



# THE FIELD GUIDE FOR BAREFOOT PSYCHOLOGY

because science is a right, and self-awareness is an asset

# ACKNOWLEDGMENT

The Field Guide reflects a unique collaboration between Beyond Conflict and Questscope to address the emotional and psychological burdens associated with forced displacement, trauma and violence.



# DISCLAIMER

This Field Guide is not intended to replace the work of mental health professionals nor to train mental health professionals. Beyond Conflict, the provider of the Field Guide, is not licensed to practice medicine or clinical psychology and will not be deemed to be engaged in the practice of medicine or clinical psychology as a result of providing the Field Guide.

In many cases, individuals who have experienced chronic stress or traumatic events need professional assistance and care. It is unwise to think that anyone other than a trained professional can provide specialized care. We strongly encourage you to explore, get to know, and maintain contact information for therapists, counselors, and other mental health professionals in your area before you use this guide. If you continue to have upsetting feelings or emotions during or after your engagement with the content herein please contact a mental health professional.

You may find some of the material and detail contained in the Field Guide graphic or disturbing. Such content has been included as a way to faithfully and honestly explore how conflict, war, and various crises affect the brain, the body, and interpersonal behavior. Our intention is to bring readers as close as possible to “real” experiences, for the sake of honest metaphors and explaining otherwise complicated and broad scientific phenomena.

Readers are encouraged to move slowly and carefully through the Guide. If any of the content creates overwhelming negative reactions, either for you or anyone with whom you are sharing the information, please stop reading. Take the time to make an honest assessment of whether you can continue.

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# The Field Guide for Barefoot Psychology ▲

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# FOREWORD

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I do not know where to start talking about this journey of several years. Now, I speak after six years of this migration, which I can only compare with the uprooting of a tree from its roots. But not a normal tree. A deep-rooted tree, with roots that reach the depths of the earth.

The longer the roots of a tree, the harder it is to uproot. Only after I bore witness to the difficulty of my own uprooting did I understand why many of the elderly do not leave their homelands.

This issue is very painful and hard on my heart, so I do not write about it, actually.

I have kept these memories in my heart without moving them, because moving them is like opening a grave of sleeping monsters. Painful memories are a sleeping danger that we must find a way to handle safely, without hurting anyone else.

Let me paint the picture in a way imaginable for you. Forced migration is more like a nightmare than anything else.

Have you ever dreamed a dream so scary that you wish to wake up because the dream is unbearable? I thought this dream of migration was a nightmare, but I have not yet woken up. As little as I was when it began, I was ashamed, at the beginning, to express my fears. I was too patient with my fears.

For so long, I tried to be steady and somewhat quiet. But inside, I burned. A false, calm world showed on my face, and a distorted and confused world spun inside me, contoured by the pressure of my thoughts.

Endless questions raced in circles:

Where will we go?  
What's there?  
Will we get there?  
What's on the way?  
Will we pass safely?  
What if they refuse our entry and we have to go back?  
Why is this happening to us?  
What will happen to my mother?  
Why is my father confused?

I cannot even remember the little thoughts that sat squashed under those larger ones.

Whenever I remember those moments, those questions, I imagine myself then, a young man of twenty dragging behind him heavy bags that contained anxiety, fear, hesitation, regret, love, and hatred—a huge number of emotions that I am still unpacking and sorting.

**Mohammad Kheir Refai**

# WELCOME TO THE FIELD GUIDE

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Welcome. You may not be a psychologist, a therapist, or a doctor. That's fine. This guide is meant precisely for you. And this guide isn't going to turn you into a therapist or a psychologist.

This guide is meant for individuals of all backgrounds, fields of study, and experience levels, who have lived through stress or trauma, as well as those who are working with communities and individuals affected by such experiences.

This guide is meant for you.

Billions of people around the world have lived through war, conflict, pandemics, crises, and disasters. Billions of people have lived through traumatic events. Such events can affect people to the core and can permanently alter the course of their lives. Often, people talk about the “before” and “after” of crises. Suffering has a way of reorganizing time. Suffering has a way of reorganizing thoughts, of reorganizing identity.

Indeed, suffering and the events that cause it to affect the mind and the body in profound ways. And like most people, you probably have not been specifically trained to deal with the psychological or physical effects of trauma and stress. You may work with people who have lived through tragedy, loss, and devastation. Perhaps in your own life, you personally know how stressful or traumatic events can take a serious toll on your mind and body. Perhaps you yourself still experience unwanted thoughts, reactions, or symptoms related to adversities. Perhaps you feel like your emotions and thoughts are out of control.

Nevertheless, you're still here. You have survived, and you are resilient.

Whatever you do each day, the people you care for have endured a lot. So have you. Dealing with the pain of others, day in and day out, is overwhelming. Dealing with your own experiences and pain can also be overwhelming. And surely, your role is even more difficult when you don't feel properly prepared. You may not have all the equipment you need, but you're still in the thick of it. You may not have the right shoes, but you're still walking the path. In one way or another, you are applying barefoot psychology—figuring it out as you go, even if you lack certain tools. We want to better equip you as you accompany others, and figure yourself out in the process.

Stress and trauma affect each person uniquely. There is no “right” response nor “wrong” response. And with this guide, we hope you can better understand exactly why and how trauma, stress, and adversity often affect people as they do. We hope you uncover many of the tools you carry within you to address the unwanted effects of those events.

It is our hope that by understanding the why and the how, you are better equipped to care for yourself, to care for others in your community, and make change towards healing.

Welcome to The Field Guide, and thank you for taking this step with us.

# FIELD GUIDE OBJECTIVES

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The Field Guide for Barefoot Psychology is an educational and psychosocial support tool for communities affected by stress and trauma. It has two main objectives:

- To clarify why and how adverse experiences can affect the brain, body, and social behavior
- To provide specific information and exercises to recover from the effects of stress and trauma and build resilience

The Field Guide combines narrative story, scientific information, and practical skills. Each person who reads it has unique needs. Each community that uses it has unique challenges. And furthermore, the science delivered through the Guide is constantly being updated as we learn more about the brain's and the body's responses to adversity. As we learn from those who use it, and learn from scientific experts, we will update the Guide.

The Guide is intended for a wide audience: professional aid workers, community workers or volunteers, and individuals. Generally, the content is safe and relevant for those 18 years of age and above.

# STRUCTURE OF THE GUIDE

The Field Guide consists of two books.

In Book I, we share what we know about what happens to the brain and body when individuals go through stressful and traumatic experiences. We unpack the science about how the brain works, about trauma and stress, and about shame, grief, and despair. We also share what scientists have learned about how the brain and body heal, promote healthy functioning, and cope with adverse events of the past and present.

As a general rule, the chapters in Book I consist of a narrative story followed by a lesson. Most chapters, but not all, are structured this way. It is our hope that the stories serve as a useful metaphor to help explain complex scientific information.

In Book II, the Workbook, we provide exercises that focus on self-regulation, building specific resilience skills, and stress management.

## BOOK I Science & Story

Book I uses storytelling and accessible scientific explanation to explore various biological and psychological experiences associated with conflict and adversity, including trauma, stress, guilt, shame, hopelessness, resilience, and post-traumatic growth.

## BOOK II Workbook

Book II includes proven exercises that are easy to follow and to teach others. Experts from various fields have authored these simple exercises. If practiced regularly, these exercises may lead to more effective self-care and a better ability to regulate and manage unwanted effects of stress and trauma.

# ADDITIONAL GUIDANCE

As you read, think about, and use The Field Guide, we want to provide a few quick reminders. Please bear these in mind as you move forward:

## DO

- Have the phone number or contact information of a mental health professional with you at all times
- Make a list of local practitioners or professionals in your area to contact if needed while and after you read The Field Guide
- Read the content thoroughly and in intended order, making notes and asking questions
- Take your time
- Allow yourself to react to what you learn, without judging, criticizing, or shaming yourself. Your response is valid and okay.
- Share lessons learned with others
- Take the time to thoroughly learn how to do the Self-Care Exercises in Section II
- Be fascinated by your brain, your body, and your resilience

## DO NOT

- Suggest to others what they “should” be feeling based on what you read
- Assume that you can “fix” or “treat” someone based on what you learn
- Try to provide any sort of treatment beyond peer-to-peer support, or suggest that you are in any way a trained mental health professional
- Rush through the Field Guide or read it in one sitting or a short amount of time.
- Make assumptions about scientific concepts without researching and/or asking
- Ignore clear signs and symptoms that require professional treatment

# MENTAL HEALTH & PSYCHOSOCIAL SUPPORT (MHPSS) IN EMERGENCIES

This Guide intends to give you more knowledge and resources to care for yourself and those around you as you explore issues of mental health, psychology, and trauma. We want to briefly explain some other resources that are available, and how this Guide fits in among existing tools and programs.

## A History of Approaches

Over the past decades, international organizations, the United Nations, hospitals, researchers, social workers, and doctors have developed various methods to assist individuals and communities affected by conflict, violence, crises, and disasters. Today, there are dozens of interventions and treatment options that psychosocial practitioners and healthcare professionals use to help people confront the psychological effects of war, violence, conflict, and displacement.

Sadly, specialized treatment options are not accessible to everyone. In fact, mental health professionals are often incredibly difficult to find. Therapists, psychologists, and psychiatrists are often in high demand during and after crises, and often, the demand for care outpaces the supply.

But there is still lots of hope. Thankfully, human beings carry inside of them many resources for healing. Suffering has been around much longer than medicine and psychologists, and people have found ways to survive. And when it comes to mental health and psychological well-being (also known as MHPSS), we already possess many assets that help us confront the past and the present, and chart a new, healthier course forward.

One of our most important assets is community. Your community—your family, friends, and loved ones—are your primary support. As we move forward, please remember that our individual health and well-being affects and is affected by those around us, by our relationships and our community. We are part of a broader ecosystem, and individual mental health and psychosocial well-being are inextricably linked to our collective, to our community's well-being.

## Current Frameworks for MHPSS Work

International organizations use a number of frameworks and guiding principles to train their staff on the importance of MHPSS. Similarly, organizations have applied a number of specific programs for mental health and psychosocial wellbeing in places like refugee camps, shelters, and urban areas, with varying degrees of success.

MHPSS is not an issue that stands by itself. The people and the structures around us affect mental health. For example, the quality of your house affects your mental health. Living surrounded by four solid walls is safer and less risky than living in a tent. If you live in a tent, it is harder to protect your belongings, to keep your children healthy, and to stay warm. In this way, mental health is a part of every minute, every day, and anyone who works with survivors of war, conflict, and crisis should understand the basics of MHPSS and understand how individual health and well-being cannot be dissociated from structures and structural challenges in community and society.

There are a number of resources used by people who work in the mental health and psychosocial support (MHPSS) sector in places around the world, and particularly by those working in humanitarian or natural disaster emergencies. Many of those resources are available in multiple languages, and we recommend you take the time to read those.

One of the most useful frameworks for understanding how individuals and organizations address mental health is the pyramid framework developed by the Interagency Standing Committee. It specifies different types and levels of interventions.

Not everyone who plays football should be a football coach. And not every football coach should coach the national football team. The IASC framework explains a similar idea when it comes to mental health.

The IASC framework recognizes that **many types of activities can be used to promote healthy coping** and addressing negative consequences of stress and trauma, but it is important to recognize what each type of activity targets, and who should, therefore, conduct and lead such activities.

Indeed, just as activities in daily life can cause stress, small things can help us heal. Starting with basic things like a solid roof and safe living conditions, the IASC pyramid suggests that different services address different needs. Food, water, and shelter are necessary if we are to survive and feel safe. Almost anyone can help provide these services. This is “Level 1.”

Relationships can add an extra layer of support, listening ears, and help in times of stress and crisis. And community programs for sports, art, and education can provide supportive friends, teachers, and colleagues that make stressful times easier to bear. This is “Level 2,” addressing community support structures.

“Level 3” of the pyramid describes specifically and intentionally designed programs that target the management and reduction of distress symptoms. For example, drawing, painting, and writing can be excellent ways for a person to uncover and release certain negative thoughts and emotions. When these types of activities are planned and executed by someone trained in the proper techniques and ensuring safety, they can do tremendous good for those who participate. This Field Guide would classify as a Level 3 intervention.

The final level, “Level 4,” refers to activities that can be carried out by highly trained professionals, many of whom may come from outside of the community. Things like therapy and counseling, or psychiatric doctors, fall under this category because only a few trained people can implement them, and they are used not for all cases, but for those most in need of help.

The IASC framework distinguishes between basic services that anyone can provide and programs and activities that require specific training and set-up. For example, while many people could read a book to their children, not everyone could teach a classroom full of children. Specialized services require specialized training. And specialized services have more specific outcomes. Similarly, when it comes to mental health, IASC suggests that specific interventions might target specific behaviors and psychological challenges, and therefore, individuals conducting or providing those activities will need specific training.

Many types of useful MHPSS activities can be implemented by lay community members (i.e. people who are not clinical professionals) who receive sufficient training. The Field Guide is an example of such a program. That said, not all activities work for all individuals, and it is important to reiterate that people will respond to activities differently and in their own way.

Despite the many specific guidebooks, reference manuals, and training programs to equip workers to better understand the importance of mental health during and after emergencies and crises, and the number of specific activity programs that exist in the MHPSS sector, few of these resources delve into the science behind the effects of conflict, displacement, or other adversities on the mind and body.

In other words, there are almost no resources that explain why stress and trauma affect us as they do, or why certain emotional experiences are common after experiencing adversity and trauma. Again, most existing resources are program guidelines or technical guides on how to set up specific activities or how to protect people from further psychological risks in an emergency. In The Field Guide, we explore the underlying causes and impacts from a psychological and biological perspective, and then briefly explore how we can heal and grow by tapping into some of the same systems negatively affected by stress and trauma through specific exercises.

## What we mean by "Mental Health" and "Psychosocial Well-Being"

Before moving forward, it is important to clarify what “**mental health**” and “**psychosocial well-being**” mean. These terms will come up repeatedly, but they might not be clear to you, even if you may have a general understanding or hunch. Hopefully the definitions on the next page are helpful.

Mental Health	Psychosocial Wellbeing
<p>There are dozens of complementary and competing definitions for the term “mental health.” Here we provide two that adequately capture what we need to know for The Field Guide.</p> <p>From the Merriam-Webster dictionary: “The condition of being sound mentally and emotionally that is characterized by the absence of mental illness and by adequate adjustment especially as reflected in feeling comfortable about oneself, positive feelings about others, and the ability to meet the demands of daily life.”</p> <p>From the World Health Organization: “A state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community.”</p> <p>For our purposes, it is important to note that mental health is generally conceived of as not just the absence of mental illness (e.g., depression, bipolar disorder, obsessive compulsive disorder, schizophrenia), <b>but the presence of positive abilities</b> to cope, to healthily interact with others, and to successfully avoid negative thought and behavior patterns that are common risks after traumatic or overwhelming negative experiences.</p>	<p>Psychosocial well-being includes two important words: psychosocial and well-being, implying a consistent and positive psychological and social state of being.</p> <p>The term was created to highlight the fact that the social self and the psychological self are closely linked, and perhaps more so in times of stress and crisis. Mental illness or mental health challenges often have a deep effect on the social aspects of our lives, affecting interpersonal functioning, relationships, and our sense of self. For example, someone experiencing clinical depression may start to lose important relationships, and the loss of relationships may further complicate their depression. The cycle is destructive.</p> <p>From the International Network for Education in Emergencies: “The term psychosocial underscores the close connection between psychological aspects of our experience (our thoughts, emotions, and behavior) and our wider social experience (our relationships, traditions and culture)...Many psychosocial problems do not require clinical treatment but are rooted in stigmatization, lost hope, chronic poverty, uprooting, inability to meet basic needs, and inability to fill normal social roles.”</p> <p>Psychosocial well-being therefore describes a positive state in which an individual operates with healthy and positive social interactions with others, benefits from a strong support network, has a positive view of the self, efficiently copes with mental health challenges, and maintains a positive and hopeful outlook, often in spite of major challenges.</p>

# CONTENT WARNING



Some sections of The Field Guide present detailed experiences of traumatic events. Some sections of the text may thus be distressing. Certain sections portray violence, explicit language, thoughts of self-harm, depictions of shame and loss of loved ones, and intense negative emotional experiences.

Such content has been included as a way to faithfully and honestly explore how conflict, war, and various crises affect the brain, the body, and interpersonal behavior. It is not our intention to be voyeuristic, but rather to bring readers as close as possible to “real” experiences, for the sake of honest metaphors that can help explain otherwise complicated scientific information.

You are encouraged to move slowly and carefully through the Guide. We advise you to stop reading at any time, particularly if the content creates overwhelming negative reactions.

# GROUNDING EXERCISE

The Field Guide contains some distressing content. You can use the following quick breathing exercise if the content causes you distress, including difficulty breathing, tension, a sense of disconnection, or hyperventilation. Please read and practice the exercise a few times before beginning the rest of the Guide.

This exercise specifically focuses on extended-release of the exhale in your breath. As we will discuss in the Guide, deep breathing from the diaphragm muscle stimulates the vagus nerve, one of the main communication highways that helps your brain coordinate all sorts of relaxation responses in your body.

The instructions are quite simple. The exercise can be done alone or in a group, anywhere, anytime. Practice this exercise a few times before continuing the Guide, until the exercise feels comfortable for you. It is straightforward.

1. Make sure you are sitting down comfortably somewhere, ideally in a chair with your back straight against the chair.
2. Either close your eyes or keep them open with a neutral focus straight in front of you.
3. Take a deep but comfortable breath in through your nose. Do not force a breath that is uncomfortable.
4. Breathe out normally, with a gentle exhale through your nose.
5. Repeat this a few times.
6. After a few breaths, place your hands on your abdomen. Place your thumbs on the bottom of your rib cage, and place your middle finger on your hip.
7. On your next breath, breathe in as before through your nose. On the exhale, extend the exhale as you draw the bottom of your ribs closer to your hip bones. You should feel your thumb and middle fingers getting closer together, almost touching, as you finish the extended exhale.
8. Repeat a deep inhale, with the extended exhale as described before.
9. Repeat a few times.
10. Place your hands on your legs, and breathe naturally.

This exercise will stimulate the vagus nerve and will spur relaxation signals through your brain and body. It will help you regain a sense of calm, connection, and control over breath. If it does not work, and you continue to be stressed or anxious, you have several options: 1) try it a second time; 2) simply put down the Guide and walk around inside or outside, and speak to someone until you can move on with your day; or 3) contact medical services if you feel deeply distressed.

# THE READER'S PLEDGE

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This Field Guide is in no way intended to replace the work of mental health professionals and clinicians. Reading this Guide will not make you a mental health professional. The Guide is intended to serve as an enrichment and capacity-building resource only.

Your role is fundamentally different from that of professional mental healthcare providers. In many cases, individuals who have experienced chronic stress and traumatic events need professional assistance and care. It is unwise to think that anyone other than a trained professional can provide specialized care.

We strongly encourage you to explore, get to know, and seek contact information for therapists, counselors, and other mental health professionals in your area before you read this Guide, and to make use of their services when necessary and desired.

Unfortunately, in so many communities in need, there are too few mental health professionals. We hope that this will change. We will continue to work and advocate for more professional resources and specialists who speak your language and know your communities to provide the levels of professional care needed.

Until then, let's work together to give you some basic resources that will give you more confidence in your work, and promote safe, supportive environments for you and for those around you, while never presuming or suggesting that we are doctors, therapists, or mental health professionals.

If you agree and want to continue, please sign and date below.

Signed :

Date :

## Summary

## Introduction

- The Field Guide does not in any way aim to replace the work of mental health professionals and clinicians.
- We strongly encourage you to research and keep contact information for therapists and other mental health professionals in your area before reading this guide. Mental health professionals provide important and necessary services in many cases.
- The Field Guide is intended for individuals and communities who have experienced either recently or in the past significant stressful events including conflict and migration forced migration
- The Field Guide was created on the belief that that scientific information is right and that self-awareness is an important asset to cope and withstand stress and trauma.
- The Field Guide aims to demystify why and how adverse experiences can affect the brain, body, and social behavior and aims to provide specific information and exercises to confront the effects of stress and trauma and build resilience
- The Field Guide is divided into two books:
  - Book I shares what scientists know about what happens to the brain and body when individuals go through stressful and traumatic experiences.
  - Book II provides a series of exercises that focus on self-regulation, building specific resilience skills, and managing stress.
- Mental health is not just the absence of mental illness (e.g. depression, bipolar disorder, obsessive-compulsive, schizophrenia), but the presence of positive abilities to cope, to healthily interact with others, and to successfully manage negative thought and behavior patterns that are common risks after traumatic or overwhelming negative experiences
- Psychosocial wellbeing is a positive state in which an individual operates with healthy and positive social interactions with others, benefits from a strong support network, has a positive view of the self, efficiently copes with mental health challenges, and maintains a positive and hopeful outlook, often in spite of major challenges.
- Some sections of The Field Guide present detailed experiences of traumatic events. Some sections of the text may thus be distressing. Certain sections portray violence, explicit language, thoughts of self-harm, depictions of shame and loss of loved ones, and intense negative emotional experiences.
- Readers are encouraged to move slowly and carefully through the Guide. Readers are advised to stop reading at any time, particularly if the content creates overwhelming negative reactions

**Keywords:** mental health, psychosocial well-being

# **THE FIELD GUIDE FOR BAREFOOT PSYCHOLOGY**

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self-awareness is an asset.

## **BOOK I**

# Chapter 1

## Setting the Stage

# Lesson 1

## Setting the Stage

Throughout this book, you will read in parts the story of two siblings: Isra' and Ahmad. You will follow them as they grow up, as they live through violence and conflict, and as they are forced to leave their home and make sense of a life they neither chose nor expected.

For millennia, humans have learned through story. Stories reflect the truths we are sometimes scared to confront in ourselves and our societies. Stories help us access parts of ourselves and convey feelings, sentiments, and thoughts that would otherwise remain hidden.

Hopefully, you will learn from Isra' and Ahmad's story, and we will use their story as a way to learn about the brain, the body, and the effects of conflict and migration.

From the very beginning of their story, it is clear that Isra' and Ahmad are tough. They are strong. Despite their circumstances, Isra' and Ahmad carry inside themselves so much of what they need to survive and to thrive. All of us carry inside ourselves the ability to survive, grow, and overcome life's pains and trials.

Isra' and Ahmad's story started long before the conflict. It is important that we explore who they were, how they were, and the myriad challenges that have nothing to do with conflict, trauma, or migration, because the war did not define them.

The war did not control them, though it did change them. Their sense of self from before the war is very much intact and living. The war never took from them their core being. It never took their soul—though at times in the chaos and conflict they could barely recognize themselves.

As you read about Isra' and Ahmad, you will see that both of them are more than the sum of their experiences. They are more than what the conflict did to them and their communities. Their beginning and their still unknown end are not defined by what they lived through for seven years, and the journey of their lives will bring many new experiences of joy, hope, and growth.

Their story is unique, but it is not uncommon. Isra' and Ahmad's story may be similar to the stories of many you know. They may be like you in some ways, or like your sister, brother, friend, or colleague. So, as you read their story, you may feel in your body a tightness, or heat flowing through you, or perhaps cold. Perhaps you recognize yourself in these characters. Perhaps you will nod your head or breathe heavily as you read their internal thoughts.

It is our hope that as you read their story and think of your own story, you will learn about yourself in some way. You are the expert in your story, and stories like Isra' and Ahmad's are here to help us think together about conflict, about migration, about our minds, bodies, and hearts.

You did not choose all the parts of your story, or the order of its events. You did not choose all of the experiences, challenges, or wounds that have made you who you are. But, despite what

has happened to your or those you know, it is possible to learn from your own story, from the stories of those you love, and from those you do not even know.

- As you read about Isra' and Ahmad, I'm sure you will have questions like:
- Why did she react that way? I didn't do that...
- Why did he leave?
- Why did he not talk to his family?
- Why is she so anxious?

Your questions are good. Your questions are important, and hopefully they will be answered as you go through the book.

As we read about Isra' and Ahmad, it will become clear that they face tremendous disruption, adversity, and challenges. Many of their experiences are too common for too many people in the world. Importantly, it is important to always keep in mind that just as Isra' and Ahmad have suffered, they are surviving and growing. They carry inside themselves the power to survive, to overcome, and to thrive in the face of obstacles. You also have that power, and are likely using it every day already.

In general, when we talk about mental health and psychological well-being, **we are not suggesting that all people who live through war are unwell or "sick."** Every individual reacts uniquely to life's experiences. Two people, even in the same family, will react uniquely to the same event. One may seem fine, and the other may be forever changed. Those individual differences are influenced by many factors, from our genetic make-up to our personalities. We will delve into some of the reasons behind this later in the book. Ultimately, we cannot judge or even know, for sure, why a person reacts a certain way. All we can do is meet them where they currently are, and share what resources we have.

While those who survive life's terrible events are not "sick," we cannot deny the deep effects of traumatic events. Everyone who has suffered can use and benefit from support. Everyone can benefit from learning more about themselves, the mind's and body's reaction to the world around them.

Isra' and Ahmad could have benefited tremendously from a doctor's or psychologist's help as they struggled through pain and loss. The support of loved ones is also critical in difficult times. Learning about ourselves and our past can also assist in coping with stress and tragedy. Professional help may also be important in that journey.

Whatever resources are available, remember that humans are extremely resilient. And more than that, remember that we can use specific strategies to better control how we respond to threats, challenges, and stress. We will discuss some of those strategies in detail.

We already know how to cope. How to survive. And with specific knowledge and skills, we can train ourselves to better manage the pain of the past. We can create new pathways of hope. We can literally change the wiring in our brains to undo and overcome the damage that tragedy, hurt, and adversity may have caused.

As we start this journey, let us first meet Isra' and her family.



# Story 1

## Setting the Stage

Isra' is twenty-eight years old, though the lines branching from her honeyed eyes indicate something else. She has the wrinkles of a new mother, forged by sleepless nights, and the furrowed face of a soldier unsure why home feels so sad.

Her favorite food is okra, but only the way her mother used to make it, full of garlic sliced so thin that it disintegrates into the sea of tomatoes. She often daydreams of it, of how she could barely see the garlic, translucent as its taste overwhelmed the entire pot. She never quite perfected it the way her mother did, though she always tried. The tiny scars on her fingers bear evidence of her countless attempts.

Her cooking scars are outnumbered by scars less visible, scars bore by her heart, scars the result of years of failed attempts to close wounds that insist on bleeding out.

Born in Damascus, Isra' was only twenty when the conflict began. She spent more than twenty years on earth before she lost anyone she loved. And in eight short years since then, she has endured more loss than most endure in a lifetime.

Eight years.

Eight years she has lived in movement, harsh and constant, like a swimmer pounded by waves, coming up for air only to find another wave cresting. Eight years, and each year has brought challenges that she was never told to expect, and was not automatically equipped to handle. Her mother and father prepared her for most things—things still yet to come—but not for this. Not for leaving everything behind.

Before 2011, neither she nor anyone in her family had any reason to expect displacement, to expect the crossing of seas once beautiful, or to expect the usage of secret codes over the phone for fear of punishment. The unimagined problems she now faces are built on the still-burning ashes of problems past, and on screams not yet silent.

It—all of it—happened so fast, so completely, and so devastatingly. The pain is long-felt, but somehow time seems to pass unnoticed now.

There was a time when Isra' used to cry much more than she does now. At the beginning of the conflict, tears felt like part of the solution. Tears were the way she expressed anguish, pain, and longing.

How she wishes she could cry now like she did then. In crying, she feels something, at least.

Feeling anything is far better than the numbness of late. She has been here before, in this numb place, though she thought she had overcome it. The last time she felt this way she was thousands of miles away. And that time, she simply had to wait until it passed. That time she waited, a lonely and dark wait surrounded by family, but feeling no warmth. Something about this wait seems different.

How she wishes she could cry now. In crying, Isra' recognizes a part of herself. In crying, she remembers who she was back then, before it all began.

In Syria, her family was neither affiliated with the government nor affiliated with any other movement. They were the countless many—apolitical, but fiercely in love with their country, with its dark soil, endless groves, and breezy mountains.

At age twenty, when the war was just starting, Isra' was primarily focused on university and finding the appropriate career opportunities either in Damascus or Aleppo. She was studying engineering, but was also drawn to art and music. Whether machines or music—Isra' just wanted to make things. From the time she was little, she was always creative and creating. And eight years later she is still trying to make something of herself, trying to make something out of the unexpected future handed to her.

In the earliest days of the clashes in 2011, Isra' attended university for a year, hoping and assuming that the skirmishes would end.

She was not ignorant of what was happening. From the morning the first bullet flew, she had a sinking feeling that things were changing permanently. That she was changing along with her country, that a thick curtain—one that blocks out love and light—was closing slowly and heavily upon her.

In those days, after class, she and her friends would sit together, finding anything to talk about to distract themselves from the deep anxiety about what might happen. The pain of what might happen was far worse than the pain of what was actually happening.

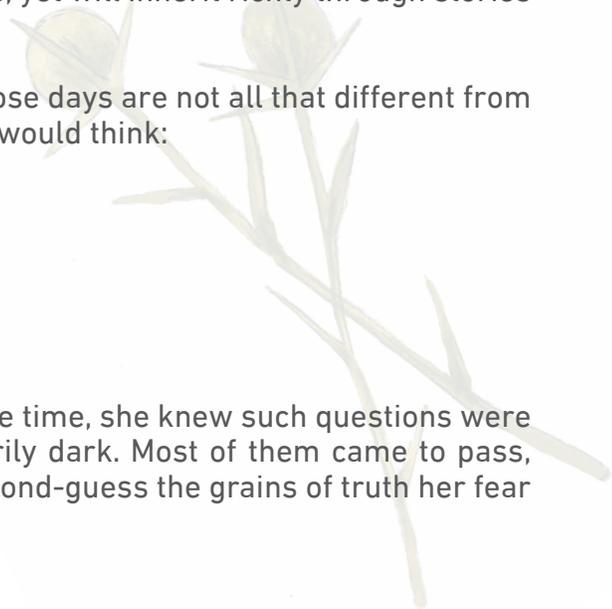
By mid-2012, though, nothing was certain. Her deep fears, once purely worst-case scenarios, began to align with reality. To this day, Isra' can vividly recall the days when her worries intensified, moving from her mind to her body, from her thoughts to her lungs, heart, and stomach.

Now, today, in 2019, she can still sit for hours remembering the beginning of it all, the beginning of a change that has not yet stopped. With eyes closed, she can conjure up sights and smells of places reduced to rubble, places her sons will never see, yet will inherit richly through stories and tastes.

The relentless thoughts that ran through her mind in those days are not all that different from the thoughts that run through her mind now. Then, she would think:

What if the conflict escalates?  
What if it comes to our village?  
What if we have to leave?  
What if I cannot finish school?  
What if I lose my friends?

In 2012, those thoughts sat like bricks in her mind. At the time, she knew such questions were presumptuous, bordering on irrational and unnecessarily dark. Most of them came to pass, though. So, hindsight has taught Isra' to never again second-guess the grains of truth her fear finds.



And while the content of her thoughts has changed dramatically since the days of war, the worry and uncertainty have persisted unbridled. Such thoughts, recited silently in her mind, used to wear her down. They were constant. They were violent. They clawed at her like a cat thrown in cold water—frantic and desperate, needing to get out.

And, of course, these thoughts were her own. She never shared them with anyone. She still doesn't.

She did not want to burden anyone else around her. She just tossed them back and forth in her mind, knowing that expressing them would not help anyone she loved. Everyone else is thinking the same thing, she assumed, so why bother sharing?

Why add to their hurt? Whenever doubt and fear overtake her now, she still has the same thought. Of all the things that have changed, her unwillingness to burden those around her has remained the same.

In the days of the war, Isra' was frightened but strong, as she was expected to be, especially in front of her younger sister, Hoda. Cracks in the walls she built were evident, but considering all that had happened, she was still a fortress.

By the middle of 2012, two of her best friends had fled to Lebanon. The noose of loneliness was tightening around her, and she could do nothing but watch. The circle of friends she spoke with after class was shrinking fast, faster than she imagined even in her darkest thoughts. One by one, people left. She stayed. Her best friend, Marwa, stayed. At least she had Marwa. At least Marwa was not changing.

Groceries grew more expensive.

Roadblocks peppered the streets in new patterns every day.

Her brother Ahmad's friends were either leaving or being recruited.

Her mother sang more from the kitchen—a giveaway that she was worried.

She felt a heaviness on her chest, some weight invisible that would not leave her alone.

The end of 2012 marked the end of many things for Isra'. And, six and half years ago from today, a short phone call changed her life. Six and a half years ago, a few short words confirmed that perhaps her fears and worries had not been enough. That perhaps she would not survive this.

Months passed. Then, on a cold morning in March 2013, Isra' zipped up her backpack. She closed the door to her room. She walked downstairs and gently closed the iron door that opened into their living room. Her father grabbed her hand, escorting her to the car. The door shut too loud.

Isra' would never see her room again.

## Summary

## Chapter 1: Introduction

- Storytelling is historical and important way to share and communicate information across cultures. Storytelling is central to the Field Guide.
- Humans are strong and resilient, even in the face of overwhelming negative experiences.
- Thoughts, behaviors, and actions in the present are heavily influenced by what has happened in the past.
- What happens to a person after the experience of adverse or traumatic events is largely understandable and normal; our responses after trauma are a normal response to abnormal circumstances
- No two people respond to the same event, including a traumatic event, in the same way.

**Suggested exercises:** Self-Soothing; Belly Breathing

# Chapter 2

## Back to the Beginning

# Story 2

## Back to the Beginning

Isra' was just 20 when the conflict began. Her brother Ahmad was 22. Born in Damascus, Isra, Ahmad, and their younger sister, Hoda, grew up surrounded by family. Fridays were chaotic, in a good way, in a memorable way—the kind of chaos mixed with love that fills the entirety of the heart.

Ahmad always wanted yebra on Fridays. Without even asking, everyone knew what he craved. He had some sort of addiction to the salty little leaves. On weeks when Ahmad brought home good news from school or passed an important exam, their mother would make yebra for him. Isra' dreaded it, as she and her mother together had to start preparing it the night before. Every yebra Friday, Isra' would start to feel her fingers cramp up in anticipation of the work. It was a labor of love, but labor no less.

Still, Isra' loved watching her brother delight in his favorite food.

Isra preferred bamia. Sometimes, she won the argument about what to cook, because she was one of the cooks. As anyone who eats knows, the food tastes better when the cook is happy. Importantly, Isra's father also loved bamia, and like Isra', loved the extra garlic she and her mom always added. Whenever she cooked for her father, Isra would anticipate the sigh of delight that he would give upon first taste. Isra' treasured her father's affection. She awaited it; she needed it.

Isra' was always bolder than her friends, bolder than others recommended, making choices uncommon for girls like her. She had learned at a young age to trust few. Her father worried for her safety, a worry which reinforced his lessons to “trust no one, except those bound to you by blood.” He used words poorly understood but rich in implication, words like ezweh, old Bedouin words that Isra' used to laugh at, but that he used specifically to emphasize the importance of kin.

Her father trusted so few people, and whether or not she realized it, Isra' took after her father in so many ways.

It was her lack of trust in others that enabled her boldness, in part. She wasn't scared of people, or so she always told herself. She did not need to fear those who could not hurt her, those whom she did not trust.

That is not to say that Isra' was invincible. Her skin was thick, but her heart was no less tender for it.

As a young girl Isra' was taller than most others in her class. Perhaps her height was always trying to catch up to her dreams. She wanted to be an engineer—a mechanical engineer specifically. She wanted to make things. To make something out of nothing.

Her wild imagination was rivaled by her mathematical mind. She was a force like few others, wildly creative and abnormally intelligent. A lover of numbers and of art, she wanted to create things, things that others could not imagine, let alone make.

Her extreme height was a constant source of embarrassment, though. She was very tall. Noticeably so. Girls in her class would regularly make fun of her, usually thinking they were too far for Isra' to hear. Other times, they were less careful, letting comments fall from their mouths unguarded and unhindered by what should have been barriers of common sense and kindness. Even when the mockery was far away, Isra' could often hear them from across the classroom.

Outside school, her height was no less obvious. And strangers were just as vicious as her classmates.

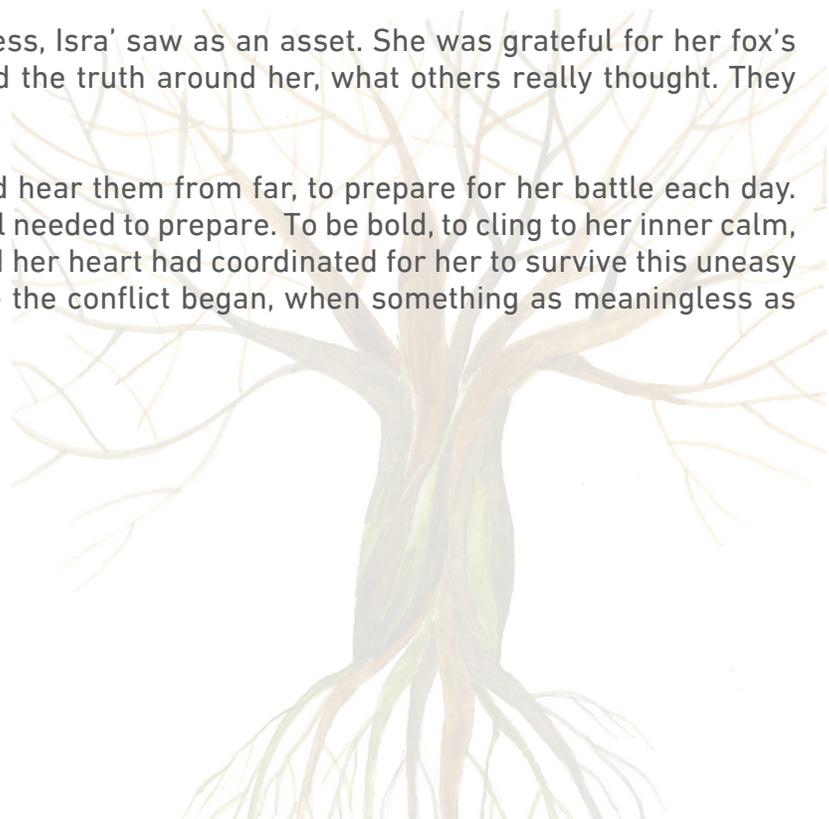
Isra's mother told her that she was simply oversensitive, paranoid about what people were saying or thinking. But, Isra' could not help it. She had grown hawkishly attentive to the unapologetic stares of employees at clothing stores, to the admonishing once-overs from elderly women masking cruelty as an empathic concern.

Her least favorite mockery, not that she ranked them, was any combination that used her height as some sort of prophecy about her love life. Isra' remembers with vivid anger one elderly woman in a supermarket who loudly blurted out: "Wow, a tall one. Too tall to find a boy." The woman chuckled and patted Isra' on the shoulder, again trying to soothe the sharpness of words with the softness of touch. Yet the softness only infuriated Isra'.

Isra' had ears like a fox—she could hear people talking about her from meters away. This only emboldened Isra's mother. It strengthened her opinion that Isra' was just too sensitive.

But what her mother saw as weakness, Isra' saw as an asset. She was grateful for her fox's ears, for they helped her understand the truth around her, what others really thought. They kept her safe.

Isra' needed to hear people well, and hear them from far, to prepare for her battle each day. She knew to trust no one. But she still needed to prepare. To be bold, to cling to her inner calm, she had to be prepared. Her ears and her heart had coordinated for her to survive this uneasy childhood. And this was well before the conflict began, when something as meaningless as height was the extent of her pain.





# Lesson 2

## Back to the Beginning

The story that you just read says that Isra's ears and heart had coordinated to help her navigate her childhood. She could hear sounds and words from farther away than most people. She paid attention to things others would ignore. Simply, her attention was different. How she focused and how she heard those around her was different from the way other people focused and heard.

In other words, she had focused her attention, in a way to prepare her to deal with gossip and bullying.

How did that happen? Why did that happen?

Isra's attuned sense of hearing speaks to one of the most important lessons that we will learn about the brain; that is, that the brain coordinates the entire body for one major task, and that task is keeping you alive. In other words, survival.

In order to succeed in this world, you first need to stay alive. This should not come as a surprise. Survival is the basic goal of all humans. Survival is the basis of success, the first and primal need that we all share.

Survival at its most basic means having enough food and water to stay alive. It means being able to stay alert to threats and risks; it means having people to rely on to help you get that food and water, to have shelter, and to find a mate. Overall, there are many things that make survival more likely, or easier.

If you can absorb nutrients effectively from food, you are more likely to survive.

If you have people around to protect you, you are more likely to survive.

If you avoid places that are dangerous, you are more likely to survive.

If you can avoid illness and disease, you are more likely to survive.

If you can recognize threats and dangers, you are more likely to survive.

Survival is more than just having enough food and water. The human brain takes a very comprehensive approach to survival. When we say the brain prioritizes survival, we mean that the brain helps direct our thoughts, actions, and reactions to build up survival resources.

**Survival resources** are physical resources, thoughts, reactions, and behaviors that help increase our ability to survive and avoid harm.

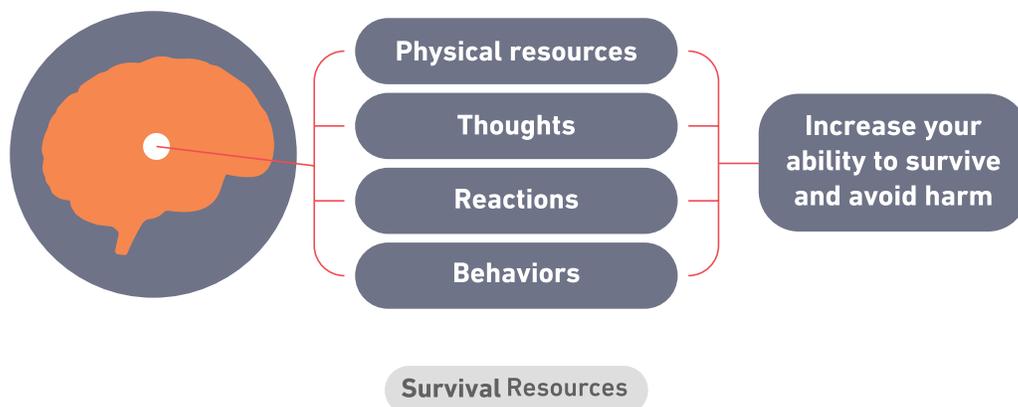
In this sense, food and water are definitely survival resources. A good sense of direction

is a survival resource. Avoidance of dangerous places is a survival resource. A protective community of family and friends is a survival resource.

Being able to pay attention to hurtful words is also a survival resource.

Isra's attuned hearing was a survival resource. It helped her avoid harm, to avoid people who made her feel unsafe, unloved, and unprotected.

Again, the priority of the brain is almost always to help you survive, to help you find food and water, to have healthy relationships with people who love and protect you, and to avoid harm.



All animals share with humans this priority of survival.

The gazelle, for example, has developed excellent hearing, far better than human hearing, to be able to hear a lion brushing through the grass from far away. Ducks have developed the ability to sleep with one eye open, so as to always be on the lookout for predators approaching the edge of the water, where they sleep. Dolphins have developed special sonar communication to be able to communicate with each other across long distances, to coordinate their fishing for food.

All species prioritize staying alive and acquiring survival resources to increase their likelihood of survival. As such, many species, including humans, have developed special, customized abilities that help us maximize our chances of survival.

Anything and anyone that exists trying to stay alive shares these specific, customized abilities.

Simply, our brains and bodies have developed in ways specific to us— specific to you—to keep you safe and alive.

Another easy way to understand this survival function of the brain is to think about airports. Each year, 27,000 planes touch down and take off from the airport in Amman, Jordan. About 2.3 million passengers travel through the airport each year. A bigger airport, like Dubai's international airport, hosts 70 million passengers each year, with 400,000 flights taking off and landing on a yearly basis. All of this movement is delicate and fragile. It requires careful and constant communication, all of which is handled by the airport control tower. In other words, they do a lot of coordination.

The airport control tower in Amman is impressive—new technology, modern equipment, and highly trained staff. Within the confines of the tower, a number of engineers coordinate the movements of all aircraft, ensuring safe take-off, landing, arrival at the gate, and movement along the runway.

In an airport, planes are constantly arriving. Planes are constantly taking off. Planes are trying to move around and between runways, avoiding each other with healthy distance so as to avoid accidents. In addition to coordinating movements, control towers play an important role in assessing potential threats to the airport, the passengers, and the planes. They have radars that check for unknown aircraft, mysterious objects in the air, or unknown vehicles on the runway. Basically, the height, size, and equipment of the tower were designed so that the engineers inside can predict incoming risks and effectively coordinate day-to-day operations to keep the airport safe, free from harm, and able to accommodate more and more movements each year.

We can summarize the key functions of the airport control tower as follows:

- Coordinating take-off and landing
- Coordinating runway movements
- Anticipating changing conditions
- Anticipating threats
- Coordinating responses to changing conditions and threats

The human brain is, in many ways, like an airport control tower. Your brain coordinates all that is going on inside you. Your brain coordinates various inputs, sensations, responses, thoughts, and actions to ensure you get the various survival resources you need, to ensure you can adapt to changing conditions, and to ensure you avoid harm as much as possible.

Your brain coordinates inputs and outputs, senses, thoughts, movements, and decisions. All of it—even emotions—at some point are coordinated by the brain.

Your brain is the chief coordinator, communicating with systems of the body and getting feedback from systems in the body.

As chief coordinator, your brain is constantly interpreting all the information coming in from the world around you and from your body, and coordinating the appropriate responses based on all that information, in order to help you navigate the world.

Just as the engineers in the control tower have to communicate with various departments, employees, and machinery on the ground below, your brain communicates back and forth with the whole body. We will discuss this in detail in Chapter 6.

For now, it is important just to recognize the brain as the chief communicator, the starting point for ensuring our survival and success. The smell of jasmine flowers, appreciating the deep blue of the sky, feeling the softness of a warm blanket, noticing a quick increase in our heart rate—all of these experiences are in some way coordinated, registered, and processed in our control tower, our brain.



Coordinating take-off and landing

Coordinating runway movements

Anticipating changing conditions

Anticipating threats

Coordinating responses to changing conditions and threats

### Control Tower Functions

Importantly, while the basic structure and size of our brains is more or less the same, our reactions, feelings, and behaviors are unique, adapted just for us, for our unique sense of safety and security—just like Isra’s attuned hearing.

So much of what we will learn through the stories of Isra’ and Ahmad is grounded in this concept of safety and survival. It is important to understand how the brain learns, how we form responses, and why each of us has unique responses to the same situations, good and bad.

## Summary

## Chapter 2: Back to the Beginning

- The brain's priority is the survival of its host (you). It coordinates operations in the entire body in service of survival.
- Survival means more than just having enough food and water to survive. It also includes being able to pay attention to threats and risks and having reliable people around you; all things that help boost the likelihood of survival are considered survival resources.
- Survival resources are physical resources, thoughts, reactions, and behaviors that help increase your ability to survive and avoid harm
- All species prioritize survival and obtaining survival resources. Across species, brains and bodies have developed capabilities to ensure survival.
- The brain can be likened to an airport control tower, in terms of coordination, prediction, and response to changes and threats.
- The brain is the main coordinator that communicates with all systems in the body, sending and receiving messages in order to meet expected demands

**Terminology:** survival resources

**Suggested exercises:** Affirmations; Conscious Movement & Relaxation

# Chapter 3

## A Predictive Brain

# Story 3

## A Predictive Brain

By all measures, Isra' grew up in a safe environment. She never broke a bone. She was never abused physically, though she was bullied. She never knew the pain of abandonment, or destitution. She never knew war, at least in her childhood.

Her family loved her, and she loved them securely, without fail and without doubt. She was well educated. She ate three times per day and could walk everywhere she needed to go. She had a very small group of close friends like sisters whom she had known since she was a baby. Yes, she had to deal with the discomforts and pain of bullying, but she was, all in all, safe from harm.

Isra' never really thought about the concept of survival. Children never think about such things. Those for whom safety is a guarantee may not even think of it as adults.

As a teenager, Isra' knew she was specifically sensitive about her height. Her height, and the feelings it generated, was her weakness in an otherwise thick armor. No one else saw her cry about it. No one else saw her constant criticisms, her longings to look different. Shy and stoic was how others saw her, a high tower, isolated, with walls of carefully placed stones.

Of course, it is difficult for Isra' to pinpoint exactly how, why, or when she became this way. Why she was so sensitive about her height. Why her heart beat faster in response to insults about her height, but little else.

For Isra', like most of us, she wished she were different—she wished she were shorter. She wished she were stronger. She wished day and night to actually be the strong being others seemed to see with such clarity. To her, that tower was invisible, or, at best, thickly veiled by clouds.

Where others saw strength, Isra' saw weakness. Where others saw a thick skin, Isra' constantly worried that her sensitivity was exposed bare.

While she may not remember, so much of Isra's shyness started when she was just a little girl, about eight years old, in second grade. In the second grade was the first time someone made fun of her height.

The incident was ordinary, not dramatic, not the type of thing Isra' would usually remember. Yet, that one banal event set off a chain reaction that profoundly shaped Isra's internal emotional life. An incident all but forgotten was the seed of deeply rooted patterns fundamental to Isra's way of engaging with the world.

It was in the early morning, soon after she had walked into the classroom with its wooden chairs and peeling walls. The classroom was the color of the soap her mother always bought—a sundried, greenish-yellow. It reminded her of olive oil as it comes out of the press. She remembers the classroom clearly. The teacher, underqualified but eager, was kind but a

little bit sad most of the time.

Isra' had just begun to take out her notebooks for the first class, when she heard a girl across the room whisper to another girl, "Look at her. She's too tall. Like a flagpole."

Isra' turned around. The girls were clearly talking about her.

Isra's heart beat faster.

Like a flagpole—strong, unfazed by the elements, respected, but never attractive.

The girls were not saying anything Isra' did not know. Isra' ignored them, paying attention to her teacher instead. But those words whispered from across the room sat stewing in Isra's mind for minutes, passively taking up space and energy in her mind while she tried to focus on class.

By the end of the day, Isra' thought she had put the incident behind her.

But food on low heat nonetheless cooks. And those words, unnoticed, carved out space in her heart. They meant something, they felt a certain way, even as Isra's immediate attention had moved on.

Those words. Too tall. They took up space in Isra's mind.

The next morning, Isra' sat in the same seat. She opened her notebook. Without intention or awareness, she shifted slightly to the left in her chair, tilting her head in the direction where those two girls had been sitting the day before. Without thinking, Isra' was searching for those words again, tuning in close to hear if those girls were still interested in her height or had moved on to more exciting news.

Isra' listened closely. But, for a long minute, the girls said nothing. Isra' was relieved. About to move on and focus again on the lesson in front of her, Isra' looked back, to check if the girls had even showed up at school.

As Isra' looked back, for a second, one of the girls locked eyes with Isra' from across the room. She signaled to her friend, pointed at Isra', and giggled quietly.

No words at all, yet Isra's heart began to race. As the girls chuckled to themselves, Isra' felt a sharp pain in her chest, as if someone had hit her. Her mind raced; her heart beat faster than usual. She felt her hands get tight, like she was making a fist. She felt awful; she felt angry.

She tried to forget. The thought wouldn't move. The feeling wouldn't go away. And that was perhaps the first time Isra' felt insecure, insecure in her own skin, in who she was.

As she had done the day before, she tried to shove those bubbling feelings down. She breathed deeply, closed her eyes tight for a second, turned towards the teacher, opened her eyes, and breathed out. The feeling in her chest subsided slightly.

Forget it. Forget them. She thought harder this time.

Her grip softened on her pencil. Her thoughts slowed. Her heart gentled itself back to a normal beat. She focused on the teacher.

Too tall. The words bounced around in her head, until she took a few more breaths. She tried to focus on the teacher, but she felt herself drawn back into her own mind, replaying the soft yet bruising laughter she heard across the room.

Too tall.

There in her mind, trying to be ignored, that laugh from across the room and the words from the day before sat stewing together. They grew bigger. And at eight years old, Isra' had no idea just how much those words, those feelings, would carve deep patterns in her thoughts and her very sense of self.





# Lesson 3

## A Predictive Brain

The brain, like an airport control tower, is constantly scanning for risks, constantly trying to keep you alive. Your brain coordinates every response—from breath to feelings to thoughts—to help you accrue all the survival resources you need to survive—everything from food and water to love and friendships. It does this using two main tools: **associations** and **predictions**. These tools are distinct but closely related.

### Learning by association

Think back to when you were a small child, like Isra'. At some point, you may have encountered a hot flame, oven, or stove for the first time. Perhaps you were helping your mother in the kitchen, or just wandering around. Like many young children, you may have curiously reached out to touch the hot stove or flame. Quickly, you found out that it is hot! It burned you.

Chances are, you only needed to touch the stove once to learn an important lesson. Maybe it took a few times, or a few trials of pain, to learn the lesson. Whether it was just once, or a few incidents, chances are, you have not touched a hot stove since then.

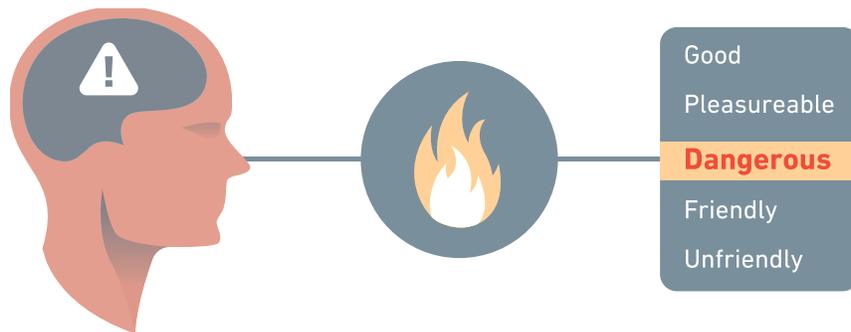
What happened in your brain in this scenario is simple:

- An event happened (you touched the stove)
- It made you feel unsafe or at risk or in pain (you were burned)
- You quickly or gradually learned to not do that.

You formed an **association**, a link between a stimulus and a set of physical or emotional sensations.

Every input from the world around you passes through your brain at some point. Every smell, every sight, every touch, every emotion, and every physical state is in some way processed and coordinated by your brain.

When inputs are first sensed, the brain has to interpret those inputs. Are they good? Pleasurable? Dangerous? Friendly? Unfriendly?



Learning by Association

In other cases, you notice a strong feeling in your gut, your chest, or just an emotional state. When the cause of these feelings is unknown, your brain will scan for possible inputs, possible reasons.

Your brain is constantly making inferences and associations, links between feeling states and possible causes in the world around you. Sometimes the cause of a feeling is clear, as in the case of the stove. In other cases it is less clear, but the brain still searches for a cause.

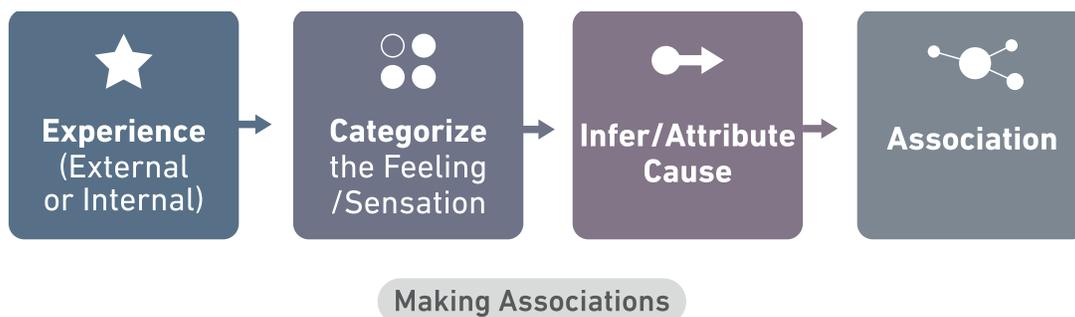


In other words, your brain is constantly trying to infer or make meaning of what is happening to you and in you.

By making meaning and learning cause-and-effect, you learn to stay alive.

You learn what to approach and what to avoid.

And you learn how best to navigate the world to accrue more survival resources.



In the case of Isra', when she was mocked for the second time in the classroom, she experienced a variety of sensations both physical and emotional. She felt bad—from her chest to her hands to her emotions. Perhaps it took a few seconds, but the mockery she experienced was clearly negative. And thus, a **negative association** was created. The process is as follows: First, an experience (whether an external or an internal state) occurs.

Second, we recognize that it feels a certain way—good, bad, pleasurable, uncomfortable, sad, worrisome, or any number of other feelings. We categorize the experience.

Third, we search for the cause of that feeling state. Above, we had two examples: a hot stove, and, for Isra’—people’s unkind words. In some cases it is clear; in others it takes more effort and “filling in the blanks” with various possibilities.

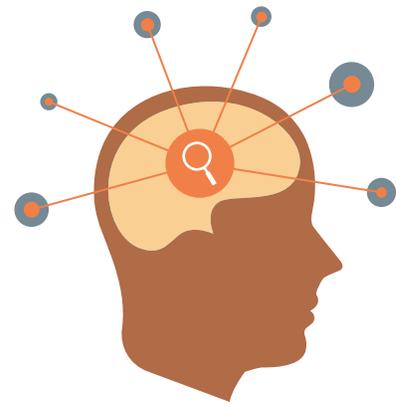
Fourth, either quickly or gradually, those experiences and inferences lead to an association, which, as we noted, is a link between an object and a set of physical or emotional sensations. Associations help us quickly and efficiently navigate the world.

### Shortcuts for survival

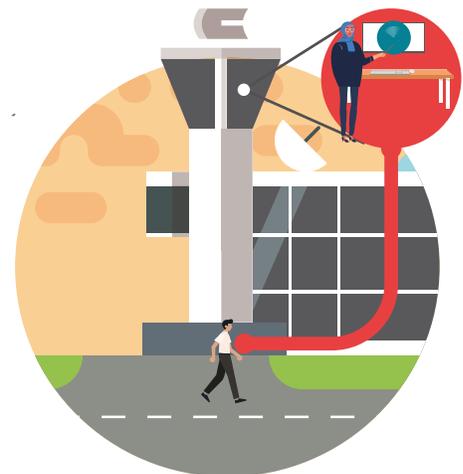
Given the complexity of our world, it is important for the brain to quickly and easily identify different feeling states. Think back to the airport control tower.

Imagine the engineer in the tower sees an incoming object, but it is a new object, one he has not seen before. He needs a way to identify it, in order to coordinate the appropriate response—to ignore it, to take some precautionary measures, or to prepare the airport for danger. Though the engineer has not seen this object before, he has a feeling that it deserves his attention; he makes inferences based on similar experiences and similar objects. He relies on broad categories of things that are similar to this new object. He makes decisions based on experience and inferences, in service of ensuring the safety of the airport.

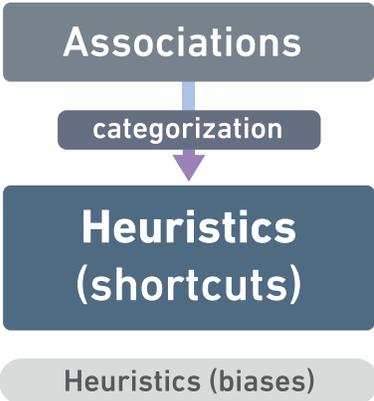
Given the complexity of our world, it would be difficult to survive if we had to stop and think every single time we had a feeling or had a new experience, and had to make brand new categories for those feelings and experiences. We thus often rely on **heuristics** or **biases**, which are essentially mental shortcuts based on past experiences and inferences that aid in rapid response to recurring situations.



Filling Gaps



Shortcuts for Survival



We need to be able to tell, relatively quickly, a hot fire from a block of ice, or a safe person from a dangerous person. For this reason, the associations we make often fall into large categories that become more or less automatic in the form of heuristics.

In the case of Isra', when she was mocked for her height, she felt various physiological sensations and a sense of rejection in her classroom. Those experiences were clearly negative, and Isra' categorized them as such. The laughter from those girls, and their words the day before, created all sorts of negative physical and emotional sensations (tightening of fists, sensation in her chest) that, so it seemed to Isra', were directly caused by those girls' words. And perhaps it just took a few minor incidents, but Isra' began to make a clear association between people's attention to her height and a strong set of negative feelings.

### Negative and positive associations

Associations like these are how we navigate the entire world.

- Humans tend to approach things with which we have a **positive association**.
- Humans tend to avoid things with which we have a **negative association**.

Each brain and each body is different in its inferences, categorizations, and associations. This is because no two people are the exact same. That said, **positive associations** may share some common features, like feelings of joy, excitement, comfort, trust, safety, and calm, as well as welcome physical sensations like warmth and relaxation.

In the same way, negative associations may also share some common features, like feelings of insecurity, pain, anxiety, guilt, fear, and unwanted and disturbing physical

sensations like nausea, shortness of breath, and tension.

A brain that prioritizes survival is particularly sensitive to negative associations. A brain that prioritizes survival will keep an eye out for inputs and sensations linked to negative associations because negative associations often relate to experiences, incidents, people, or sensations that threaten our survival resources.

In other words, experiences that threaten our survival or our access to survival resources hold a strong place in our memories.

It is important to remember that your associations are unique to you and to what you have lived. Not everyone shares the same negative associations. Not everyone is sensitive about their height. Each person has unique associations based on life's experiences.

Overall, your brain relies on associations to keep you safe and able to succeed in the world around you. Your brain relies on associations to quickly and as accurately as possible notice what in the world around you poses a risk to your safety and survival. The brain does this by turning associations into predictions and simulations.

### Predictions and adaptations

Knowing what might happen in the future affects what you might do today. Going back to our example, an airport control tower can only keep the airport safe, secure, and efficient if it can predict possible incoming problems, if it can quickly sense signs of potential threats, and if it can make the necessary adjustments and preparations. In other words, the tower needs to keep a close watch for all its negative associations, as they could threaten the safety of the airport.

Similarly, Isra' prepared herself by listening closely and shifting in her seat to better hear any signs of incoming mockery. If Isra' wants to prepare her heart accordingly to handle the pain caused by hurtful words, she has to be able to predict when pain is coming.

The airport control tower uses radar and other advanced scanning and communications technology to predict possible risks from the sky, from the ground, from inside and outside the buildings around the airport. It does not just wait until the risks show up. The airport control tower is constantly predicting possible risks to the safety of the airport, planes, and passengers.

The same thing happens in your brain, as it uses your various senses and feeling states to infer possible risks and disruptions, in order to prepare you accordingly.

To keep you alive and safe, your brain is constantly making **predictions** about possible risks, possible threats to your safety and survival, about what you're seeing and might see, about what you're feeling and might feel. It predicts and confronts risks by relying on associations it has made between what is safe versus what is unsafe, and then by coordinating the best response to meet those risks and stay alive.

Simply, your brain is constantly scanning, like the control tower's radar. It checks for threats around you. It checks out people who are approaching you, the scenes around you, the smells around you—to help prepare you for whatever comes next. It uses all available information to make a prediction about the nature of an event or experience, and then coordinates the most appropriate responses to what it has predicted.

And as we said earlier, when there is not enough immediate information to be sure about the danger posed by an experience or sensation, it uses past experiences and heuristics to fill in the gaps and create a useful prediction that will enable it to adjust accordingly.



### Categorizing predictions

But how does the brain know what is a risk, and what is neutral?

Simply, by relying on its associations.

Going back to the example of the control tower, the engineers in the tower have years of experience in airports, and therefore know what objects and situations pose a risk to the airport, and what objects and situations are neutral. They have developed some pretty good heuristics and associations. For example:

- Light rain coming in on the horizon does not threaten the airport’s safety. The planes and the buildings can handle light rain.
- Birds flying overhead do not pose a risk to the airport. The planes can easily wait to take off and land until the birds fly by.
- A hurricane or a thunderstorm, on the other hand, is a risk to the airport. The airport and the planes cannot handle that type of weather.

In the case of dangerous weather, the engineers may temporarily suspend movements, or even close the airport until the threat has passed. These are all examples of associations the tower has made. Certain things are associated with risks to the airport, and so, over time, the tower knows what to look for on the horizon.

The brain does the same thing. Associations and heuristics inform predictions, and the brain uses all of your senses—sight, hearing, smell, touch, taste, and even internal emotional feelings and unidentifiable physical sensations—to predict when possible danger is approaching.

**Predictions** are simply the educated guesses about what comes next, based on existing information and associations. Predictions can be very simple:

- Dark sky = incoming storm
- Smell of smoke = nearby fire
- A bright red flame on the stove = getting burned
- Presence of the girls who hurt Isra’ = being mocked again

In these examples, clear signs in the outside world suggest what might come next. And generally all of the brain’s predictions are linked to life experiences, and to associations. And, of course, just as the airport control tower engineer uses his predictions to mobilize actions, your brain uses its predictions to mobilize the entire body to deal with incoming situations that it has predicted. We will discuss this in more detail the next chapters.

For Isra’, simply seeing those girls in her classroom on the second day led to a quick prediction—that she was going to be mocked again. Her brain predicted what might happen and how she might feel as a result, and prepared her for it.

Once the brain makes a prediction, it prepares you for the best response. In the case of Isra’, her prediction about being mocked again by those girls prompted the following responses:

- tuning her hearing
- adjusting her posture
- focusing her attention on those girls’ words.

Isra’s brain and body prepared her, based on a prediction, even before she actually heard anything. None of these responses were deliberate on Isra’s part; she reacted this way somewhat automatically. We will discuss the idea of automatic responses more in the next chapter.

Again, the predictions and the automatic responses our brains coordinate are almost always for the sake of survival and safety. In other words, they are **adaptive responses**, meaning that they help your body adapt towards safety and survival.

In the case of the stove, the adaptive response is to simply avoid touching the flame.

For Isra’, an adaptive response was to listen closely, to make sure she knew who was mocking her and who was kind to her.

### Simulations & prediction errors

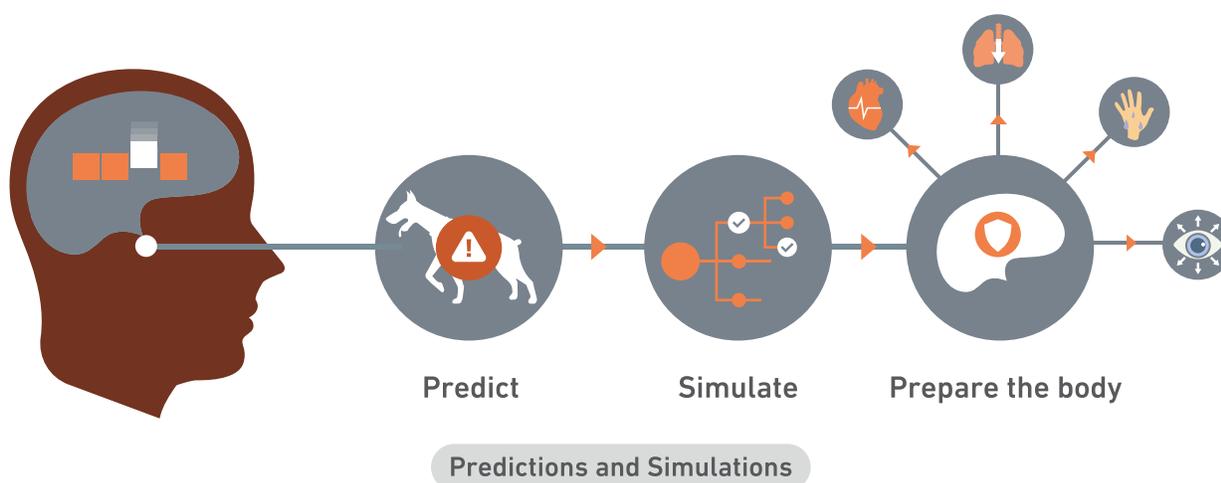
The responses and predictions described above all depend on the brain receiving inputs and reliable information. What happens, however, when there is not enough information for your brain to predict what happens next?

As your brain still needs to make meaning and a prediction, it may fill in the gaps on its own, based on past experiences and associations. And, like the airport control tower, your brain may need to do so quickly, in order to prepare you for possible threats to your safety and survival.

For example, imagine you are walking at night, and you hear the rustling of tiny footsteps just ahead of you. It might be a dog, but it might not be. You do not have any way of knowing as it is dark and you cannot see. In this case, you need to make a guess. You need to fill in the information gap. You need to have some sort of guess about what it is, in order to prepare for what to do next.

In the absence of real, verifiable information, the brain will usually fill in the gaps with information from past experiences and lessons. Based on available and inferred information, your brain:

- predicts something dangerous
- creates a mental **simulation** (an unconscious mental model of what may happen)
- coordinates and prepares an adaptive response



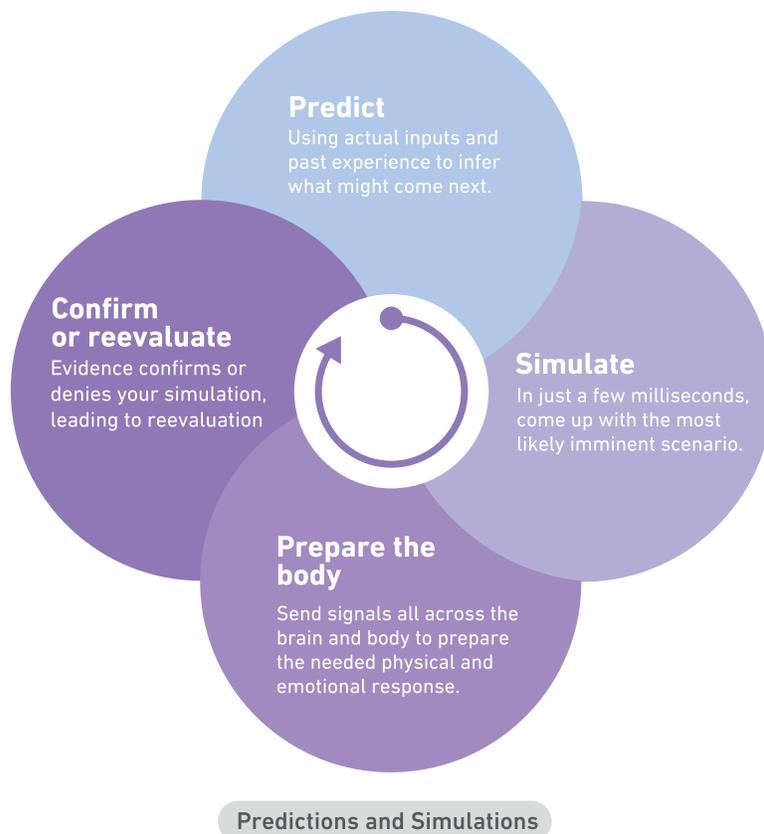
Your brain may simulate lots of possible scenarios about this possible dog in front of you. It may predict, in its simulation, a bear, or a snake, or a wolf, or a dangerous person. As all of these are possibly dangerous, your brain will start to prepare your body for meeting this threat.

- Your heart rate may rise.
- Your breaths may shorten.
- Your palms may sweat.
- Your pupils may expand.

Again, no two people will react the same way to predicted or imagined danger. This is just an example. In any case, the brain will coordinate with the body to prepare the appropriate, adaptive response to deal with the predicted situation at hand—something dangerous.

Next, you have to confront your prediction and simulation. You have to confront the unknown reality of the dog, the snake, the wolf, or whatever else it may be. You need to confirm your simulation. If it is something threatening, great, you are ready to run.

If it is not something threatening, and just a small, scared kitten, you have made a prediction error. In other words, you have simulated and prepared for a scenario that does not align with reality. In this case, your brain will re-evaluate the situation with new information: that the ominous noise was just a tiny kitten. In the case of a prediction error, you can adjust your response accordingly. This feedback cycle (see chart) is important as we understand the brain.



The outside world and those around us do not see this cycle happening in us. Indeed, it happens so fast and so constantly that you yourself are probably rarely aware of the prediction cycles your brain is going through. It happens mostly automatically, which we will discuss next.

Each person's brain is unique in the predictions it makes, just as each person is unique.

Your ears probably do not tune in to conversations across the room, like Isra's. If someone comments about your height, it may not lead to any sensation in your body. Your associations, adaptive responses, predictions, and simulations are unique to you, because you are the only one with your life experience.

While these functions are unique to you, all humans share the same core purpose behind the predictive process. The reactions and behaviors that result from the predictive process in all of us share the same basic purpose—ensuring safety and survival in a world of risks.

## Summary

## Chapter 3: A Predictive Brain

- The brain uses two main tools to help ensure your survival: associations and predictions.
- Associations are links between a stimulus and a set of physical or emotional sensations.
- Associations are the brain's attempt to build a causal understanding of physical or emotional sensations and their causes.
- After realizing the feeling generated by an experience, we automatically and unconsciously search for its cause. We fill any gaps in our search with various inferences. Then we build the link between the experience and the set of physical or emotional sensations caused by it.
- Heuristics (or biases) are mental shortcuts based on past experiences and inferences that aid in rapid response to recurring situations.
- There two types of associations: positive and negative.
- Experiences that threaten our survival or our ability to access survival resources take a more prominent place in our memories; negative associations are stronger and more sensitive.
- Predictions are speculative often unconscious thoughts about what will come based on incoming information and associations.
- Predictions allow the brain to coordinate responses that enable a person to respond to the predicted scenario(s).
- When not enough information is available, your brain fills in the gaps with information that it draws from past experiences. Based on either available and inferred information, your brain goes through the same predictive cycle:
  - Predicts what is coming next.
  - Constructs a mental simulation (imitation or model) within milliseconds.
  - Coordinates and prepares an adaptive response within milliseconds.
- Just as every person is unique, each person's brain is unique in the predictions it makes.

**Terminology:** association, negative association, heuristics, positive association, prediction, adaptive responses, simulation

**Suggested exercises:** Letting Thoughts Go; Affirmations; Belly Breathing

# Story 22

## When the Light Shines Brighter

Isra' and Qusay met and married quickly.

As a girl, Isra' had imagined every detail of her wedding. Of her husband. Of her makeup. Of how she would be a world-class engineer and a flawless mother at the same time. She had imagined her daughters' hair. Her future children's own weddings. Those were the fantasies she and Marwa would compare in hushed conversations that lasted until sunrise.

Isra' had not thought of marriage since the conflict began. The last boy she loved, Adnan, was killed in 2015. He had been her classmate in the first years of university. She chose her seat in the lecture hall carefully each day—always waiting to see where Adnan sat first.

It was only after two years in the camp that Isra' tolerated the thought of marriage. Love seemed a bit ridiculous now. Few people in the camp remembered how to fall in love, but they all understood stability.

Isra' hoped that marriage would at least be stable. Another hand to hold for safety, as the future surely had sharp teeth.

Isra' prayed. She prayed for wisdom, for opportunity, for her parents' decisions.

Her brother's plans to leave Jordan softened her to the idea of marriage. In the camp, things had remained unchanged for two years. In their immediate family, no one had died. No one had fallen ill. Whether here or back home, the family would have expanded. Either she or Ahmad would have married anyway.

The potential change brought on by marriage was not tragic. Isra' welcomed it. It felt natural, perhaps the only natural change that Isra' endured in eight years of war.

Isra's parents knew Qusay distantly. Ahmad knew his family.

Qusay was thin. He was tall, of course, with a beard trimmed so delicately she wondered how long he spent each morning ensuring no hairs dared encroach beyond the line that so neatly outlined his jaw. He was an aspiring engineer, like her, with a passion for writing. In their first formal meeting, they shared, amused and slightly embarrassed, that among the only things they each brought from home were notebooks. If they had only known what they would really miss.

Isra' was not in love, but she had no objections to Qusay. And, by that point, lack of objection felt more rare and luxurious than passion had ever felt.

Of course, her wedding was far from what Isra' had dreamt. No party. No feast. No lights like the ones she saw in Bab Touma on Christmas.

And marriage was not perfect. Not through any fault of her husband's, but simply because the heart she had in the camp was so far removed from the heart with which she used to dream of marriage. It would take years for her to love Qusay the way she wanted, and the way she knew she could. It would take years for her to befriend and engage that part of herself that could feel passion.

In the first years of marriage, neither Isra' nor Qusay knew how to build a relationship. Both of them had spent years losing people who had been such a natural part of their lives. Both of them had accumulated years of devastation, building a natural and daunting hesitancy about new relationships. Neither of them had added new people to their lives for years—they had just been counting losses.

Admitting their pain, and their past, step by step, was the very thing that brought them closer.

In late 2016, Isra' got another phone call that would change her life.

Isra' was in the kitchen, making coffee, reciting the same prayers her mother whispered the days after Mazen died. Isra' was praying for her brother, for his safe passage.

Qusay came home, ducking his head through the door. Isra's heart leapt a little whenever she saw her husband duck through the doorway. She was glad she married a tall man.

Qusay walked into the kitchen, still wearing his backpack. He was glistening with sweat from a long bike ride back from work.

She put the coffee down.

He took both of her hands in his. Qusay's hands were cold and wet. Isra' tried hard to fight off a memory of the night of the border crossing, when Ahmad's sweaty and cold hands pulled her through the maze of bullets.

She felt the shards of plastic in her fingers, the pieces of her phone that had shattered. She closed her eyes tight, fighting off the flashback.

Her hands were freezing too, as the kitchen was walled with tin and no insulation.

"Hayati," he said. His smile was still wide. My life, he called her always.

What could it possibly be? What would make him so happy? Isra's stomach bunched up. She felt a pang of nervous hunger. She felt nauseous, swallowing fast to keep her nerves from moving beyond her stomach.

"They called. They want us to go to Canada. Resettlement." Qusay's eyes were wide and shiny. Isra' had never noticed the slight difference in color between the two.

Isra' placed her hand on the stove unknowingly. She recoiled, placing her hand on her chest and checking her heartbeat.

Oh God. And my mom?

Will I see my brother? Hoda? Her mind raced.

She was unaware of the smile on her face, toothy, matching Qusay's. He read it as joy.

"What? Are you sure?" she asked him.

"Yeah. We have to go for an interview next week," he said with confidence.

Thank God we can leave.

I don't want to leave. I hate it here.

I cannot raise a child here.

But I cannot raise a child alone.

Isra' had found out she was pregnant just days before this news.





# Lesson 22

## When the Light Shines Brighter

In times of conflict, displacement, or adversity, it can feel as if there is never a moment to rest. When things settle after a long period of frantic movement, something else, something new, seems to happen.

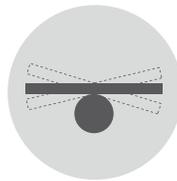
Isra' and Ahmad had been living in frantic movement for years, with no rest from the constant change. In many ways, Isra' had given up on expectations, as expectations had become painful, hijacked by past memories to distort her vision for the future.

Earlier, we discussed how chronic stress, trauma, and other associated emotional phenomena like grief and shame can affect an individual at three important levels: brain, body, and behavior. And we have seen in Isra' and Ahmad that years of stressful incidents, emotional difficulties, and complex reactions deeply impacted them at each of these levels. Everything from their physical health to their deepest relationships had been affected.

Like anyone, Isra' and Ahmad adapted (see Chapter 4) in the wake of stress and trauma. As discussed in the beginning, humans adapt in order to optimize survival resources and success in the world. In a world filled with adversity and stress, the adaptations our brains and bodies make are often unwanted, unwelcome, and detrimental (maladaptive) in the long term.



Resilience



Stress

### Threatened Survival Resources

Over the course of Isra' and Ahmad's journey, we have seen various relationship behaviors affected by stress, trauma, and adversity. For a time, Ahmad withdrew from his family. Isra' and Ahmad drifted apart for a short while. And Isra's marriage represented a new event that would inevitably be affected by her past years of experiences. Stress, trauma, and adversity complicate intimacy. We read:

And marriage was not perfect. Not through any fault of her husband's, but simply because the heart she had in the camp was so far removed from the heart with which she used to dream of marriage. It would take years for her to love Qusay the way she wanted, and the way she knew she could. It would take years for her to befriend and engage that part of herself that could feel passion.

In Chapter 18, we discussed in detail how stress and trauma can disrupt your sense of self. Stress and trauma can affect you to your core, and those effects may last a long time and affect multiple behaviors, including relationships. And, if you feel distant from yourself, it will be difficult to feel close to others.

## Trauma is not the end

After a period of disruption, it may feel as if the adaptations to stress and trauma are permanent. But the negative and unwanted changes experienced are not the end. We can continue to adapt, towards a desired, healthier functioning.

Just as circumstances can change dramatically in a short period, human beings are capable of tremendous change and growth, over the short and long term. Isra' and Qusay eventually began to find a rhythm, to kindle a love stemming from core and true parts of themselves.

This brings us to several important points:

- You are not the sum of your traumatic experiences or hardships.
- The effects of those hardships do not erase your identity.
- You can, with effort and time, begin to confront and control many of the reactions and disturbances that have accumulated over the course of difficult experiences.
- You are resilient. You can still grow into the person you want to be, and recover elements of yourself you fear have been lost.
- Just as your brain and body adapted in the face of stress and trauma, you can adapt in the direction of growth and well-being, even in the face of continued adversity.

We will discuss the underlying scientific mechanisms that make healing and growth possible in the next chapter. For now, though, we want to introduce you to the basic concepts, to the core components of “what comes next” after witnessing, feeling, and experiencing the many disruptions of stress and trauma.

After extended adversity, your control tower may operate differently than in the past, but the equipment is still there, and you can bring things back into healthy alignment. You can adapt. But just as each person’s reaction to stress and trauma is unique, each person’s journey towards managing, healing, and possibly reversing those reactions is also unique.

No two people deal with, manage, and recover from the effects of stress and trauma in the same way. That said, there are a few concepts that help clarify just how healing is possible.

## After stress and trauma

In times of constant change, assessing how you have been affected by stress and trauma may be difficult. Some symptoms and adaptations are immediately evident in the aftermath of events; others take time and reveal themselves only years later, in certain behaviors, thoughts, or responses to new stimuli and situations.

Just as “assessing the damage” may be difficult, it may also be difficult to assess how you

are growing, adapting, or recovering in positive directions after stressful experiences. Both damage and growth are sometimes understood in only hindsight.

As we said, you are not the sum of your traumatic experiences or hardships. The adaptations to your brain, body, and behavior in the aftermath of or during stress and trauma are not the end of the story.

You can manage those negative effects. You can cope with them. And in many cases, you can reverse them. It may seem unrealistic at first, but stress and trauma can even lead to tremendous new growth, to new and improved parts of your personality that emerge only after difficult experiences. Hardship can lead to many positive adaptations and changes.



Isra' would learn this over years as she grew in her relationships with family, and now with Qusay, and as she grew to become a mother.

When we talk about coping with the effects of stress and trauma, and learning to react in new ways, two important terms are used: resilience and post-traumatic growth.

### **Towards resilience**

In the face of traumatic experiences, growth and change are possible. But, it would be unfair and unrealistic to suggest that those who experience trauma should expect or even strive for “a return to normal.”

Most often, trauma creates a “new normal”—a new sense of self, a new set of feelings, thoughts and behaviors that must be confronted, addressed, challenged, and integrated into life in pursuit of a healthy future.

Progress and growth in the face of trauma is less about a return to how things were, and more about growing into the future in a way that is not consumed by the past. That includes managing some symptoms and reversing or undoing others. It may include building strong social supports. It may include being open and honest about your reactions and triggers. As said, each person's process is different.

Your ability to successfully adjust and succeed in life after trauma is what we call resilience.

**Resilience** suggests that an individual can negotiate survival and success in spite of adversity, and in the aftermath of adversity. Of course, some aspects of resilience depend on you, and other aspects depend on your environment. In some situations, resilience may be easy; in others, more difficult.

Even more simply, resilience is the ability to successfully adapt in the face of adversity. It does not mean immunity to stress and trauma. It does not mean that stress and trauma will not affect you or leave negative impacts. It means that you have solid defenses to confront it and stand your ground, as best as you can, in the face of what may come.

In other words, resilience describes your ability to adapt to adverse circumstances in order to maintain your access and ability to navigate survival resources.

### Resilience resources

As discussed earlier, your brain and body coordinate thoughts, responses, and behaviors in order to keep you alive and help you navigate the world around you. We discussed the concept of survival resources, which include food and water, physical safety, family and relational support, and cognitive abilities, among other things. Again, survival resources are substances, states of being, and relationships that increase your chance of survival in a confusing, chaotic world.

Stress and adversity redirect the brain's and body's efforts to focus on immediate survival. In the face of stress, the brain and body adjust various systems with the aim of keeping you safe. Over time, these adaptations may lead to hypervigilant reactions, numbness, isolation, or other challenges we have discussed. There are countless ways for us to become dysregulated in the aftermath of stress and trauma, and we have seen many of them in the lives of Isra' and Ahmad.

Stress and adversity disrupt the communication between the elephant and the rider, between the automatic, unconscious processes and those we have more control over. They push you out of the optimal arousal zone, as discussed before. These disruptions lead to many unwanted reactions, thoughts, and behaviors to triggers.

In summary, stress and trauma disrupt your long-term well-being, often in the name of short-term survival.

Inevitably, stress and trauma interrupt your ability to access survival resources: food and water, physical safety, relationships, bodily health, sleep, and self-esteem. Whether the source of stress is conflict and war, economic scarcity or poverty, loss of loved ones, or other, stress and trauma strip away the building blocks of resilience.

Resilience is about more than just having basic needs met. It is about maintaining a healthy set of survival resources that ensure your well-being. So, just as there are survival resources, there are resilience resources, which can include:

- Goals and purpose
- Hope

- Faith or spiritual practice
- Healthy relationships (support network)
- A stable, predictable routine
- A positive view of yourself
- Clear internal and external communication (interoception and interpersonal communication)
- Understanding the effects of stress and trauma
- The ability to manage or control unwanted reactions and impulses

Resilience resources help you navigate towards survival and success even in the face of adversity. Let us be clear, though. In the face of stress and adversity, resilience is not easy. Stress and trauma erode resilience resources. Stressful experiences disrupt interoception, complicate interpersonal relationships and intimacy, defy predictability, and lead to unwanted reactions. The effects of stress stand in direct contrast to the resilience resources discussed here.

Stress and resilience often work against each other. For example, relationships make survival much easier, and relationships make us resilient. Yet stress and trauma often disrupt our relationships. We need to be able to listen to signals from our bodies in order to confront and overcome stressful situations, yet stress and trauma disrupt our capacity for interoception.

To summarize, stress and resilience exist in a complicated balance. Stress chips away at components of resilience, but resilience can increase your ability to successfully navigate stress and adversity.

### **Building resilience**

All of what happened to Isra' and Ahmad over the past years seemed outside of their control. They did not choose what happened to them. They did not choose the pain they endured. They did not choose the reactions (strong triggers, numbness, shame, despair, etc.) that they developed as a result of their experiences.

It may seem that resilience resources are then also outside of your control. To a certain degree, that is true. It is not completely within your control whether or not you have supportive relationships. Or a predictable schedule. It is not in your control the extent and degree of disturbances you experienced after prolonged stress or trauma.

Indeed, some aspects of resilience are circumstantial (for example: having family members around you), while others require practice and effort. In other words, some aspects of resilience are under your control; others are not.

Building resources often requires effort, and there are specific strategies that you can use to deal with unwanted responses, including unwanted thoughts, your view of yourself, and your physical reactions to triggers.

Isra' and Ahmad lived through years of experience that chipped away at their resilience. It took time, honesty, and communication to rebuild their relationship, which, for so long, had been a cornerstone of safety and resilience in all that had happened. It also took Isra' and Qusay time to build their marriage relationship:

For much of their first years of marriage, neither Isra' nor Qusay knew how to build a relationship. Both of them had spent years losing people who had been such a natural part of their lives. Neither of them had the emotional tools to build a new relationship. Neither of them had added new people to their lives for years—they had just been counting losses.

Admitting their pain, and their past, step by step, was the very thing that brought them closer.

Over time and through effort, Isra' and Qusay would begin to rely on each other as a resilience resource.

It takes time and energy to identify resilience resources, and then more time and effort to build each resilience resource to counteract the effects of past and continued adversity.

Importantly, you are not alone. So much of resilience is about those around you, about community. And community does not just mean family. It can mean friends, colleagues, and people you will continue to meet along your journey.



### From resilience to growth

Monitoring our own resilience or growth in the middle of adversity is hard. It is highly unlikely that Isra' was aware of any growth or recovery after all that had happened to her. She had grown accustomed to unwanted thoughts, reactions, and triggers, and had instinctively developed ways to cope, to fight back, and to manage her symptoms. For example, we read:

He took both of her hands in his. Qusay's hands were cold and wet. Isra' tried hard to fight off a memory of the night of the border crossing, when Ahmad's sweaty and cold hands pulled her through the maze of bullets.

She felt the shards of plastic in her fingers. She closed her eyes tight, fighting off the flashback.

Isra' had, on some level, become used to flashbacks. She had grown familiar with the trigger—clenching someone's cold, wet hands, just like Ahmad's hands the night they crossed the border. She knew a flashback was coming. She tried to fight it. Without a clear plan or knowledge, Isra' had developed her own way of recognizing the incoming flashback and fighting it off.

She closed her eyes tightly. She tried to push the memory away, so that it would not create a physical reaction or re-create the fear she felt the night they crossed the border. Isra' was developing a new resilience skill, and, in practicing it, she was growing.

Isra' was demonstrating resilience as she searched for ways to fight off specific disturbances. To grow. To make progress. To overcome the automatic responses that had become commonplace. For all people who experience stress and trauma, some post-trauma reactions may persist and become deeply ingrained. Others may be temporary. The duration and intensity of post-trauma reactions varies greatly from person to person, as do strategies for growth and coping.

It was in a time of growing resilience that Isra' learned she would become a mother. That she would have to raise a child in a place she barely knew. And she was scared. Upon hearing the news about Canada, Isra' thought to herself:

Thank God we can leave.

I don't want to leave. I hate it here.

I cannot raise a child here.  
But I cannot raise a child alone.

Isra' was worried for herself and for her child. She was worried about raising her child in a place where she had fewer resilience resources. Importantly, the hardship Isra' endured may have negatively affected her, but it also helped her cultivate certain skills and perspective that would make her a strong mother.

The adversity she faced may have made Isra' more protective, more aware of her own feelings, more attuned to those few people to whom she felt close. Many of these traits would make Isra' well suited to motherhood. In other words, the adversity she faced opened up new, positive aspects of her personality.

### Post-Traumatic Growth

This idea of positive developments in the wake of trauma is called post-traumatic growth. Post-traumatic growth refers to any perceived positive change experienced as a result of adversity and other challenges, often resulting in a higher level of functioning in the brain, body, or behavior. Let us review some examples:



Post-traumatic Growth

- Think about someone who plays the piano really well. Due to a tragic injury, this person loses a finger. The loss of the finger results in a complete inability to play the piano. Initially, the loss is tragic. It is more than the loss of a finger. It is the loss of a skill, of a hobby, of a source of joy, of perhaps a source of income, and a loss of a part of this person's identity. After a period of tremendous sadness and pain, this person begins to paint and create art—an activity that does not need the same level of finger precision. Eventually, this person becomes an excellent artist. They begin to find tremendous pleasure and joy in art, and even sell art on an international level. Art becomes a new hobby, lifestyle, and identity for this person.
- Now, think about Isra' and Ahmad. Isra' and Ahmad were always close. Before the conflict, they could nearly read each other's thoughts. They were a constant support for each other. As life grew more stressful and the conflict escalated, Ahmad and Isra' both grew more quiet. And when their Uncle Mazen died, Ahmad became almost silent. He withdrew, and Isra' coped in silence and isolation. They shared only small moments of intimacy, and their relationship was disconnected. It took more than a year for them to repair their relationship. But that one night in the kitchen, they began to build a relationship that was even stronger, more supportive, than before the conflict.

These examples are not to say that trauma is positive or helpful, but rather to suggest that loss and growth can sit alongside each other. Destruction and renewal can exist at the same time. It is important to keep that in mind when discussing what comes after stress and trauma.

Traumatic experiences often lead to negative adaptations in the brain, body, and behavior, but they can also result in adaptive benefits. New skills, stronger relationships, new resilience resources can all emerge after traumatic experiences and adversity. Post-traumatic growth may sound trite or even offensive to people who suffer post-traumatic stress symptoms, or to those deeply affected by trauma. Stress and trauma can ruin lives. But that is not the end of the story. Stressful and traumatic experiences are damaging, but there may be positive changes and personal growth in the aftermath.

In short, suffering can bring out some positive changes and growth in an individual. Countless stories of heroes and prophets illustrate this point—that adversity can provide a platform for greatness, courage, love, renewed self-esteem, and other potentially beneficial outcomes.

## Summary

## Chapter 22: When the Light Shines Brighter

- It is important to remember that people are not the result of their traumatic experiences, even if those experiences had negative impacts.
- No two people respond to, control or recover from the effects of stress and trauma in the same way.
- Resilience is the ability to successfully adapt in the face of adversity.
- Resilience resources are assets which help you navigate towards survival and success even in the face of adversity.
- Stress and resilience exist in a complicated balance. Stress chips away at components of resilience, but resilience can increase your ability to successfully navigate stress and adversity.
- Building resilience often requires effort, and there are specific strategies that you can use to deal with even unwanted responses, including unwanted thoughts, your view of yourself, and your physical reactions to triggers.
- Post-traumatic growth refers to any perceived positive change experienced as a result of adversity and other challenges, often resulting in a higher level of functioning in the brain, body, or behavior.

**Terminology:** resilience, resilience resources, post-traumatic growth

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**Suggested exercises:** Mindful Stretching; Moving Meditation 1; Heart Tracking

# Chapter 23

A New Type of Journey

# Story 23

## A New Type of Journey

Isra' hated the doctor's office. Yellowish-green walls.

She had come in to get a quick diagnosis. Isra' thought it was food poisoning, which is why the wait seemed strange.

Why is she taking so long? Isra' had not thought to bring Qusay with her for what was just nausea.

The doctor walked in. Isra' flinched as she shut the door abruptly.

Isra's mind raced through the silence as the doctor opened a plain folder.

"You're pregnant."

Isra' did not register the words.

"Sorry, what?" she replied, legitimately not knowing what had just been said.

"Isra', you're going to have a baby."

Isra' was silent. Still. She swallowed deeply as she looked around the room, and then at the doctor. The doctor's eyes were kind.

Here? In this place? She immediately pushed the thought out of her mind.

The doctor sensed Isra's conflicted thoughts.

"Isra', you will be a good mother."

Isra' was not worried about being a good mother. She was raised by a good mother and had been a mother to Hoda for much of her teenage years.

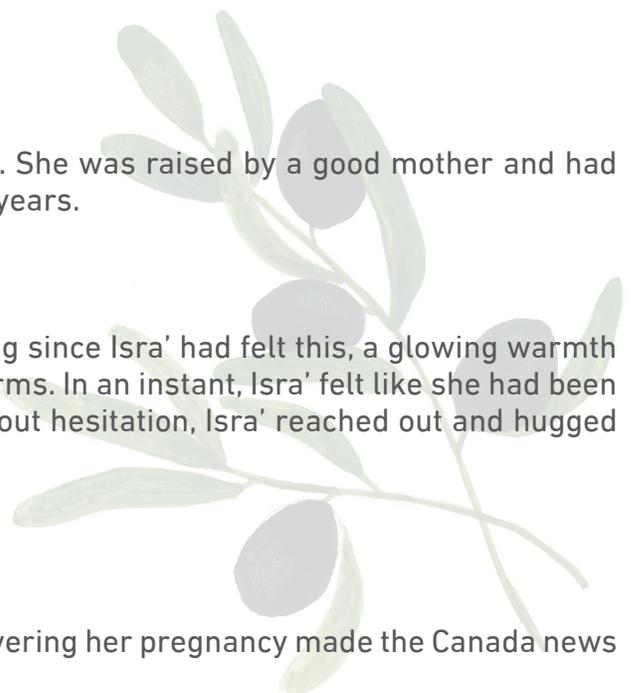
How do I feel? Isra' sat in silence.

Joy. It was barely recognizable. It had been so long since Isra' had felt this, a glowing warmth in her chest and a release in the muscles of her arms. In an instant, Isra' felt like she had been placed in a warm bath. Without thought, and without hesitation, Isra' reached out and hugged the doctor tight.

And Isra' smiled.

—

The rare joy she felt in those moments after discovering her pregnancy made the Canada news



all the more confusing. Qusay had taken Isra' by surprise with the news of Canada. For the second time in a few days, Qusay was giddy.

As he told her that afternoon as she made coffee, Isra' wanted to share his reaction.

She thought of her mother's glow when she heard the news that she would be a grandmother. She thought of her future child's little bare feet running through grass. Then running through dust. Then running through grass. Then her own feet running through thorns.

Her thoughts were swirling. Joy. Fear. Anger. Sadness. Hundreds of thoughts ran in furious circles in her mind. The tightness in her stomach stayed.

Why now? Can my parents come?

As Qusay rubbed his hands, hoping to emulate the warmth he felt inside, Isra' opened her mouth, with little idea what would come from it.

"I will go wherever you go." She hoped he interpreted it as romantic, and not as resignation.

The baby will be safe.

Will I see my family again?

And once again, Isra' did not know what she felt in that moment.

As Qusay drew her head into his chest in an embrace of what, for him, was relief, she rested against him with eyes wide open.

The past six years had taught Isra' that expectation was just as dangerous as war. She let resignation sit alongside curiosity and joy in her belly as she embraced her husband.

It took just a few months for them to pass all required interviews and procedures.

Her family was hopeful. Her family had accepted this new phase of life—a phase far away from war—but they were not accustomed to separation. In six years, the family had endured so much, but never separation.

No, it did not feel the same as the traumas of years past, but it nonetheless felt like a loss. Something was ending. Of course, Ahmad's and Isra's departures and separation implied a host of possible beginnings, but none of them were clear at the time.

As Isra' began to pack her bag, she could only feel the severance. She had not left her mother for more than three days since she was born.

Is this what death feels like? Why does this feel like I'm losing her?

As she packed her bags, Isra' wondered if she was insane.

I should be happy. I am happy. Can I be happy and sad?

She was disgusted at her own lack of joy. Qusay was elated, and Isra' was tired of pretending she was fine.

The world Isra' was leaving behind in 2017, when she left the camp with Qusay and a baby in her belly, was still an enigma to her. It was a template she had never really known, a world of situations she had never been told of even in distant fairy tales. She was eager to leave and terrified of what it meant.

In her heart, the gnawing fear of separation was not all she felt. She felt lucky. She also felt guilty.

Lucky. Afraid. Guilty.

She questioned why luck felt so much like fear—and why she felt scared to tell anyone she was leaving.

Why us? she asked herself, as she placed neatly folded clothes in her bag. As she bent over the suitcase, she again fought back flashbacks of the day she packed to leave Syria.

A different bag. A different crossing. But the same worry.

Where will we go? When will we be able to come back and visit? Three years? More?

Isra' believed none of what she heard. She had no idea when she would be able to come back to see her parents. All she knew was that her parents wanted her to do this. They insisted that this opened a chance for all of them to move to Canada, eventually.

Isra' left the camp the morning after she finished packing.

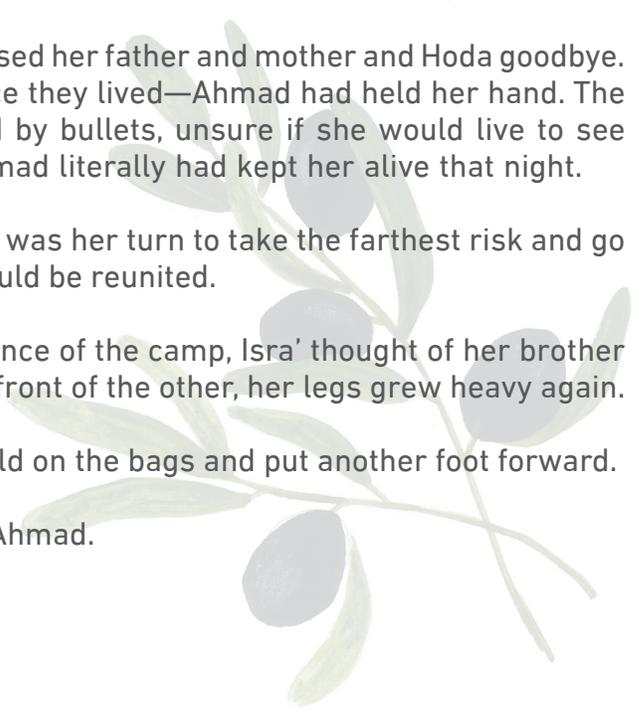
Her brother was not there to see her off as she kissed her father and mother and Hoda goodbye. The last time she left home—or, at least, the place they lived—Ahmad had held her hand. The last time she crossed a border she was chased by bullets, unsure if she would live to see another second, yet alone another continent. Ahmad literally had kept her alive that night.

On one level, Isra' believed it was now her turn. It was her turn to take the farthest risk and go to the unknown until that time all five of them would be reunited.

As she walked with Qusay to the bus at the entrance of the camp, Isra' thought of her brother and their unique goodbye. As she put one foot in front of the other, her legs grew heavy again.

She hesitated for a moment. She adjusted her hold on the bags and put another foot forward.

She let her thoughts return to her goodbye with Ahmad.



They had said goodbye without false pretenses. They had not spoken in clichés. Neither promised the other that they would see each other again. Too much had happened to believe or even utter something so thoughtless.

When they said goodbye, Ahmad was wearing the same backpack he had arrived in Jordan with. It was faded. He knew he would need to get a new one if he was to make it to Turkey with any of his belongings.

Isra' handed him a letter.

"Do not read it unless you have to. You'll know when you have to," she told him.

"What does it say?" he asked her.

"Don't be an idiot. Obviously I'm not going to tell you."

Ahmad folded the letter as small as he could and put it in the special zipper he had sewn into his sweatpants. It was a special pocket where he kept his identification and some cash, in case he was robbed or mugged.

Ahmad embraced his sister tight, confident that they would speak soon.

"I don't think I'll see you here again, in this place," he told her.

"God, I hope not," she laughed. "Get a good job. Talk soon."

Ahmad said goodbye to the rest of the family. His father kissed him on the forehead. His mother kissed him tight on both cheeks, unable to hide her tears. Ahmad could not hold his tears in any longer.

He let a few silent drops slide down his cheeks unwiped as he whispered something to his mother that they would both take to their graves. And lastly, Hoda held him tight. They were the same height nearly, though Ahmad hugged her as one would hug a child.

He walked out of the door in silence, closing the door gently behind him, in an exaggerated way, looking at Isra', as if to remind her one last time that he still was there to protect her.

Less than a year later, it was Isra's turn to say goodbye. In some ways, the second time was easier. Ahmad was safe and doing well in Turkey. The family, each in their own time, had learned to accept that distance did not compromise survival. That being separated by seas was just the next chapter in the family story, the ending of which no one dared guess.



# Lesson 23

## A New Type of Journey

Throughout this book, we have discussed how **stress** and **trauma** affect brain, body, and behavior. Years after what happened to Marwa and to her uncle, Isra' still had difficulty identifying and understanding all of her own reactions, sensations, and feelings. The news of Canada and the pregnancy afforded new instances of confusion and unclear communication between her internal control tower and her body. We read:

Joy. It was barely recognizable. It had been so long since Isra' had felt this, a glowing warmth in her chest, and a release in the muscles of her arms. In an instant, Isra' felt like she had been placed in a warm bath.

And then later:

Her thoughts were swirling. Joy. Fear. Anger. Sadness. Hundreds of thoughts ran in furious circles in her mind. The tightness in her stomach stayed.

Isra' was coping with all that had happened. She was building her resilience, but that is not to say that she no longer experienced the symptoms of post-traumatic stress. Stress and trauma affect the body in profound ways, from the heart and muscles to the immune system, to weight and the digestive system, among others. Memory and thoughts are also affected. Throughout the experience of stress and trauma, the size and shape of parts of the physical brain may change. Self-image and relationships can be damaged. The core of your identity can be shifted by stress. We see this clearly in Isra'.

Throughout this book, we have explored just how deeply and completely stress and trauma affect all aspects of life. Isra' and Ahmad were changed by their experiences. Their bodies changed. Their thoughts changed. Perhaps their physical brains changed, in terms of neural connections and anatomy (see Chapter 16).

But their story, their lives, did not end with these changes. There was more, and Isra' knew there was more to her story, even if the ending seemed both unclear and terrifying:

Less than a year later, it was Isra's turn to say goodbye. In some way, the second time was easier. Ahmad was safe and doing well in Turkey. The family, each in their own time, had learned to accept that distance did not compromise survival. That being separated by seas was just the next chapter in the family story, the ending of which no one dared guess.

Isra' and Ahmad are resilient. They have survived. They have struggled, but they have managed to make decisions, salvage relationships, and begin to grow in spite of all that happened. And as their story continues, they will continue to grow.

Often, when you experience post-trauma symptoms, you may feel as though you have lost the ability to control your surroundings, your memories, emotions, and thoughts. Therefore,

a major aspect of the process of life after trauma is learning to reestablish a sense of control and ownership over the body, the mind, and the self.

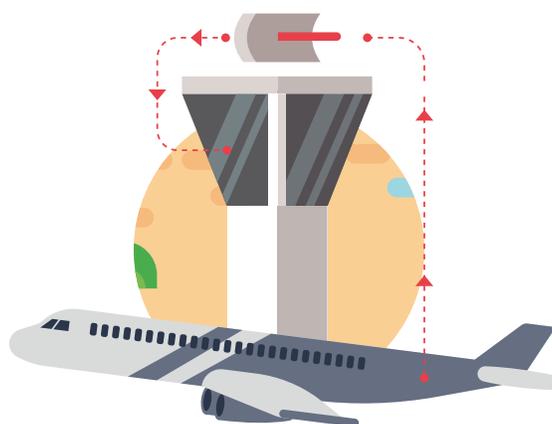
In an ever-changing world, Isra' was trying to regain control—of her body's reactions, of her thoughts, and of her future.

- She closed her eyes tightly to fight off a flashback.
- She began to respond to emerging joy she felt in response to motherhood.
- She was able to, at least sometimes, dismiss the knot in her stomach.
- She did not let her numbness prevent her from developing her relationship with Qusay.

Isra' is not the sum of her negative experiences. She, like all of us, has the capacity to grow in the face of pain, and manage and reverse the damage done. In spite of continued change and disruption, Isra' learned resilience, learned how to heal.

### Restoring control in the control tower

Stress, trauma, and adversity alter some of the core functions of the control tower, as we discussed in Chapter 2. Adversity may damage different systems in the tower and how various systems communicate with each other. Trauma and stress may disrupt the relationship between the elephant and the rider, as discussed in Chapter 5. All of these changes may completely devastate your sense of self and your relationships.

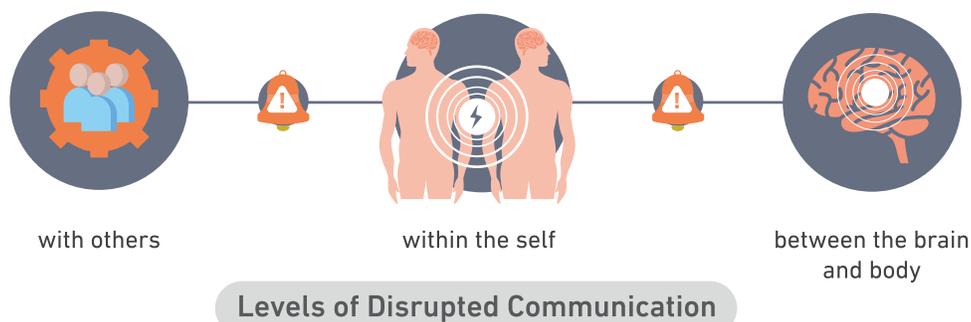


Communication in the Control Tower

And just as no two people are affected by stress and trauma in the exact same way, no two people heal from trauma, or manage and cope with the effects of trauma, in the same way. What works for one person may not work for another. But all pathways to healing and coping rest on some similar principles which we will discuss here.

To varying degrees, from one person to another, trauma and stress take away a sense of control over the brain, the body, and behavior. They remove the control tower's ability to control. Reestablishing control is therefore a necessary part of all healing journeys. And we see this process in small steps with Isra'.

The process of reestablishing ownership can take several forms. Reestablishing ownership may feel very difficult, especially if you feel that the changes in your brain and body after the experience of trauma are permanent. At this moment, though, it is important to remember that the brain was created with the purpose of survival, and part of survival includes recovery.



Yes, external experiences can lead to tremendous changes and damage, but the human brain and body are capable of regeneration, growth, and change.

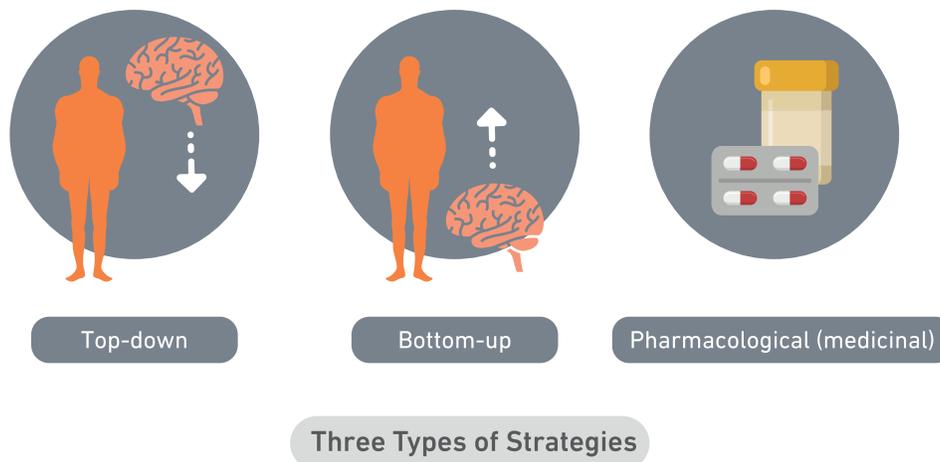
### Three paths of healing

We have explored the specifics of the bodily and psychological systems affected by trauma. We know, for the most part, what systems have been targeted and “attacked” by stress and trauma. Thankfully, by knowing the effects and understanding the goals of resilience and post-traumatic growth, you can start to think through some solutions.

Just as stress and trauma affect the brain, the body, and behavior, you can use these exact same things—your brain, your body, and your behaviors—to undo some of the negative effects you have experienced. Specifically, you can strategically use your thoughts, your body, and your behaviors with those around you to regain control, to rebuild healthy functioning of your control tower which has been so deeply affected by life’s events, and maintain functioning in the optimal arousal zone as discussed in Chapter 18.

Generally, trauma healing strategies are classified into three levels:

1. Pharmacological
2. Top-Down
3. Bottom-Up



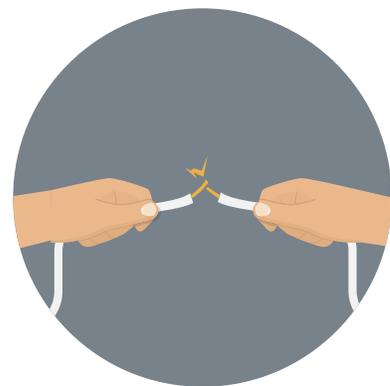
First, **pharmacological** (medicinal) interventions alter neurochemical levels in the brain, to assist healthy communication in neural pathways negatively affected by stress and trauma. We discussed in various chapters how stress and trauma responses begin with dysregulation in neurochemical signals and activity. Thus, pharmacological interventions rely on medicine to strategically increase the presence of certain chemicals in the brain to limit drastic mood or behavior changes that can occur because of chemical dysregulation after stress and trauma.

Let's return to our metaphor of the control tower. Pharmacological interventions can be likened to someone manually holding damaged or formerly connected wires in place in order to keep the control tower working properly. Pharmacological interventions are about using something external to hold in place stable connections in the brain.

Second, just as your thoughts, self-image, and psychological processes are negatively affected by stress and trauma, **top-down strategies** focus on thought patterns and cognitions as a way to manage unwanted effects of stress and trauma and to restore healthy brain-body communication and emotion regulation. These strategies deliberately boost your capacity to manage and control negative self-talk, intrusive memories, and negative beliefs and expectations. Basically, these strategies use thought management and directed attention to create new responses, sense of self, and behaviors. See the exercises for some examples.

Think again of the control tower. Top-down strategies can be likened to training courses for the engineers in the tower. They need to confront the tower damage and regain their calm if they are to continue working in the tower. They need to learn to read the radar again. And they need to learn to manage their own fears and anxieties about the safety of the airport. After a period of stress, the engineers will be nervous, and they will need some retraining to be able to manage the new reality of the tower. In the same way, top-down strategies focus on shifting thought patterns, confronting traumatic memories, and adjusting your internal monologue.

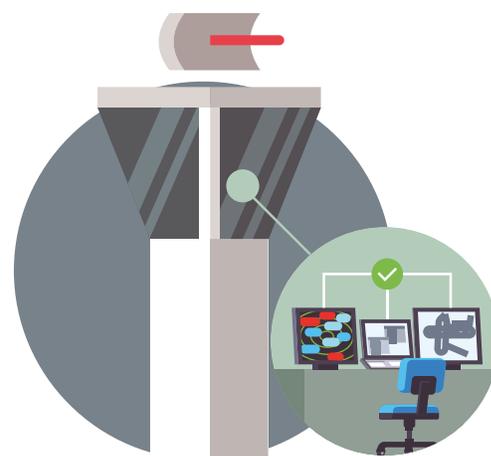
Third, we discussed how the interoceptive communication between the brain and body is affected by stress and trauma, and how hormone levels, the nervous system, and other systems of the body undergo adaptations. **Bottom-up strategies** for healing use the body and its systems as a way to manage unwanted effects of stress and trauma and to restore healthy brain-body communication and emotion regulation. These strategies focus on the body, adjusting hormone levels and autonomic nervous system activity, and restoring healthy interoception. These strategies use the body itself to rebuild healthy communication and to send clear, calming messages to the brain. Please see Part II of this book for some examples.



Pharmacological (Medicinal)



Top-down



Bottom-up

Think one more time of the control tower. Bottom-up interventions focus more on the tower and the equipment, and less so on the engineers. Bottom-up interventions focus on ensuring healthy communication between all wires and equipment; they focus on rebooting the radar and all other systems that help the engineer interpret new threats and any issues with the tower remaining after a period of stress.

### Turning damage into growth

Across intervention strategies, it is important to recognize just how many healing resources you already contain. You can use the very systems affected by trauma to undo some of its effects:

- You can use your nervous system to your advantage.
- You can use your body to send new signals to your brain.
- You can reframe your thoughts to disrupt negative and intrusive memories.
- You can use your mind to rebuild communication between the brain and body.

Throughout their story, Isra' and Ahmad have wondered whether or not things will ever get better. They've wondered whether they will ever recuperate the "self" they seem to have lost. On one level, Isra' seems to have become resigned to some aspects of her new self. Especially in terms of her relationship with Qusay, Isra' has accepted and integrated some of the emotional numbness she feels.

Indeed, the effects of stress and trauma in the brain and body are significant. The physical brain changes. Neurons disappear, shrink, or reconnect to form new fearful, but self-protective pathways.

But even these changes to the physical brain are reversible to a large extent. Just as your brain can shrink and rewire in the wake of stress and trauma, it can regenerate and rewire, even years later. Much of our capacity for healing rests on the idea that the brain is quite malleable. It can change. This is the power of **neuroplasticity**.

### The science of neuroplasticity and neurogenesis

Recall from Chapter 6 that there are 86 billion neurons in the brain. Trauma and stress affect these neurons, particularly in the amygdala, hippocampus, and prefrontal cortex of the brain. This can cause dendritic atrophy and shrinkage, boosting certain pathways and reducing others.

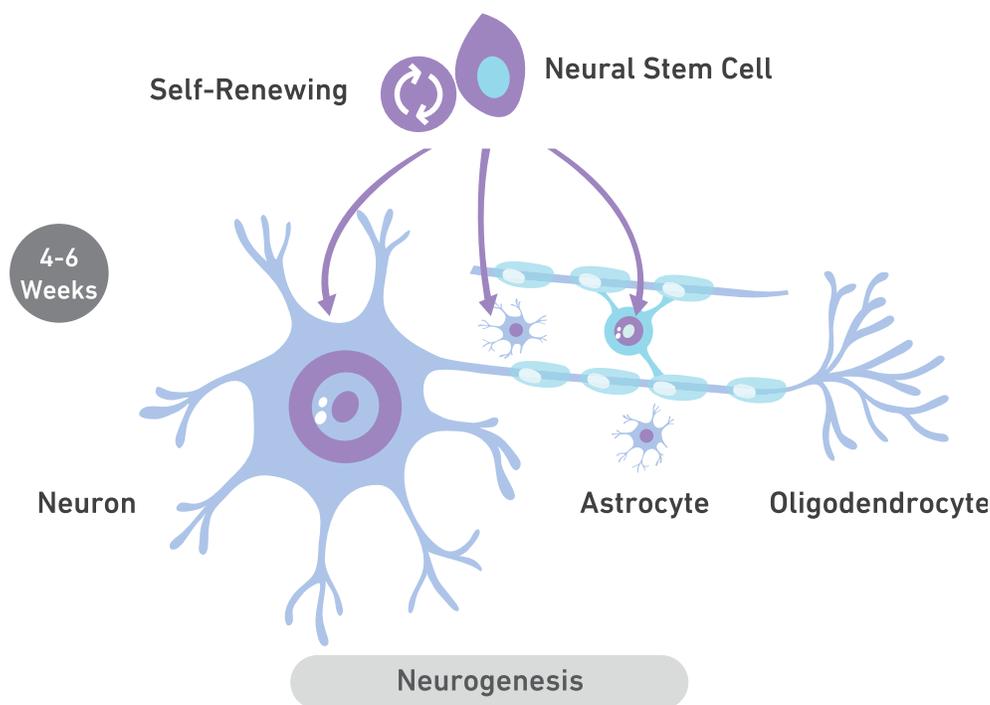


The Science of Plasticity

The brain is shapeable, pliable, malleable. In other words, it can change. Experiences in the external world can change it. We call this **plasticity**. Like melted or soft plastic, the brain can change shape, form, and internal pathways between its neurons. And indeed, while stress and trauma impact the plastic brain, we also have the capacity, using the strategies named above, to strategically reshape it.

First, just as neurons can shrink or disappear with chronic stress and trauma, they also can regenerate and grow. We call this **neurogenesis**. Neurogenesis is the creation of new neurons. Neurogenesis happens every 4–6 weeks, meaning that the brain regularly creates new neurons every few weeks.

In each neurogenesis cycle (4–6 weeks), new stem cells emerge. This process begins in the olfactory bulb and the hippocampus, which is, ironically, one of the areas most negatively affected by chronic stress. In the process of neurogenesis, stem cells created in the hippocampus do not have a specific role yet. They can differentiate and evolve into any type of cell in the body. Stem cells generated in the brain become new neurons in each cycle.



It makes sense that this process happens in the hippocampus. Recall from Chapters 16 and 17 that the hippocampus plays an important role in the formation and consolidation of memories. It also provides negative feedback for stress response, inhibiting the HPA axis in response to an increased circulation of stress hormones like cortisol. It is a key brain area where stress, memory, and behavior are linked, and an area of the brain whose neurons are deeply affected by stress.

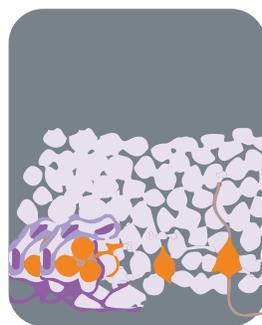
In this case, neurogenesis gives hope. It is a clear example of how the brain regions negatively affected by stress are the very same regions that promote growth and resilience. Essentially, the creation of new neurons means that we can potentially recover lost cells. After all, the brain is built to survive, and the ability to recover is an important part of survival.

## Neuronal proliferation and neuronal survival

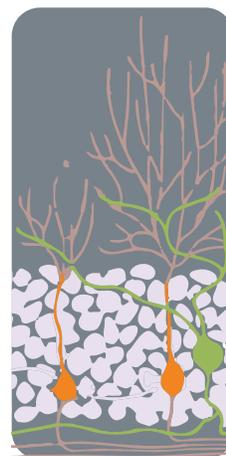
When we talk about neurogenesis, we focus on two essential processes: 1) **proliferation** and 2) **survival**. **Neuronal proliferation** is a rapid increase in the number of stem cells that turn into neurons. **Neuronal survival** refers to the number of these new neurons that survive to become well established; basically, it refers to how many neurons come into existence and how many survive into maturity and full usability.

Different strategies can be used to promote neuronal proliferation and neuronal survival, both of which correlate strongly with good mental health. Importantly, though, the strategies for proliferation are not necessarily the same as the strategies for survival.

Proliferation seems to be most affected by exercise—specifically running and other physical activities. Some studies have found that when you engage in routine exercise, you are more likely to generate more stem cells that turn into neurons.



Neuronal Proliferation



Neuronal Survival

Neuronal survival, however, is more affected by environmental enrichment. Environmental enrichment includes a diverse set of creative cognitive activity inputs. It can include things like reading a book, solving a math problem, or engaging in an exciting new activity.

## Promoting neurogenesis, using our healing powers

Now that we understand how the process of neurogenesis works on a biological level, we can discuss some ways that you can work to promote neurogenesis in the first place.

We have already categorized top-down and bottom-up approaches to healing. See Part II of the book for some examples and exercises you can try for yourself, some of which promote neurogenesis.

Overall, research has shown that exercise and environmental enrichment can help with proliferation and survival, respectively. In addition, an individual can use other practical things to promote neurogenesis, regain control, rebuild communication in the control tower, and reestablish the relationship between the elephant and the rider.

One way to enhance control and recovery is through practicing and strategically building interoception. If you recall, stress and trauma interrupt interoception. Interoception is essentially an awareness of bodily feeling states. It is about being able to read the signs that our bodies are relaying to us. We read earlier how Isra' clearly experienced difficulties with interoception:

Joy. It was barely recognizable. It had been so long since Isra' had felt this, a glowing warmth in her chest, and a release in the muscles of her arms. In an instant, Isra' felt like she had been placed in a warm bath. Without thought, and without hesitation, Isra' reached out and hugged the doctor tight.

Recognizing bodily states, and then moving to analyze and follow those signals, takes time after a long period of stress or trauma. And the only way to consciously access these deeply felt, often automatic feelings, is through practicing listening and practicing self-awareness.

You do this by activating the medial prefrontal cortex, the part of the brain that notices what is going on inside of you and allows you to interpret what you are feeling. To put it simply, practicing interoception is about forcing the rider to communicate with the elephant once again after a temporary separation. The idea is that this helps us understand what is going on and to continue the journey in better communication.

Deliberately engaging in interoception and actively thinking about what you are feeling and how you are responding to the world around you forces you to be more stimulated, which, in turn, helps with neuronal survival.

Interoception enhances the cognitive environment, enhancing your ability to recognize and interpret and engage with inputs from the body. Over time and with practice, this allows for more neuronal survival, better communication within the control tower, and overall better mental health.

### **Healing that works for you**

Each person's strategy for healing, coping, and managing is different for a number of reasons, including the type and duration of the traumatic or stressful experience, personality, genetic makeup, and physical abilities.

Here we talked specifically about neurogenesis and interoception. But there is a vast body of research on different methods of healing and dealing with post-trauma symptoms, and lingering feelings of loss, hopelessness, and shame. You can find some resources at the end of this chapter.

The basic scientific information presented here is not meant to provide a solution but to generate new ideas for your own healing journey. Your brain can grow. It can change. And you can rely on your body to do so.

You are your own expert, and you can use this information to start designing better solutions—solutions that work for you and that use the exact same equipment you've had all along.

- Post-trauma healing strategies can be categorized as pharmacological, top-down, and bottom-up.
- Pharmacological interventions alter neurochemical levels in the brain, to assist healthy communication in neural pathways that have been negatively affected by stress and trauma.
- top-down strategies focus on thought patterns and cognitions as a way to manage unwanted effects of stress and trauma.
- Bottom-up strategies for healing use the body and its systems as a way to manage unwanted effects of stress and trauma.
- Plasticity refers to the brain's ability to change shape, form, and internal pathways between its neurons.
- Neurogenesis is the emergence of new neurons every 4 to 6 weeks; this means that the brain regularly creates new neurons every few weeks.
- Neuronal proliferation is the rapid increase in the numbers of stem cells that turn into neurons.
- Neuronal survival refers to the number of these new neurons that survive to become well established neurons.
- Neuronal proliferation can be positively influenced by exercise, especially running. Some studies have reported that routine exercises lead to the production of more stem cells that turn into nerve cells.
- Neuronal survival is more affected by environmental enrichment. Environmental enrichment includes a diverse set of creative cognitive activity inputs. It can include things like reading a book, solving a math problem, or engaging in an exciting new activity.

**Terminology:** pharmacological, top-down strategies, bottom-up strategies, neuroplasticity, neurogenesis, neuronal proliferation, neuronal survival

**Suggested exercises:** Mindful Stretching; Moving Meditation 2; Safe Space

# Chapter 24

## Built to Overcome

# Story 24

## Built to Overcome

It was spring of 2017 when Isra' arrived in Canada.

When she first stepped out of the airport, she looked down at the ground. The pavement was so smooth, though she noticed a web of small cracks running from where she was standing to the end of the street. In those cracks, she saw countless little blades of grass. She had not seen grass so green since she left her home four years earlier.

Among the blades of grass she saw a little yellow dandelion, an early bloom just emerging from its bud. The dandelion pushed its way impossibly through gravel and grit to start a journey towards the sun.

Let it be so, God, she thought to herself. And, holding Qusay's hand tightly, she stepped into the car.

—

Today, two years later, she puts on the same headscarf she wore the day she left Syria. She puts it on under softly falling snow outside. It is cold. There are fewer stars in Canada.

Her son, Ammar, is growing. He was born just months after they arrived in Canada.

He is Canadian in his citizenship. No one taught Isra' how to raise a Canadian. She frequently wonders if there is something she needs to do, to not do, to do differently in order to raise a son in this place so cold, far colder than that March night at the border.

Ammar has just learned to walk, and Isra' runs around constantly making sure he does not fall onto anything sharp. She cannot stand it when Ammar cries. She cries when he cries. She cannot see him in pain.

She named him for her husband's brother, who left at the time she and Qusay left, hoping to make it to Turkey and then to Italy. He did not make it to Italy. Neither she nor Qusay have heard from his brother Ammar in three months, when he was on the coast of Turkey. None of them know where he is, or even where exactly he had intended to go when he arrived.

Isra' does not know what has become of older Ammar. But Isra' hopes fervently that her little Ammar will build something better than any of them have been able to build—how she hopes he will have more, lose less, and stay close to her.

Isra's son looks identical to his Uncle Ahmad, who has since moved from Turkey to Germany.

The week before she left for Canada, Isra' had finished an online course she had started in the camp. She earned a diploma in journalism from a university in the United States. Engineering was not one of their offerings, so she decided that she would try her best to tell stories as a journalist. She had plenty to say, and pen and paper had always been preferable to words.

Even with her degree, Isra' cannot yet work in Canada. Her English is too weak.

Also, Canada does not need journalists now. They have people to tell their stories, and seemingly, to tell others' stories. More importantly, Ammar needs a mother full time, as Isra' has no family in Canada to watch him, to hold him, or to hold her when she feels overwhelmed, or when she feels numb, which still happens, although much more rarely than before.

The first time it happened, the first time she was unable to feel, she just had to wait until the tears came. The bamia her mom left for her that one day had coaxed her tears out of hiding. She and Ahmad both cried together that day. She wishes she could recreate that moment. She knows she needs to let something out. She cares little what it is—she just wants to feel it.

Isra' speaks very little to others beyond the world of her phone. Whenever Ammar sleeps, she is on her phone. She looks at photos of Syria. Photos of the camp. Photos of her mother, father, brother, and sister. Of Marwa. Of Mazen. Of violence, protest, and blood. She talks to Hoda and Ahmad.

She notices a message from Ahmad.

*How are you?* it says.

In a message time-stamped a bit later, it reads, *I read the letter.*

She writes back, finding him awake.

*Why did you read it?* she asks.

*Because I needed to,* he replies.

Ahmad had made the trek to Germany with few problems. The routes were so much clearer and safer than his first route to Turkey. Isra' knows he struggled with the language, as she does. She knows he struggled finding a job, but he has been working in an apprenticeship for a few months now, sending money to their parents regularly.

*I was wondering, the other day, was leaving worth all this,* Ahmad writes.

*Was there another option?* she writes back.

*Whatever, just...thank you for what you said, he wrote. Isra' could tell he wanted to say more.*

*It's the truth, brother. It was not your fault. You were protecting us,* she wrote.

There was a pause in his typing. After a minute, Ahmad started typing again. Isra' felt he would change the subject.

*Do you see light at the end of this?* he asked her. She sensed calm in him.

*There is always light, Ahmad.*

*Good night. I have a feeling I'll see you soon. Maybe 2021?*

Isra' prays intensely every night, usually for nothing in particular. Her wants are too many, and too unrealistic, for her to trouble God with them in her normal prayers.

*He knows already, she thinks.*

*He knows my heart. He knows my loss. He knows all.*

As she always has, Isra' thinks almost addictively. In thinking, she feels safest. In thinking, she feels a bit more in control. And just as she did at home, she holds her heart together until those quiet moments in the night when she can release the valve to feel.

*What happens next? When can I see Mama? Will I see her at all? How can I get her here? Where is Ammar, really? I'm glad Ahmad is okay.*

Her mind races in silence, and she finds comfort in cooking. She knows that this is where she is supposed to be. Where she can do the most with what she has been given in this life. She knows this is not the final page of the story, but a chapter of hope being penned as she cooks in her small kitchen.

The smell of garlic, thinly sliced, calms her heart, and lifts a faint heaviness off her chest.

Home, for Isra' from Damascus, will always be the house that is no longer there, where the smell of garlic reaches her grandfather's olive tree in the farthest corner of the garden.

For Isra', home is more than that place. It is a feeling she keeps under lock and key, under the surface of her heart, opened rarely and carefully, because she is just starting to rebuild it. She is starting to rebuild it in a place so far from where it was before, but in a place where she knows she is starting to feel normal.

The heaviness lifts completely from her chest, and she begins to recite a few short verses—*My Lord, bring tranquility to my heart and give me ease in my affair*—speaking calm over the entire house as her motherly lullaby emanates from the kitchen.





# Lesson 24

## Built to Overcome

Isra's story is not over.

Despite her loss, and despite her suffering, she feels hope. She is rebuilding. She is building something—just as she had always wanted. She is taking her loss and converting it into a future for her family and for her son, who will build a future she cannot yet imagine.

Isra' and Ahmad cannot return to what was, or to how things were. But they can build a home again. For Isra' the home she is building is something abstract inside of her. We read:

It is a feeling she keeps under lock and key, on the surface of her heart, opened rarely and carefully, because she is just starting to rebuild it. She is starting to rebuild it in a place so far from where it was before, but in a place where she knows she is starting to feel normal.

Isra' has found home within herself. She cannot eliminate the past. She cannot reverse all the negative effects caused by her adversities. But she has begun to feel normal, at ease with herself, knowing herself and who she can be, in spite of what has happened.

Her relationships continue to play a major role in her growth. Her mother, Qusay, Ammar, and Ahmad are her pillars of strength. Her growth and healing is a collective effort, as it is for each of us. Healing is best done with those we love. And while each journey is unique, we share some common hopes and common goals about living life fully after years of hardship.

### Key elements of recovery

The experience of displacement, of violence, of loss is individual. In other words, no two people share the exact same experiences, and no two people react to experiences in the same way.

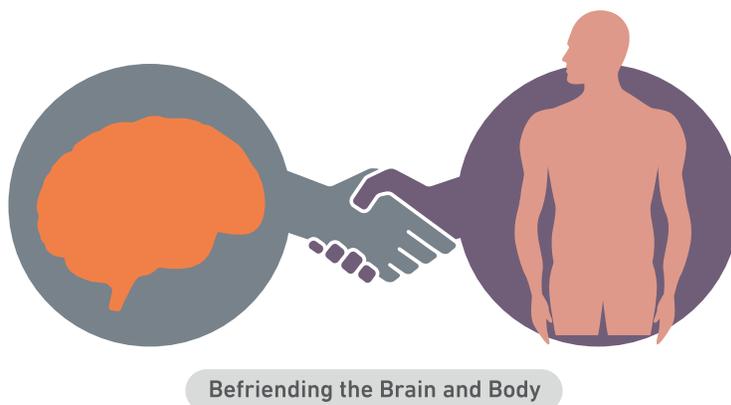
Since you were born, your brain and body have worked together to keep you alive by accruing and securing survival resources. Your brain and body have coordinated to keep you functioning at an optimal level to ensure your well-being and survival.

Attention to possible threats is an important resource. If you were not able to pay attention and respond to possible threats, you would not survive.

If you did not know how to read emotions in other people and interact with them, it would be difficult to survive.

If your brain did not regulate your body's systems up and down via the HPA axis, autonomic nervous system, cardiovascular system and other systems, you could not adapt successfully to the world around you. You would not survive.

The brain and body have a logic, but that same logic that is adaptive in the short term can create challenges in the long term. We have spent all chapters discussing those challenges, and specifically how stress and trauma disrupt our access to survival resources and create a host of maladaptive responses.



Importantly, though, no two people will respond the same way to the circumstances. Just like different engineers in the same control tower of the airport might have slightly different responses to the same situations, you and others around you will have different psychological, emotional, and biological responses to difficult situations.

Indeed, despite their countless similarities, Isra' and Ahmad interpreted the same incidents quite differently. They experienced many of the same incidents, but their bodies and minds reacted differently, even though, like many people, they had some common feelings, sensations, and challenges across years of uncertainty and pain.

Isra' and Ahmad have lived eight years of uncertainty, an uncertainty that has been recorded and recalled in their brains, bodies, and behaviors. Ahmad and Isra' are still on the move. Settlement and settling are yet unknown feelings for the siblings.

### Knowing the brain and body

As you try to negotiate survival and success in the world around you, your human brain is constantly trying to make meaning. From the time we are born, our brains make meaning of inputs, feeling states, causes and effects. We make meaning of others, of relationships, of our own selves. In the same way, our brains also try to make meaning of our pain. For Isra' and Ahmad alike, as for all people, the process of making meaning out of pain—out of stress, trauma, loss, or grief—can be excruciating and agonizing.

When the body reacts in ways unwilled...

When the mind allows for false or intrusive memory...

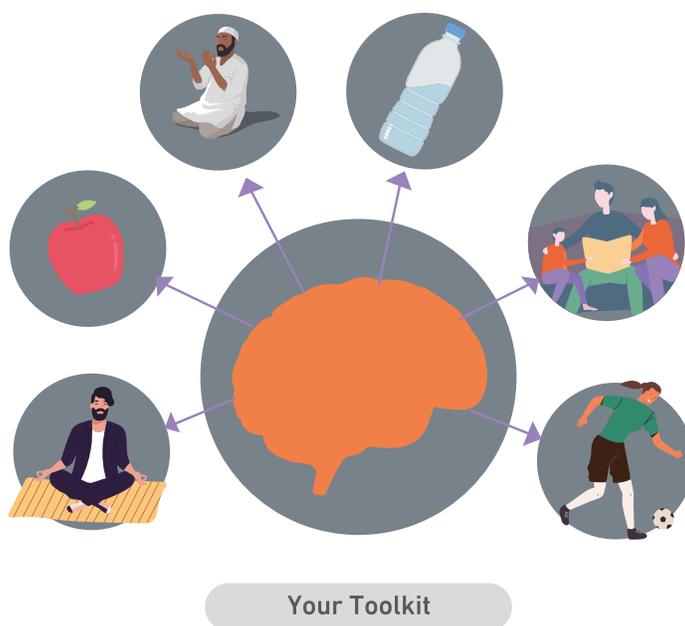
When an internal voice speaks dark and negative thoughts...

When you experience pain, stress, and loss, your brain can be quite harsh. In its search for an explanation or a way out of pain, it can become adversarial. And there are few pains as great as feeling like your own enemy.

As discussed, much of the pain we experience after trauma or stress is in some way adaptive, or part of an adaptive response that the brain and body coordinate for short-term success, even if that response is not beneficial in the long term. For example:

- Flashbacks are a way in which the brain re-experiences a moment, keeping you “ready” to respond in the future.
- In the context of stress, the brain and body coordinate to turn down digestion functions. Your possible lack of hunger when stressed is, in this way, adaptive and logical, even if it has long-term consequences.
- Feeling a need to isolate yourself when you experience shame does, on some level, make sense, even if it can hurt relationships in the long term.

It is important to remember that not everything that is adaptive is beneficial. Our brains and bodies are experts in keeping us alive and accruing survival resources, even if that creates other types of pain or challenges, as we’ve explored.



But just as the brain and body have creative ways of recording and responding to pain, stress, trauma, loss, and shame, the brain and body also have unique and powerful ways to re-learn and to undo certain maladaptive responses.

Remember, you are resilient, even if it takes time to locate and build up your resilience resources.

### Fighting for control and wholeness

We have spent much of this book learning how the brain and body respond to negative experiences of stress, trauma, violence, and conflict. We have learned how bodies and brains coordinate through multiple systems.

Stress and trauma, as we’ve discussed, affect us at three levels: the brain, the body, and behavior. Importantly, behavior includes social behavior with those we love.

Just as we know how stress and trauma affect us at multiple levels, researchers are now also discovering ways to tap into various mechanisms of our brains and bodies to heal; to deal with unwanted reactions, feelings, and response; and to control our maladaptive responses.

Simply, we can use our brains and bodies to combat the effects of negative experiences. We can use what we know about the brain and body to manage and improve the control we have in the face of stress, trauma, pain, and adversity.

The very systems targeted by stress and trauma are the same systems we can use to recover. We can use bottom-up methods. We can use top-down methods. And, when necessary, we can use medical methods like medication.

## Doing the most with what you have been given

Healing, coping, and remaining resilient are certainly not easy tasks. Furthermore, the pain you and your loved ones have experienced is not fair, and it is not fair that you also carry the burden of dealing with unwanted reactions, emotions, and feelings.

Healing and growth are possible, and made easier, with specific strategies that you know work for you. You can find some of those strategies in Part II of this book. In addition to the three general types of healing strategies, there are some other small practical things that can help

with the recovery process, including:

- Establishing a clear and predictable routine
- Setting clear goals
- Living among supportive and loving community.

As you move forward, be gentle with yourself. Coping, resilience, and recovery take time. And no, things may never return to how they were before. But, some things may be even better than before.

Dealing with unwanted pain requires unwanted effort. The burdens we carry are rarely ours to choose.

It is not fair that you have to sing to sleep the same monsters and reactions and memories that would torment you. The burden you have is not light.

As you move forward, be gentle.

You are not your thoughts. Some thoughts are just thoughts, scrambling frantically to protect you from pain, while at the same time causing pain.

You are not your reactions. Like thoughts, some reactions are just misguided attempts to protect you from hurt. Get to know your unwanted reactions, and then begin to work on them.

### Simple Strategies

a stable, predictable routine

setting clear goals

supportive and loving  
community

You are not your pain.

You are able to create much good in the world.

And importantly, you are not alone in your struggle.

No one can guarantee you a better tomorrow, but you are not alone in fighting for it.

You yourself, and those around you, are your hope for a tomorrow that can indeed be far brighter than any of the darkness of yesterday and today. There is a tomorrow, even if distant, in which your brain and body can be your intimate friend and not your adversary. There is a tomorrow in which, like Isra', you find comfort, where you know that you can do "the most with what you have been given in this life."

## Summary

## Chapter 24: Built to Overcome

- The experience of displacement, of violence, of loss is individual. No two people share the exact same experiences, and no two people react to experiences in the same way.
- Much of the pain we experience after trauma or stress is in some way adaptive, or part of an adaptive response that the brain and body coordinate for short term success, even if that response is not beneficial in the long term.
- The brain and body also have unique and incredibly powerful ways to re-learn, and to undo certain maladaptive responses.
- Healing is not easy, but it is possible with specific strategies appropriate for you and that will differ from person to person; the very systems targeted by stress and trauma are the same systems we can use to recover.
- We each have a responsibility to find the right way to recover, and coping, resilience, and recovery take time.

**Suggested exercises:** Sun Salutation; Face Yoga; Waking Sleep (Nidra)

# Glossary of Terms

Chapter	Term	Definition
Front Matter	<b>Mental Health</b>	a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community.
	<b>Psychosocial Wellbeing</b>	a positive state in which an individual operates with healthy and positive social interactions with others, benefits from a strong support network, has a positive view of the self, efficiently copes with mental health challenges, and maintains a positive and hopeful outlook, often in spite of major challenges
Chapter 1		
Chapter 2	<b>Survival resources</b>	are physical resources, thoughts, reactions, and behaviors that help increase your ability to survive and avoid harm.
Chapter 3	<b>association</b>	a link between a stimulus and a set of sensations physical or emotional
	<b>negative association</b>	a link between a stimulus and a set of unpleasant or undesirable sensations
	<b>heuristics (biases)</b>	"mental shortcuts based on past experiences and inferences that aid in rapid response to recurring situations"

Chapter	Term	Definition
Chapter 3	<b>positive association</b>	a link between a stimulus and a set of pleasant or desirable sensations
	<b>predictions</b>	rapid educated guesses about what comes next, based on existing information and associations
	<b>adaptive responses</b>	changes that help your body adapt towards safety and survival
	<b>simulation</b>	an unconscious mental model of what may happen
Chapter 4	<b>unconscious</b>	without our conscious awareness or intentional direction
Chapter 5	<b>trigger</b>	any felt input that reminds you of threat, suggests threat, or elicits a threat response can be referred
Chapter 6	<b>neuron</b>	specialized cells that transmit impulses in the form of electricity to other neurons
	<b>synapses</b>	the junctions between individual neurons where chemical and electrical signals are passed
	<b>neural activity</b>	the sequential and patterned firing of neurons where electrical and chemical impulses are passed between neurons
	<b>brain stem</b>	a small, interior, and crucial part of the brain that sits at the base of the brain continuous with the spinal chord; it regulates core functions like heartbeat and breathing
	<b>limbic circuitry (system)</b>	a network of parts of the brain that plays a large role in body state awareness (interoception), threat recognition, and memory

Chapter	Term	Definition
Chapter 6	neocortex	the outermost part of the brain involved in functions such as sensory perception, spatial reasoning, language, and many aspect of cognition and reasoning
Chapter 7	brain-body communication	the process of feedback between the brain and the rest of the body, which helps us ensure that various systems are functioning optimally
	interoception	the sense of the body's internal state
	regulation	adaptation in response to emotional or physiological feeling states
	homeostasis	the tendency of various physiological systems to revolve around a stable equilibrium level
	allostasis	the process of fluctuation of various physiological systems in order to keep us functioning at the level needed to meet the current demands
Chapter 8	stress	an increased demand on physiological and psychological systems
	stress response	a series of physiological and psychological changes undertaken by the brain and body to deal with an increased demand
	eustress	healthy and positive stress often due to wanted or beneficial events
	distress	stress from unwanted, unwelcome, sources that often linger longer than expected and that may cause concern, and usually produce anxiety

Chapter	Term	Definition
<b>Chapter 9</b>	<b>amygdala</b>	an almond-shaped mass located deep inside the brain just above the brainstem. It is a core part of the limbic system is one of the key entry points for sensory information. The amygdala begins part of the elaborate coordination process that leads to our general responses to the sensed world.
	<b>hypothalamus</b>	A part of the brain gets signals from the amygdala and plays a role in physical and emotional activity. The hypothalamus plays a role in the stress response.
	<b>hormone</b>	a regulatory substance produced internally and transported across the body to stimulate specific cells or tissues into action
	<b>pituitary gland</b>	a small gland that plays a major role in regulating body functions and controls the activity of other hormone-secreting glands
	<b>adrenal cortex</b>	the outer region of the adrenal gland responsible for producing specific hormones including cortisol
	<b>receptors</b>	chemical structures composed of protein that receive and transduce signals that may be integrated into biological systems. Receptors play an important role in receiving and interpreting signals in the stress response.
	<b>cortisol</b>	a hormone released from the adrenal cortex as part of the stress response. Cortisol signals back to the hypothalamus, indicating that the body has begun to respond to the stress or threat

Chapter	Term	Definition
Chapter 9	the hypothalamic-pituitary-adrenal axis	the HPA Axis refers to the communication chain between the amygdala, hypothalamus, pituitary gland, and adrenal cortex
Chapter 10	autonomic nervous system	a control system that acts largely unconsciously and regulates bodily functions, such as the heart rate, digestion, respiratory rate, pupillary response, urination, and sexual arousal. This system is the primary mechanism in various stress responses.
	sympathetic system	A branch of the autonomic nervous system responsible for elevating heart rate, speeding up breath, constricting digestion, increasing blood pressure, working to calm inflammation, and slowing down saliva production, among other excitatory functions
	parasympathetic system	A branch of the autonomic nervous system responsible stimulating digestion, constricting the airways of the lungs, encouraging saliva production, and slowing the heart rate, among other relaxation functions
	vagus nerve	A nerve which runs from the eyes all the way down the spine, connecting the brainstem with core bodily functions including digestion, heart function, and breath. It helps regulate and control these responses.
Chapter 11	periaqueductal grey (PAG)	a nucleus that plays a critical role in autonomic function, motivated behavior and behavioural responses to threatening stimuli. Each side of the PAG is connected to a different "side" of the autonomic nervous system. One side coordinates with the sympathetic nervous system (SNS), and the other coordinates with the parasympathetic nervous system (PNS)
Chapter 12	chronic stress	stress that occurs when the stressor or threat do not pass, but instead linger

Chapter	Term	Definition
Chapter 12	<b>hyperarousal</b>	sustained activation of the stress response system
	<b>hypervigilance</b>	is a heightened sensitivity and attentional bias to potential stressors and threats, often accompanied by typical anxiety symptoms and most associated with activation sympathetic nervous system
Chapter 13	<b>respiratory system</b>	a series of organs responsible for taking in oxygen and expelling carbon dioxide. The primary organs of the respiratory system are the lungs
	<b>cardiovascular system</b>	a vast network of organs and blood vessels that acts both as a delivery and waste removal system for the body
	<b>hyperventilation</b>	a loss of control of the breath, often characterized by fast breathing
	<b>memory consolidation</b>	the process by which the brain takes our day to day experiences or stressful experiences and categorizes them into long term memories
	<b>immune system</b>	a system composed of various biological structures that serves front line of defense against pathogens, bacteria, or any form of disease and infection
	<b>immune cells</b>	specific proteins in blood plasma that are released in advance of inflammation and other immune responses
	<b>hippocampus</b>	a part of the brain whose main functions include classification and coding of emotions, coding and retrieval of memories, and learning

Chapter	Term	Definition
Chapter 13	<b>apical dendritic atrophy</b>	a process in which a specific type of nerve cell called apical dendrites shrivel and stop working
	<b>apical dendrites</b>	are short branches of nerve cell extensions in the shape of a pyramid and are found in the hippocampus, among other brain regions
	<b>prefrontal cortex</b>	a complex region in the front of the brain with many different functions and responsibilities, including analytical thinking, cognitive focus, self-control, and sustained attention
Chapter 14	<b>detachment /dissociation</b>	feeling of disconnection from your physical or psychological self
	<b>survival mode</b>	a mode of operating in which the brain orients all of its coordinative functions around the key goal of keeping you alive in the short term
	<b>threat sensitivity</b>	attention disproportionately directed at specific targets or inputs
Chapter 15	<b>trauma</b>	an event or series of events that overwhelms your ability to cope
Chapter 16	<b>flashback</b>	re-experiencing a traumatic event in memory or in visualizations, often accompanied by physical sensations
	<b>Post-Traumatic Stress Disorder (PTSD)</b>	a mental health condition characterized by recurring reactions after trauma, which may include flashbacks, hypervigilance to perceived threats, dissociation, avoidance of situations that remind you of the event(s), negative beliefs, memories, and thoughts about yourself, and difficulty with relationships and intimacy

Chapter	Term	Definition
Chapter 16	<b>attribution</b>	the ascription of cause to a person or thing; here referring to the degree to which an individual blames themselves for the traumatic incident or their behavior during the incident
	<b>norepinephrine</b>	a hormone present in various brain regions that assists in the coordination of stress and fear responses, including fear conditioning and hypervigilance
	<b>fear conditioning</b>	the unconscious process by which a trigger is paired with an aversive fear response
	<b>serotonin</b>	a neurochemical that often accompanies norepinephrine in stress responses and plays important role in regulating sleep, appetite, sexual behavior, aggression, motor function, and blunting feelings of pain.
Chapter 17	<b>ventromedial prefrontal cortex</b>	a region of the prefrontal cortex often associated with thoughts about the self
Chapter 18	<b>numbness</b>	is the lack of feeling
	<b>flat affect</b>	a difficulty feeling any sort of emotion whether positive or negative
	<b>depression</b>	a psychological and biological condition whose symptoms include a constant feeling of sadness, loneliness, lack of energy, a feeling of despair, difficulty eating, sleeping, concentration, attention, loss of interest in enjoyable activities, feelings of guilt and worthless.
	<b>hypocortisolism</b>	the under-production of cortisol

Chapter	Term	Definition
Chapter 18	<b>optimal arousal zone</b>	a range of states in which a person feels comfortable and safe, and where the body responds effectively and efficiently to stress and to the outside world in general
	<b>hyper-arousal zone</b>	an elevated state in which the brain and body are on the edge; may include emotional overwhelm, panic, feeling unsafe, anger, racing thoughts, and anxiety
	<b>hypo-arousal zone</b>	a low state of feeling frozen or low energy; may include a disconnection from your body, from your identity, and from others, lethargy, depression or disinterest
	<b>oxytocin</b>	a neurochemical that facilitates trust and can stimulate the parasympathetic nervous system
Chapter 19	<b>despair</b>	a feeling of loss of hope and lack of control, often accompanied by sleep and appetite problems as well as attention and emotion regulation difficulties
	<b>restless</b>	inability to rest or relax as a result of anxiety or boredom
	<b>insomnia</b>	inability to sleep
	<b>hypersomnia</b>	excessive sleeping
	<b>dopamine</b>	a hormone and neurotransmitter often associated with feelings of anticipation, desire, and predicted rewards
Chapter 20	<b>grief</b>	sorrow usually caused by death or loss
	<b>insula</b>	a part of the brain involved in emotion and empathy, often stimulated by emotional pain

Chapter	Term	Definition
Chapter 20	<b>anterior cingulate cortex</b>	a part of the brain involved in emotion and pain processing
	<b>neutrophils</b>	white blood cells that play a role in infection prevention
	<b>complicated grief</b>	a specific condition characterized by grief prolonged for more than at least six months; shared some elements with Post-Traumatic Stress Disorder
	<b>nucleus accumbens</b>	a brain region that plays a significant role in processing of pleasure, rewards, and aversion; and produces dopamine
Chapter 21	<b>self-conscious emotions</b>	emotions that relate to our sense of self and others' reactions to us; includes guilt and shame
	<b>shame</b>	a self-conscious emotion that involves a negative evaluation of the self as a source of unwanted outcomes or criticism
	<b>guilt</b>	a self-conscious emotion that involves a negative evaluation of a specific behavior as a source of unwanted outcomes or criticism
	<b>empathy</b>	the ability to understand and mirror the emotional and mental state of others
	<b>humiliation</b>	an emotion that often emerges from feeling lowered in front of others or having lost dignity
Chapter 22	<b>resilience</b>	successful adaptation in the face of adversity
	<b>resilience resources</b>	assets which help you navigate towards survival and success even in the face of adversity

Chapter	Term	Definition
Chapter 22	<b>post-traumatic growth</b>	any perceived positive change experienced as a result of adversity and other challenges, often resulting in a higher level of functioning in the brain, body, or behavior
Chapter 23	<b>pharmacological strategies</b>	medicinal interventions used to alter neurochemical levels in the brain, to assist healthy communication in neural pathways that have been damaged by stress and trauma
	<b>top-down strategies</b>	interventions that focus on thought patterns and cognitions as a way to manage unwanted effects of stress and trauma
	<b>bottom-up strategies</b>	interventions that use the body and its systems as a way to manage unwanted effects of stress and trauma
	<b>neuroplasticity</b>	the brain's ability to reorganize itself by forming new neural connections
	<b>neurogenesis</b>	the creation of new neurons
	<b>neuronal proliferation</b>	the rapid increase in the numbers of stem cells that turn into neurons
	<b>neuronal survival</b>	refers the maturation of neurons after emergence into full usability



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