

# Bridging the Brain–Body Divide: A Commentary and Response to Wilkinson

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*In response to Wilkinson's (2018) critique of humanistic counseling's alliance with neuroscience, the author explores the concept of the brain–body divide, proposes an adjustment to Wilkinson's quadripartite model, and suggests ways for humanistic counselors to integrate levels of consciousness and the brain–body connection into their work with clients.*

*Keywords:* neurocounseling, mind–body, humanistic, humanism, neuroscience-informed cognitive behavior therapy



Humanism has long been at the center of the counseling profession's identity and values. The core tenets of humanistic counseling have been identified to include a focus on the depth of an individual's phenomenological experience, depth of the relationship between counselor and client and helping the client to feel deeply heard and understood, personhood of the counselor, honoring client autonomy and trusting the client's intrinsic propensity toward growth, and facilitating growth rather than seeking to remediate problems or disorders (Scholl, Ray, & Brady-Amoon, 2014). Consistent with this, Wilkinson (2018) recently criticized the application of neuroscience to counseling practice on the basis of the central argument that science is incapable of adequately measuring the complexity of unique phenomenological experiences of the individual. Similar concerns have been raised by humanistic counselors previously in regard to empirical science in general (Hansen, 2012) and neuroscience in particular (Montes, 2013). Some degree of debate and dialogue exists within humanistic counseling regarding its relationship with post-positivist empiricism. In 2012, Hansen proposed that the values of humanistic counseling exclusively aligned with qualitative research, claiming that quantitative studies reduce the uniqueness of phenomenological experience and also ignore the multiple realities that coexist by presenting one singular perceptual representation. For similar reasons, Hansen dismissed the importance of clinical diagnosis in humanistic counseling practice. In response, Lemberger (2012) proposed a more moderate approach of considering symbolic representations of research and how it might apply to specific clients, citing Heppner, Wampold, and Kivlighan (2008).

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Consistent with the empiricist–humanist incompatibility argument by Hansen (2012) and others, Wilkinson (2018) proposed that because neuroscience is fundamentally reductionistic and aligned with behaviorism and medical models, it “may lend little substance to counseling” (p. 73). Wilkinson’s dismissal of the current relevance of neuroscience to counseling practice was responded to by Beeson and Miller (2019).

Wilkinson (2018) used this platform to present a model for integrating neuroscience and humanism that is organized by four levels of consciousness: metacognition, rational awareness, intuitive awareness, and implicit awareness. This quadripartite humanistic neuroscience (QHN) model identifies humanistic terminology and correlates activity in brain regions that have been associated with each of the four levels of consciousness. Wilkinson suggested that such a structure could assist with bridging the divide between neuroscience and humanism.

In this article, I provide a commentary and response to Wilkinson’s (2018) QHN model. I identify research support for Wilkinson’s assertions, identify important shortcomings of the model, and offer an alternative integrative model for bridging neuroscience and humanism. Rather than respond to Wilkinson’s criticisms of neuroscience’s relevance to counseling practice (much of which was overstated, as described in Beeson & Miller, 2019), my objective is to further the dialogue by deeply exploring consciousness and its related dilemma of the interdependent workings of the brain and body. I describe the historical backdrop to Wilkinson’s model and use this information to present an important modification to Wilkinson’s model that would help counseling bridge the long-standing separation of mind and body in mental health treatment.

## A HISTORY OF CONSCIOUSNESS AND THE MIND–BODY PROBLEM

Wilkinson’s (2018) identification of four levels of consciousness was informed by theoretical conceptualizations from within the neuroscience field. Wilkinson’s differentiation of explicit processing (e.g., metacognitive awareness, rational awareness) from implicit processing (e.g., intuitive awareness, implicit awareness) is grounded in a lineage of Western thought that has separated the functions of the brain and body. To understand the context of Wilkinson’s model, we will explore the history of dualism before reviewing 20th century theories about the triune brain and subsequent theories about top-down versus bottom-up processing and right versus left hemisphere processing. Each of these theories attempt to delineate forms of consciousness by brain regions and structures.

### *Dualism*

The separation of brain from body reflects long-standing philosophical beliefs of Western culture about consciousness (Schore, 2012). Western society, including in the United States, remains heavily influenced by philosophical thought derived from rationalist European philosophy of

the 17th century. René Descartes and his philosophy of Cartesian dualism has been particularly influential in this regard (Schore, 2012).

Descartes was a French philosopher whose philosophy emphasized human capacity for rational thought. He argued that the mind and body were disconnected entities. The body was considered to be a machine, as it followed the laws of nature and was not capable of transcending its corporeal form. In contrast, the mind was capable of rational cognition, which implied existence, and without rational thought, humans could not be conscious of their own existence. This philosophical position was reflected in Descartes's (1644/1984) famous maxim, "I think, therefore I am." Descartes believed that rational consciousness separated humans from animals. Physical needs were seen as not only less valuable but also antithetical to rational thought, since physical needs often impaired rational thinking. While Descartes's philosophy has been widely criticized, his influence can be seen throughout Western culture. For example, mental health and physical health care services have been provided separately from each other, in silos, until relatively recently. Furthermore, educational institutions in the United States evaluate academic performance largely through tasks aligned with Howard Gardner's (1983) verbal-linguistic and logical-mathematical intelligence (i.e., tasks requiring rational verbal and calculation abilities), rather than tasks requiring bodily-kinesthetic and naturalistic intelligence.

### *Phrenology*

In the late 18th century, the study of the brain was furthered by Franz Josef Gall's invention of phrenology (Simpson, 2005). Gall identified 27 different brain regions (which he termed *organs*) associated with mental faculties such as emotional temperament. Phrenologists sought to evaluate the size of brain regions associated with personality and character by the shape and size of the skull. Gall's theory was discredited by 1843, although his attempts to differentiate and localize brain functions remain influential today (Simpson, 2005). It is important to note that Gall's theory focused solely on the brain and did not connect the function of brain organs to other parts of the body. As such, Gall's theory was influenced by Descartes' earlier dualistic theory.

### *Triune Brain*

During the 1960s, Paul MacLean created a simplified model for consciousness as it pertains to brain functioning, known as the triune brain (MacLean, 1990). The model identified three brain areas: the *reptilian complex*, comprising the brain stem and the cerebellum; the *paleomammalian complex*, composed of limbic subcortical structures (e.g., amygdala, hippocampus, thalamus); and the *neomammalian complex*, also known as the neocortex, which includes the frontal, occipital, parietal, and temporal lobes. MacLean proposed that conscious processing occurred in the neomammalian complex. Preconscious processing occurred in the reptilian

and paleomammalian complexes, and the reptilian complex was associated with basic physiological functions, such as breathing, heart rate, hunger, and so on. The reptilian complex was also the part of the brain associated with sending messages to different parts of the body through the nervous system and with survival responses, such as sending messages to the adrenal cortex and medulla to release the hormones (e.g., cortisol, adrenaline) associated with readiness for action. MacLean considered the reptilian and paleomammalian complexes to be artifacts of evolution, believing that all mammals possessed these anatomical components of the brain and that mammals evolved from reptiles initially.

While helpful for learning the basic functions of neuroanatomy, MacLean's (1990) triune brain perpetuated beliefs about the distinction between brain and body. The reptilian and paleomammalian complexes were considered more primitive areas of the brain, whereas the neomammalian complex was considered to be more evolutionarily advanced and the area of the brain that separates humans from animals. Furthermore, the model offered little information about how these major regions of the brain worked together in synchrony. Put simply, the triune brain model unfortunately created unnecessary distinctions between regions of the brain and seemed to reflect cultural beliefs about the neocortex (i.e., the neocortex was more advanced, less primitive, and of greater importance because it distinguished humans from animals).

#### *Top-Down Versus Bottom-Up Models*

Another conceptualization for consciousness as it relates to brain function was popularized by the Nobel Prize-winning Daniel Kahneman in his book *Thinking Fast and Slow* (Kahneman, 2011). Subsequent esteemed neuroscience experts (e.g., LeDoux & Pine, 2016) have proposed variants of this conceptual model. The top-down versus bottom-up processing model proposes that people have two main thinking systems. The bottom-up implicit processing system, known as System 1 (Kahneman, 2011), is a fast pathway that is marked by the thalamus sending messages to other areas of the limbic system and eventually to the brain stem and throughout the nervous system without the frontal lobe of the cortex becoming activated. This system occurs during times of threat, when the brain and body need to respond quickly. The *amygdala hijack* metaphor was popularized by Daniel Goleman (1996) to describe this process, reflecting the tendency to decry physiological processes that interfere with rational thought. The second system, top-down explicit processing, is a slower pathway that involves the frontal lobe of the cortex in decision-making. This model is useful to understanding why people have difficulty with thinking before acting, driven by evolutionary tendencies toward self-preservation. The top-down bottom-up model, known as System 2, uses similar differentiation of regions as the triune brain model (e.g., cortex, limbic system, brain stem, nervous system). As with the triune brain model, the differentiation of regions by function has the potential to be misleading because more focus is placed on what makes these regions different rather than how they work simultaneously in a connected fashion.

The lateralization model of right versus left hemisphere processing also is used to explain consciousness as it pertains to brain function. The right hemisphere has been associated with preconscious, intuitive, implicit processing, whereas the left hemisphere has been associated with conscious, rational, explicit processing (Schoe, 2012). As with the models described previously, this distinction has historically tended to emphasize the unique role of each hemisphere (Corballis, 2014). This is perhaps most famous in Iain McGilchrist's (2009) writings about the divided brain. Subsequent research has debunked the lateralization of hemispheric function and instead has supported the complementary and synchronistic interplay between both hemispheres (e.g., Nielsen, Zielinski, Ferguson, Lainhart, & Anderson, 2013). Only recently have theorists proposed that the two regions work in concert rather than separately (e.g., Corballis, 2014; Siegel, 2010).

In summary, the study of consciousness within neuroscience has tended to over-emphasize differentiated and localized activity by brain region and has underemphasized the interrelationships between regions. Western thought has also privileged the importance of rational cognition and conscious awareness while neglecting the importance of preconscious processing. Culturally, this tendency to isolate brain function and to overemphasize explicit rational consciousness reflects the persisting influence of Cartesian dualism and the continued differentiation of brain and body. Our current studies into neuroscience remain rooted in the pitfalls of phrenology, which is apparent in researchers' descriptions of compartmentalized, rather than interrelated, brain functions and in oversimplified models, such as right-left hemisphere lateralization. In his recent book *The Biological Mind*, Alan Jasanoff (2018) expressed concern that the brain has been conceptualized as a distinct entity from the body, rather than another organ of the body that has intricately interconnected functions. Jasanoff wrote that the brain and body work in synchrony; emotions are often experienced physiologically, for example.

## CONSCIOUSNESS AND COUNSELING THEORY

The provision of mental health services in the United States has been strongly influenced by Western philosophical traditions of dualism. Until recently, mental and physical health care services operated in separate silos. Counselors and other medical professionals collaborated very little in the treatment of clients, other than to make referrals. Currently, the mental health services landscape appears to be transitioning to integrated forms of mental and physical health care that perhaps reflect greater respect for the mind-body connection.

Most traditions of counseling and psychotherapy have been influenced by a Western philosophy that emphasizes rational, explicit, and top-down conscious processing. Nearly every theory of counseling and psychotherapy emphasizes rational cognition and underemphasizes physiological activity, reflecting differentiation rather than integration of brain and body. The ultimate goal and outcome of psychodynamic psychotherapy is the fostering

of insight (Shedler, 2010). Adler (1931/2010) highlighted the importance of mental mistakes, which influenced the later cognitive models of Beck (e.g., Beck, 1975) and Ellis (e.g., Ellis, 1961). Humanistic forms of counseling and psychotherapy have also tended to prize rational consciousness. Rogers's (1957) person-centered therapy placed importance on rational verbal communication within the context of a trusting therapeutic relationship, apparent by the focus on techniques that reflect verbal content, feeling, and meaning. Existential approaches are largely focused on rational meaning making, decision-making, and conscious awareness of responsibility (Yalom, 1980). Even constructivist models, such as narrative therapy and solution-focused therapy, highlight the importance of rational, verbal dialogue in the change process (e.g., DeJong & Kim Berg, 2012; White & Epston, 1990). Although classic and operant conditioning models of behaviorism often focus on environmental changes that condition an individual's responses without requiring conscious processing, they have not historically attended to physiological responding and the importance of the brain-body connection. Gestalt therapy is perhaps the only major theoretical model that has, to date, given any weight to the importance of attending to physiological responding (Perls, 1992). The reliance of counseling and psychotherapy on conscious processing is reflected in Wilkinson's (2018) article. Wilkinson delineated four levels of consciousness without providing any guidance about how these levels of consciousness are interrelated. Wilkinson also did not provide direction for how to work at the intuitive or implicit awareness levels. Furthermore, and perhaps most importantly, Wilkinson provided little information about how the brain and body are interconnected in their functions or how to best work with clients in an integrated manner that recognizes the complex interconnection between brain and body. In Wilkinson's QHN model, physiological awareness is mentioned only in passing as a component of the implicit awareness domain ("bodily attunement," p. 76). Without such information, Wilkinson's model does not diverge from the flawed neuroscience conceptualizations of consciousness that are described above. As it currently stands, the QHN model does not move the field of counseling and psychotherapy beyond the tradition of overemphasizing rational consciousness.

In the remainder of this article, I propose an adjustment to Wilkinson's (2018) model that integrates different levels of consciousness to bridge the gap between humanism and neuroscience in a manner that addresses the brain-body divide.

## TOWARD AN INTEGRATED MODEL

As an organ of the body, the brain works in concert with other parts of the nervous system. All aspects of a person's experience are thus both neurological (brain-based) and physiological (body-based). For example, imagine a person has a deeply felt emotional experience in counseling and subsequently proceeds to self-reflect and process that experience. Per Yalom and Leszcz (2005), this affective experiencing and cognitive processing are core components of Franz Alexander's concept of the *corrective emotional*

*experience* (as referenced in Jacobs, 1990). Following Wilkinson's (2018) domains, the person would likely experience the emotional response initially through preconscious subcortical processing (i.e., implicit awareness), resulting in emotional experiencing and associated physiological activation in the limbic regions, brainstem, and messages sent throughout the nervous system (e.g., release of hormones from the adrenal cortex and medulla). It is likely that the person's physiological activation would eventually enter their awareness, to varying extent. On some occasions, the person might have a felt sense of being activated, such as fleeting recognition of sweating, face flushing, increased heart rate, or tearfulness (i.e., intuitive awareness). At other times, the person might self-reflect on their emotional and/or physiological state (i.e., rational awareness) and process their thoughts and feelings about becoming activated. Some people (especially if prompted by the counselor) may proceed to process what it was like to talk about their activation with another person (i.e., metacognition). It is important to note here that subsequent secondary emotional and/or physiological activation can occur throughout the process. For example, when a person processes what it was like to talk about an experience with their counselor (i.e., metacognition), they may experience pride, joy, or embarrassment and accompanying physiological consequences (e.g., relaxing or tensing muscles) without becoming aware of this secondary response (i.e., implicit awareness). Phenomenological awareness and physiological activation are thus both core components of a person's experience in counseling.

An integrated counseling approach that helps people to understand the connection between brain and body (i.e., phenomenological and physiological awareness) seems particularly important in Western culture, in which many people have become distant or even numb to their emotional and physiological experiences and may struggle at first to understand how they are feeling and responding at any given moment. Some people may experience bewilderment and even shame at their emotional and physiological activation. For example, a person with a trauma history may experience shame at becoming emotionally or physiologically activated by environmental stimuli as a means of avoiding anticipated social rejection. Helping clients to become aware of their emotional and physiological responding in the here and now of the counseling session helps them to better understand and accept their self-experience. This acceptance is an important step toward the development of self-compassion (Neff, 2012), which appears to have significant impacts on the amelioration of symptomatology (Hiraoka et al., 2015; Kearney et al., 2013; Neff & Germer, 2013).

A client's awareness (i.e., implicit and rational consciousness) of when emotional and physiological activation is occurring (i.e., implicit consciousness) may be foundational to subsequent counseling interventions that aim to modify a person's responding. For example, imagine a person feels threatened by something in the environment, and the sympathetic nervous system is activated. Messages are sent from limbic structures (e.g., thalamus, hippocampus, amygdala, hypothalamus, pituitary gland) to the adrenal cortex

and medulla located above the kidneys, leading to the release of chemicals, such as adrenaline and cortisol, which help the person immediately respond to this threat. The person experiencing this activation of the sympathetic nervous system feels agitated, aroused, anxious, and ready for action. If the person experiences such activation frequently enough, it can be problematic. Chronic states of high arousal and stress are counterproductive, and the ability to modulate the threat response has health implications (Douthit & Russotti, 2017). Once the person has learned to use intuitive and rational cognition to identify signs of physiological activation, he or she can then learn to soothe the physiological response by activating the parasympathetic nervous system. For example, diaphragmatic breathing can help a person to reduce anxiety and tension, releasing stress-reducing enzymes and hormones, such as acetylcholine, vasopressin, and oxytocin. In short, understanding the relationship between brain and body and using techniques like deep breathing can help a person better self-regulate. This self-regulation example elucidates how brain and body are intricately connected.

To illustrate how different levels of consciousness can be integrated within a counseling approach that respects the interconnection of brain and body, it may be useful to review emerging counseling theories that reflect the importance of attending to implicit emotional and physiological activation in clients. Field, Beeson, and Jones (2015) developed neuroscience-informed cognitive behavior therapy (nCBT) out of concern for the reliance on rational cognition within CBT. In practice settings, the authors saw children attempt to think before acting and fail, resulting in negative outcomes such as diminished belief in counseling and reduced self-esteem. Findings from neuroscience regarding top-down and bottom-up processing (e.g., LeDoux & Pine, 2016) informed an alternative conceptualization of client problems that integrate both implicit (i.e., preconscious) and explicit (i.e., conscious) processing. The nCBT model proposes that people first process information implicitly; for example, when a person preconsciously detects a threat within the environment and becomes emotionally and/or physiologically activated (Field et al., 2015). That person becomes consciously aware of such activation afterward, when he or she begins to make sense of the experience, and the response generates secondary emotional and physiological responses. This new conceptualization provides counselors with tools to help people become aware of preconscious physiological responding and to use new experiences to dispute negative cognitions (Beeson, Field, Jones, & Miller, 2017). Tools for preconscious responding include altering lifestyle behaviors and enhancing wellness to reduce vulnerability to emotional dysregulation, attending to physiological activation, and identifying emotions and physiological activation. Although not a humanistic theory per se, nCBT integrates components of humanistic traditions, such as Gestalt therapy's focus on physiological awareness and the practice of attending to the client's verbal and nonverbal (especially physiological) responding. The method was not borne from an attempt to resolve specific diagnostic symptomatology; thus, although behavioral, nCBT was not another backdoor

approach to reducing client experience. Instead, the model emphasizes the importance of individualizing the principles of the approach to the unique experiences and needs of the client (Beeson et al., 2017).

The nCBT model includes lifestyle change interventions to work with clients at the implicit level of consciousness. For decades, wellness interventions have provided a treatment option outside of traditional talk therapy (i.e., rational consciousness). Similar to humanism, wellness models have historically sought to holistically integrate body, mind, and spirit with the goal of achieving optimal health and well-being (Myers, Sweeney, & Witmer, 2000). Often described as central to counseling practice, wellness is included—along with the counseling relationship, empowerment of clients, and respect for diversity—in the consensus definition of counseling (Kaplan, Tarvydas, & Gladding, 2014).

A similar holistic and integrative wellness-based treatment approach can also be found in the neuroscience field. Daniel Siegel, a leader in the field of interpersonal neurobiology, developed a model of wellness termed the *healthy mind platter*, which addresses comparable concepts to Myers et al. (2000) from a brain-based perspective (Rock, Siegel, Poelmans, & Payne, 2012). Authors within the counseling profession have also written about how neuroscience can inform both wellness and prevention practices, such as therapeutic lifestyle changes (Chapin, 2017; Ivey, Ivey, & Zalaquett, 2014).

Counseling's long-standing focus on wellness and holism is thus supported by neuroscience and serves as an antidote to Western cultural lineage of mind-body disconnection. Using wellness assessments and interventions is thus a potential method for addressing the brain and body interconnection when using a humanistic counseling approach.

## CONCLUSION

Wilkinson's (2018) QHN model is a valiant attempt to integrate neuroscience and humanism, and contains components that are reflective of trends in the neuroscience literature. The four levels of consciousness within the QHN model appear to adequately represent different forms of implicit and explicit processing, and to his credit, Wilkinson mentions physiological responding as an aspect of implicit consciousness. Unfortunately, the QHN model reflects concerning trends within both counseling and neuroscience regarding the disconnection between brain and body and the tendency to overemphasize rational, conscious cognition. As presented, the model offers no guidance regarding how to approach counseling in an integrated manner that recognizes the complex interconnection between brain and body. I propose that this dualistic divide of brain and body is unhelpful for conceptualizing client distress and is incongruent with humanism's historical respect for holism. Per Kaplan et al.'s (2014) consensus definition, professional counseling values wellness and the interconnection of body, mind, and spirit.

In this article, I presented an example of how a counselor might approach integrating different levels of consciousness when working with clients in a manner that emphasizes the interconnection of brain and body. The

relatively new model of nCBT was reviewed to present an example of a counseling approach that attempts such an integration. In providing guidance about how to integrate different levels of consciousness when using Wilkinson's (2018) QHN model, I hope the reader will consider taking a more integrated approach when working with clients that respects the brain and body interconnection.

## REFERENCES

- Adler, A. (2010). *What life should mean to you*. Eastford, CT: Martino Fine Books. (Original work published 1931)
- Beck, A. T. (1975). *Cognitive therapy and the emotional disorders*. Madison, CT: International Universities Press.
- Beeson, E. T., Field, T. A., Jones, L. K., & Miller, R. (2017). *nCBT: A semi-structured treatment manual*. Boise, ID: Boise State University.
- Beeson, E. T., & Miller, R. M. (2019). Grounding neuro-informed practice in a humanistic framework: A response to Wilkinson. *The Journal of Humanistic Counseling*, 58, 95–107. doi:10.1002/johc.12099
- Chapin, T. J. (2017). Wellness and optimal performance. In T. A. Field, L. K. Jones, & L. A. Russell-Chapin, (Eds.), *Neurocounseling: Brain-based clinical approaches* (pp. 133–146). Alexandria, VA: American Counseling Association.
- Corballis, M. C. (2014). Left brain, right brain: Facts and fantasies. *PLoS Biology*, 12, e1001767. doi:10.1371/journal.pbio.1001767
- DeJong, P., & Kim Berg, I. (2012). *Interviewing for solutions* (4th ed.). Belmont, CA: Brooks/Cole.
- Descartes, R. (1984). *Principles of philosophy*. New York, NY: Springer. (Original work published 1644)
- Douthit, K. Z., & Russotti, J. (2017). Biology of marginality: A neurophysiological exploration of social and cultural foundations for psychological health. In T. A. Field, L. K. Jones, & L. A. Russell-Chapin, *Neurocounseling: Brain-based clinical approaches* (pp. 45–60). Alexandria, VA: American Counseling Association.
- Ellis, A. (1961). *A guide to rational living*. Englewood Cliffs, NJ: Prentice-Hall.
- Field, T. A., Beeson, E. T., & Jones, L. K. (2015). The new ABCs: A practitioner's guide to neuroscience-informed cognitive-behavior therapy. *Journal of Mental Health Counseling*, 37, 206–220.
- Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences*. New York, NY: Basic Books.
- Goleman, D. (1996). *Emotional intelligence: Why it can matter more than IQ*. New York, NY: Bantam Books.
- Hansen, J. T. (2012). Extending the humanistic vision: Toward a humanities foundation for the counseling profession. *The Journal of Humanistic Counseling*, 51, 133–144. doi:10.1002/j.2161-1939.2012.00011.x
- Heppner, P. P., Wampold, B. E., & Kivlighan, D. M., Jr. (2008). *Research design in counseling* (3rd ed.). Belmont, CA: Brooks/Cole.
- Hiraoka, R., Meyer, E. C., Kimbrel, N. A., DeBeer, B. B., Gulliver, S. B., & Morissette, S. B. (2015). Self-compassion as a prospective predictor of PTSD symptom severity among trauma-exposed U.S. Iraq and Afghanistan war veterans. *Journal of Traumatic Stress*, 28, 127–133. doi:10.1002/jts.21995
- Ivey, A. E., Ivey, M. B., & Zalaquett, C. (2014). *Intentional interviewing and counseling* (8th ed.). Belmont, CA: Brooks/Cole.
- Jacobs, T. (1990). The corrective emotional experience: Its place in current technique. *Psychoanalytic Inquiry*, 10, 433–545.
- Jasanoff, A. (2018). *The biological mind: How brain, body, and environment collaborate to make us who we are*. New York, NY: Basic Books.
- Kahneman, D. (2011). *Thinking fast and slow*. New York, NY: Farrar, Straus and Giroux.

- Kaplan, D. M., Tarvydas, V. M., & Gladding, S. T. (2014). 20/20: A vision for the future of counseling: The new consensus definition of counseling. *Journal of Counseling & Development*, 92, 366–372. doi:10.1002/j.1556-6676.2014.00164.x
- Kearney, D. J., Malte, C. A., McManus, C., Martinez, M. E., Felleman, B., & Simpson, T. L. (2013). Loving-kindness meditation for posttraumatic stress disorder: A pilot study. *Journal of Traumatic Stress*, 26, 426–432. doi:10.1002/jts.21832
- LeDoux, J. E., & Pine, D. (2016). Using neuroscience to help understand fear and anxiety: A two-system framework. *American Journal of Psychiatry*, 173, 1083–1093. doi:10.1176/appi.ajp.2016.16030353
- Lemberger, M. (2012). A return to the human in humanism: A response to Hansen's humanistic vision. *The Journal of Humanistic Counseling*, 51, 164–175. doi:10.1002/j.2161-1939.2012.00015.x
- MacLean, P. D. (1990). *The triune brain in evolution: Role in paleocerebral functions*. New York, NY: Plenum Press.
- McGilchrist, I. (2009). *The master and his emissary: The divided brain and the making of the Western world*. New Haven, CT: Yale University Press.
- Montes, S. (2013, December). The birth of the neurocounselor. *Counseling Today*, 56, 32–40.
- Myers, J. E., Sweeney, T. J., & Witmer, J. M. (2000). The wheel of wellness counseling for wellness: A holistic model for treatment planning. *Journal of Counseling & Development*, 78, 251–266. doi:10.1002/j.1556-6676.2000.tb01906.x
- Neff, K. D. (2012). The science of self-compassion. In C. Germer & R. Siegel (Eds.), *Compassion and wisdom in psychotherapy* (pp. 79–92). New York, NY: Guilford Press.
- Neff, K. D., & Germer, C. K. (2013). A pilot study and randomized controlled trial of the mindful self-compassion program. *Journal of Clinical Psychology*, 69, 1–17. doi:10.1002/jclp.21923
- Nielsen, J. A., Zielinski, B. A., Ferguson, M. A., Lainhart, J. E., & Anderson, J. S. (2013). An evaluation of the left-brain vs. right-brain hypothesis with resting state functional connectivity magnetic resonance imaging. *PLoS One*, 8, e71275. doi:10.1371/journal.pone.0071275
- Perls, L. (1992). Concepts and misconceptions of Gestalt therapy. *Journal of Humanistic Psychology*, 32, 50–56. doi:10.1177/0022167892323004
- Rock, D., Siegel, D. J., Poelmans, S. A. Y., & Payne, J. (2012). The healthy mind platter. *NeuroLeadership Journal*, 4, 1–23.
- Rogers, C. R. (1957). The necessary and sufficient conditions of therapeutic personality change. *Journal of Consulting Psychology*, 21, 95–103.
- Scholl, M. B., Ray, D., & Brady-Amoon, P. (2014). Humanistic counseling process, outcomes, and research. *The Journal of Humanistic Counseling*, 53, 218–239. doi:10.1002/j.2161-1939.2014.00058.x
- Schore, A. N. (2012). *The science of the art of psychotherapy*. New York, NY: Norton.
- Shedler, J. (2010). The efficacy of psychodynamic psychotherapy. *American Psychologist*, 65, 98–109. doi:10.1037/a0018378
- Siegel, D. J. (2010). *Mindsight: The new science of personal transformation*. New York, NY: Bantam Books.
- Simpson, D. (2005). Phrenology and the neurosciences: Contributions of F. J. Gall and J. G. Spurzheim. *ANZ Journal of Surgery*, 75, 475–482. doi:10.1111/j.1445-2197.2005.03426.x
- White, M., & Epston, D. (1990). *Narrative means to therapeutic ends*. New York, NY: Norton.
- Wilkinson, B. D. (2018). The limits of neuroscience in counseling: A humanistic perspective and proposed model. *The Journal of Humanistic Counseling*, 57, 70–78. doi:10.1002/johc.12067
- Yalom, I. D. (1980). *Existential psychotherapy*. New York, NY: Basic Books.
- Yalom, I. D., & Leszcz, M. (2005). *The theory and practice of group psychotherapy* (5th ed.). New York, NY: Basic Books.

