



Beyond Stress: How Emotions Shape Persistent Gastrointestinal Symptoms

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Disclosures

Dany Lamothe, MD, MA
has no relevant financial relationships to disclose

Some Common Phrases I Hear ...

- “I’ve been told it’s stress”
- “I am already doing talk therapy, but my GI symptoms persist”
- “I lost so much because of my GI symptoms; I am so (frustrated, at a loss, etc.)”
- “No one knows what is causing my symptoms”

Outline

1. Brief historical remarks
2. Emotions and health
3. Emotions and the gastrointestinal tract
4. Clinical implications
5. Conclusion/Questions

Brief History

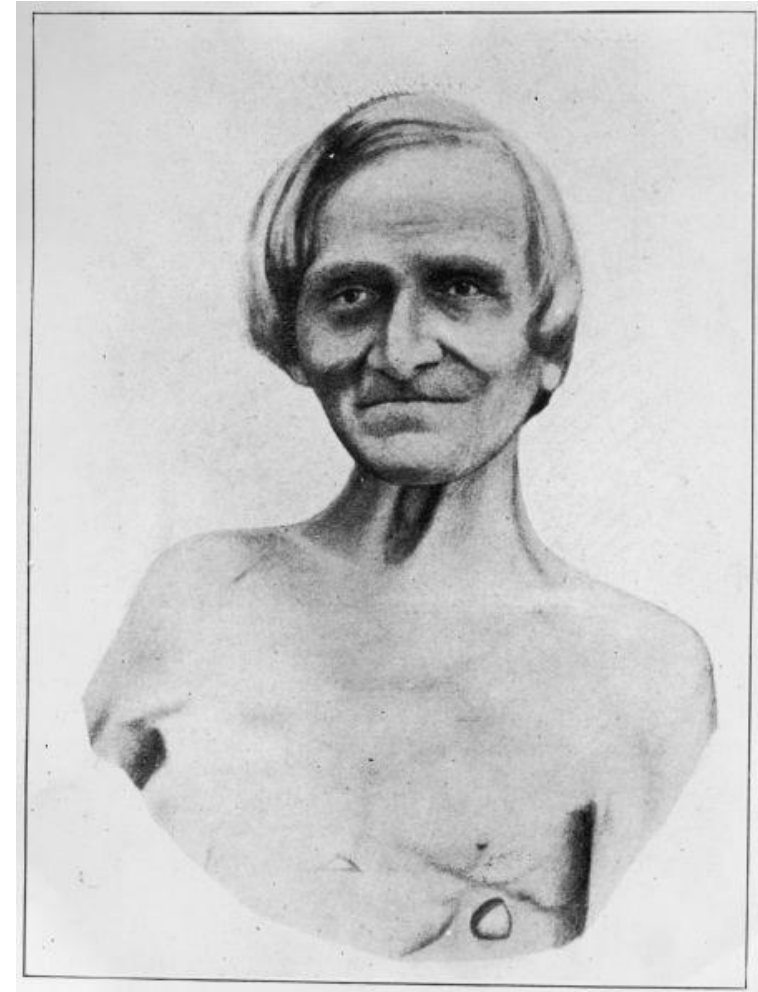
The Biomedical Model of Physical Symptoms



- Descartes (1596-1650) is associated with the concept of mind-body dualism
 - Mind and body are treated as fundamentally distinct things
- Proposed an early version of the nociceptive model of pain
 - Pain = threat of or actual tissue damage

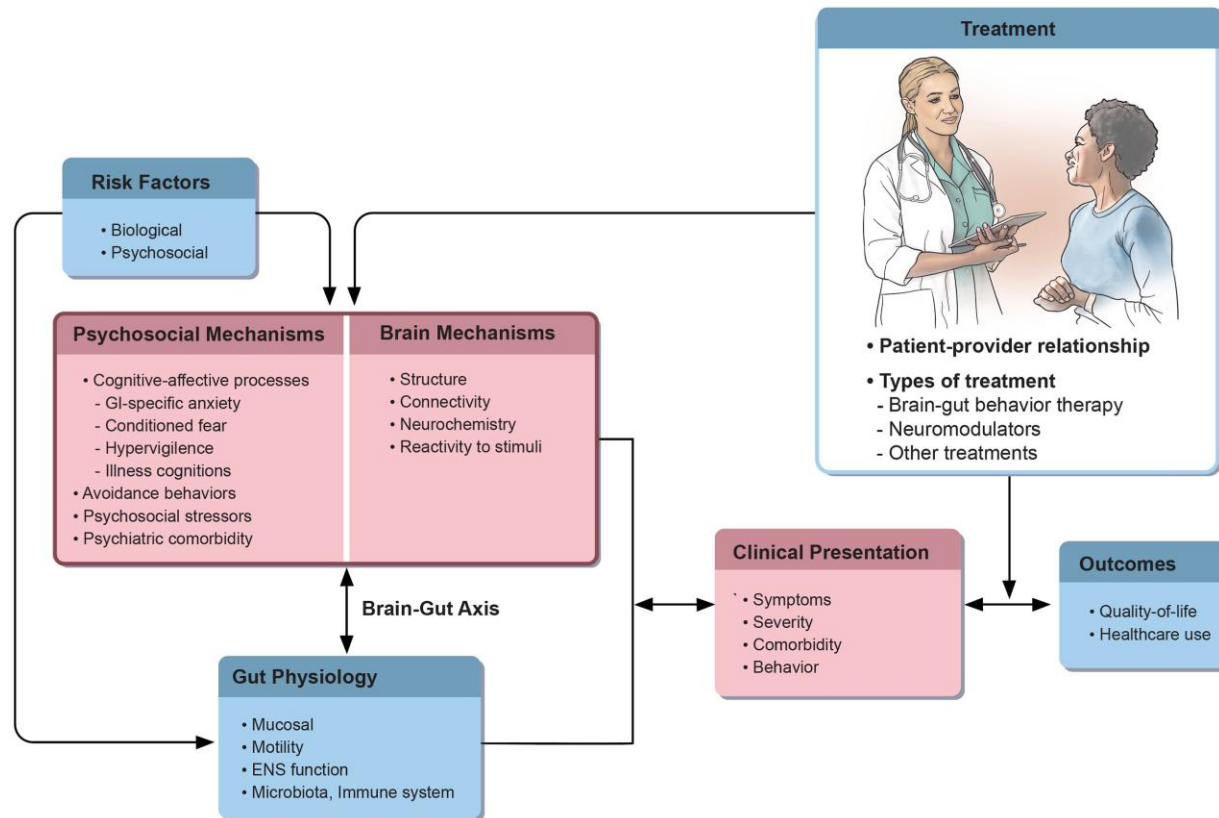
Early Evidence of Gut-Brain Interaction

- Dr. William Beaumont studied Alexis St. Martin and observed the impact of emotions on the stomach (Beaumont, 1833; Mai, 1988)
- Observation of dogs with gastric fistulae showed that the taste (Blondlot, 1843) and the sight of food (Bidder, 1852) impacted gastric secretion



Alexis St. Martin with a traumatic gastric fistula (image from Myer, 1912)

The Biopsychosocial Model of DGBI ¹



1. Adapted from Elsenbruch (2026)

Emotions and Health

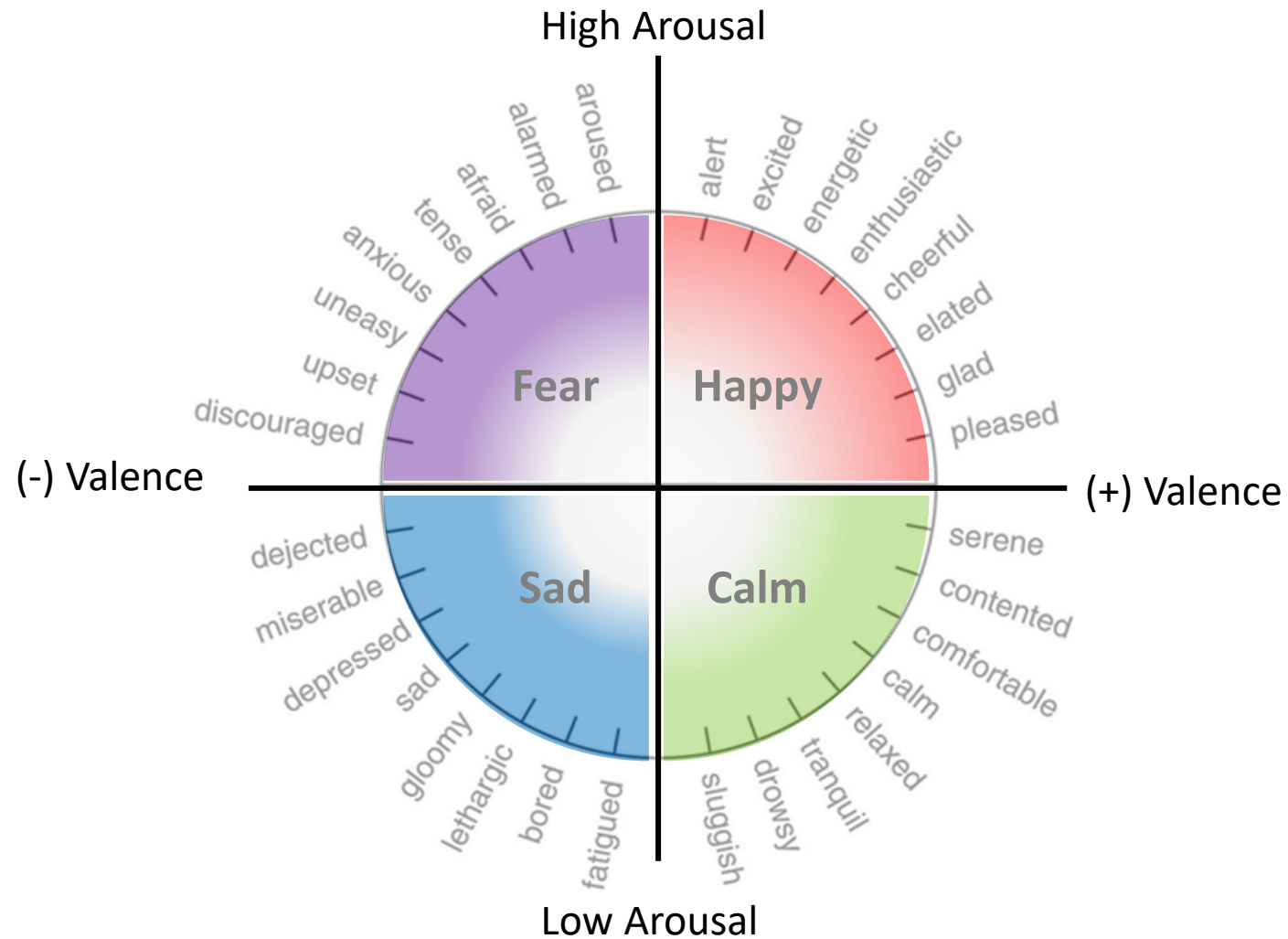
What are Emotions?

- Standard view of emotions includes at least **three components** (Gross, 2011)
 - **Subjective state:** what it feels like
 - **Expressive behavior:** what you do or show
 - **Physiological state:** what happens in your body
- Emotions are events **activating biology and behavior** to meet challenges and seize opportunities (Levenson, 2019; Nummenmaa, 2022)

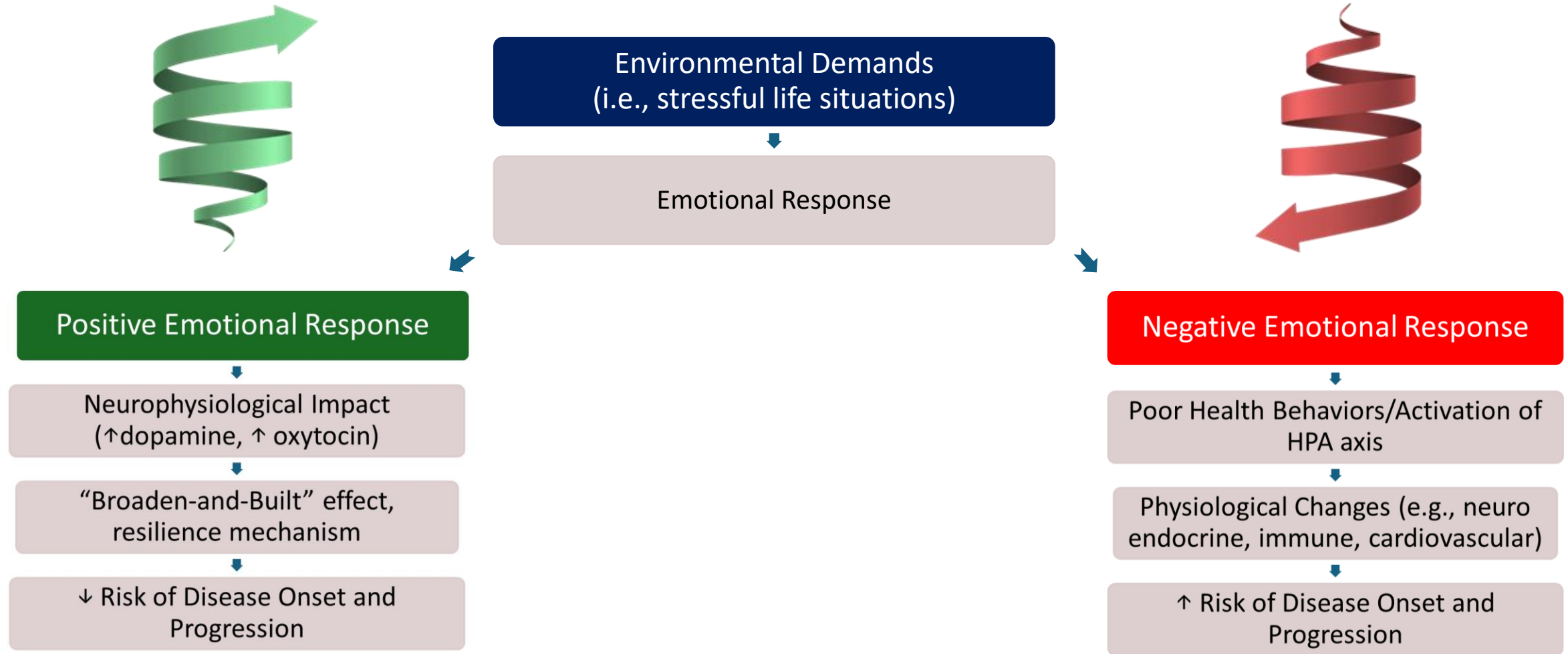
Different Emotions Prepare the Body Differently

Emotion	Challenge	Body/Action Tendency
Fear	Threat	Protect, escape, monitor
Disgust	Contamination/rejection	Expel, avoid, distance
Anger	Obstacle/violation	Mobilize, confront
Sadness	Loss	Slow down, withdraw
Shame	Exposure/judgment	Hide, avoid
Calm	Restoration	Digest, connect, explore

The Circumplex Model of Emotions



The Link between Emotion & Health: Differential Model¹



1. Adapted from Garland (2010); Cohen (2016); Alexander (2021); Schwartz (2021)

Emotions and the GI Tract

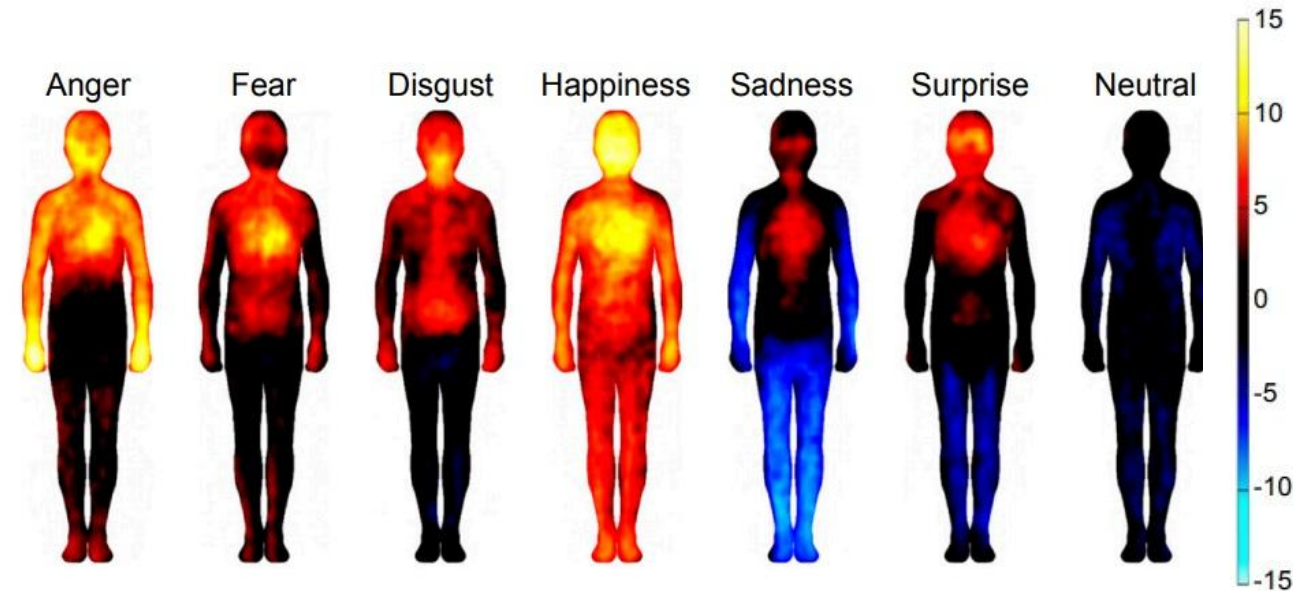
Common Expressions That Link Emotion and the Gut

Expression	What it communicates
Butterflies in my stomach	A fluttery, uneasy sensation caused by nervousness or anticipation.
Sick to my stomach	A feeling of intense disgust, anger, or emotional distress.
My stomach is in knots	A sensation of tension caused by anxiety, nervousness, or emotional upset.
Can't stomach it	Difficulty accepting, tolerating, or enduring something unpleasant.
A punch in the gut	A sudden emotional shock that causes distress or devastation.

Self-Reports of GI Symptoms and Emotions

- Studies on reported bodily maps (Nummenmaa, 2014)
 - n = 701; healthy individuals from Finland, Sweden, and Taiwan
 - Emotional elicitation: emotional words, stories, movies, or facial expressions
 - Results: discrete, partially overlapping maps of bodily sensations that are similar across cultures

Bodily Topography of Self-Reported Basic Emotions ¹



1. Adapted from Nummenmaa (2014)

Emotions Can Affect the GI Tract From Stomach to Rectum

GI Region	Main Finding
Stomach	• Disgust and fear ↑ gastric acidification in HC (Porciello et al., 2024) • Emotionally charged films ↑ increase peak EGG amplitudes (Vianna & Tranel, 2006) • Sympathetic arousal ↑ gastric tachyarrhythmia and ↓ reduces normogastria (Muth et al., 1999) • Negative affect ↑ increases EGG amplitude in Crohn's patients (Vianna et al., 2006) • Anger ↓ antral motor activity in IBS patients but ↑ it in controls (Welgan et al., 2000).
Small Intestine	• Acute psychological stress ↓ duodenojejunal motility (Kellow et al., 1992).
Colon	• Pain-induced stress produces sigmoid colonic spasm and ↑ secretion (Almy & Tulin, 1949) • Anger increases colonic motility and spike activity, especially in IBS (Welgan et al., 1988) • Spontaneous panic attack during colon manometry ↑ colonic contraction (case report, Hyman, 2005)
Rectum	• Anger, sadness, and anxiety alter rectal tone and predict ERP brain responses (Blomhoff et al., 2000).

Experimental Evidence of Emotion on GI Function

Study (Author, Year)	Population (n=)	Emotional Induction Method	GI Outcome Measured	Key Findings
Porciello et al., 2024	31 (healthy males)	Emotion-eliciting videos (disgust, fear, happiness)	SmartPill: pH, pressure, temp; surface EGG	Stomach pH varied by emotion; acidification tracked negative valence

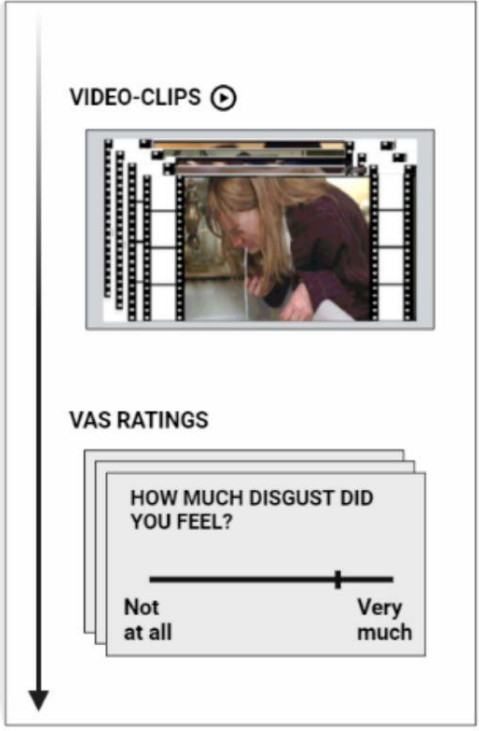
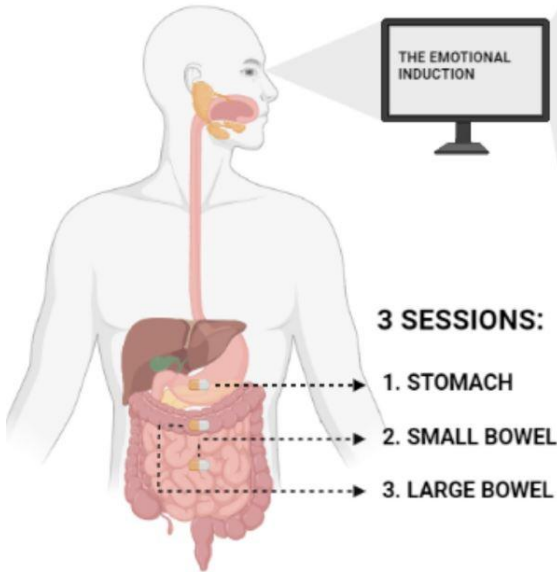
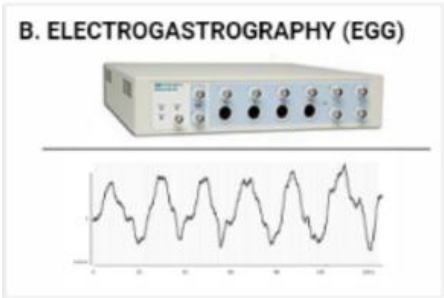
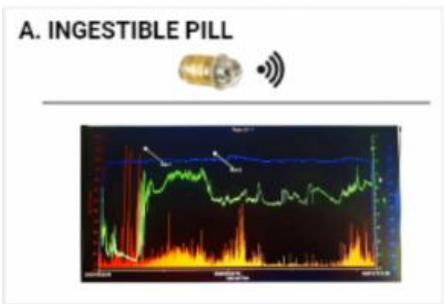
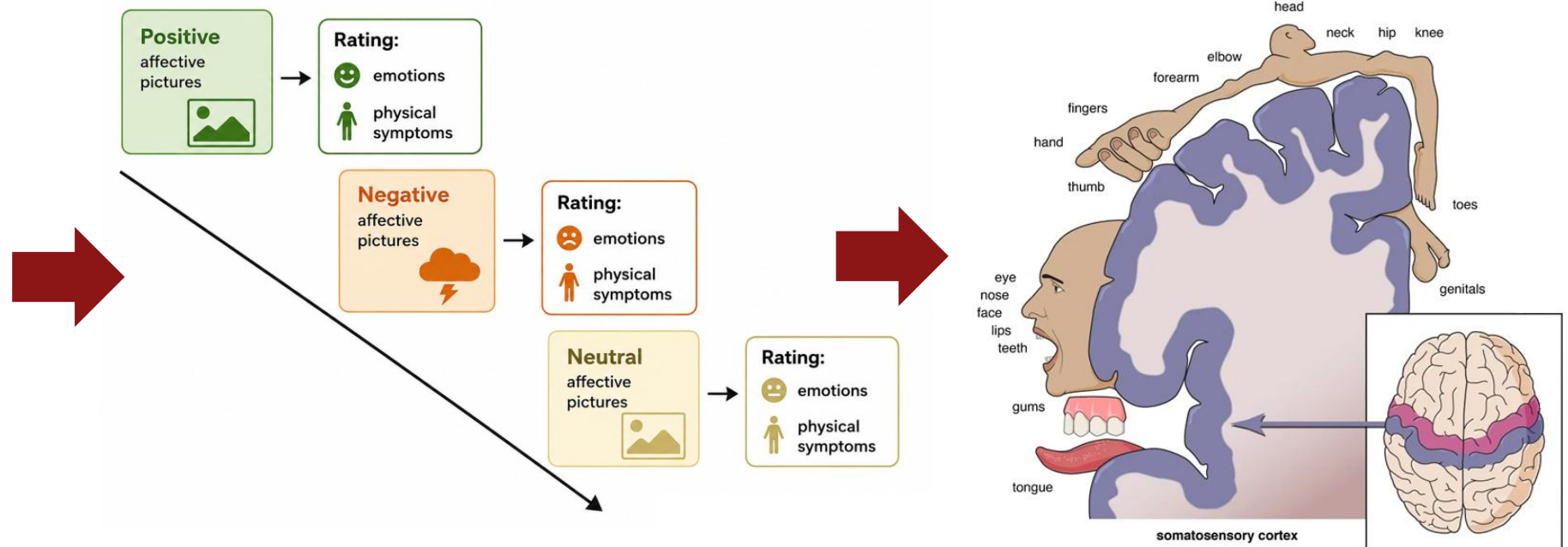


Image from Porciello et al. (2024)

Experimental Evidence of Emotion on Symptoms

Study (Author, Year)	Population (n=)	Emotional Induction Method	Outcome Measured	Key Findings
Bogaerts et al., 2023	30 (fibromyalgia and/or IBS) compared to 30 (healthy males)	International Affective Picture Test	fMRI	+ physical symptoms during negative pictures (patient > control) + activation in somatosensory regions during negative vs neutral picture



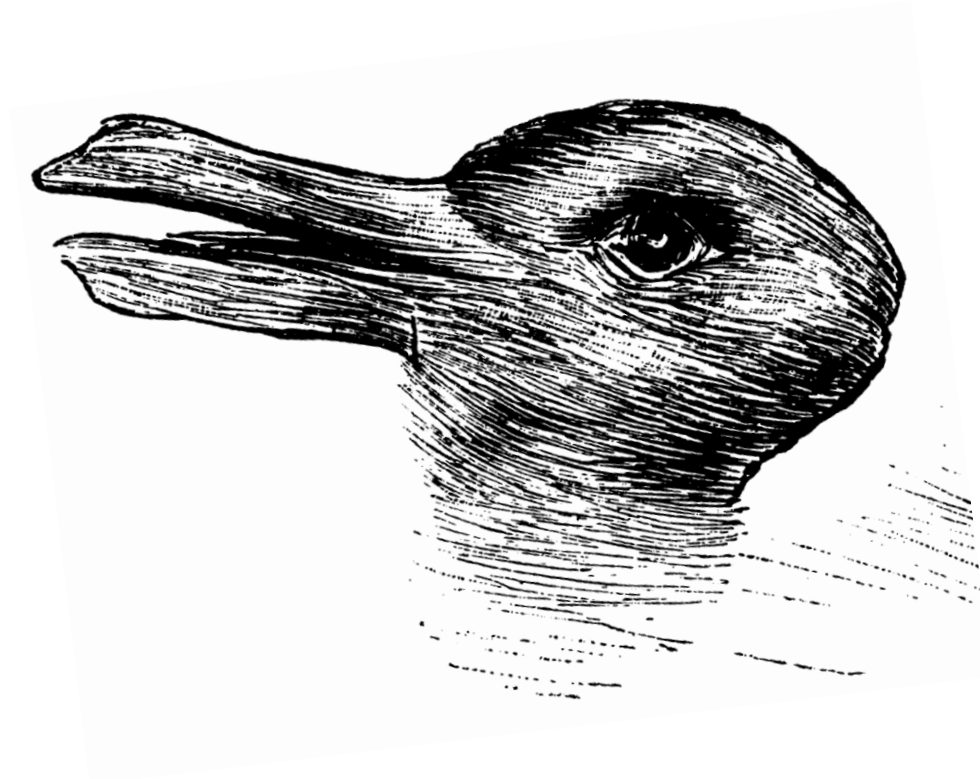
Sample of Emotion Elicitation Video Clips

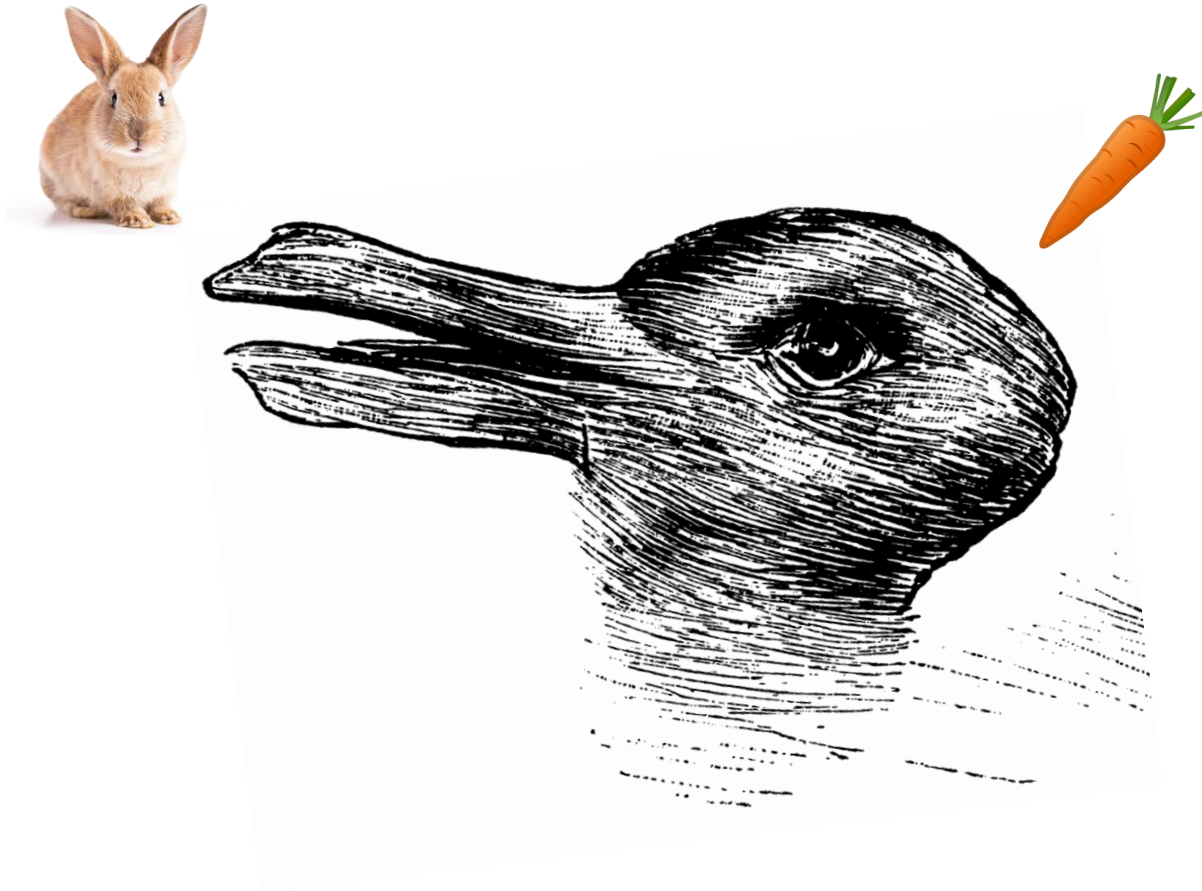


What About Emotions Outside the Lab?



How Symptoms Become Persistent





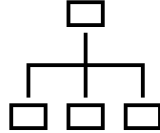
The Brain Is Not a Passive Receiver

The nervous system receives more information than we can consciously experience

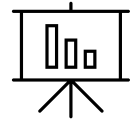
It must constantly:



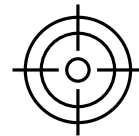
Select



Organize



Interpret

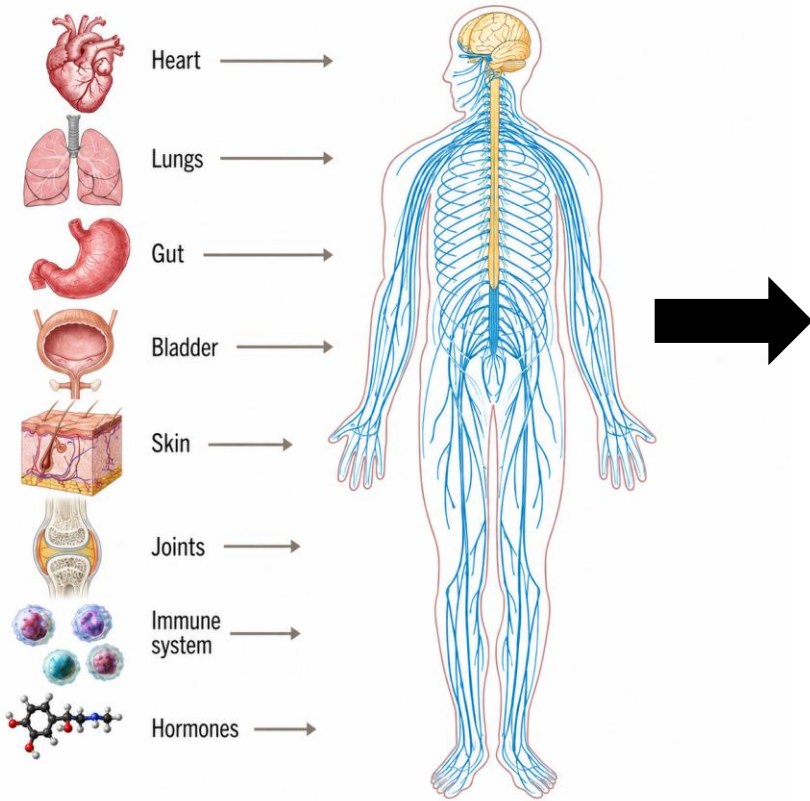


Prioritize

Conscious symptom experience



- Pain
- Nausea
- Fullness/bloating
- Urgency
- Etc.



Symptoms Are Shaped by Meaning & Prediction

The brain asks:

What does this body signal mean?

A sensation may become more intense or threatening depending on:

Prior experience

Expectation

Attention

Current
emotion

Context

When the Nervous System Learns Danger

Learned meaning		Protective response	
	Meals → danger	→	Restricting eating 
	Pain → damage	→	Monitor/check 
	Urgency → humiliation	→	Avoid leaving home 
	Uncertainty → threat	→	Seeking reassurance 
	Invalidation → vigilance	→	Escalate or withdraw 

Clinical Implications

For All of Us: A Change in Mindset

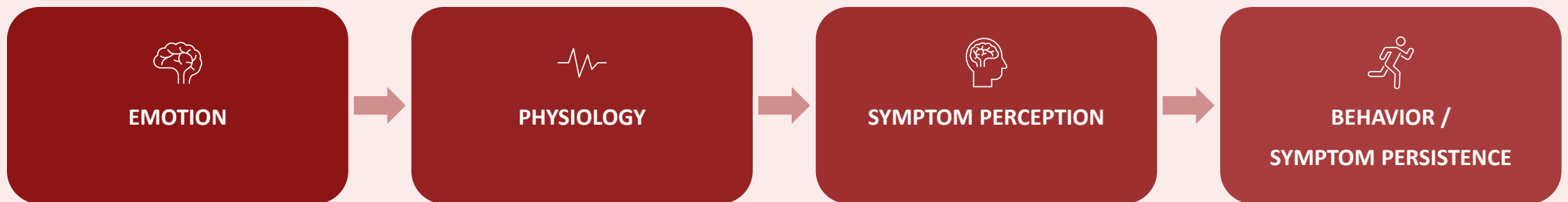
- Emotions are not “just psychological”
- They are:
 - biologically active events
 - part of brain-gut physiology
 - a source of information

Why Emotion Recognition Matters Clinically

WHAT WE ALREADY KNOW: Emotion recognition helps clinicians (Schwartz, 2021):

- Build trust and therapeutic alliance
- Understand the patient's illness experience
- Improve information exchange and clinical decision-making

WHAT THIS TALK ADDS: Recognizing emotions is not only about communication – it can help us understand symptoms



For Clinicians: Notice - Ask - Connect

Areas Where Emotional Cues May Appear ¹

Area	Examples
Body	facial expression, gaze, posture, fidgeting
Speech	tone, pitch, rate, volume, pauses, silence
Language	emotionally charged words, metaphors, repeated phrases
Behavior	avoidance, reassurance seeking, restriction, withdrawal, frustration

1. Notice:

Listen for emotion in language and behavior

2. Ask:

Inquire about the meaning, fear, feeling, and behavioral response

3. Connect/Validate:

Validate the emotion, link to physiology and brain-body interface

1. Adapted from Schwartz (2021; p. 115)

For Mental Health Clinicians: GI Symptoms in Psychiatric Diagnoses

DSM Diagnosis	GI Sx in DSM Criteria – (associated features) ^A	Note
Panic Disorder (PD)	Yes – Choking feelings, Chest pain, Nausea or abdominal distress	PD with “gastrointestinal subtype” has been described ^B GI sx in PD > other psych disorders and healthy controls ^C
Generalized Anxiety Disorder (GAD)	No – [somatic symptoms can be associated]	Of anxiety disorder, GAD most frequently seen by gastroenterologist ^D
Separation Anxiety Disorder	Yes – Complaints of physical symptoms – [nausea, vomiting, stomach aches]	N/A
Major Depressive Disorder (MDD)	Yes – Appetite – [can present mainly with somatic complaints]	Constipation aHR 1.48 before MDD diagnosis ^E Depression associated with a large number of GI conditions ^F
Persistent Complex Bereavement Disorder	No – [May experience diverse somatic complaints (e.g., digestive complaints, pain), including symptoms experienced by the deceased]	Self-reported symptoms often include “hollow feeling” in stomach, digestive complaints ^G
Premenstrual Dysphoric Disorder	Yes – Physical symptoms such as bloating	N/A
Eating Disorders (AN, BN, BED, ARFID)	Yes – Indirectly via behavior or consequences – [can experience complications like esophageal tears, gastric rupture, association with rectal prolapse]	Association with GI symptoms, GI function, including slowing of gastric emptying, constipation, SMA syndrome ^H

For Patients: Build Skills That Change the Response

Practice that help the nervous system respond differently

Daily calming practice: 5 minutes, once or twice daily

Examples:

- diaphragmatic breathing; “belly breathing”
- paced breathing
- grounding techniques
- mindful awareness of emotion

Practices that can help build:

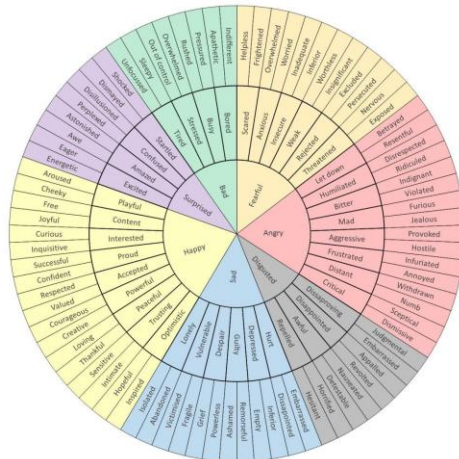
- a calmer body–mind state
- more space between a moment and a reaction
- tolerance of body sensations and emotions
- quiet awareness rather than automatic alarm

For Patients: Become an “Emotion Scientist”

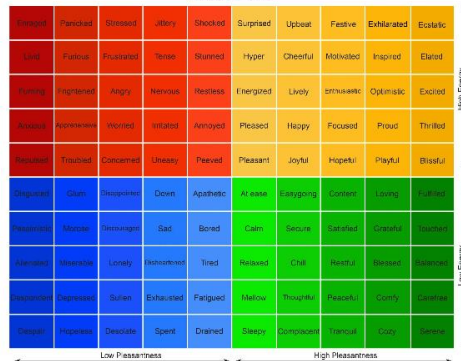
1

Use an emotion grid/wheel

Pleasant or unpleasant?
High or low activation?



Emotion Grid



2

Try a 30-second check-in



Body

What do I notice in my body?
(e.g., tension, heart rate, stomach)



Emotion

What emotion am I feeling?
(e.g., anxious, angry, sad)



Thought/Meaning

What am I telling myself?
(e.g., “This is dangerous.”)



Urge

What do I feel like doing?
(e.g., avoid, check, eat, withdraw)



Choice

What is a helpful next step?
(e.g., pause, breathe, different action)

3

Practice and strengthen the mind–body connection

With practice, you can get better at noticing how thoughts, emotions, body sensations, and behavior influence each other.

When More Support Is Needed: Brain-Gut Therapies

Therapy

- Cognitive-Behavioral Therapy (CBT)/
exposure-based approaches
- Gut-directed hypnotherapy
- ACT / mindfulness-based approaches
- Psychodynamic/interpersonal approaches
Emotional Awareness and Expression Therapy

Primary Target



Thoughts, symptom meaning, avoidance, safety behaviors



Attention, autonomic regulation, symptom expectation



Relationship to symptoms, values, flexibility



Emotional awareness, expression, relationships, conflict, attachment patterns

Bottom line: Different therapies target different parts of the cycle

Conclusion: Beyond Stress, Integrating Mind-Brain-Body

1. Emotions are part of physiology

They are biologically active states that are at the intersection of the brain and body

2. Persistent GI symptoms can be shaped multiple processes

physiology • emotion • attention • meaning • behavior • learning

3. Emotional processes are potential targets for change

Treatment can help the nervous system respond differently, through regulation, emotional awareness, new learning, and reduced avoidance

Further Resources

Book:

- Permission to Feel: The Power of Emotional Intelligence to Achieve Well-Being and Success by Marc Brackett, Ph.D.
- Dealing with Feeling: Use Your Emotions to Create the Life You Want by Marc Brackett, Ph.D.

App:

- How We Feel. A free, science-based mood tracker and emotional well-being app. <https://howwefeel.org/>
- Mindfulness Coach. A free app, developed by the VA, focused on mindfulness practice (with a section on *Mindfulness for Difficult Emotions*).
<https://mobile.va.gov/app/mindfulness-coach>

Therapy resources:

Ask your clinician about:

- CBT for DGBI / IBS
- Gut-directed hypnotherapy
- ACT or mindfulness-based treatment
- Emotion-focused or interpersonal therapy

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Q&A