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Interpersonal Neurobiology: Applications for the Counseling Profession

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Neurocounseling: Bridging Brain and Behavior

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Counselors are increasingly interested in how neuroscience research applies to the counseling profession. Evidence of that interest includes a growing number of session offerings on topics related to neuroscience at counseling conferences, publication of new "neuroscience for counselors" textbooks and the availability of this monthly column in Counseling Today.

The field of neuroscience is vast, however, and finding direction on how to meaningfully and ethically integrate such findings into counseling can be challenging. Interpersonal neurobiology (IPNB), a consilient field of study that explores how individuals' social worlds and embodied brains interact to shape mental life, may offer one framework through which counselors can understand and apply neuroscience principles to counseling.

In the mid-1990s, Daniel Siegel organized a series of meetings with scholars from various disciplines to discuss the mind and mental life. What emerged from those meetings was a tentative definition of the mind and a new field, IPNB. Siegel published the first text related to IPNB, *The Developing Mind*, in 1999, and since that time a number of scholars and clinicians, including Bonnie Badenoch and Allan Schore, have added to the body of IPNB literature. More than 55 books are currently available through the Norton Series on Interpersonal Neurobiology, and at least three formal continuing education programs exist for training mental health professionals in IPNB (Mindsight Institute, Nurturing the Heart With the Brain in Mind and Portland Community College). Additionally, in 2005, the Global Association for Interpersonal Neurobiology Studies formed to further advance the science, practice and application of IPNB.

Siegel's 2006 article "An interpersonal neurobiology approach to psychotherapy" asserted that the central idea of IPNB is to offer definitions of the mind and mental well-being that can be used by a wide range of professionals concerned with human development. In this article, I discuss these relevant definitions and propose potential applications for counselors.

Defining the Mind

The mind is rarely defined within the mental health field. When it is defined, it is most often described as an output of the brain. From an IPNB perspective, the mind is more than brain activity. The mind includes consciousness (subjective experience), information processing and self-organization. Although the mind may be dependent on neural firing, it is not the same as neural firing. The mind is one of three components that constitute the triangle of human experience: mind, brain, relationships. Each of these components is capable of shaping and being shaped by the other two.

In the 2012 second edition of The Developing Mind, Siegel outlined three fundamental principles inherent in the IPNB conceptualization of the mind.

> 1) A core aspect of the human mind is an embodied and relational process that regulates the flow of energy and information within and between brains.
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> 2) The mind is an emergent property of the body and relationships, created within internal neurophysiological processes and relational experiences. In other words, the mind is a process that emerges from the distributed nervous system extending throughout the entire body and from the communication patterns within relationships.
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> 3) The structure and function of the developing brain are determined by how experiences, especially within interpersonal relationships, shape the genetically programmed maturation of the nervous system.

The brain, often referred to in IPNB literature as the expanded nervous system or the embodied brain, affects the mind and relationships in a number of ways. One such way is through gene expression. Genes serve as templates for passing on information from generation to generation. Genetic influences can greatly shape temperament, intellectual abilities, physiology and many other factors, such as the likelihood of developing depressive symptoms when exposed to prolonged stress or exhibiting anxiety when introduced to novelty.

Another way the brain can influence the mind is through motivational drives that encourage action. In The Archaeology of Mind: Neuroevolutionary Origins of Human Emotions, Jaak Panksepp and Lucy Biven describe seven basic affective systems, or inherent emotional learning structures, within the subcortical region of the brain: seeking (expectancy), fear (anxiety), rage (anger), lust (sexual excitement), care (nurturance), panic/grief (sadness) and play (social joy). These affective states appear to underlie higher order emotions such as pride, shame and disgust and are influential in directing thinking and behaving before or beyond conscious awareness.

Relationships also affect the brain and mind. The relatively new field of environmental epigenetics specifically explores how individuals' physical and social worlds impact the genome. Researchers have discovered that experiences direct brain circuitry, influencing which neuronal connections are reinforced and which neurons die away. The influence of relationships on the developing brain is greatest during early childhood and adolescence, but they continue to play a valuable role in mental functioning throughout the life span. IPNB literature almost always includes discussions of attachment theory and the role of attachment on mental schemas and affect regulation.

Finally, the mind can influence the brain and relationships. Consistent with characteristics of a complex system, the mind both emerges from and in turn influences the functioning of the brain and relationships. How one focuses attention affects neural structure and function. Furthermore, through processes not yet fully understood — perhaps through resonance circuitry or mirror neurons — the mental processes of one person can influence the mental processes of another person.

The resonance circuitry is a set of interconnected brain regions believed to be dominant in attunement and embodied connection. Clinicians can likely recount times when they began to sense the internal experience of the person sitting across from them. The person's anxiety symptoms (e.g., heart palpitations, sense of hypervigilance, tightened chest) started to emerge in the clinician's own here-and-now experience. This experience, often referred to as emotional contagion, is but one example of the interconnectedness of relationships, mind and brain.

Mental Well-Being

Mental well-being, from an IPNB perspective, is defined in terms of integration. Functionally distinct components within the complex mind system differentiate (i.e., specialize) and then link with other components of the system to form a greater whole. The metaphor of a fruit salad versus a fruit smoothie is often used to illustrate integration. Each ingredient in a fruit salad maintains its unique quality (differentiating) while also combining (linking) to make a new, more complex dish (an "integrated" fruit salad).

Integration of the mind brings with it a special state of functioning that is characterized in IPNB as the FACES flow: flexible, adaptive, coherent, energized and stable. Individuals operating at greater levels of integration are more open to possibilities and flexible in response to their natural proclivities. Impaired integration results in degrees of rigidity or chaos.

Researchers have found empirical support for the concept of integration across a variety of neuroscience studies. Among the most notable researchers in this area is Martin Teicher, director of the Developmental Biopsychiatry Research Program at McLean Hospital and associate professor of psychiatry at Harvard Medical School. Teicher's research, which focuses on the impact of childhood neglect and abuse on brain development and functioning, has found evidence of impaired integration in children who have experienced abuse and neglect.

Counselors with an IPNB orientation also suggest that the middle prefrontal cortex (mPFC) aids in nine functions that describe mental well-being. The mPFC is believed to play an important role in the following complex mental experiences: body regulation, attuned communication, emotional balance, fear modulation, response flexibility, insight, empathy, morality and intuition. Notably, researchers have found that all nine of these functions are enhanced by mindfulness meditation, and the first eight are bolstered by secure attachment.

Applications for Counselors

Counselors, typically grounded in principles of development and wellness, are well-positioned to apply the IPNB definitions of the mind and mental well-being. The following suggestions touch on ways counselors can start integrating principles of IPNB into their daily work.

IPNB as a metatheory

Siegel has refuted the notion of IPNB as a theory of counseling, noting that IPNB informs therapy but is not a form of therapy. However, aligning with the criteria for identifying and evaluating counseling theories found in Kevin Fall, Janice Miner Holden and Andre Marquis' 2010 text Theoretical Models of Counseling and Psychotherapy, IPNB may be considered a metatheory of counseling.

Counselors are often familiar with the story of a group of men who cannot see touching different parts of an elephant and reaching disparate conclusions regarding reality. The men are all right and yet also all wrong. IPNB scholars often refer to their approach as a "whole elephant perspective," and for good reason. IPNB literature presents a coherent and consistent view of human nature, offers an integrative perspective on personality development, describes unique models of functionality and change, and includes novel concepts, terms and techniques.

One way an IPNB metatheoretical perspective could guide counseling is by identifying integration as the ultimate goal of counseling, then working to assess domains of integration and targeting interventions toward problematic domains. Siegel identifies nine domains of integration: integration of consciousness, vertical integration, bilateral integration, integration of memory, narrative integration, state integration, temporal integration, interpersonal integration and transpirational integration. Counselors can initially focus on identifying broad patterns of impaired integration, evident as patterns of chaos or rigidity within the nervous system. Rigidity is often expressed as underarousal of the brain and results in depressive-like symptoms (e.g., numb, sad, driven by compulsions). Chaos is expressed as an overarousal of the brain and results in more anxiety-like symptoms (e.g., lack of focus, tense, driven by fear).

Within each domain, counselors can subjectively assess degrees of differentiation and linkage. Although the IPNB process is individualized, fluid and creative, examples of such assessment include conducting a developmental interview (e.g., Adult Attachment Interview) to listen for the degree of coherence and detail provided in narratives and engaging in exercises that require clients to recognize and tolerate bodily felt sensations.

Once specific domains are assessed, counselors can select interventions that help differentiate and link specific domains toward integration. For instance, vertical integration (the integration of subcortical and cortical brain regions) calls for interventions that foster awareness of the interior of the body and balance of the autonomic nervous system. Bilateral integration (integration of right and left hemispheres) calls for attention to novelty. If individuals are operating dominantly from their left hemispheres, counselors can direct attention in ways that encourage greater right-hemisphere engagement (e.g., facilitating a nonverbal exchange game and watching television with the sound off).

Mindsight Skills

Siegel first coined the term mindsight in 1980 to describe individuals' abilities to look within their own minds. In his 2010 book Mindsight: The New Science of Personal Transformation, Siegel noted that when he "first began to explore the nature of the mind professionally, there was no term in our everyday language that captured the way we perceive our thoughts, feelings, sensations, memories, beliefs, attitudes, hopes, dreams and fantasies."

Today, mindsight is most closely linked with the concepts "theory of mind" or "mentalization" and the emerging field of contemplative neuroscience that includes mindfulness meditation and allied practices. The skill consists of three components: insight, empathy and integration.

Broadly, insight refers to individuals' focus on their internal, subjective mental experiences, whereas empathy refers to individuals' sensing of other people's internal subjective experiences. In this case, integration refers to the differentiation and linkage of the sense of self and the sense of another. Mindsight is a skill that can be taught and fostered within safe and attuned therapeutic relationships.

One therapeutic exercise developed to teach and enhance mindsight is the Wheel of Awareness. The exercise guides individuals through an approximately 22- to 32-minute reflective practice across eight senses, differentiating and linking each sense within the hub of awareness. Over the course of the exercise, individuals can move from reactive, automatic experiencing to a place of greater receptivity and openness to the self beyond neural adaptations and ingrained implicit responding. More recent versions of the exercise also include focus on connections with others, intentionally cultivating a sense of kindness and compassion. Audio recordings of the practice are available in the resources section of the Mindsight Institute website at drdansiegel.com/resources/wheel_of_awareness/.

Neuroeducation

A final way counselors might consider applying IPNB principles is through neuroeducation. I define neuroeducation as a didactic or experiential-based intervention that aims to reduce distress and improve client outcome by helping clients understand the neurological processes underlying mental functioning. Other terms that have been used to describe this type of intervention are internal education and brain talk.

Clients often appreciate learning about the brain and mental processes. Potential benefits include increased compassion for self and others, greater client empowerment and normalization of the change process. In IPNB literature, the phrase “name it to tame it” is used to describe the relief that individuals feel from the simple act of recognizing and understanding what is going on inside their minds.

Potential neuroeducation topics include neuroplasticity, brain structures and functions, implicit versus explicit memory, the autonomic nervous system and the influence of certain toxins on neural development and functioning. Two specific neuroeducation activities that have emerged out of the IPNB literature are the Hand Model of the Brain and the Healthy Mind Platter. The Hand Model of the Brain activity can be used to describe brain anatomy and basic functions, allowing clients to kinetically practice and understand a simplified model of the brain. The Healthy Mind Platter activity can be used to help clients understand and practice basic mental hygiene to support positive neural growth and enhance learning in counseling. In the July special issue on neurocounseling in the Journal of Mental Health Counseling, I provide additional details regarding these activities and other considerations for engaging in neuroeducation.

Other examples of neuroeducation activities and conceptual models are increasingly available in the counseling literature. In a 2015 Journal of Mental Health Counseling article, Eric Beeson, Thomas Field and Laura Jones presented a wave model for understanding top-down/bottom-up mental processing under stress. Using common imagery (a wave) and identifying key brain regions and processes (e.g., prefrontal cortex, amygdala, thalamus), the authors provided counselors with a new way to talk to clients about their automatic responses under stress.

Counselors’ selection and implementation of neuroeducation activities should follow general guidelines for engaging in psychoeducation. Counselors should assess their own competence levels, evaluate clients’ levels of interests and goals, and consider the timing within the here-and-now therapeutic interaction.

Conclusion

When first presented, the IPNB notion that relationships change the brain was largely rejected in scientific disciplines. Yet this view is now widely accepted — and is certainly not novel for professionals in the counseling field.

In many ways, IPNB offers a new framework and language to describe processes that are already accepted and practiced in counseling. Having such a framework, however, can be helpful in deepening and validating therapeutic conceptualizations and interventions. Counselors interested in IPNB are encouraged to access the many resources and training opportunities available.

Among the key resources I recommend:

- Being a Brain-Wise Therapist: A Practical Guide to Interpersonal Neurobiology (2008) by Bonnie Badenoch
- Pocket Guide to Interpersonal Neurobiology: An Integrative Handbook of the Mind by Daniel Siegel (2012)
- The Developing Mind: How Relationships and the Brain Interact to Shape Who We Are by Daniel Siegel (2012)

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