Story, the outcome measure is the proportion of rationales at each point value. Zero-point rationales convey misunderstanding of the material or a confusion between the different components of the Scale. For example, some participants listed “neglected by his mother” as a red box for Douglas but provided the rationale “no serve and return,” which was considered an appropriate rationale for a fulcrum element. One-point rationales demonstrate the ability to identify how elements in the story contribute to resilience by accurately assigning them to the Scale, but without using Brain Story-informed language. For example, acknowledging that having a chronically ill father is difficult for Angela

without commenting that it is a source of toxic stress that is not buffered by her mother who is preoccupied with her father's care. Two-point rationales demonstrate the ability to link elements of the story to the Resilience Scale and the Brain Story as a whole, using the appropriate language such as "toxic stress," "adverse childhood experience," and "safe, stable, supportive relationship or environment." Finally, three-point rationales convey advanced understanding of the science of the Brain Story and how details of the scenario relate to brain development. For example, Douglas's limited interaction with his mother derailed the development of a sturdy brain foundation to support later skill development.

Evaluators acknowledge that performance based on the proportion of rationales of a given point value is influenced by more than just a participant's understanding of the material. Motivation to complete the exercise, available time, and the presence of distractions would all impact completion of the worksheets. As well, there were some instances of participants engaging in in-depth conversation about their scenario without writing the answers on their worksheets.

EXPLANATORY VARIABLES

Scenario: Whether the participant completed the Angela, Aram, or Douglas scenario.

Resilience Scale Component: Whether there was a difference in worksheet performance between the red boxes, green boxes, and purple fulcrum skills and abilities, which indicates if there is a component of the Scale that participants find more or less difficult to rationalize.

Brain Story Certification Status: Certification status as of the event date was determined using Brain Story Certification Course enrollment data; participants were classified as either "completed" if they have obtained Brain Story Certification, "enrolled" if they have signed up for the course, or "not enrolled" if there is no record of them engaging with the course.

Red or green organization: The evaluators coded each organization as "red" (i.e., primarily reduces adversity) or "green" (i.e., primarily adds positive supports) based on a high-level summary of their goals within the larger system. Red organizations included those from addiction services, children and family services, healthcare, social services, justice and safety, and housing and poverty supports. Green organizations include those from education (including early childhood education), post-secondary education, children's programs, leisure and recreation, faith groups, targeted community supports (e.g., disability, immigration, senior services), and government.

Sector of work: Fourteen sectors of work were classified, including the 13 mentioned in the preceding paragraph as well as technology, which was not designated as red or green.

Role within organization: Based on participant job title, evaluators defined seven general roles within organizations: frontline, program manager/coordinator, supervisor/team lead, executive, administrative, research, and student.

STATISTICAL ANALYSIS

Data was analyzed using IBM SPSS 29. Univariate analysis of variance (ANOVA) was used to determine the relationship between the explanatory variables and the outcome variable. Bonferroni *post-hoc* tests were used to control for multiple comparisons. The threshold for statistical significance was $p < .05$.

OBJECTIVE 2: FEASIBILITY AND ACCEPTABILITY

To evaluate feasibility and acceptability of the Toolkit, qualitative thematic analysis of participant feedback was conducted. At the end of each Resilience Scale Masterclass or Resilience Day, participants completed a brief evaluation survey to share their thoughts on the learning objectives. The question of interest asked participants:

“Please share any thoughts you have on the Resilience Scale exercise that you completed following Part 1. Reflect on the clarity of the instructions, difficulty level, applicability to your work, and usefulness as a training tool.”

To conduct this analysis, four evaluators, all of whom were engaged with the project design, data collection process, and methods of analysis, independently reviewed the available data for relevant themes. After this independent review process, evaluators reconvened and formally defined the four main themes as outlined in the question:

1. The **clarity** of the exercise and the clarity of instruction
2. The level of **difficulty** of completing the exercise
3. The **applicability** of the exercise and information to the participants’ work
4. The **usefulness** of the exercise as a training tool

This thematic analysis also revealed a number of sub-themes, including the tool’s ability to effectively communicate complex brain science and the advantage of its visual nature, as well as a series of recommendations. Once a robust description was developed and agreed upon for each of the above themes, evaluators again individually coded the data according to these descriptions. The final coding of the data was decided upon in discussion and upon consensus.

RESULTS

SUMMARY STATISTICS

Worksheets from 308 participants were scored; of these, 287 (93.2%) worksheets included rationales that could be scored. The remaining 21 (6.8%) worksheets were either blank, had only box names with no rationales, or had only a drawing of the Scale.

Table 1 provides a summary of the numbers of boxes and fulcrum elements that were named and rationalized by the 287 participants whose worksheets were included in the analysis, as well as the proportion of named items that received rationales per participant. For the average participant, 85.1% of named Scale items received a rationale. **Table 2** summarizes the number of scorable worksheets for each category of the explanatory variables.

Table 1

Summary of the number of identified and rationalized red boxes, green boxes, and fulcrum elements per participant, and the percent of items rationalized per participant.

Variable	N	Mean	Std. Error	Minimum	Maximum
Red Boxes Named	287	5.24	0.12	0	13
Red Box Rationales	287	4.42	0.13	0	11
% Red Boxes Rationalized	285	86.50	1.61	0	100
Green Boxes Named	287	6.12	0.14	0	16
Green Box Rationales	287	5.14	0.15	0	14
% Green Boxes Rationalized	283	85.63	1.89	0	100
Fulcrum Elements Named	287	3.01	0.11	0	9
Fulcrum Element Rationales	287	2.50	0.11	0	9
% Fulcrum Elements Rationalized	246	83.12	2.11	0	100

Note. Sample size (N) varies for percent rationalized because only participants who named at least one red box, green box, or fulcrum element, respectively, were able to be included in the calculation of these values.

Table 2

Summary of the number of scorable worksheets based on each explanatory variable.

Variable	Valid N	Missing N	% Total Valid N
Scenario	287	0	
Angela	97		33.8
Aram	97		33.8
Douglas	93		32.4
Certification Status	285	2	
Certified	75		26.3
Enrolled	80		28.1
Not Enrolled	130		45.6
Red or Green Organization	282	5	
Red	155		55.0
Green	127		45.0
Sector	283	4	
Addiction Services	22		7.8
Children and Family Services	24		8.5
Children's Programs	29		10.2
Community Supports	1		0.4
Education	13		4.6
Faith Groups	2		0.7
Government	8		2.8
Health	59		20.8
Housing and Poverty Supports	1		0.4
Justice and Safety	31		11.0
Leisure and Recreation	6		2.1
Post-Secondary	68		24.0

Social Services	18	6.4
Technology	1	0.4
Role Within Organization	268	19
Frontline	135	50.4
Program Manager/Coordinator	39	14.6
Supervisor/Team Lead	36	13.4
Executive	23	8.6
Administrative	11	4.1
Research	11	4.1
Student	13	4.9

Note. Explanatory variables have missing values when participants did not provide sufficient information to be allocated to a group.

In total, 3436 rationales (among 287 participants) were scored. The overall ICC (Cronbach’s alpha, α) was .864, which lies well above the minimum acceptable value of .75. By scenario: Angela ($n = 1185$) $\alpha = .898$; Aram ($n = 1093$) $\alpha = .838$; Douglas ($n = 1158$) $\alpha = .843$. By Scale component: red boxes ($n = 1255$) $\alpha = .840$; green boxes ($n = 1463$) $\alpha = .853$; fulcrum skills and abilities ($n = 718$) $\alpha = .888$.

OBJECTIVE 1: VALIDITY

On average, participants provided the greatest proportion of one-point rationales (55.6%), followed by two-point rationales (35.8%), zero-point rationales (7.8%), and lastly three-point rationales (0.8%).

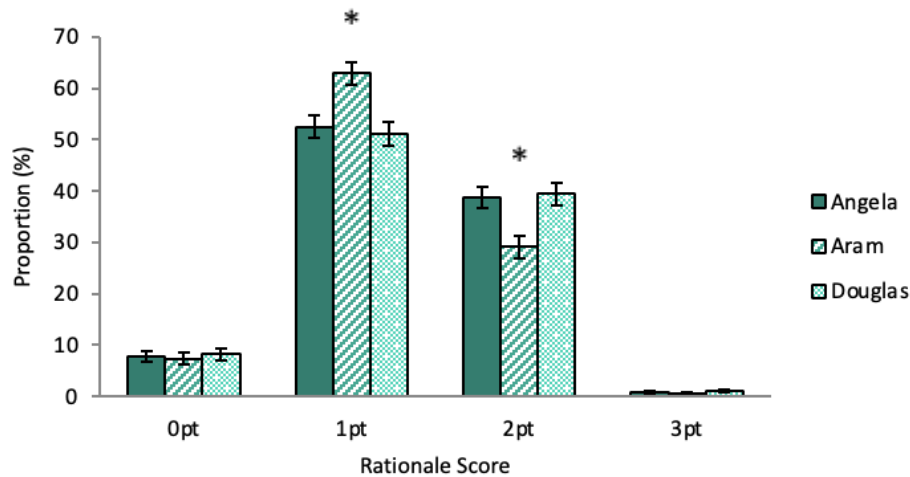
ANALYSIS BY SCENARIO

The proportion of total rationales that were scored as either one point or two points differed based on the scenario being completed (**Figure 2**). **There were significantly fewer one-point rationales for Angela (52.5%) and Douglas (51.2%) compared to Aram (63.0%). Conversely, there were significantly more two-point rationales for Angela (38.9%) and Douglas (39.5%) compared to Aram (29.2%).** This indicates that participants were more successful at linking scenario details to information presented in the Resilience Scale Masterclass for Angela and Douglas than they were for Aram, for which they were more likely to use excerpts from the scenario as their rationale without explicitly using Brain Story-informed

language. Despite these small differences, the low proportion of zero-point answers suggest that all scenarios are suitable exercises to translate the training of the Masterclass into practice.

Figure 2

Analysis by Scenario



Note. There were significant differences in the proportion of one-point, $F(2, 284) = 8.372, p < .001, \eta_p^2 = .056$, and two-point rationales, $F(2, 284) = 7.000, p = .001, \eta_p^2 = .047$, based on scenario. There were fewer one-point rationales for Angela, $p = .003$, and Douglas, $p < .001$, compared to Aram. Conversely, there were significantly more two-point rationales for Angela, $p = .006$, and Douglas, $p = .003$, compared to Aram. There were no statistically significant group differences for the proportion of zero-point, $F(2, 284) = 0.155, p = .856, \eta_p^2 = .001$, or three-point rationales, $F(2, 284) = 1.308, p = .272, \eta_p^2 = .009$. * $p < .05$

ANALYSIS BY RESILIENCE SCALE COMPONENT

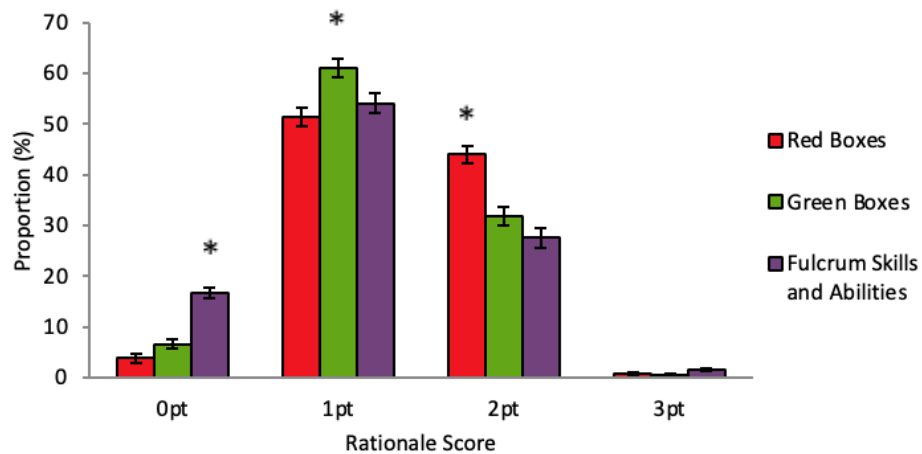
Worksheet performance was different depending on what part of the Scale the participant was providing rationales for (i.e., red boxes, green boxes, or purple fulcrum skills and abilities) (Figure 3). Overall, performance was the greatest for red boxes, in that there was the lowest proportion of zero-point rationales (3.8%) and the highest proportion of two-point rationales (44.0%). Green boxes received the greatest proportion of one-point rationales (61.0%), indicating participants were most likely to correctly identify items relevant to the right side of the Scale without using Brain Story language. Participants received a greater proportion of zero-point rationales for fulcrum elements (16.7%) than for either red or green boxes.

Of the 287 participants that provided at least one rationale, 271 (94.4%) provided rationales for red boxes, 269 (93.7%) provided rationales for green boxes, and 219 (76.3%) provided rationales for fulcrum skills and abilities. As a greater proportion of participants provided rationales for red boxes and green boxes than fulcrum skills and abilities, it's possible

that participants found rationalizing fulcrum elements difficult, or that simply because the fulcrum was the last component participants were prompted to comment on, they may have run out of time.

Figure 3

Analysis by Resilience Scale Component



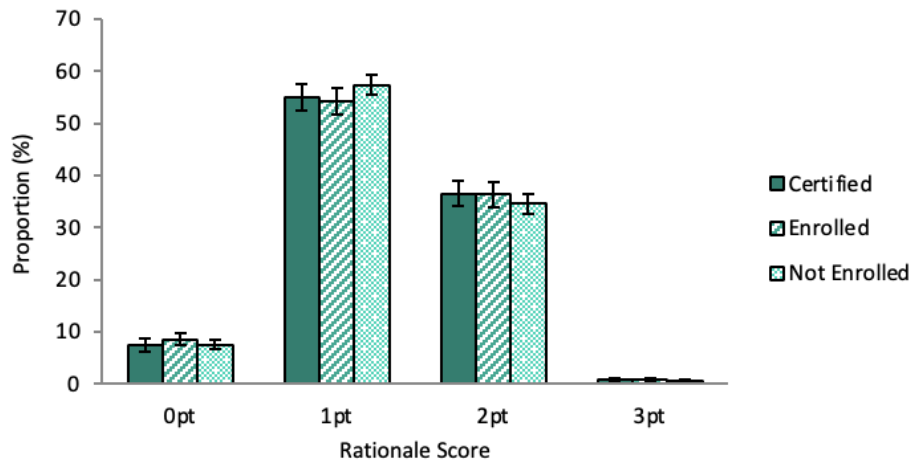
Note. There were significant group differences based on whether participants were providing rationales for red boxes, green boxes, or fulcrum skills and abilities for zero-point rationales, $F(2, 757) = 39.548, p < .001, \eta_p^2 = .095$, one-point rationales, $F(2, 757) = 7.198, p < .001, \eta_p^2 = .019$, and two-point rationales, $F(2, 757) = 21.227, p < .001, \eta_p^2 = .053$. There were significantly more zero-point rationales for fulcrum skills and abilities than either red boxes, $p < .001$, or green boxes, $p < .001$; there was no difference between red and green boxes, $p = .142$. There were significantly more one-point rationales for green boxes than either red boxes, $p < .001$, or fulcrum skills and abilities, $p = .038$; there was no difference between red boxes and fulcrum skills and abilities, $p = .957$. There were significantly more two-point rationales for red boxes than either green boxes, $p < .001$, or fulcrum skills and abilities, $p < .001$. There was no difference between green boxes and fulcrum skills and abilities, $p = .363$. There were no group differences for the proportion of three-point rationales, $F(2, 757) = 2.689, p = .069, \eta_p^2 = .007$. * $p < .05$

ANALYSIS BY BRAIN STORY CERTIFICATION STATUS

Whether the participants had completed the Brain Story, were enrolled but not yet completed, or not yet enrolled in the Brain Story had no bearing on how well they completed the Resilience Scale worksheets (**Figure 4**). One interpretation of this finding is that the Resilience Scale Masterclass provides sufficient background to the material for even individuals who have not been exposed to the entire course. Another possibility is that the participants of the Masterclasses have an inherent interest and understanding of the material due to their sector of work, priming them to perform well with the worksheets.

Figure 4

Analysis by Certification Status



Note. There were no statistically significant group differences based on certification status for the proportion of zero-point, $F(2, 282) = 0.246, p = .782, \eta_p^2 = .002$, one-point, $F(2, 282) = 0.535, p = .586, \eta_p^2 = .004$, two-point, $F(2, 282) = 0.273, p = .761, \eta_p^2 = .002$, or three-point rationales, $F(2, 282) = 0.412, p = .663, \eta_p^2 = .003$.

ANALYSIS BY RED OR GREEN ORGANIZATION

Whether participants were employed by a red (i.e., primary goal is to reduce adversity) or green (i.e., primary goal is to add positive supports) organization had a minor effect on their performance on the Resilience Scale worksheets (**Figure 5**). **Specifically, staff from red organizations provided fewer zero-points rationales than green organization staff (6.2% in comparison to 9.9%).** There were no between-group differences for one-point, two-point, or three-point rationales. This small difference suggests that the tool is valid and useful for service providers no matter what area of the Scale their organizations are targeting.

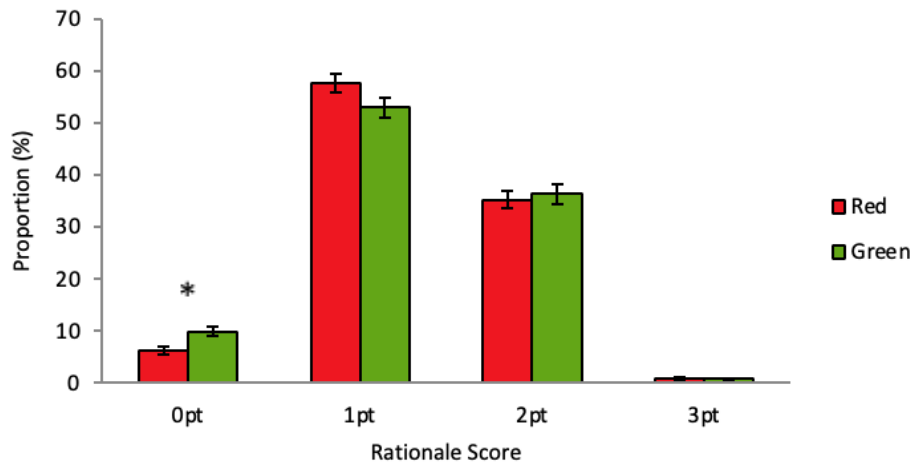
ANALYSIS BY SECTOR OF WORK

The following sectors were excluded from the analysis due to having too few participants: community supports ($n = 1$), faith groups ($n = 2$), housing and poverty supports ($n = 1$), and technology ($n = 1$).

Participants' sector of work had no impact on how well they completed the Resilience Scale worksheets suggesting this tool is usable across sectors and by service providers with a variety of professional training/backgrounds (**Figure 6**).

Figure 5

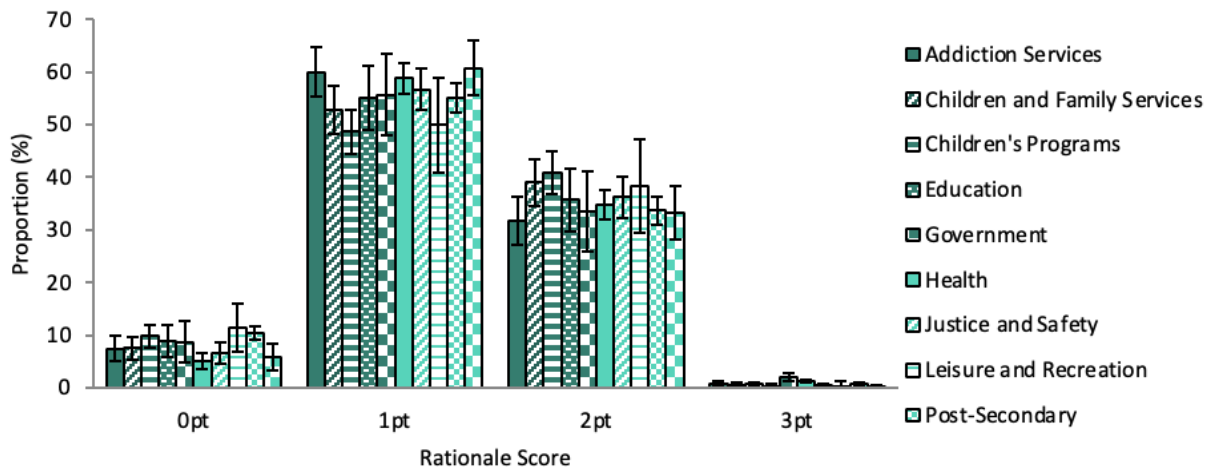
Analysis by Organization Code



Note. Staff with red organizations provided significantly fewer zero-points rationales than staff with green organizations, $F(1, 280) = 8.016, p = .005, \eta_p^2 = .028$. There were group differences based on organization color for the proportion of one-point, $F(1, 280) = 3.303, p = .070, \eta_p^2 = .012$, two-point, $F(1, 280) = 0.211, p = .646, \eta_p^2 = .001$, or three-points rationales, $F(1, 280) = 0.101, p = .751, \eta_p^2 = .000$. * $p < .05$

Figure 6

Analysis by Sector of Work



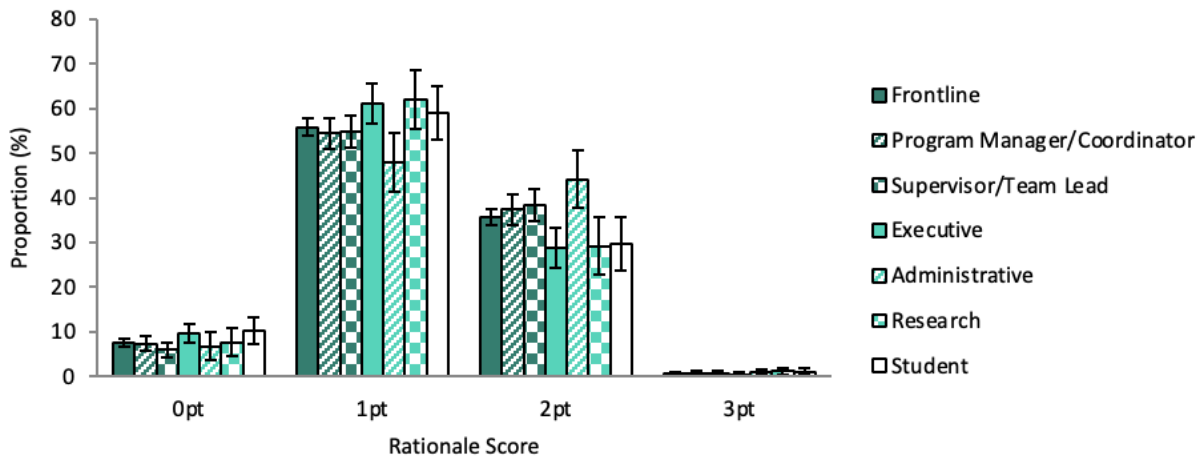
Note. There were no statistically significant group differences based on sector of work for the proportion of zero-point, $F(9, 268) = 1.154, p = .325, \eta_p^2 = .037$, one-point, $F(9, 268) = 0.762, p = .652, \eta_p^2 = .025$, two-point, $F(9, 268) = 0.437, p = .914, \eta_p^2 = .014$, or three-point rationales, $F(9, 268) = 0.980, p = .457, \eta_p^2 = .032$.

ANALYSIS BY ROLE WITHIN ORGANIZATION

Participants' general role within their organization had no impact on their performance on the Resilience Scale worksheets (**Figure 7**).

Figure 7

Analysis by Role within Organization



Note. There were no statistically significant group differences based on role within organization for the proportion of zero-point, $F(6, 261) = 0.406, p = .837, \eta_p^2 = .010$, one-point, $F(6, 261) = 0.689, p = .659, \eta_p^2 = .016$, two-point, $F(6, 261) = 1.195, p = .309, \eta_p^2 = .027$, or three-point rationales, $F(6, 261) = 0.180, p = .982, \eta_p^2 = .004$.

OBJECTIVE 2: FEASIBILITY AND ACCEPTABILITY

Qualitative analysis was conducted using data collected from evaluations circulated after the completion of the full Resilience Scale Masterclass. Across the nine events, 231 attendees completed the evaluation, 134 of which provided an answer to the question inquiring about their thoughts on the Resilience Scale Toolkit exercise:

“Please share any thoughts you have on the Resilience Scale exercise that you completed following Part 1. Reflect on the clarity of the instructions, difficulty level, applicability to your work, and usefulness as a training tool.”

Of the 134 responses, 113 participants shared a **positive impression** of the exercise.

CLARITY

Of the 134 responses, 40 participants explicitly addressed the clarity of the instruction and of the exercise. Of those 40 responses, 35 identified the instructions and exercise were clear and understandable, while five responses indicated there was room for improvement regarding the clarity of instruction. Of those five responses, four identified a lack of clarity regarding how to address the fulcrum and one identified that more conversation following the exercise would have served to further explain the concepts being reviewed.

“Instructions were clear, very applicable to our work. Will be using as a tool in our coach [sic].”

- Participant, Addiction Services

“Nice activity, very clear, not difficult, very applicable to work, & useful to aid as a training tool.”

- Participant, Children's Programs

“Clear instructions, good difficulty - made you think critically, very applicable to my work.”

- Participant, Education

DIFFICULTY

Of the 134 responses, 25 participants explicitly addressed the difficulty of the exercise. Of those 25 responses, 10 identified the exercise was easy to complete, seven identified the exercise was of an average or appropriate level of difficulty, and eight identified that they found at least one component of the exercise difficult. Seven of those eight comments did not rate the whole exercise as difficult, but rather identified that naming elements of the fulcrum and rationalizing them was difficult.

“Very useful as a training tool. Easy to use & apply within healthcare.”

- Participant, Justice & Safety

“The scale is extremely helpful and easy to understand. The instructions were good and difficulty level was adequate.”

- Participant, Addiction Services

“Instructions were good, was more difficult to put in practice than it looks. Very applicable to our work. It wasn't as simple as it seemed. Rationale was difficult to express sometimes.”

- Participant, Post-Secondary

APPLICABILITY

Of the 134 responses, 50 participants explicitly addressed the applicability of the exercise to their work or life. Of those 50 responses, 30 commented on the general applicability of the tool to their work and life including comments like:

“It's applicable to my work in that I can better describe what we do to donors.”

- Participant, Children's Programs

“I work specifically w/ teen moms so this helps to add clarity - simplicity of complicated life situations.”

- Participant, Justice and Safety

“Great training tool to understand patient's history, coping skills. Tool is a good way to build a [patient's] story. Easy to use, good visual.”

- Participant, Health

Of the 50 comments regarding the applicability of the tool, 12 specified that they intended to apply the Scale in their work and 3 respondents indicated they were already using the Resilience Scale as a tool in their practice. Only 5 participants of the 50 identified that the tool was not applicable to their work.

USEFULNESS

Of the 134 responses, 59 addressed the general usefulness of the Resilience Scale Toolkit as a training tool. Of those responses, 20 specified that the Resilience Scale and the exercise were useful tools in communicating complex brain science.

“Excellent facilitation, clarity, and applicability. Very engaging throughout. Loved the activity as a tool to conceptualize the material.”

- Participant, Children's Programs

“Great exercise - increased understanding of the practical interpretation of the Resilience Scale.”

- Participant, Justice and Safety

“I can see this being useful in my day to day work, I hope it takes off”

- Participant, Education

Ten respondents also highlighted the visual nature of the Resilience Scale as an advantage to its ability to serve as a training tool.

“Excellent tool - great for addressing need[s] and supports - very visual and easy to understand.”

- Participant, Children and Family Service

“An excellent self-assessment tool. As strong visual learners the clients can identify their situations and strengths to increase green boxes.”

- Participant, Healthcare

“Helps individuals to “visualize” their life situations.”

- Participant, Faith Groups

Eight participants also made specific comments regarding the opportunity for collaboration offered in the form of group discussion following the individual completion of the Toolkit exercise. Some of these comments indicated a desire for more of an opportunity for group discussion. This theme was also present in the recommendations which follow.

“Very useful - group discussion helped some people in [the] group solidify concepts.”

- Participant, Education

“I enjoyed collaborating with the people at my table.”

- Participant, Health

“It was good practice - more small group discussion would have been interesting/helpful for the table to have the scenario. Collaboration + consultation is helpful to how some learn.”

- Participant, Children’s Programs

RECOMMENDATIONS

Thirty participants used the opportunity when presented with the above question to leave recommendations as part of their answer. In exploring these recommendations several themes emerged, including increasing the time allocated to complete the exercise, ensuring time for group discussions, more specific examples prior to completing the exercise, and a desire for more information regarding the fulcrum or skills and abilities part of the Scale.

DISCUSSION

The objective of this report was to assess the validity, feasibility, and acceptability of the Resilience Scale Toolkit as a training exercise for service providers. To do so, evaluators used quantitative data from 287 participants and qualitative data from 134 participants of nine Resilience Scale Masterclasses and Resilience Days hosted in Alberta, Canada between February and June of 2023. The data and feedback from these events provided encouraging results and suggest that the Resilience Scale Toolkit is a valid training tool which effectively communicates the science of the Brain Story and the Resilience Scale. Participants were able to successfully complete the exercise while maintaining fidelity to the science of the Brain Story. Furthermore, participants themselves identified the tool as clear, easy to use, applicable to their work, and useful in their life and practice.

VALIDITY

Before evaluating the validity of the Toolkit, it was critical to know if the worksheets could be consistently scored; that is, if the scoring guides were reliable across evaluators and scenarios. Inter-rater reliability was assessed using Cronbach's α . The lowest value of α obtained was .838, which is well above the predetermined cutoff value of .75, which corresponds to good reliability.²² Therefore, evaluators have confidence that the measures of worksheet performance are reliable.

To evaluate the validity of the toolkit, evaluators examined worksheet performance with respect to the proportion of rationales of each point value for each participant. On average, participants received one point, two points, or three points for over 92% of the rationales they provided. The fact that only 7.8% of rationales per participant were scored as zero points demonstrates that participants were well-equipped to complete the exercise after attending the Resilience Scale Masterclass. This high proportion of rationales receiving one or more points suggests that at a minimum, participants are properly mapping story elements onto the Resilience Scale and that the Resilience Scale Toolkit is a valid tool with which service providers can practice using the Resilience Scale in their lives and work.

Evaluators did observe that worksheet performance was influenced by several factors, none of which compromise the validity of the Toolkit. Worksheet performance was influenced by whether participants were creating the Resilience Scale for Angela, Aram, or Douglas, as it appears that participants were more successful at using Brain Story language to rationalize some types of scenario elements than others; however, participants still successfully aligned

²² Bobak, C., Barr, P. & O'Malley, A. (2018). Estimation of an inter-rater intra-class correlation coefficient that overcomes common assumption violations in the assessment of health measurement scales. *BMC Medical Research Methodology*, 18 (93), <https://doi.org/10.1186/s12874-018-0550-6>

other elements of the scenarios to the Resilience Scale even without using Brain Story language. As the primary goal of the Toolkit is to practice applying the Resilience Scale as a practical tool, this outcome does not compromise the validity of the training exercise nor its application in the workplace; participants were highly capable of generalizing the science of resilience to a variety of scenarios. Worksheet performance was also influenced by whether participants were providing rationales for red boxes, green boxes, or fulcrum skills and abilities. The fulcrum appeared to be the most difficult element of the scale to address, as also suggested in the qualitative analysis, and could benefit from more instruction. However, the proportion of answers related to the fulcrum that received zero points remained relatively low compared to higher scoring rationales and it is therefore reasonable to conclude that participants were overall successful at rationalizing fulcrum elements. Finally, there was a small difference in worksheet performance based on whether participants worked for a red or green organization. Despite the observation that participants representing red organizations provided fewer zero-point rationales, considering the relatively low proportion of zero-point rationales compared to one-point, two-point, and three-point rationales from participants representing both red and green organizations, the tool remains valid and useful no matter what the primary goal of the organization.

Worksheet performance was not influenced by: (1) whether participants had completed, enrolled but not completed, or not enrolled in the Brain Story Certification Course, suggesting the Masterclass provides suitable background information to complete the exercise; (2) participant's sector of work, suggesting this tool is usable across sectors and by service providers with a variety of professional training/backgrounds; (3) or participant's general role within their organization, suggesting this tool is usable by everyone from front-line workers to senior administration.

Overall, the data from these nine events indicate that the Toolkit is valid, accurately assesses understanding of the material, and that participants were able to effectively synthesize the training to use the Resilience Scale as a practical tool. This is true across fields of work, roles, and previous Brain Story training.

FEASIBILITY AND ACCEPTABILITY

Second, it was essential to evaluate if the Resilience Scale Toolkit would be a feasible and acceptable training exercise for using the Resilience Scale as a practical tool. A Toolkit that was deemed too cumbersome, complicated, or trivial would not be utilized in practice, even if it was valid. To assess feasibility and acceptability, evaluators examined: (1) the proportion of people that completed the exercise as instructed; (2) the number of rationales provided, indicating the

level of motivation to complete the worksheet; and (3) open-ended responses regarding the Toolkit exercise.

An impressive proportion of people completed the Toolkit worksheets in such a way that enabled their responses to be scored and analyzed. Of the 308 participants at the nine events, 287 (93.2%) provided at least one rationale. This suggests that the worksheets were deemed feasible and acceptable by the participants, as well as valuable given they used the time to complete the worksheet as opposed to engaging in other activities. On average, approximately five red boxes were named, six green boxes were named, and three fulcrum elements were identified per worksheet, and 85% of these were provided rationales.

Open-ended responses to the evaluation question asking participants to comment on the Toolkit exercise supported the above conclusion that the exercise is feasible and acceptable, as 84% of participants responding to this question gave positive feedback. Furthermore, participants who commented on the applicability of the tool to their work indicated it was applicable and that they either intended to use the tool in practice or were already using the tool in practice. Participants who wrote about the clarity of the instructions and execution of the Toolkit also referenced a high level of clarity of instruction and execution. The majority of respondents who commented on the difficulty of the exercise reported it as either easy or adequate. Finally, the analysis also revealed that participants believed this to be a useful training tool with respect to helping them understand the Brain Story concepts, visualizing the Resilience Scale and an individual's resilience, and being generally useful, helpful, valuable, or beneficial.

Overall, the qualitative analysis further confirms that the Resilience Scale Toolkit is indeed a feasible and acceptable tool. Beyond that, this feedback provides encouraging insights suggesting the tool will be valuable and user-friendly for service providers from across the spectrum of care.

NEXT STEPS

The Resilience Scale Toolkit is part of a larger strategy to integrate the Resilience Scale at an individual, organizational, and systems level across sectors including health, education, children's services, and justice. **At the individual level, the Resilience Scale Toolkit offers service providers from across sectors the opportunity to practice applying the knowledge of the Brain Story and Resilience Scale.** At the organization level, the Resilience Scale serves as a tool for organizational change management and a framework by which to code services and programs based on whether they are designed to target red boxes (i.e., reduce sources of adversity), green boxes (i.e., add positive supports), or the fulcrum (i.e., build skills and abilities). For a full description of the application of the Resilience Scale at the organization

level, please see *Report 2 of 3: Brain Story: Organizational Change Management. Quality Improvement Implemented Using the Resilience Scale: An Alberta Family Wellness Initiative Proof of Concept*. At a systems level, the Resilience Scale can improve outcomes for individuals, families, and communities by promoting systems integration and refining service delivery through wide scale adoption of a common competency in Brain Story science. For a full description of the application of the Resilience Scale at the systems level, please see *Report 3 of 3: Brain Story: Creating Systems Integration Using the Resilience Scale*.

FINAL THOUGHTS

To reiterate, the primary goal of the Resilience Scale Toolkit is to supply service providers across sectors with the opportunity to practice applying the science of the Brain Story by using the Resilience Scale as a practical tool. The Toolkit provides examples of what service providers may encounter as they use the Resilience Scale as a tool with service users during intake, regular assessments, and at other stages of service provision. This analysis provides encouraging results in relation to the validity, feasibility, and acceptability of this approach. As such, we are confident that when combined with the Resilience Scale Masterclass, the Resilience Scale Toolkit will serve as an effective tool and empower practitioners across sectors to use the Resilience Scale in practice.

APPENDIX 1: THE EVALUATORS



Dr. Serena Jenkins, PhD.,
University of Lethbridge
Palix Foundation

Serena Jenkins is a Scientific Associate with the Palix Foundation. She has a Ph.D. in Behavioural Neuroscience from the University of Lethbridge, where she studied under Dr. Robbin Gibb, with additional mentorship from Dr. Bryan Kolb. Serena's research explored how maternal experiences can be transferred across generations to influence brain and behavioural development via epigenetic mechanisms.



Claire Niehaus, MSc.,
University of Lethbridge
Palix Foundation

Claire Niehaus is a Scientific Associate with the Palix Foundation and graduate of the University of Lethbridge having received her MSc. in Behavioural Neuroscience. An active member of her community, she volunteers with Let's Talk Science and serves as a secretary on the board of Big Brothers Big Sisters of Lethbridge and District.



Janelle Boram Lee, MSc.,
University of Calgary
Palix Foundation

Janelle Boram Lee is a Scientific Associate with the Palix Foundation and a PhD student in Epidemiology at the University of Calgary. She is a CIHR Vanier Scholar studying the area of Adverse Childhood Experiences, parenting and child development under the supervision of Drs. Nicole Letourneau and Kirsten Fiest.



Sara Yamamoto BH.Sc.

*University of Calgary
Palix Foundation*

Sara Yamamoto is a consultant with the Palix Foundation and is a Master of Social Work student at the University of Calgary, specializing in Clinical Infant Child and Adolescent Mental Health. She is an Addictions Counsellor with Alberta Health Services and has worked with youth and adults in residential addictions treatment programs in Ireland, Belgium, and Canada.



Alexandra Zehner, B.A.,

*Barnard College
Palix Foundation*

Alexandra (Allie) Zehner graduated in 2023 from Barnard College of Columbia University with her Bachelor's in Neuroscience & Behavior, on the cognitive/behavioral track. During university, she worked in neuroscience labs at both the New York State Psychiatric Institute and Columbia University Irving Medical Center. She is also a member of the Phi Beta Kappa academic honor society and upon graduation received the Neuron Prize for Distinguished Accomplishment in Neuroscience.



Dr. Isobel Lewis, MD.,

*University of Oxford
Palix Foundation*

Isobel Lewis is a Junior Doctor from the U.K. She connected with the Palix Foundation through the Brain Story team whilst a student at the University of Oxford and arranged to do an internship in Calgary that revolves around the impact of the Brain Story in community services, clinical practice, and research. She intends to pursue a career in family medicine, to which the work of the Brain Story is particularly relevant.



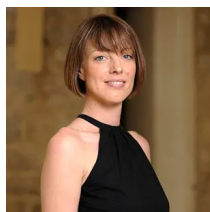
Dr. Madeleine Turner, MD.,
University of Oxford
Palix Foundation

Madeline Turner is a graduate of the University of Oxford. She first learned about the Brain Story in Oxford two years ago and has since become involved in a project on medical students' understanding of early childhood development using themes derived from the Brain Story.



Dr. Louise Dalton, DClInPsych,
University of Oxford

Louise Dalton is an associate professor and consultant clinical psychologist at the University of Oxford. Alongside Dr. Elizabeth Rapa and under the mentorship of Dr. Alan Stein, Louise co-leads the Oxford Brain Story, a research group which focuses on elucidating the key mechanisms underpinning child development including the intergenerational transmission of difficulties in the context of adversity. In partnership with the Palix Foundation, their team is developing a program to explore and evaluate different ways of implementing the Brain Story to maximize its reach and impact.



Dr. Elizabeth Rapa, PhD.,
University of Oxford

Elizabeth Rapa is an associate professor at the University of Oxford. Alongside Dr. Louise Dalton and under the mentorship of Dr. Alan Stein, Elizabeth co-leads the Oxford Brain Story, a research group which focuses on elucidating the key mechanisms underpinning child development including the intergenerational transmission of difficulties in the context of adversity. In partnership with the Palix Foundation, their team is developing a program to explore and evaluate different ways of implementing the Brain Story to maximize its reach and impact.

APPENDIX 2: EXAMPLE WORKSHEET

The following are samples of completed worksheets (one per scenario) taken from the Lethbridge Resilience Day dataset.

USING THE RESILIENCE SCALE WITH INDIVIDUALS

Name: _____

Organization/Role: _____

Read the following scenario. On your own, identify the (1) red boxes, (2) green boxes, and (3) skills and abilities (purple fulcrum) for the individual. Below the scenario, draw the individual's resilience scale. When you are finished, discuss your drawing with the others at your table.

Scenario:

You are a support worker at a community group for individuals who have parents or loved ones with Parkinson's Disease. Angela, a young mother of two, has come to her first meeting and generously shared her story with the group:

"My father is 67 and has an advanced case of Parkinson's. He has difficulty moving around the house and requires help from my mother for most daily activities. My mother is his primary caregiver, and they still live in the house I grew up in. Gosh, I have so many great memories of that house. About my whole childhood really; my home, my parents, my school, extracurriculars. I was pretty lucky. My dad and I built a treehouse in the backyard when I was 8 - now my kids get to play in it when we visit on holidays. Holidays were a blast growing up. My parents always went above and beyond - for Christmas, Easter, Thanksgiving, Halloween. I was an only child but you'd never know it because I always had friends around. I still have that same group of childhood friends now. I have one friend whose father had dementia, so she's been a really valuable support for me as I go through this with my dad. It's a little sad now because with dad being ill, mom just doesn't have the time or energy to get excited about the holidays anymore. I visit them most weekends to lend a hand. I would go more often but they live four hours away. I really struggle with the guilt of feeling like I'm not doing enough to help. I also have two young kids, 2 and 5 who are my pride and joy. Me and their dad have recently separated but it was amicable. We're still on good terms and have a good co-parenting arrangement - he takes the kids every other week and we split all of their expenses 50/50. I work as an insurance broker and am able to work from home. It's a good job - it provides stable income and benefits and my boss is very accommodating. Both of my kids are in daycare or kindergarten, so I do a lot of drop-off and pick-up, and Greg, my boss, is completely supportive.

More Resilient ← → Less Resilient

Red Boxes

In the space below, please name and list every "red box" you identified in the given scenario. Below that, please write a brief rationale as to why you interpreted that piece of information as a "red box".

Please note: You may not require all the spaces provided.

Box: Father - Illness Box: _____
Rationale: Stress related to ill parent Rationale: _____

Box: Guilt about Distance Between Parent Box: _____
Rationale: Emotional/Mental Stress Rationale: _____

Box: Caregiving Parent Box: _____
Rationale: Grief, stress Rationale: _____

Box: _____ Box: _____
Rationale: _____ Rationale: _____

Box: _____ Box: _____
Rationale: _____ Rationale: _____

Box: _____ Box: _____
Rationale: _____ Rationale: _____

Box: _____ Box: _____
Rationale: _____ Rationale: _____

Green Boxes

In the space below, please name and list every "green box" you identified in the given scenario. Below that, please write a brief rationale as to why you interpreted that piece of information as a "green box".

Please note: You may not require all the spaces provided.

Box: Extra Curriculars in childhood
Rationale: Opportunity, connection, skills.

Box: Engaged Parents.
Rationale: Attachment

Box: Stable Employment/Supportive Boss
Rationale: Stability, Opportunity, to work from home, supportive

Box: Parents still together.
Rationale: Stability, Security, Support

Box: Financial ~~about~~ stability
Rationale: Ability to meet needs.

Box: _____
Rationale: _____

Box: Friends.
Rationale: Support, connection

Box: _____
Rationale: _____

Box: Co-Parenting Relationship.
Rationale: Amicable separation/supportive

Box: _____
Rationale: _____

Box: Relationship w/ kids
Rationale: Engaged, "Pick & Choose"

Box: _____
Rationale: _____

Box: Stable Childhood
Rationale: Schooling, extracurriculars engaged parents

Box: _____
Rationale: _____

Fulcrum Placement

In the space below, please list the aspects of the scenario that you believe exemplify the individual's skills and abilities. Below that, please include a brief description of how you think that information relates to the skills and abilities that make up the fulcrum, and why this information is relevant to the placement of the fulcrum.

Please note: You may not require all the spaces provided.

Scenario Detail: Extracurriculars Scenario Detail: _____
Rationale: Skills, Connection, teamwork Rationale: _____

Scenario Detail: Co Parenting Scenario Detail: _____
Rationale: teamwork, patience, support Rationale: _____

Scenario Detail: Employment Scenario Detail: _____
Rationale: Work Ethic, Esteem, Ability to provide. Rationale: _____

Scenario Detail: Coping with Parents Scenario Detail: _____
Rationale: Although difficult but support, ability to ask for help. Rationale: _____

Scenario Detail: Friends Scenario Detail: _____
Rationale: Social Skills Rationale: _____

Scenario Detail: _____ Scenario Detail: _____
Rationale: _____ Rationale: _____

USING THE RESILIENCE SCALE WITH INDIVIDUALS

Name:

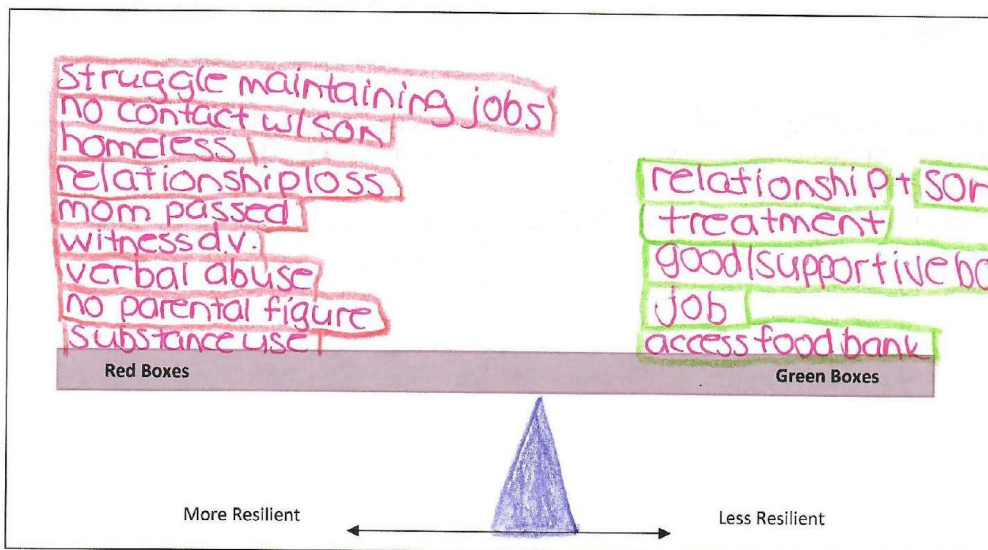
Organization/Role:

Read the following scenario. On your own, identify the (1) red boxes, (2) green boxes, and (3) skills and abilities (purple fulcrum) for the individual. Below the scenario, draw the individual's resilience scale. When you are finished, discuss your drawing with the others at your table.

Scenario:

You are a counsellor at an inpatient addiction treatment centre, and you are having your first appointment with a new resident, Douglas.

"I'm really grateful a spot opened up here. I think I've hit bottom and I'm finally ready to turn my life around. I've been struggling with substance use since I was 15 years old. My mother tried her best for me, but she kept drawing the short straw in life, so I never really had a parental figure. She was in one abusive relationship after the other. A few of the guys were verbally abusive towards me when she wasn't around, but I tried not to let it bother me too much. Mom got sick and passed away when I was 18. That hit me really hard. After she was gone, I moved from one place to the next, sleeping on people's couches until they got tired of me being there. I had a hard time keeping a job and was accessing the local food bank on a regular basis. Those people are great though, they always helped me out. There was a short while when things were starting to turn around. I got hired at a mechanic's shop and my boss decided to take me under his wing and indentured me as an apprentice. Around the same time, I started seeing this girl who was a lot of fun. We'd go out drinking on Friday and then somehow, it'd be Sunday and we were still going. When she found out she was pregnant she decided to put all that behind her. Me, not so much. She got tired of that really fast and told me she wanted to raise the baby alone. I'll admit that I didn't handle that very well - I started drinking even more and it really started to affect my work. Lucky for me, my boss saw something in me that not many others have and didn't fire me. He's actually the reason I'm here now. He encouraged me to seek treatment and told me that my job would be there waiting for me when I get out. When I got the news that I had a spot in the program, I reached out to my girl and told her that I was entering treatment. She seemed happy for me and told me that if I stick with it, she'll let me meet my son (I have a son!).



Red Boxes

In the space below, please name and list every "red box" you identified in the given scenario. Below that, please write a brief rationale as to why you interpreted that piece of information as a "red box".

Please note: You may not require all the spaces provided.

Box: substance use
Rationale: negative impact on job + relationship

Box: no parental figure
Rationale: lack of serve + return, not feeling loved/cared for, nurtured, no (+) role model

Box: _____
Rationale: _____

Box: verbal abuse
Rationale: negative impact on sense of self, confidence, mental health

Box: _____
Rationale: _____

Box: witness DV.
Rationale: traumatic, toxic stress, no positive adults in life, witnessing men abusing mom may

Box: _____
Rationale: _____

Box: mom passed
Rationale: loss of only parent, left feeling alone w/ no support

Box: relationship loss
Rationale: increased substance use, affecting work

Box: homelessness
Rationale: no stable environment or safe space

Box: no contact w/ son
Rationale: due to substance use + instability, already causing stress on new child + guilt + shame for Doug.

Box: _____
Rationale: _____

Box: difficulty maintaining job
Rationale: financial instability, toxic stress

Box: impact relationships w/ women in future

Box: _____
Rationale: _____

Green Boxes

In the space below, please name and list every "green box" you identified in the given scenario. Below that, please write a brief rationale as to why you interpreted that piece of information as a "green box".

Please note: You may not require all the spaces provided.

Box: access food bank
Rationale: positive supports, connection, food

Box: relationship
Rationale: giving hope, motivation

Box: job as mechanic
Rationale: finally stable job, good support from boss

Box: son
Rationale: giving hope, motivation

Box: boss
Rationale: (+) support, role model, serve + return not giving up

Box: _____
Rationale: _____

Box: _____
Rationale: _____

Box: _____
Rationale: _____

Box: treatment
Rationale: (+) supports, build resiliency, healing + lead to re-connection w/ relationship + son

Box: _____
Rationale: _____

Box: _____
Rationale: _____

Box: _____
Rationale: _____

Box: _____
Rationale: _____

Box: _____
Rationale: _____

Fulcrum Placement

In the space below, please list the aspects of the scenario that you believe exemplify the individual's skills and abilities. Below that, please include a brief description of how you think that information relates to the skills and abilities that make up the fulcrum, and why this information is relevant to the placement of the fulcrum.

Please note: You may not require all the spaces provided.

Scenario Detail: substance use Scenario Detail: _____
Rationale: did not have skills Rationale: _____
to cope or (+) supports _____

Scenario Detail: not let verbal abuse Scenario Detail: _____
Rationale: _____ affect him Rationale: _____
less impact + (-) _____
consequences _____

Scenario Detail: _____ Scenario Detail: _____
Rationale: _____ Rationale: _____

Scenario Detail: _____ Scenario Detail: _____
Rationale: _____ Rationale: _____

Scenario Detail: _____ Scenario Detail: _____
Rationale: _____ Rationale: _____

Scenario Detail: _____ Scenario Detail: _____
Rationale: _____ Rationale: _____

USING THE RESILIENCE SCALE WITH INDIVIDUALS

Name:

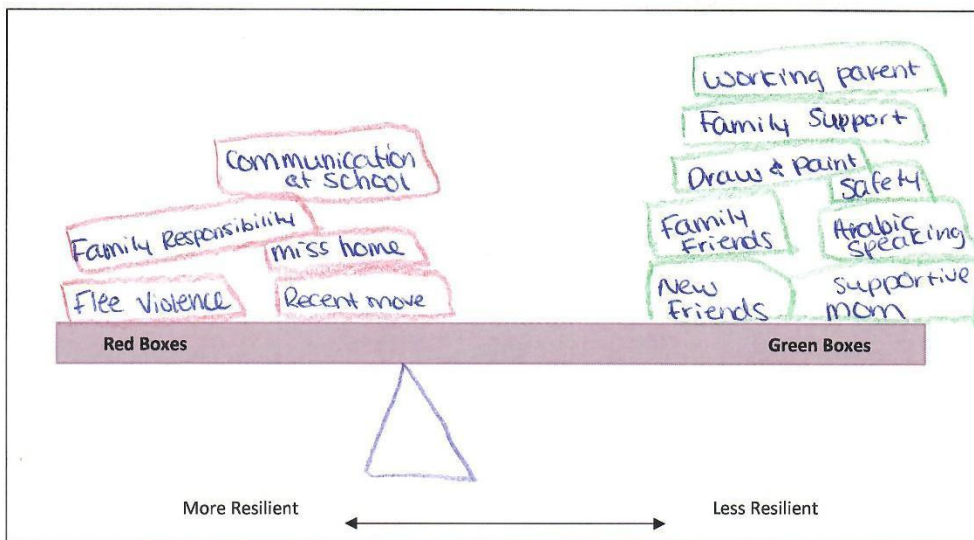
Organization/Role:

Read the following scenario. On your own, identify the (1) red boxes, (2) green boxes, and (3) skills and abilities (purple fulcrum) for the individual. Below the scenario, draw the individual's resilience scale. When you are finished, discuss your drawing with the others at your table.

Scenario:

You are the manager of family and community programming at a local multicultural centre. Last month, a new family began accessing the services of the centre. This family recently immigrated to Canada from Syria to flee violence. Aram, the oldest of three siblings, is 11, and he has been visiting weekly and particularly enjoys the art programming offered at the centre. Aram is quiet, but fortunately you can speak Arabic. One afternoon, he begins to open up to you:

"[In Arabic] I really like coming here with my family because I can spend time with my new friends. I like it much more than being at school. I find it hard to communicate with kids at school, but here there are kids who also speak Arabic. This place also has a really fun art class with so many different art supplies that I can use whenever I want. My mom and dad also like coming here and they talk to the parents of my new friends. My dad has to work a lot - he's already gone when I wake up in the morning and doesn't come home until supper time. I'm not sure what he does, but he is helping build that really tall building that we can see from our living room. My mom doesn't have a job like my dad - she says her job is taking care of me and my brothers. I love that I get to spend so much time with my mom because she loves us very much and she teaches me lots of cool things. I'm the oldest so I help my mom a lot. I help cook dinner and help my little brothers with their homework. When my dad is home, my family spends time doing fun things like playing games and exploring the city on the bus, which makes me happy. I have a lot of family that still live in Syria. I really miss them and my old friends, but it is too dangerous for us to live there. I think about them at nighttime and wonder if they are okay and when they'll move to Canada. I ask my mom and dad sometimes, but then they always get sad and that makes me sad. I remember living in Syria really well, but my brothers are too young to remember. When I start to miss my family a lot, I find it helps to draw and paint. I keep every picture I make in a box in my closet, and when the rest of my family finally does move to Canada, I'll give them all the pictures."



Red Boxes

In the space below, please name and list every "red box" you identified in the given scenario. Below that, please write a brief rationale as to why you interpreted that piece of information as a "red box".

Please note: You may not require all the spaces provided.

Box: Flee violence
Rationale: scary/unknown

Box: _____
Rationale: _____

Box: miss Syria/friends
Rationale: sad/hurting/loss

Box: _____
Rationale: _____

Box: Moving/immigrate
Rationale: disruption

Box: _____
Rationale: _____

Box: Responsibility for siblings
Rationale: pressure, responsible

Box: _____
Rationale: _____

Box: Communication @ school
Rationale: not welcome

Box: _____
Rationale: _____

Box: _____
Rationale: _____

Box: _____
Rationale: _____

Box: _____
Rationale: _____

Box: _____
Rationale: _____

Green Boxes

In the space below, please name and list every "green box" you identified in the given scenario. Below that, please write a brief rationale as to why you interpreted that piece of information as a "green box".

Please note: You may not require all the spaces provided.

Box: New friends
Rationale: Safe, Supportive

Box: Safe
Rationale: out of the country - has a home at a multicultural centre to visit

Box: Mom relationship
Rationale: Safe, Supportive
nurturing

Box: _____
Rationale: _____

Box: Friends who speak arabic
Rationale: welcoming/safe
familiar

Box: _____
Rationale: _____

Box: Family has friends
Rationale: connection &
relationships

Box: _____
Rationale: _____

Box: Painting/drawing
Rationale: Safe environment
or way to relax/decompress

Box: _____
Rationale: _____

Box: Family Support (activities)
Rationale: connecting with
each other, feel safe

Box: _____
Rationale: _____

Box: Working parent
Rationale: Financially - have
an income

Box: _____
Rationale: _____

Fulcrum Placement

In the space below, please list the aspects of the scenario that you believe exemplify the individual's skills and abilities. Below that, please include a brief description of how you think that information relates to the skills and abilities that make up the fulcrum, and why this information is relevant to the placement of the fulcrum.

Please note: You may not require all the spaces provided.

Scenario Detail: Resilience
Rationale: Aram finds positivity in his situations

Scenario Detail: _____
Rationale: _____

Scenario Detail: Relationships
Rationale: Built a relationship at the Centre - has friends that speak Arabic

Scenario Detail: _____
Rationale: _____

Scenario Detail: Safety
Rationale: New home in a country with less violence

Scenario Detail: _____
Rationale: _____

Scenario Detail: Environment
Rationale: Has an interest in drawing/painting - passion

Scenario Detail: _____
Rationale: _____

Scenario Detail: _____
Rationale: _____

Scenario Detail: _____
Rationale: _____

Scenario Detail: _____
Rationale: _____

Scenario Detail: _____
Rationale: _____

APPENDIX 3: SAMPLE SCORING GUIDES

Accepted rationales were defined using a four-point scoring system:

- 0 points (0pt) - Rationale given is irrelevant to the point. Rationale does not relate to the subject of the story.
- 1 point (1pt) - Basic identification. Uses elements of the scenario as a rationale for other elements with no connection to aspects of the Brain Story. Gives rationale without using the language of the Brain Story (e.g., protective factor).
- 2 points (2pt) - Understanding of the material. Able to relate the scenario details to aspects of the Brain Story as covered in the Masterclass.
- 3 points (3pt) - Advanced understanding of the material. Able to relate the scenario details to the science of the Brain Story as covered in the Brain Story Certification more fully.

SCENARIO: ANGELA

The table below is a small sample of the scoring guide developed by evaluators. It outlines the point allocation system for Angela’s scenario, highlighting five elements a participant could identify.

Rank	Scenario Detail	Code	Rationale - 3 points.	Rationale - 2 points.	Rationale - 1 point.	Rationale - 0 points.
1	Support worker	Green	Safe, stable, supportive relationship to buffer toxic stress associated with dealing with her father’s illness. AND/OR Provide opportunity for critical skill development related to the fulcrum.	Safe AND/OR Stable AND/OR Supportive relationship	Suggestion of a safe, stable, supportive relationship (e.g., relationship, support person, counselor).	
2	Support worker	Purple	Serve and return opportunities to build strong brain architecture . AND/OR	Serve and return opportunity AND/OR Builds self-regulation/coping	Suggestion of serve and return opportunity, self-regulation/coping skills, executive function skills.	

			Builds self-regulation and coping skills to manage stress , including positive stress. AND/OR Builds executive function skills that allow her to plan, prioritize, and organize her responsibilities at home and school to prevent a mental collision. AND/OR Regulates reward motivation system to be sensitive/calibrate to adaptive situations.	skills AND/OR Builds executive function skills AND/OR Builds reward motivation skills	AND/OR Reward motivation skills (e.g., skill building).	
3	Parkinson's Support Group	Green	Safe, stable, supportive relationships and environment to buffer toxic stress associated with dealing with her father's illness. AND/OR Provide opportunity for critical skill development related to the fulcrum.	Safe AND/OR Stable AND/OR Supportive relationship AND/OR Environment	Suggestion of safe, stable, supportive relationships and/or environment (e.g., emotional support, healthy relationships).	
4	Parkinson's Support Group	Purple	Serve and return opportunities to build strong brain architecture. AND/OR Builds self-regulation and coping skills to manage stress including positive stress. AND/OR Builds executive function skills that allow her to plan, prioritize, and organize her responsibilities at home and school to prevent a mental collision. AND/OR Regulates reward motivation system to be sensitive/calibrate to adaptive situations.	Serve and return opportunity AND/OR Builds self-regulation/coping skills AND/OR Builds executive function skills AND/OR Builds reward motivation skills	Suggestion of serve and return opportunity, self-regulation/coping skills, executive function skills. AND/OR Reward motivation skills (e.g., skill building).	
5	Father with Parkinson's	Red	Prolonged stress can become toxic stress and is damaging to brain architecture if not buffered. AND/OR Losing safe, stable supportive relationships may make sources of stress less tolerable/more toxic , which can be damaging to brain architecture if not buffered.	Stress from witnessing her father suffer/ potential loss/extended care burden. AND/OR Potential loss of safe, stable, supportive relationships.	Use of scenario elements (e.g., father needs constant care, burden on mother).	

APPENDIX 4: DATA EXPLORATION FOR ASSOCIATION BETWEEN WORKSHEET PERFORMANCE AND NUMBER OF RATIONALES

The following analyses were conducted to explore if the number of rationales participants provided was systematically related to their worksheet performance in terms of the proportion of rationales at each point value.

Figure A4.1

Number of rationales against the proportion of zero-point rationales

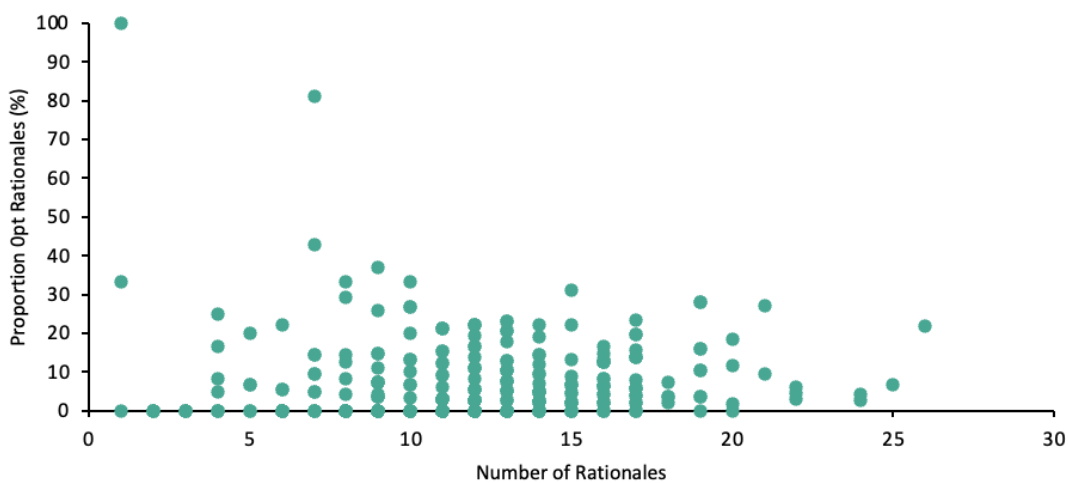


Figure A4.2

Number of rationales against the proportion of one-point rationales

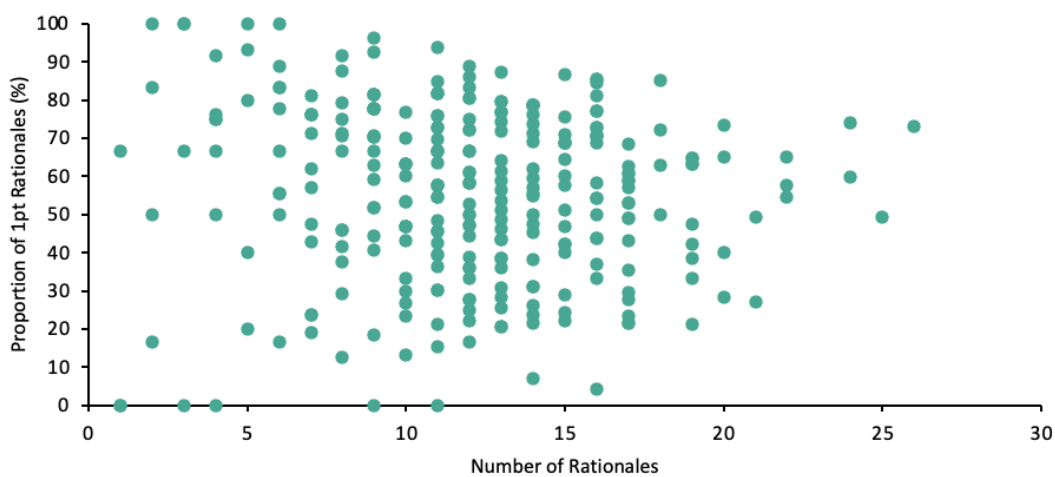


Figure A4.3

Number of rationales against the proportion of two-point rationales

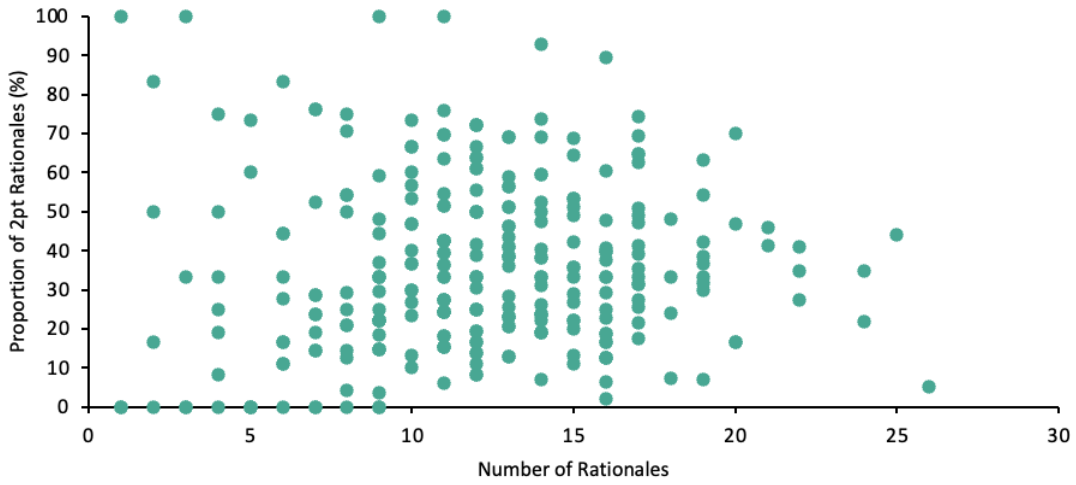


Figure A4.4

Number of rationales against the proportion of three-point rationales

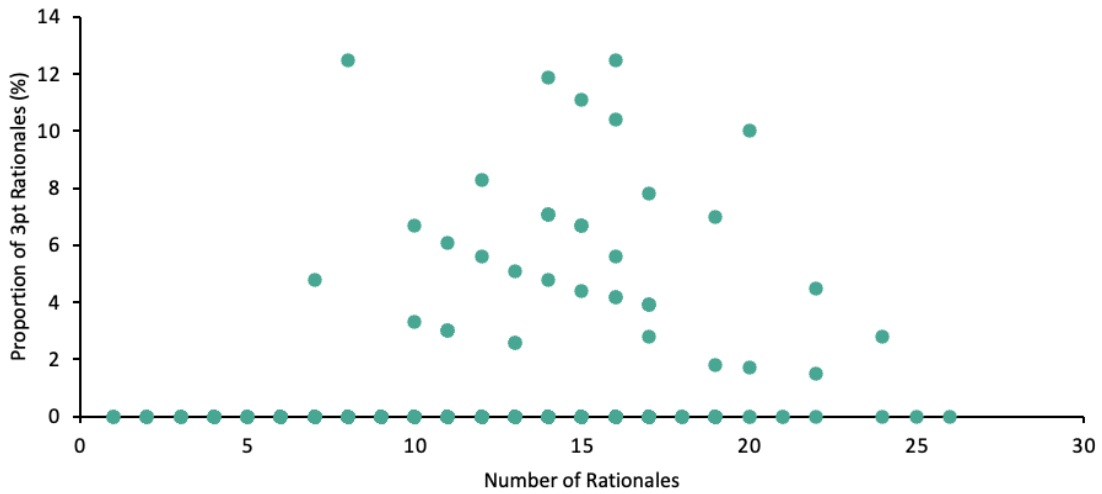


Table A4.1: Pearson correlation coefficients between the number of rationales and the proportion of each point value.

Correlation between # of Rationales and:	<i>N</i>	<i>r</i>	<i>p</i>
Proportion of Zero-Point Rationales	287	-.025	.668
Proportion of One-Point Rationales	287	-.071	.228
Proportion of Two-Point Rationales	287	.065	.270
Proportion of Three-Point Rationales	287	.196	< .001

Note. The correlation with the proportion of three-point rationales was statistically significant.