

RESILIENCE AFTER BRAIN INJURY: EVIDENCE, INNOVATIONS, AND WAYS FORWARD

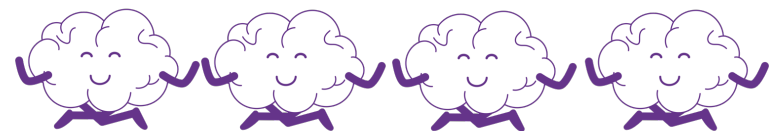
Kyla Pearce, MPH, PhD, RYT, CBIS
Senior Director, Programs & Research, LoveYourBrain Foundation



C.A.L.M.

LEARNING OBJECTIVES

- Resilience vs. recovery framework
- 10 empirical factors of resilience
- Mindfulness-based tools for cultivating resilience
- How to access resilience-based programs for people with TBI & caregivers



TRAUMATIC BRAIN INJURY

- Common, complex, difficult to treat
- Untreated TBI most expensive public health problem globally
- Community integration primary rehab goal, yet
 - Access barriers to holistic, rehab services
 - Emphasis on 'fixing what's wrong'
- Social isolation, symptoms & co-morbidities persist, lower QOL



RESILIENCE *VERSUS* RECOVERY

re sil ience



rə'zilyəns/

noun

1. process of adapting well in the face of adversity, trauma, tragedy, threats, and significant sources of stress

re ·cov ·er ·y

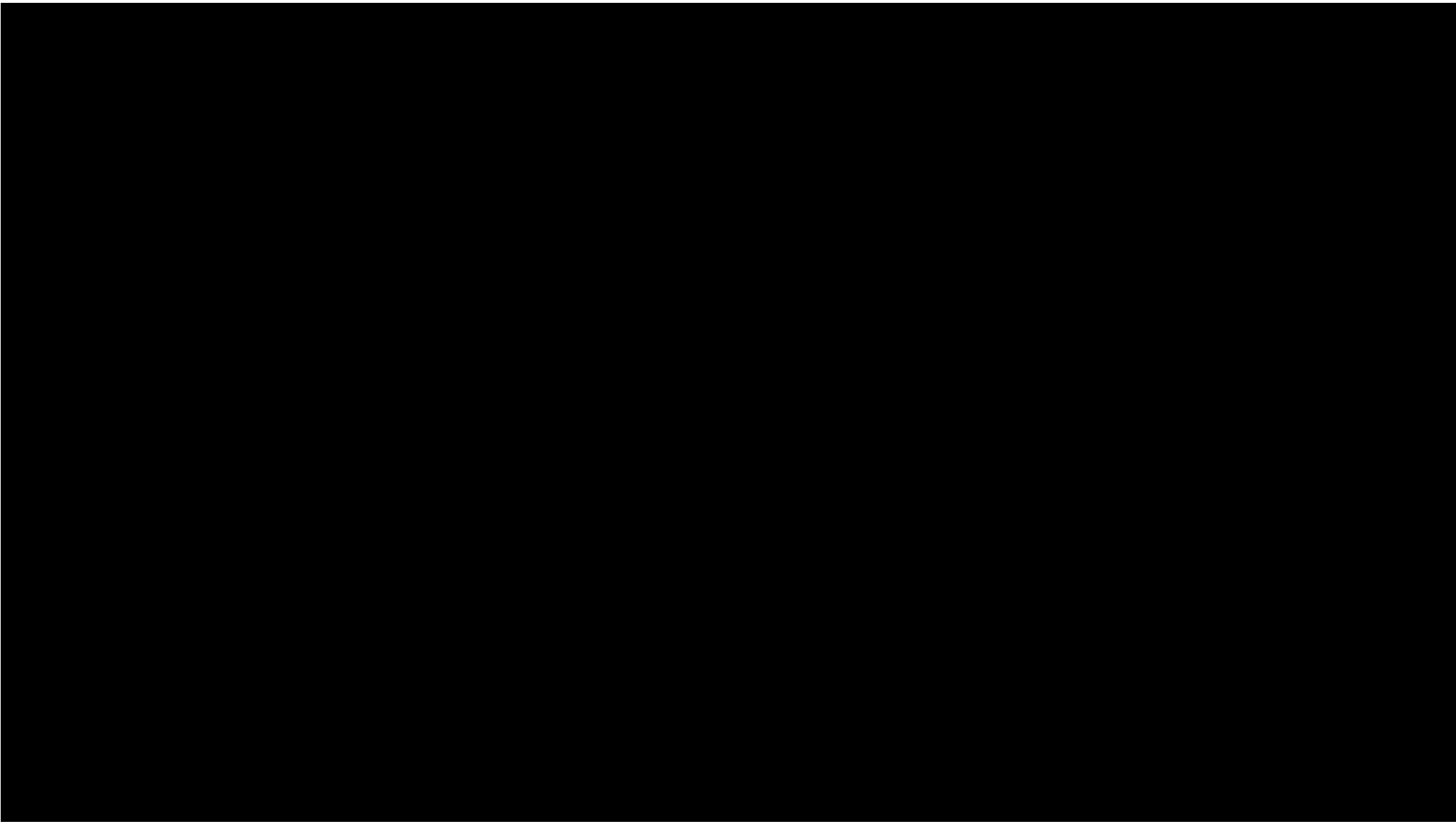


rə'kəv(ə)rē/

noun

1. a return to a normal state of health, mind, or strength
2. process of regaining possession or control of something stolen or lost

Ability to adapt positively to adversity
and find a way *forward*



RESILIENCE

- ✓ **Coping, psychological adjustment, motivation**
- ✓ **Symptoms & functional outcomes**
 - Study of mTBI (n=74), less PPCS, PTSD, fatigue, depression, higher QOL
- ✓ **Participation** in jobs, education, leisure, relationships
 - Cross-sectional study (n = 245 people) with mild-severe TBI, 4.6 years post-injury, found resilience significantly predicted higher participation (along with shorter PTA, more time post-injury, higher education, younger age)
 - Longitudinal study (n=195) resilience significantly associated with participation over first year post-injury
- **Quality of Life** (objective and subjective)
 - Adverse effects of low resilience stronger influence on well-being than do the positive effects of high resilience
- Moderators: social support, nonminority status, lower anxiety and disability level, greater life satisfaction

POST-TRAUMATIC GROWTH

Success in coping or strengthening perceptions of self, others, and meaning after trauma

- Alternative view of trauma → “Building what's strong” vs. “fixing what's wrong”
- Up to 50% of people with ABI in research samples
 - **Self views** – appreciation of personal strengths, greater awareness of new possibilities in life
 - **Relationships** – greater connection and compassion for others who have suffered
 - **Meaning** - changing views about what's important and life's possibilities
- Meta-analysis on PTG after brain injury
 - Subjective beliefs about changes, employment, education, older age, longer time post-injury, less depression
 - Severity of injury very small effect size – most severe reported similar PTG levels
 - Social integration & forming new identities proposed as pivotal

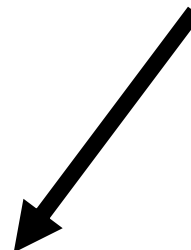
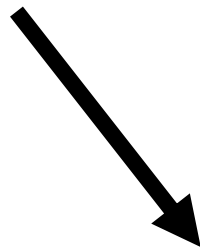
“The type of people who may tend to experience PTG are those who would **actively approach difficulty** rather than avoid it. Someone who is **open to change**, open to the novelty and serendipity of life. People who can **accept** that bad things happen, that they can no longer do certain things, but who **focus on engaging** in the things that they can still do. And people who are **open to new opportunities...** possibilities and choices that may not have presented themselves before the tragedy.”

- Dr. Richard Tedeschi

IMPLICATIONS FOR REHAB SERVICES

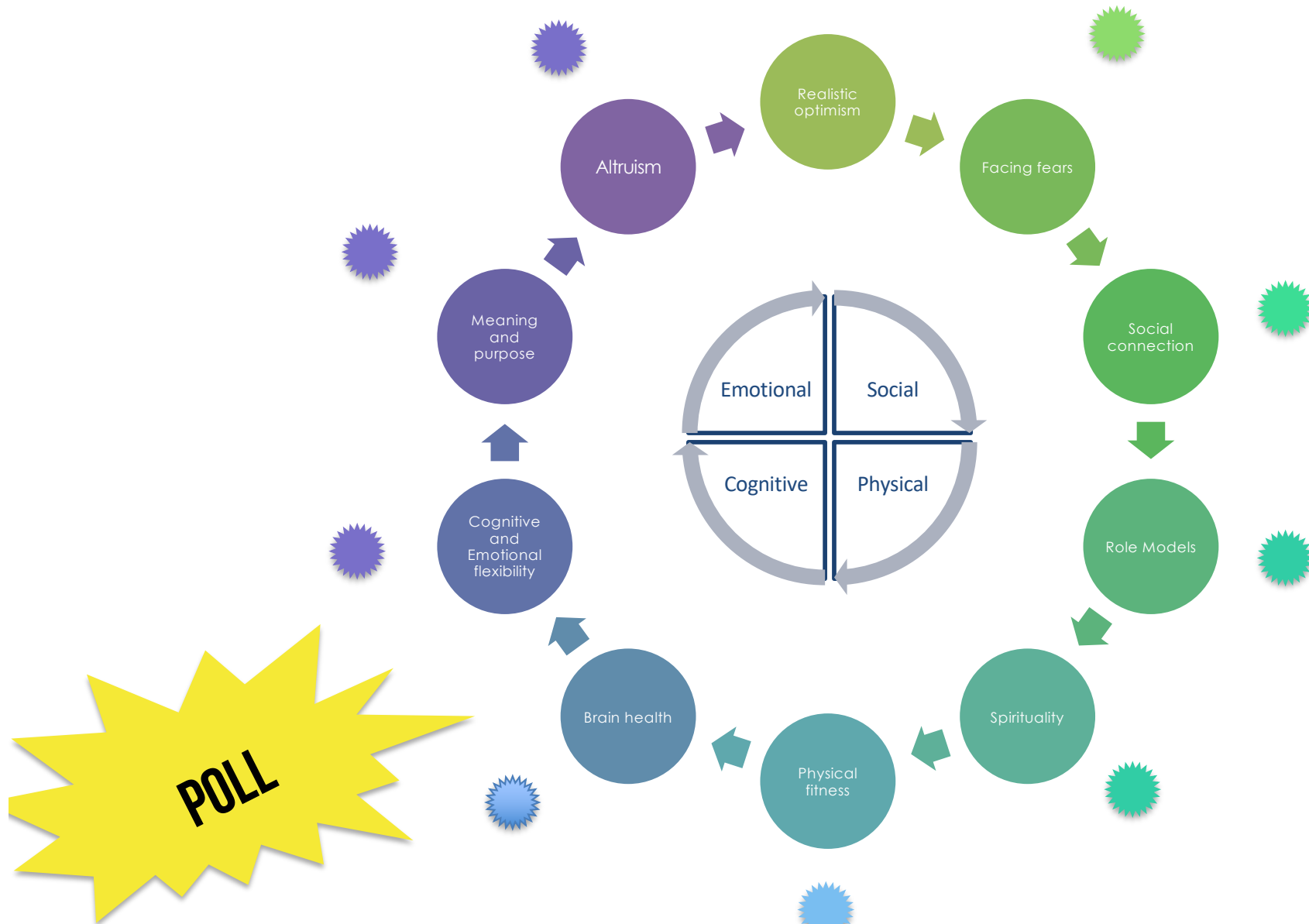
Resilience and PTG
do *not* make everything
all better or stress
disappear

Shown to improve a
range of important health
and QOL outcomes after
brain injury



Integrate evidence-based strategies for
promoting resilience

10 EMPIRICAL FACTORS OF RESILIENCE



RESILIENCE AND ADJUSTMENT INTERVENTION

Manualized, 7-session program, delivered 1:1 by clinicians

Guiding assumptions

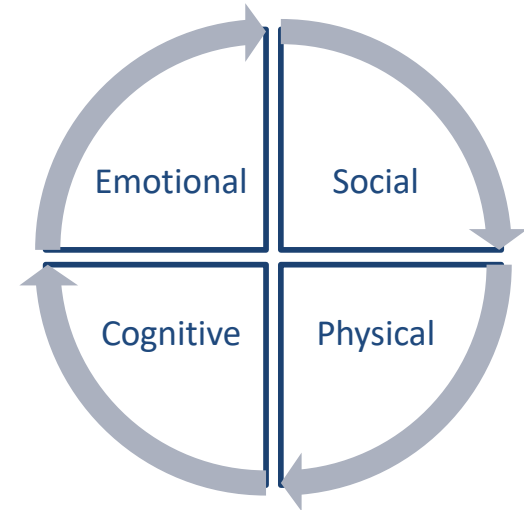
- ❖ People who **learn to adopt traits** key to resilient living will find increasing success in their recovery and growing life satisfaction
- ❖ Achieving emotional wellness after TBI requires **clear understanding** of symptoms, commonly encountered challenges, and recovery process
- ❖ People who are **more aware** of their strengths and limitations are more likely to lead productive and meaningful lives
- ❖ Developing resilience enhancing skills for problem-solving, goal setting, communication, and managing stress and intense emotions enhances abilities to be **productive and maintain quality relationships**
- ❖ People are **more likely to improve when** they **actively engage** in recovery, and able to maintain a **positive outlook**

RESILIENCE AND ADJUSTMENT INTERVENTION

- Randomized trial with 160 TBI either RAI or control group
- 7 one-hr sessions at outpatient clinic over 5-weeks
- 2-3 topics/session on skills-building, psych support, education:
 - Learning about **common changes** after a TBI
 - Discussing how to take an **active role** in TBI recovery
 - **Goal setting** and defining success in a flexible way
 - Learning how to **solve problems** and overcome challenges
 - **Managing stress** and difficult emotions
 - **Communication skills**, building relationships, and talking to others about TBI
 - Having a **positive outlook** on life and overcoming negative thinking
- Assessments before, after, 3 month follow-up
- Control group had very small changes
- ✓ RAI group **significant improvements** in **resilience, emotional health, communication** and **problem-solving skills**
 - Resilience increased by 35%, stress decreased by 33%, sustained at 3 mos

LOVEYOURBRAIN PROGRAMS

- Holistic, community-based, complementary rehabilitation programs for TBI & caregivers
- Designed to improve resilience, QOL, community participation via psychosocial & mindfulness-based components



MINDFULNESS

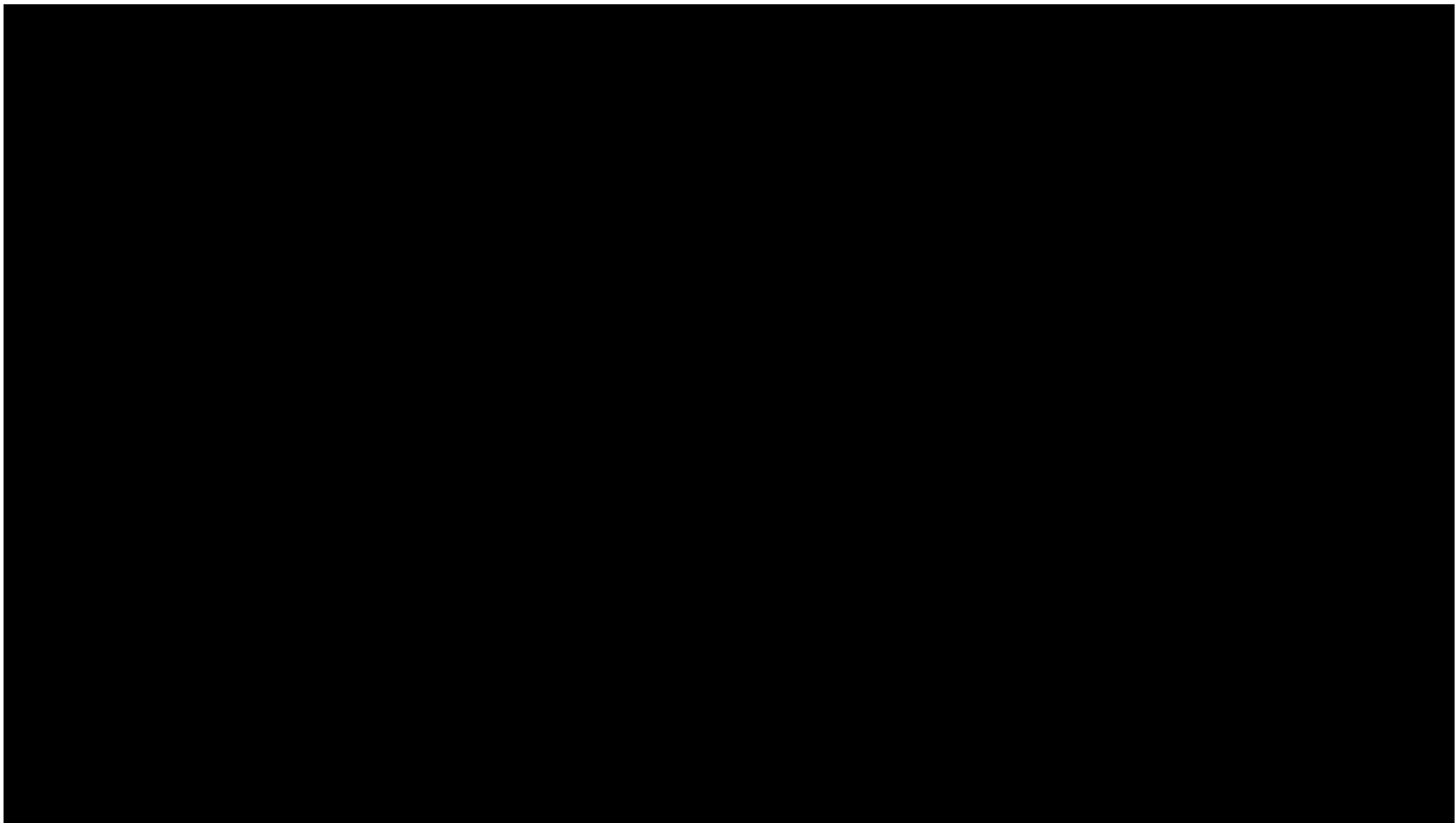
“Paying attention:
on purpose, in the
present, non-
judgmentally”

Dr. Kabat-Zinn

Lack of awareness
major obstacle to
resilience & QOL

- Accurate perceptions of themselves and greater willingness to change → healing and community integration
- Supports people to recognize and appreciate strengths, while being aware of limitations without over-identifying





MINDFULNESS IN MOTION: YOGA

physical movement (asana)

breathing exercises (pranayama)

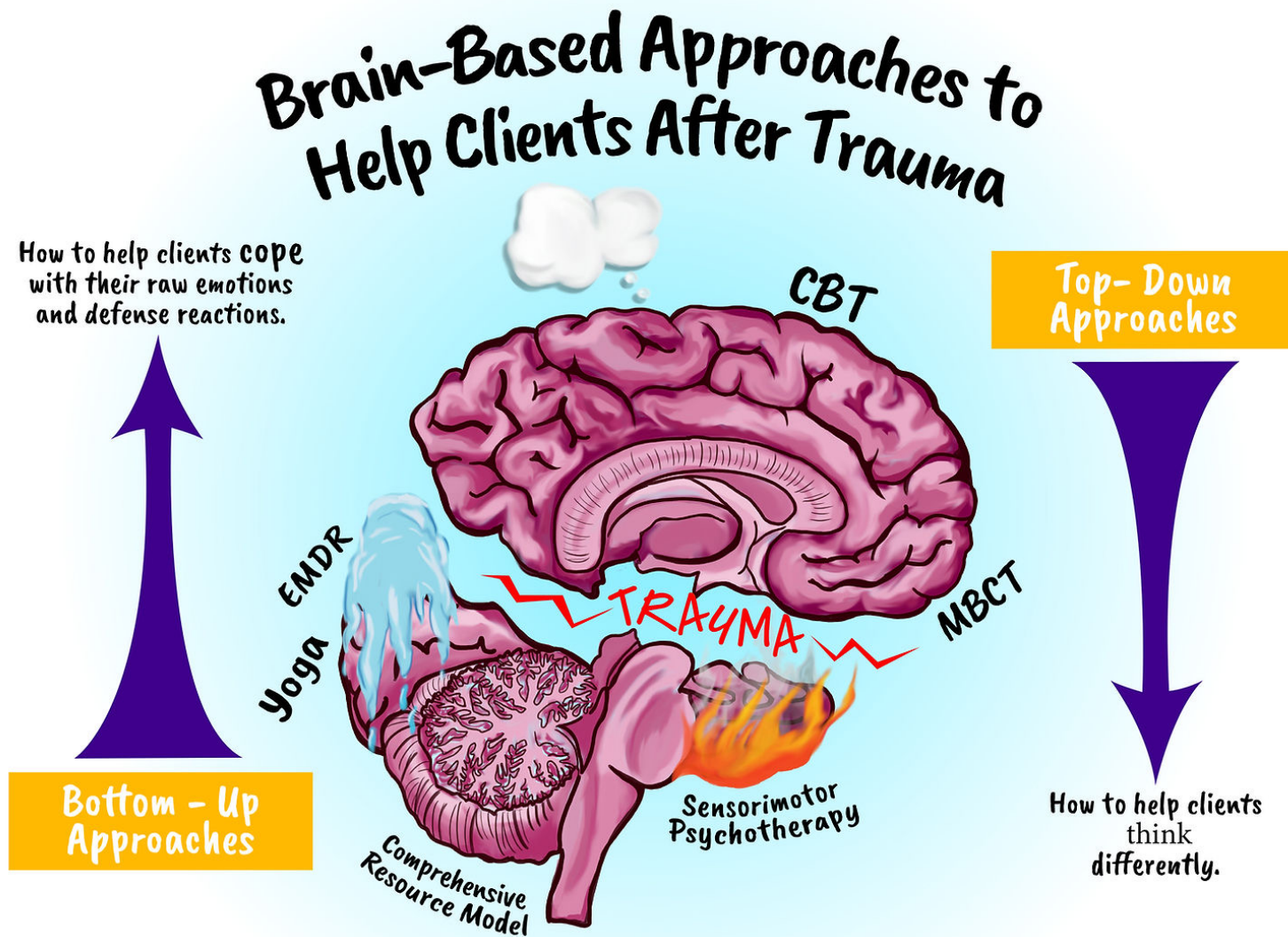
meditation (pratyahara, dharana, dyana)

ethics (yamas, niyamas)

complete wellbeing (samadhi)



TOP DOWN AND BOTTOM UP REGULATION



nicabm
www.nicabm.com



TAKE 5



Empowering people with traumatic brain injury + concussion and caregivers to build **resilience and community connection** through FREE, research-backed programs:



YOGA

6-week yoga and meditation program in studios and hospitals across the US and Canada to support wellbeing



MINDSET

6-week online yoga, mindfulness, and education program to build a resilient mindset



RETREAT

5-day holistic health retreats to explore mindfulness, movement, nutrition, and community



TRAININGS

20-hour online and in-person trainings for yoga teachers and clinicians to become certified in accessible yoga for TBI

30,000+ SERVED ACROSS US, CANADA, AND GLOBE

Curricula Development

2014

Piloted Retreat and Yoga programs

2015-2017

Iterative development using participant & health professional feedback

2017-2018

Manualized curricula in preparation for scaling up

2018-2020

Expansion to new locations

2020

Online Adaptation due to COVID for Mindset program

The feasibility of a with acquired brain injury

Kyla Z. Donnelly¹, Kat

¹The Dartmouth Institute for
Lebanon, NH, USA; ²no affi

ABSTRACT

Objective: This pilot study
quality-of-life of adult
Methods: Thirty-one
Participants completed
tion; individuals in the
Wilcoxon Signed Rank
and sub-scale QOLIBR
Results: No significant
However, there were
sub-scales for the inte
2.15 (SD = 0.34, $p = 0$
0.52, $p = 0.01$), and t
Conclusion: Adults with
programme. Specific i
dance and satisfaction

A qualitative study of psychoeducation for traumatic brain injury

Kyla Z. Donnelly^a, Shari

^aThe Dartmouth Institute for
Professions, Colby-Sawyer Col

ABSTRACT

Purpose: To explore the
designed to facilitate co
Materials and methods:
injury and three caregiv
based yoga intervention
Interviews were analyzed
Results: We identified s
physical health, self-reg
yoga studio environment
in strength, balance, flex
nection, and ability to c
breathing exercises) to c
tionships built during t
their community.
Conclusions: LoveYourB
matic brain injury. It also
efits, which suggest that

► IMPLICATIONS FOR REHABILITATION

- Traumatic brain injury rehabilitation
- Yoga is a holistic intervention at the community level
- Participants in a community-based yoga program showed diverse and meaningful improvements
- Group-based yoga with a community-based rel

A retrospective study of LoveYourBrain Feasibility

Kyla Z. Donnelly^a

^aDepartment of Psychology
USA; ^bThe Dartmouth

ABSTRACT

Purpose: To evaluate the
effectiveness of the
Materials and Methods:
age 15–70, ambulatory
satisfaction, and
and four TBI-QOL
improvement.
Results: 1563 p
provinces. Mean
improvements in
Affect and Well-Being
matic brain injury
Dysregulation, h
impulsivity. Careg
Conclusions: Low
nity-based rehab

► IMPLICATIONS

- People with traumatic brain injury
- Yoga is a holistic intervention at the community level
- Participants in a community-based yoga program showed diverse and meaningful improvements
- Group-based yoga with a community-based rel

Research

Best Practices Yoga for People and Canada Nirali Chauhan, M

1. The Dartmouth Institute
2. LoveYourBrain Feasibility
3. Department of Psychology

Correspondence: kyla

Abstract

Emerging benefits of
suggest that broader
programming is in
methods study sought
and delivering community
An online survey was
teach LoveYourBrain
manualized program
givers. The survey in
text questions assessed
and least helpful ad

> Complement Therapies
Online ahead of print

A crossover study of and effectiveness of community

Kyla Z Donnelly¹,
Martha L Bruce⁴

Affiliations + expand
PMID: 35780542

Abstract

**Background and
Methods:** This study
improve fatigue and
assess the feasibility
psychoeducation in
a rural, community

Methods: This study
among 15 people
English-speaking,
mean differences
Test, NIH Neuro-G
recruitment and re
measures.

Results: Significant
wellbeing (MD 2.7
after LoveYourBrain
SD 1.4) and a major

The feasibility, acceptability based LoveYourBrain and caregivers

Kyla Z. Donnelly^{a,b} , Jennifer

^aThe LoveYourBrain Foundation, Lebanon, NH, USA; ^bChildren's of

ABSTRACT

Purpose: To evaluate the
using a pre-post, retrospective
Materials and methods: A
quality of life among trauma
ment, nutrition, art, and co
injury) or caregiver, 18+ ye
participant. Self-reported qu
post-retreat, analyzed separat
Quality of Life After Brain In
Positive Affect/Wellbeing, a
sample characteristics and
Content analysis explored p
Results: 68 People—53 with
Significant improvements w
0.50–3.78), Cognition (2.81
0.14–5.54) among TBI surv
revealed community connec
Conclusions: The LoveYou
rehabilitation to improve QOL

► IMPLICATIONS FOR REHABILITATION

- Ongoing, holistic rehabilitation for brain injury (TBI).
- Residential retreats are a valuable intervention for people with TBI.
- LoveYourBrain Retreats are a valuable intervention for people with TBI.
- The integration of community-based support may support adjustment

Introduction

Traumatic brain injury (TBI) is a
both short- and long-term con
and society. It is estimated th
living with a TBI-related dis
Cognitive and behavioral impa

LoveYourBrain Mindset: Feasibility and Effectiveness of an Online Psychoeducation Intervention for Injury

Christine E. Callahan , Ling Beisecker, Shilo Zeller & Kyla Z. Donnelly 

Received 25 Apr 2022, Accepted 09 Jan 2023, Published online: 24 Jan 2023

 Download citation  <https://doi.org/10.1080/026999052.2023.2168062> 

 Full Article

 Figures & data

 References

 Citations

ABSTRACT

Objective

Despite the benefits of yoga, mindfulness, and psychoeducation programming exists. This study investigated the feasibility, acceptability, and effectiveness of the LoveYourBrain Mindset online program for people with TBI.

Research Design

Pre-post, retrospective intervention.

Methods

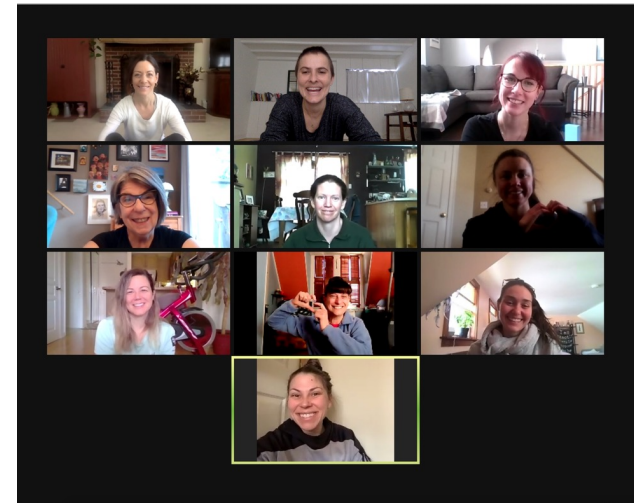
LoveYourBrain Mindset is a six-week online yoga, mindfulness, interactive Zoom classes and prerecorded mindfulness tools. Topics (e.g., yoga, mindfulness, and group discussion, 75-minute group discussion and gentle yoga) are offered in a self-paced format. Participants were eligible if they experienced TBI, were a caregiver, or clinician; ≥ 18 years old; and group discussion. We analyzed attendance, program ratings, and pre/post-intervention differences in QOL, resilience, emotional well-being, and positive affect/well-being.



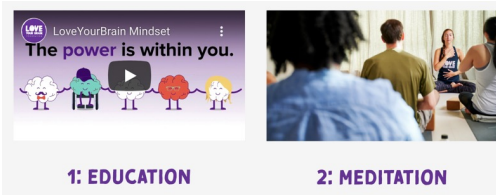
Research-backed, FREE, six-week online yoga, mindfulness, and education program



YOGA CLASS



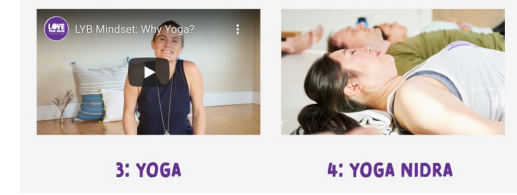
GROUP DISCUSSION



1: EDUCATION

2: MEDITATION

MINDFULNESS TOOLS

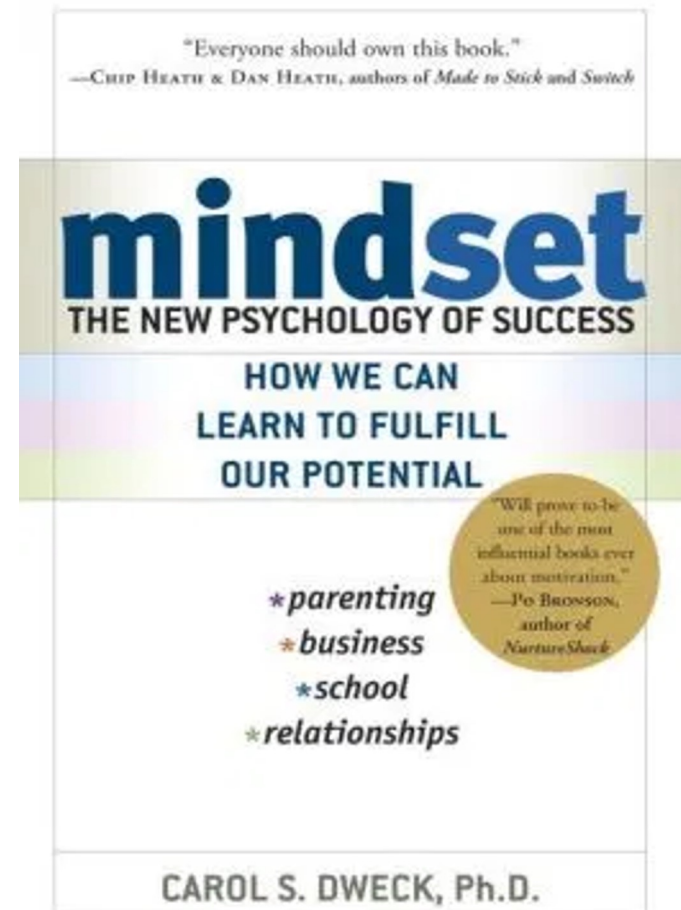


3: YOGA

4: YOGA NIDRA

MINDSET: YOUR SUPERPOWER

- Our mindset is a belief system about our own abilities and potential
- Learn about and adopt a **growth** versus **fixed** mindset through a group process



FIXED MINDSET

“In a fixed mindset, people believe their basic qualities, like their intelligence or talent, are simply **fixed traits**. They spend their time documenting their intelligence or talent instead of developing them. They also believe that talent alone creates success—without effort.”

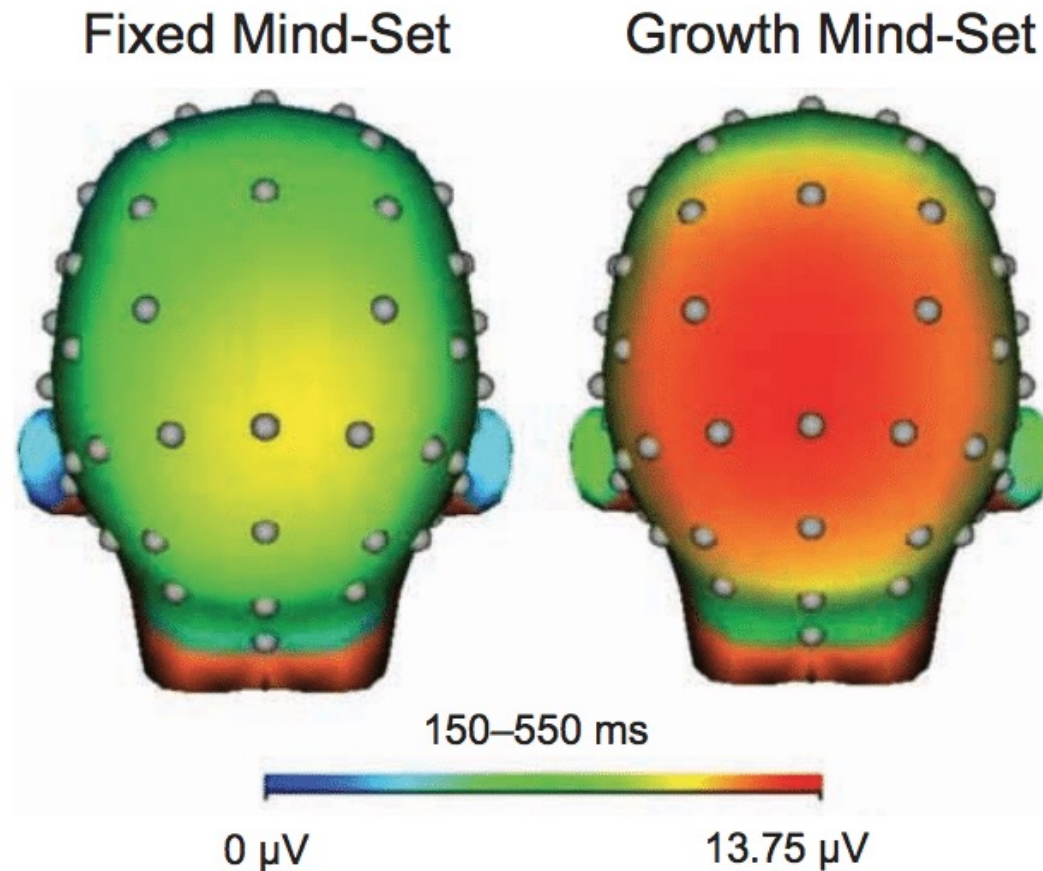
- Carol Dweck

GROWTH MINDSET

“A belief that your **basic qualities are things you can cultivate through your efforts**. Although people may differ in every which way — in their initial talents and aptitudes, interests, or temperaments — everyone can change and grow through application and experience.”

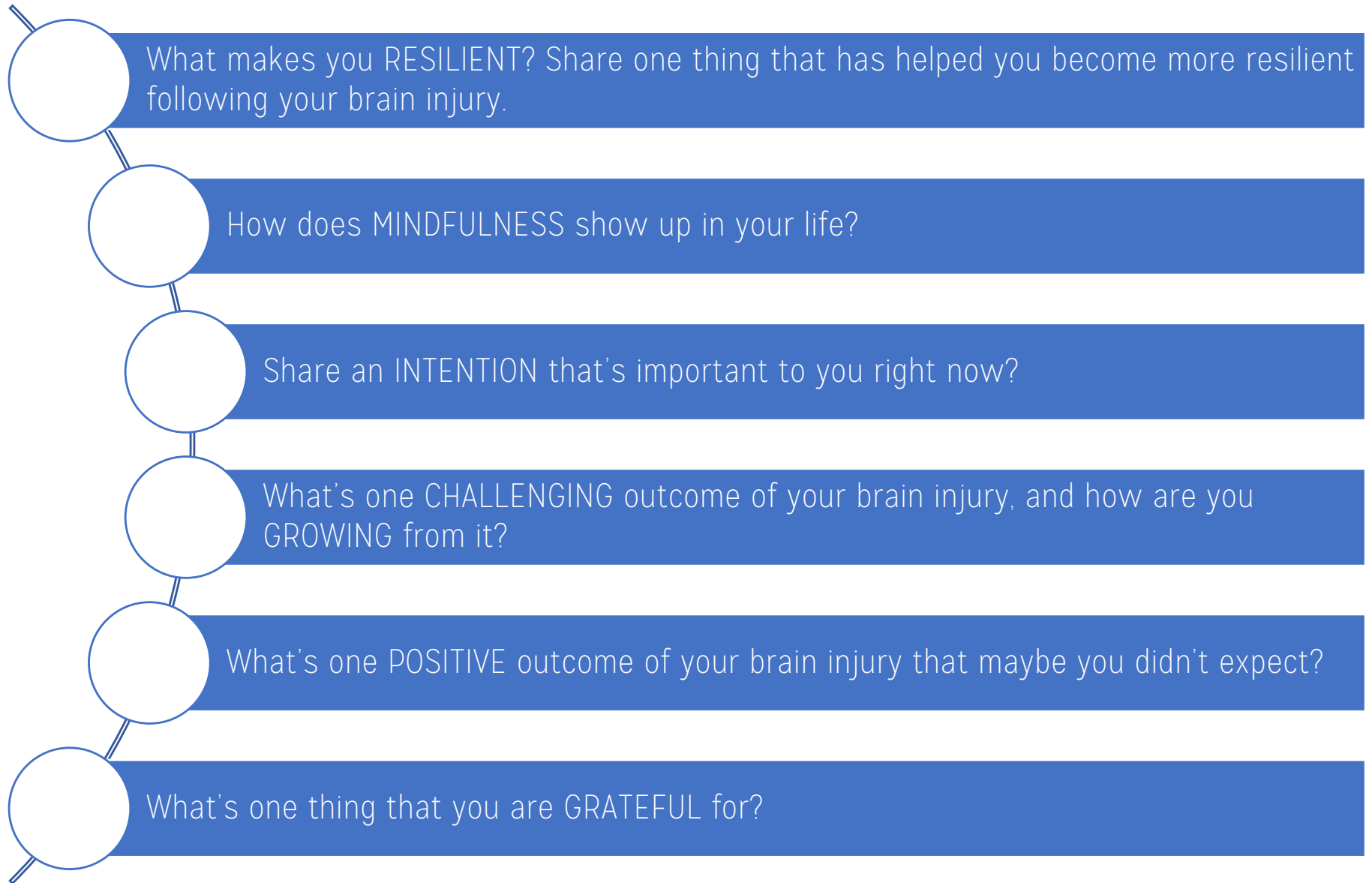
- Carol Dweck

NEUROSCIENCE



Mangels, J. A., Butterfield, B., Lamb, J., Good, C. D., & Dweck, C. S. (2006). Why do beliefs about intelligence influence learning success? A social cognitive neuroscience model. *Social Cognitive and Affective Neuroscience (SCAN)*.





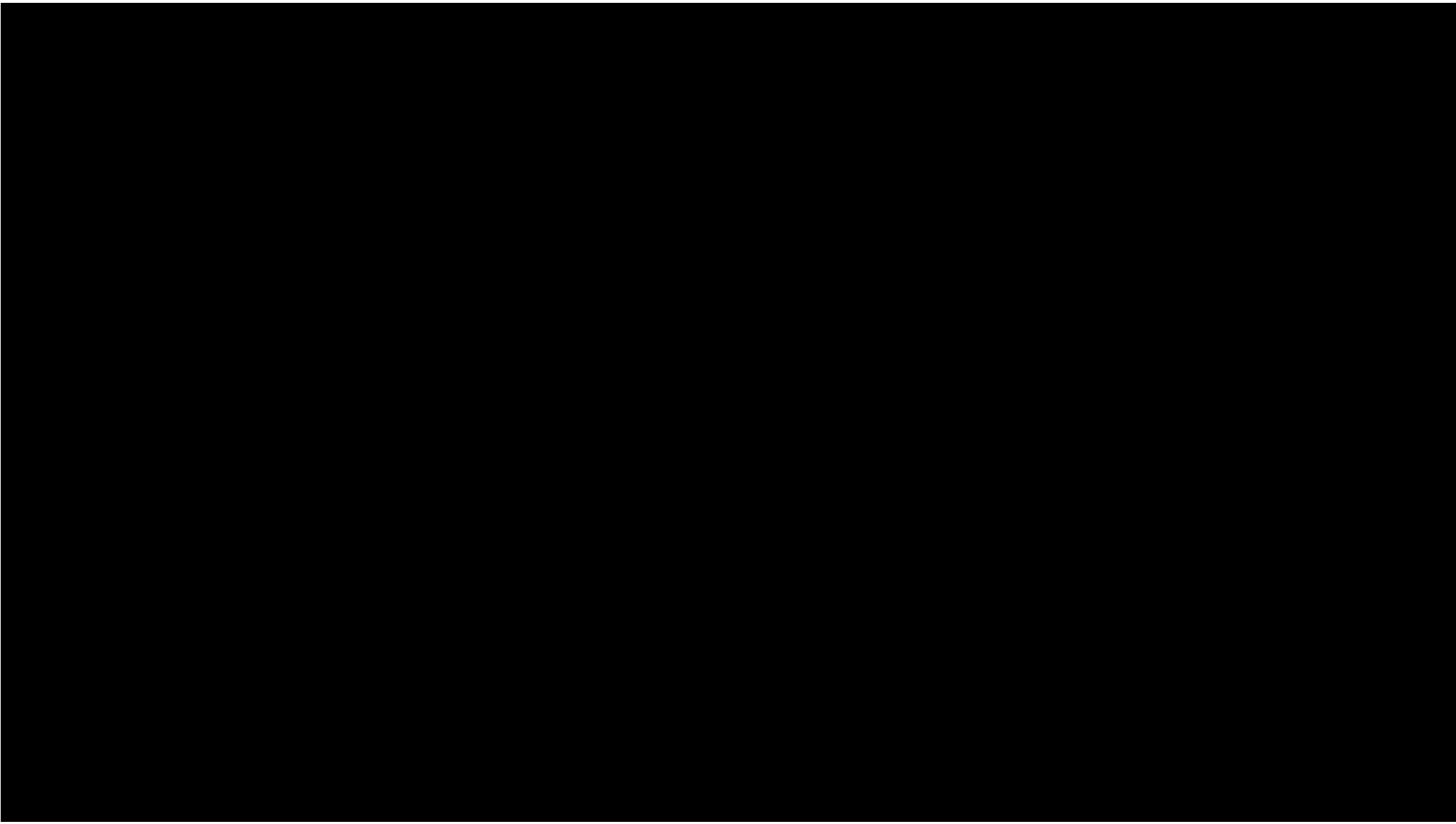
WEEK 4: POWER OF REALISTIC OPTIMISM



Realistic optimism: ability to acknowledge obstacles without getting bogged down, and see opportunities to work towards what's possible

Tool for handling *challenges*

- Hope and confidence that you can make good things happen, even in rough conditions, through hard work, persistence, and choosing the right strategies
- Strengths-based approach: “what am I learning from this?”
- Add ‘yet’ to statements about one’s current challenges, e.g., “I can’t drive...” → “I can’t drive... yet”.



WEEK 5: POWER OF POSITIVE THINKING



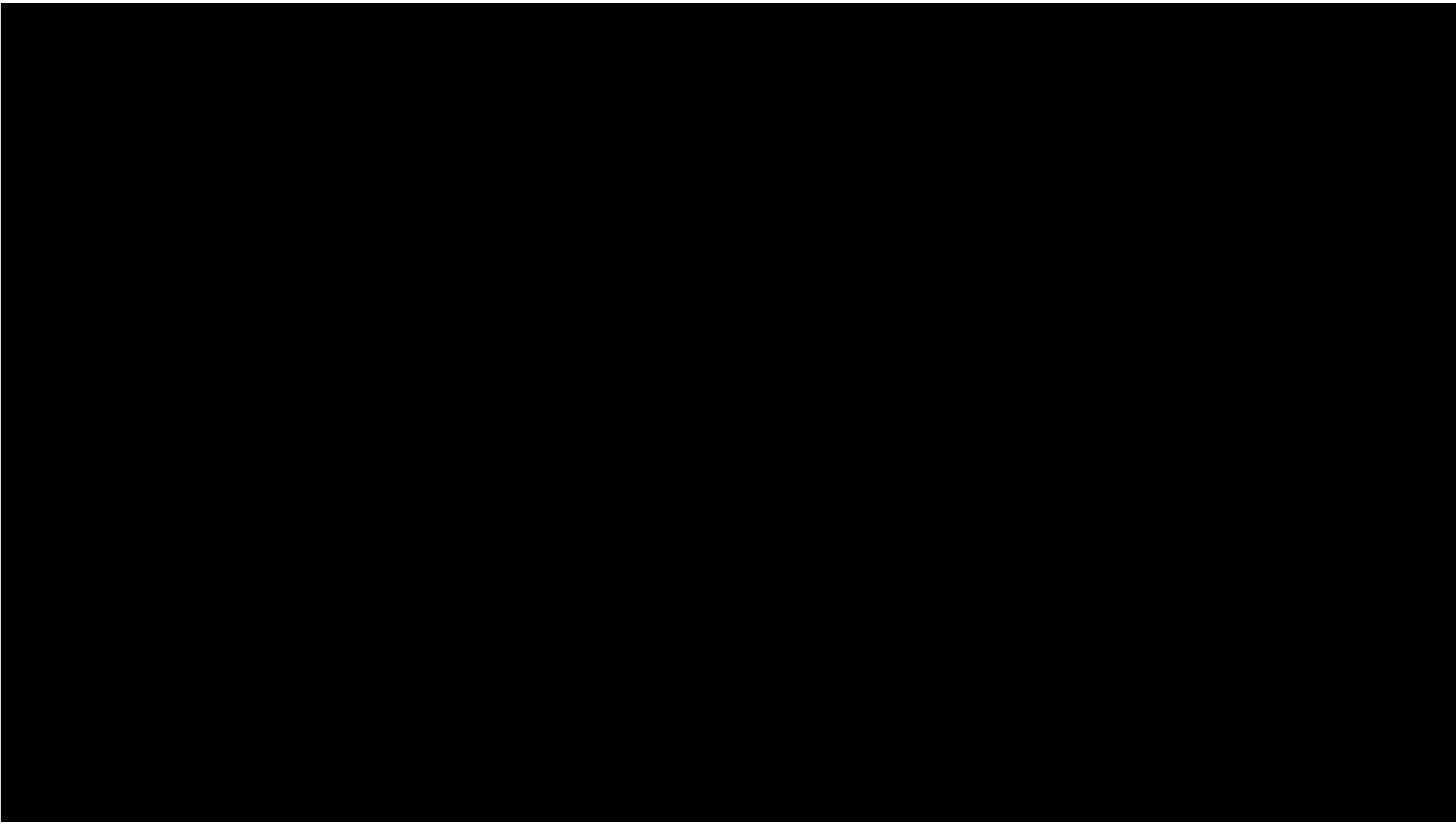
Tool for addressing the negativity bias → brain wired to pay more attention to negative rather than positive information, heightened after TBI

Important to address Automatic Negative Thoughts (ANTS)

Mind Reading | Guilty Thinking | Fortune Telling | Comparison | Blaming

Few important points:

- Not trying to get rid of ANTS or deny problems → acknowledge and use positive self-talk to work with anxiety, depression, stress
- Positive self-talk → opportunity for self-compassion or making things *less negative*



FIRST-EVER ONLINE YOGA FOR TBI STUDY

We wanted to know...

Is it helpful?

Does LYB Mindset benefit health outcomes after TBI?

It is good enough?

Are people satisfied with the LYB Mindset content and design?

Does it work for TBI?

Can people with TBI & caregivers successfully participate in LYB Mindset?

How the study went...

Design: Mixed-methods, pre-post retrospective study

Eligibility: TBI, caregiver, 15+ years, capable of gentle exercise and group discussion

Data collection: self-reported demographics & 5 clinical outcomes

Analysis: Multiple linear regression, content analysis



IMPROVED CLINICAL OUTCOMES



- 1,093 people (71.0%) participated >1 class in 127 programs in 1.5 yr period
- Mean satisfaction was 9.1 out of 10 (SD 1.28)
- 411 people with TBI experienced **significant improvements** in:
 - ✓ Quality of Life MD = 0.59, 95% CI=0.51, 0.67, $p<0.001$
 - ✓ Resilience MD = 0.70, 95% CI=0.62, 0.78, $p<0.001$
 - ✓ Cognition MD = 0.74, 95% CI=0.68, 0.80, $p<0.001$
 - ✓ Positive Affect MD = 0.77, 95% CI=0.70, 0.85, $p<0.001$
 - ✓ Emotional/Behav Dysregulation MD = 0.58, 95% CI=0.52, 0.65, $p<0.001$

“The hardest part for me was losing my professional ‘mind’ after my accident. I lost everything I depended on in life to feel useful, confident, and like a functioning adult. I was **suddenly dependent, in an emotional firestorm, and physically challenged, a trifecta of crises. This program has brought me inner healing physically, sanity, and emotional shelter.** I cannot say enough how much this program saved my life, literally. I am so very grateful to have been able to participate these six weeks. I will continue everyday to practice the 4 steps and be thankful for what I have achieved in this program.”

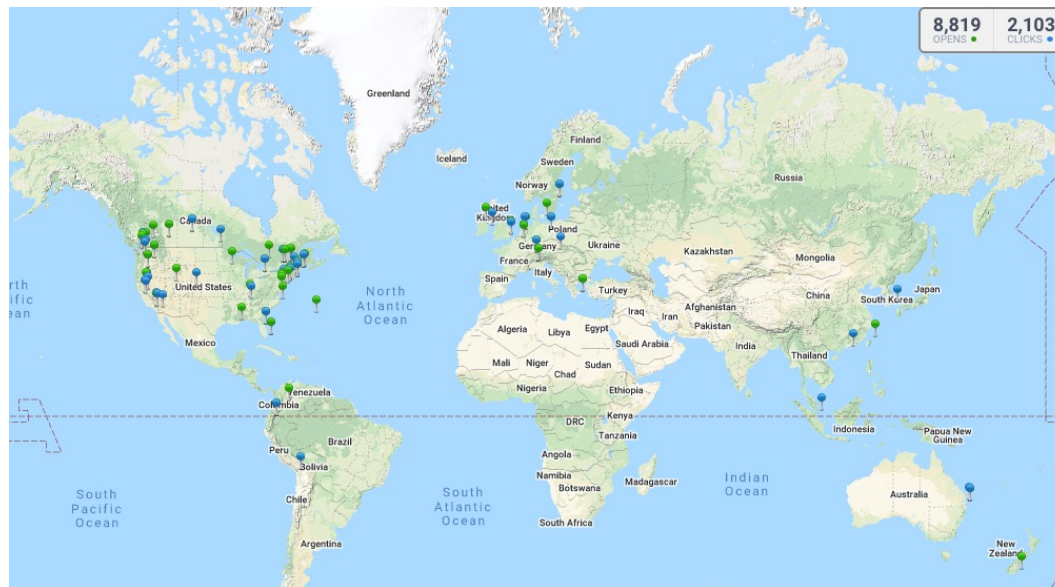
EXPANDING ACCESS TO RESILIENCE

5,600+ people in Mindset programs

65 Facilitators/co-Facilitators - 46% with TBI or caregiver

Affinity Groups – Caregiver, BIPOC, Veterans, Chair, Young Adult

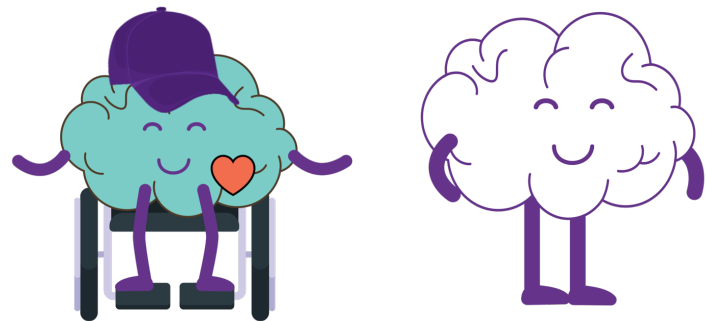
High quality - 9.0 out of 10 rating



50 states in US
11 Canadian prov/terr
22 other countries

RESILIENCE RESOURCES

- Resilience and Adjustment Intervention
- Brainline.org – articles & videos
 - Positive Ways to Reinvent Yourself After a TBI
 - Tapping into Skills of Resilience After Brain Injury
- LoveYourBrain programs





LOVEYOURBRAIN RETREATS

5-day, manualized, holistic health residential retreats

- Somatic movement
- Mindfulness
- Brain Health Nutrition
- Community Building
- Art therapy



Offered 5x per year in nature-based retreat centers in Colorado and Maine

CERTIFICATION-LEVEL TRAININGS

2,500+ yoga teachers, clinicians, advocates
trained to offer resilience-based mindfulness and
yoga programs for TBI

20+ hour live online lecture,
experiential learning, practice
teaching

- TBI & neuroplasticity, neuroscience
- Best practices for TBI-specific yoga, breathing exercises, meditation
- Psychoeducation material & group facilitation techniques



TRAININGS TO EXPAND YOUR SKILLS!

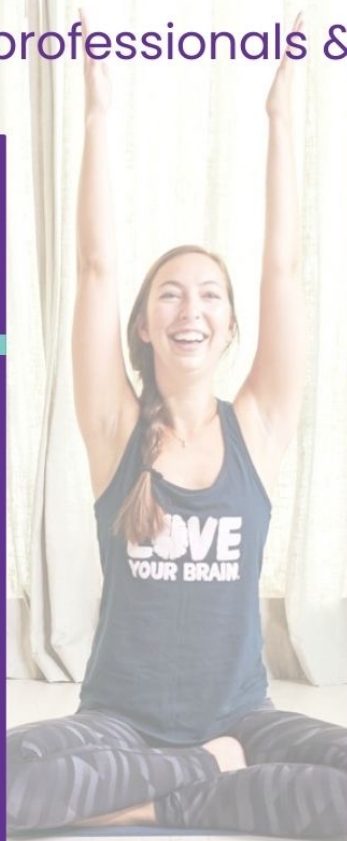
For yoga teachers, health professionals & the brain injury community

Level 1 & 2 – Yoga & Facilitation Trainings

Trauma-informed yoga, meditation, breathwork, group facilitation for TBI

**March & June 2023
APPLY!**

www.loveyourbrain.com/train-with-us



LYB Yoga for Health Professionals

Accessible chair/mat yoga, yoga nidra for sleep, neuroscience & research

**Aug 2023
APPLY!**

www.loveyourbrain.com/train-with-us

THANK YOU & QUESTIONS!

Together, we believe we can promote resilience
and wellbeing after brain injury!



LET'S COLLABORATE

kyla@loveyourbrain.com

loveyourbrain.com

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