

# NEUROSCIENCE- INFORMED COUNSELING

**Brain-Based Clinical Approaches,**  
Second Edition

edited by

**Thomas A. Field • Laura K. Jones • Lori A. Russell-Chapin**



AMERICAN COUNSELING  
ASSOCIATION

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# NEUROSCIENCE- INFORMED COUNSELING: Brain-Based Clinical Approaches Second Edition

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*We dedicate this book to everyone who has been working toward integrating neuroscience into the counseling field and to the next generation of counselors, eager to understand the connections between brain, mind, body, and behavior.*



# REVIEWS

Thomas A. Field, Laura K. Jones, and Lori A. Russell-Chapin have individually written some of the most inspiring and practical textbooks that integrated neuroscience and neuroscientific concepts into the counseling field. Here in the second edition of their edited book, *Neuroscience-Informed Counseling: Brain-Based Clinical Approaches*, they contribute to the continued significance of enhancing the relational work that counseling professionals and counseling students do by being informed by neuroscience research and literature. This book not only speaks to the dialogues between brain, mind, body, and behavior in a deficit-focused way but also helps counseling professionals conceptualize biological, neurological, and physical factors that play a role in from human development over the life span to overall wellness. Additionally, the organization of the book's chapters aligns with the step-by-step approach addressed in a training model established for development of neuroscience competencies in counseling professionals.

— Yoon Suh Moh, PhD, LPC, CRC, NCC, BC-TMH,  
BCN, author of *Neurobiology of Stress-Informed  
Counseling: Healing and Prevention Practices for the  
Helping Professions*

The latest edition of *Neuroscience-Informed Counseling* successfully bridges the gap between neuroscience research and practical clinical application. Packed with insightful case illustrations, this invaluable book translates emerging brain science into clear interventions clinicians can employ immediately for improved treatment outcomes. I am thrilled to recommend the newest edition of this essential guide to brain-based therapies. The authors have vastly expanded the clinical

utility for frontline counselors through enhanced psychopharmacology content, lifespan neurodevelopmental context, and demonstrating neuroscience-aligned skills via rich case scenarios. Connecting neurophysiological processes with counseling best practices, this multidimensional resource truly empowers therapist capabilities. From illuminating how neurobiology interacts with substance abuse to providing neuroscience interventions across specialty areas, practitioners now have an accessible framework for harnessing this knowledge toward evidence-based care.

— **Carl Sheperis, PhD, NCC, CCMHC, MAC**

An excellent and accessible read to get therapists up to speed on the brain. Practicing counselors have limited time to stay on top of current research, and we all know how mentally draining it can be trying to piece together real world applications from abstract publications. This updated edition of *Neuroscience-Informed Counseling: Brain-Based Clinical Approaches* does the heavy lifting for you, summarizing thousands of hours of reading into key observations and practical suggestions specifically relevant to the modern clinician. As a licensed therapist who has spent 20 years designing clinical applications for neurotechnology, I have seen many deeply curious counselors who want answers but don't know where to begin. This book is the solution: the perfect starting place for busy, overwhelmed clinicians to learn how to counsel mind, body, *and* brain.

— **Penijean Gracefire, LMHC, BCN, qEEG-D**

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# PREFACE

Many therapeutic fields are embracing principles of neuroscience into their work, with such principles rapidly influencing best practices. For over 10 years, the counseling field has also been exploring how neuroscience, neurobiology, and related physiology (e.g., endocrine, immune, and gastrointestinal functioning) can best be used to inform, explain, and enhance the theory and practice of counseling while still honoring its humanistic roots.

In 2012, leaders in the counseling field articulated that neuroscientific findings were becoming the “practice standards of the future” (Myers & Young, 2012, p. 21). Recognizing the growing influence of neuroscience on counseling practice, the American Counseling Association (ACA), the Association for Counselor Education and Supervision, and the American Mental Health Counselors Association (AMHCA) established interest networks in which members have worked collaboratively to present a unified vision of how neuroscience can be used to explain and enhance counseling practice. National groups such as AMHCA have also developed specific training standards in the biological basis of behavior. In 2015, ACA’s magazine *Counseling Today* began featuring a monthly column on neurocounseling.

In 2016, the Council for Accreditation of Counseling and Related Educational Programs (CACREP) began requiring counselor training programs to address the biological, neurological, and physiological factors that affect human development, functioning, and behavior. In 2023, reflecting further development of knowledge in the field, CACREP broadened the 2016 training mandate to encompass “biological, neurological, and physiological factors that affect lifespan development, functioning, behavior, resilience, and overall wellness” (CACREP, 2024; Section 3, Standard C.10.). The inclusion of resilience and overall wellness in this CACREP standard reflects how neuroscience helps counselors understand the adaptive nature of the nervous system, rather than using neuroscience to merely support deficit-based models such as diagnostic psychopathology.

Since 2017, the *Journal of Mental Health Counseling* has devoted a section to neuroscience-informed counseling. In addition, a growing number of counseling texts and national, regional, and state conference presentations have highlighted the enduring integration of neuroscience into counselor practice. New or revised textbooks have emerged addressing counseling theories from the neuroscience perspective (Chad Luke), neuroscience-informed child and adolescent counseling (Thomas Field and Michelle Ghoston), and neuro-informed clinical supervision (Lori Russell-Chapin and Ted Chapin). Other recent publications include a neuroeducation toolbox (Raissa Miller and Eric Beeson) and a practical neurocounseling text showing computerized LORETA brain maps written by counseling students and faculty (Lori Russell-Chapin, Nicole Pacheo, and Jason DeFord). In this preface, we underscore how integrating neuroscientific principles into the practice of counseling can support and advance the profession (Beeson & Field, 2017) and how this second edition builds on this knowledge.

## 2024 CACREP Standards

With that background in mind, this preface addresses the 2024 CACREP Standards that are pertinent to the foundational curriculum area of Professional Counseling Orientation and Ethical Practice (Section 3, Standard A):

- History and philosophy of the counseling profession and its specialized practice areas (Standard A.1.)
- The role and process of the professional counselor advocating on behalf of the profession (Standard A.5.)



## Definition of Counseling

*Who are counselors? What do they do? What does it mean to be a counselor? How are we similar to and different from other mental health professionals? How do advances in the field, such as neuroscience and neurobiology, pertain to counseling?*

All of these questions are important to ponder throughout one's career, from new graduate student to experienced practitioner. As counselors consider who they are as professionals, neuroscience and related physiology provide the information and tools to support their belief in certain core principles as foundational to counseling practice.

The field of counseling is unique among the mental health professions in its historical beliefs about the human condition and how to enhance optimal living. In 2010, a consensus definition of *counseling*

was agreed on by multiple stakeholders in what was formally titled “20/20: A Vision for the Future of Counseling” (Kaplan et al., 2014). The stakeholders distilled into one sentence how the counseling profession could be defined: “Counseling is a professional relationship that empowers diverse individuals, families, and groups to accomplish mental health, wellness, education, and career goals” (Kaplan et al., 2014, p. 368). This definition identifies as foundational to counseling practice several important concepts: (a) the professional relationship takes precedence; (b) the goal of counseling is to empower people, especially those from diverse backgrounds, and address systemic barriers that prevent optimal health; and (c) counseling assists people to not only achieve optimal mental health and wellness but also alleviate distress and mental disorders.

Neuroscience supports and provides models for implementing these concepts into counseling practice. As the chapters in this text will elucidate, neuroscience can help counselors to understand how relationships are forged, leading to deeper and more meaningful working relationships with clients; to recognize the persisting impact of systemic barriers such as oppression, marginalization, and trauma on clients’ ability to achieve their goals; and to take a wellness and strengths-based perspective that serves to empower clients and increase optimal performance. In other words, the use of neuroscience in counseling is consistent with the orientation and identity of the counseling profession.

## Neurocounseling and Neuroscience-Informed Counseling Defined

Mental health fields, including counseling, are rapidly evolving. One of the most important emerging trends in counseling has been the integration of neuroscience into practice (Beeson & Field, 2017), often referred to as neurocounseling (Montes, 2013; Russell-Chapin, 2016) or as neuroscience-informed counseling (Duenyas & Luke, 2019; Field & Ghoston, 2020; Field et al., 2022; Russo et al., 2021; Schauss et al., 2019). *Neurocounseling* has been defined as “the integration of neuroscience into the practice of counseling, by teaching and illustrating the physiological underpinnings of many of our mental health concerns” (Russell-Chapin, 2016, p. 93). *Neuroscience-informed counseling* is commonly understood to mean the same as neurocounseling, but the use of different terms has become a source of friendly discussion among leaders in this area, and the terms may mean different things to different practitioners, including the editors of this text. Both neurocounseling and neuroscience-informed counseling reflect a focus on the brain-mind-body and neurological-physiological factors that influence cognition, behavior, and emotion.

Lori prefers to use the term neurocounseling because it reflects a thorough psycho/social/medical assessment that customizes and prioritizes client interventions for neurological and physiological dysregulation. For chronic or severe client symptoms, a more thorough assessment than the typical paper-and-pencil instruments and psycho/social/medical history may be necessary. A 5- or 19-channel electroencephalogram (EEG) could be used. Turning these EEG brain wave recordings into visual brain maps assists the counselor and client to better understand where the areas of dysregulation occur. Then, symptom priority and goal setting are personalized for each client. Using both qualitative and quantitative assessments creates an easy method for successful goal obtainment and research (Russell-Chapin et al., 2021).

Conversely, Laura and Thom fear that the term neurocounseling implies that a counselor who integrates neuroscience into their work is doing a different form of counseling altogether. There are growing concerns within the counseling field that the counseling profession is overemphasizing specialization (e.g., school counseling, couples and family counseling, career counseling) at the expense of its unified identity and straying away from its humanistic roots. Laura and Thom prefer the term neuroscience-informed counseling because it represents a unified identity, and the integration of neuroscience and related physiology can be applied to any and all work in which counselors are engaging. Furthermore, Laura and Thom agree that using a term that suggests integration, rather than using a wholly new term, emphasizes that they are still honoring the core traditions of the field while also incorporating knowledge from other fields that may further strengthen our field and the work of counselors within it. Perhaps reflecting the shared valuing of a unified counselor identity, the term neuroscience-informed counseling is also becoming more prevalent within the counseling literature.

Honoring all views, we all agreed as editors to use the term neuroscience-informed counseling in the title of this second edition but to allow the authors of each chapter to use whatever term they preferred. The terms are roughly equivalent but sometimes differentiated in focus.

The integration of principles of neuroscience and related physiology into counseling has a variety of uses. For example, it can be used by counselors to

- understand how and why psychotherapy changes the brain (Russell-Chapin, 2016) and, thus, why clients begin to feel, think, and behave in healthier and more adaptive ways;
- better understand client concerns, conceptualize cases, and plan treatment by using a brain-based perspective;

- help clients understand their experience through brain-based psychoeducation; and
- take a more holistic, wellness-based, and mind-body integrative approach to client work.

In addition, counselors can use technical approaches such as biofeedback and neurofeedback to determine the physiological and neurological underpinnings of a client's distress and dysfunction (assessment) and to help clients modify physiology and brain waves to enhance their functioning and reduce distress and dysfunction (intervention). Approaches such as biofeedback and neurofeedback can also be used to improve optimal performance, not just to modify distress and dysfunction.

For some counselors, integrating principles of neuroscience and related physiology is part of what they are already doing and is another tool in the toolbox (i.e., an adjunctive strategy to psychotherapy). However, it can also entirely change the way they conceptualize client cases, conduct assessments, and select interventions. For example, as Lori once wrote, “For decades, my goal was to assist clients in changing their unwanted thoughts, feelings and behaviors . . . but the overarching goal of all my counseling [today] is to help clients to improve their emotional and physiological self-regulation” (Russell-Chapin, 2016, p. 94).

## Purpose of This Text

As counselors learn more about neuroscience and related physiology, they need guidance regarding how to integrate this new brain- and body-based knowledge into counseling practice with clients. The ability to translate complex knowledge to clients is a separate skill set that requires the ability to distill rather than dilute information. Counselors are not immune from believing inaccurate pop psychology information about neuroscience, or *neuromyths* (Kim & Zalaquett, 2019), such as about learning styles and hemispheric dominance (“right or left brained”). Counselors whose case conceptualizations are becoming informed by neuroscientific knowledge also require guidelines regarding how to apply these concepts in clinical practice.

The purpose of this text is to provide a resource for how neuroscientific concepts can be translated and applied to the counseling field, with the objective of both explaining and enhancing the theory and practice of counseling. In doing so, we hope to provide guidance and facilitate learning about how counselors are integrating neuroscience into their work, with the hope of better understanding and identifying methods for effectively and responsibly incorporating key principles of neuroscience into the profession. To advance this effort, we use the 2024 CACREP Standards as our markers of

learning to ensure that CACREP-accredited (and all) programs have the information needed to apply neuroscientific concepts to all major areas of counseling practice.

While writing and editing this text, we also understood that for some counselors, especially those for whom science and research are not strength areas, neuroscience can be an overwhelming and frightening concept. The scientific terminology, complex anatomy, and technology-based brain measurements may seem irrelevant to daily counseling practice with clients who bring forth deep existential human struggles that cannot easily be quantified. The specialized knowledge required to be a neuroscience-savvy practitioner may also seem outside the scope of counseling practice.

With that in mind, the purpose of this text is to provide counselors with guidelines, ideas, and tips on how to become effective and skillful neuroscience-informed counselors. We have purposefully asked each author to convey these concepts in a way that is understandable yet retains important information (distill, not dilute; Field & Ghoston, 2020). The chapters are organized so that you will understand foundational neuroscience concepts that inform client case conceptualization (e.g., human development, social and cultural background) before learning how to approach assessment and intervention from a neuroscience-informed perspective.

We hope that this text will be useful not only to counseling practitioners but also to master's- and doctoral-level students in counseling programs. In that regard, it addresses the eight core areas in the Foundational Counseling Curriculum (Section 3) of the 2024 CACREP Standards: professional counseling orientation and ethical practice, social and cultural identities and experiences, lifespan development, career development, counseling practice and relationships, group counseling and group work, assessment and diagnostic processes, and research and program evaluation. We also address several 2024 CACREP Standards that are integrated into the eight core areas, such as the impact of crises, disaster, and traumatic events; the neurobiology of addictions; wellness and optimal performance; and psychopharmacology. Some chapters also address the 2024 CACREP Doctoral Standards for Counselor Education and Supervision (Section 6). We are proud that the first edition of this text was the first publication to discuss the application of neurocounseling and neuroscience to the CACREP standards specifically. Furthermore, the first edition of this text represents the first publication to broadly address the application of neurocounseling and neuroscientific concepts across the core counseling curriculum, an approach that provides a practical, comprehensive model for the integration of neuroscience into counseling practice.

In addition to being an adjunctive text for all foundational courses in the master's-level counseling curriculum, this text can serve as a primary resource for counseling students (both master's- and doctoral-

level students) who are taking specialization courses in neuroscience-informed counseling, neurocounseling, brain and behavior, the biological basis of behavior, and so forth. Finally, the text could also be a resource for counselor educators and supervisors who want to learn more about neuroscientific applications to counseling practice. Thus, it is broadly designed for practicing counselors in the field, counselor education students-in-training, and counselor educators and supervisors.

## **Text Organization and Chapters**

From 2017 to 2020, leaders in the neuroscience integration movement worked together on an AMHCA-sponsored task force to create a training model for the development of neuroscience competencies (Field et al., 2022). Their training model (see Figure) highlighted a step-by-step learning process whereby counselors first are provided foundational knowledge in neuroanatomy and physiology (Step 1); then learn about neuroscience applications to clinical presentations (Step 2); and last move up to counseling practice, interventions, and techniques (Step 3).

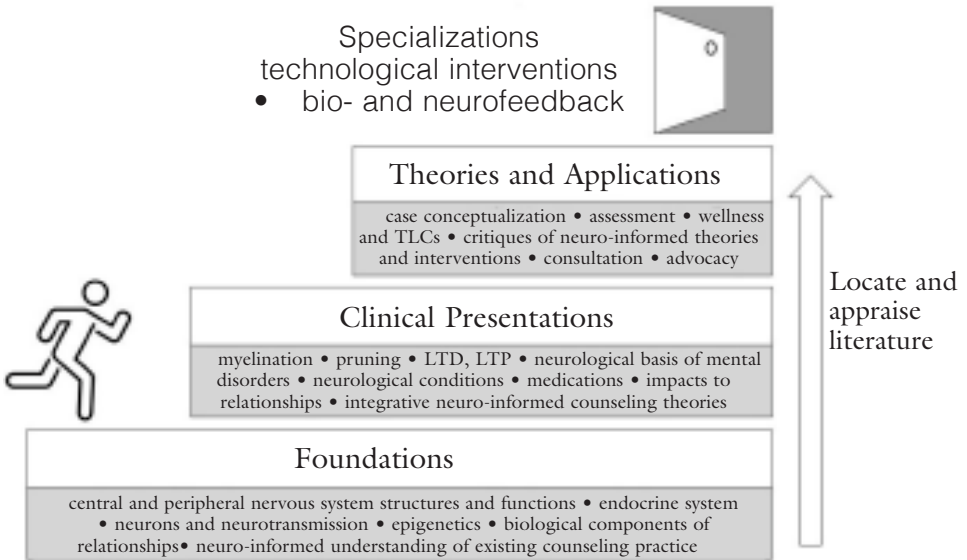
In this text, the organization of the chapters corresponds to the steps in the training model, so that the reader learns basic neuroanatomy and physiology (Chapters 1 to 3) and clinical presentations (Chapters 4 to 6) before exploring applications to counseling practice (Chapters 7 to 13). The last three chapters (Chapters 14 to 16) are about advanced applications pertaining to research, supervision, and 10 principles for holistic integration. Thus, the text is divided into three parts.

Part I reviews foundational information about neuroanatomy and neurophysiological development across the life span before exploring the effects of social and cultural issues such as marginalization and oppression. This part also covers clinical presentations, such as the neurophysiology of traumatic stress, substance use, and indications for psychopharmacological intervention.

Part II applies the foundational knowledge learned in Part I to counseling assessments and relationships from the intake process through case closure. These chapters describe an approach to completing a comprehensive neurocounseling assessment, assessing for client wellness and enhancing optimal performance, using attentional processes and empathic understanding, leveraging the neuroeducation process to enhance client outcomes, applying neuroscience-informed counseling theory, career counseling, and group work.

Part III addresses advanced applications of a brain- and body-based approach to conducting research and clinical supervision. It also includes 10 guidelines for integrating neuroscience into counseling practice using the clinical case study of Muna.





**FIGURE**  
**Training Model for the Development of Neuroscience-Informed Counseling Competencies**

*Note.* TLC = therapeutic lifestyle change; LTD = long-term depression; LTP = long-term potentiation. Reprinted from “A Training Model for the Development of Neuroscience-Informed Counseling Competencies,” by T. A. Field, Y. S. Moh, C. Luke, P. Gracefire, E. T. Beeson, and G. M. Russo, 2022, *Journal of Mental Health Counseling*, 44(3), 266–281. Copyright © 2022 by American Mental Health Counselors Association. All rights reserved. Reprinted with permission.

## Text Features

As editors, we sought to ensure that each chapter made direct connections between the content and clinical practice. As an anchor for the content knowledge, each chapter references a fictional case study to ensure the material is relevant to client work. This preface presents a case study with reflective questions that are further explored in the final chapter. Reflective questions are integrated throughout each chapter so that readers can pause and consider how the content knowledge that has been covered could be relevant to the client case being discussed. We encouraged chapter authors to share their own brain-based approach to their case study so you, as the reader, can consider how to use the information presented with clients in your own unique way. A few quiz questions are included at the conclusion



of each chapter so that you can test your knowledge. The quiz answers are located at the back of the text. A glossary is also provided at the conclusion of the text to help you understand the concepts taught in the chapters. You are encouraged to return to sections of the chapter in which those terms are described if you are not confident in your knowledge.

## Changes to the Second Edition

This revision builds upon the first edition by (a) updating content to highlight changes in the scientific literature since 2016; (b) reflecting new research within the counseling field regarding the empirical understandings of integration, the ethics of integration, cultural considerations when integrating neuroscience into counseling practice, and best practices for training counselors in neuroscience; and (c) addressing pertinent 2024 CACREP Standards. Empirical findings regarding neuroscience are always emerging, and this text reflects important updates to the scientific literature.

In the years since the first edition was published, counselors also have been recognized by law as being eligible for independent Medicare provider status, have worked with increased numbers of clients struggling with addiction (especially opioid addiction), and have assisted clients through the coronavirus pandemic that began in 2019. This second edition text includes new content relevant to these current practice needs for counselors, such as (a) the neuroscience of aging, cognitive decline, and brain injury; (b) medication-assisted treatment for addiction; and (c) the role of inflammation in mental health conditions. This second edition also features two new chapters reflecting emerging themes in the counseling literature: leveraging neuroeducation to enhance client outcomes and neuroscience-informed clinical supervision.

## Addressing Diversity and Social Justice

Neuroscience informs the importance of cultural competency and social justice work as counselors (Ivey et al., 2024). When used appropriately, the integration of neuroscience also can reduce the stigma associated with mental health (Lebowitz & Appelbaum, 2017) and perhaps facilitate help seeking by members of marginalized groups. Chapter authors discuss such considerations and give attention throughout the text to the different factors related to providing neuroscience-informed counseling with clients from marginalized backgrounds. For example, the biology of marginality chapter provides clear guidance for exploring a client's heritage and marginalized experiences during the counseling process and assisting clients to navigate systemic and environmental barriers to reduce the impacts of such stress.

## Concluding Thoughts

As Lori likes to say, once you have learned about how the brain works in relation to physical and emotional health, you cannot go back. We are confident that this knowledge will forever change how you approach case conceptualization, assessment, and intervention in clinical practice. We hope the subsequent chapters will be your starting point on this journey.

### Clinical Case Study

The client described here, Muna, was first presented in the first edition of this text. In this second edition, we provide updated case information to catch the reader up on Muna's journey.

Muna is a 42-year-old Iraqi woman living in a metropolitan area of a large U.S. city. Seven years ago, she sought counseling to address anxiety that she was experiencing at her new job in an accounting firm. Muna was also struggling with feelings of inadequacy related to her long-standing dating relationship of nearly a decade. Her family lives in Iraq, and she emigrated to attend a U.S. college in her early 20s. She lived in constant dread of her family finding out that she was living with her boyfriend outside of marriage. She drank alcohol to cope, mostly at night (4 to 5 units). Muna also struggled with sleep, usually only getting 3 to 5 hours per night. She had a past diagnosis of attention-deficit/hyperactivity disorder and twice a day took 20 milligrams of Adderall, a stimulant. Muna had experienced psychological abuse from her father throughout her childhood. She was warm and engaging during the initial interview, although her nonverbal fidgeting suggested she was somewhat anxious. Muna acknowledged holding deep-seated fears that something was deeply wrong with her.

During the first 2 years of counseling, Muna made significant progress. At the counselor's request, Muna scheduled a full physical exam with a primary care physician. Her bloodwork assessment indicated that she was anemic and vitamin D deficient, with estrogen levels below the normal range, and that her thyroid functioning was outside the normal range. These medical concerns were addressed, and Muna's anxiety abated somewhat. Muna explored her past and present relationships and realized her attachment pattern was to end relationships before the other person might call it quits.

Treatment for Muna included discussing the effects of early trauma on her physiological hyperarousal, her development, and her overall functioning. Knowing about these connections reduced Muna's presenting symptoms of anxiety and sleeplessness. She then proceeded to achieve treatment goals of reducing her alcohol consumption through attending Alcoholics Anonymous meetings. She began attending a mosque. She also received neurofeedback and eventually was weaned off the stimulant medication. When treatment concluded, Muna reported a great deal of self-efficacy from achieving her goals.

Five years later, Muna contacts your office to arrange a new intake appointment. You learn during the first meeting that the coronavirus pandemic was particularly hard on Muna. Shaking as she talks, she discloses that she has broken up with her partner and moved into her own apartment. The close proximity and "cabin fever" of quarantine had exacerbated disputes between them to the point that she feared for her safety. During the pandemic, Muna grew uncomfortable with socializing in large groups and currently has limited social activity and few friends. She also was diagnosed with ulcerative colitis and is having difficulty managing her symptoms. Muna wonders if these conditions developed following lingering symptoms of coronavirus infection. In addition, a year before the pandemic, Muna was injured in a serious car accident that left her with chronic pain she manages daily with opioids. Muna is still employed at the accounting firm but now works from home. Her goals for counseling are to better manage her medical problems, reduce her reliance on opioids, and become more socially active again.

The ensuing chapters of this text contain information that will help you conceptualize Muna's concerns. You will learn possible answers to important questions such as the following:

- How might stress and the inflammatory response be connected with mental health?
- Which areas of Muna's brain and body are being compromised?
- How does anxiety "happen" in the body?
- What is the potential extended impact of emotional abuse on the client's functioning?

- How does a person become neurophysiologically dependent on a drug?
- What role do lifestyle changes and neurofeedback have in managing health conditions?

In the final chapter of this text (Ten Guidelines for Integrating Neuroscience Into Your Practice), we review each of these questions on the basis of knowledge you will acquire from the chapters that precede it.

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