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How the Mind-Brain Revolution Supports the Evolution of OD Practice

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Enter The Revolution

The last two decades have seen an explosion of neuroscience research. Enhanced brain imaging studies have influenced how we think about wellness, mental health, ethics, education, law, religion, politics, economics, and leadership. Some have called this the neuroscience revolution (Silva, Landreth, & Bickle, 2014). Our culture's infatuation with science and desire for simple solutions to complex human issues has led to a popularization of all things "brain" and a predictable backlash. In *Brainwashed: The Seductive Appeal of Mindless Neuroscience*, Satel and Lilienfeld (2013) raise concerns about reductionism and overblown claims. In light of this rush to proclaim that neuroscience is the answer to all things, we believe that a more balanced discussion is needed. Our perspective is shaped by our journey to integrate emerging mind-brain discoveries in our classroom, our consulting practice, and our research. Along the way we have met scientists and clinicians who share our desire to make the knowledge practically useful without overstating the possibilities. We offer our reflections on the potential of what we prefer to call the *mind-brain revolution* to support a *mind-brain evolution* of our field.

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A mind-brain evolution aligns with our organization development (OD) roots. OD is a field grounded in applied behavioral science with Lewin inspired DNA that values both scientific inquiry and practical application. Our ability to integrate interdisciplinary perspectives and a commitment to field testing theory has historically been a strength of our field (Scherer & Alban, 2010). Considerations of the brain and the mind, particularly the role of mindsets and shifts in consciousness (Marshak & Grant, 2008) are of current interest and of long standing tradition (Bandler & Grinder, 1975).

In conversations with colleagues, we find that many of us long to have a greater impact. Worley and Feyerherm (2008) emphasize that organization development is at an important crossroads. Burnes and Cooke (2012) echo the call to action for our field to achieve ambitious and progressive social and organizational goals. The early promise of our field was inspired by a desire to influence human systems towards greater levels of justice, participation, and excellence. We propose that a *critical and integrative* neurobiological perspective holds the potential to advance our field in two ways: *what we do*—the nature and quality of our ability to assess and intervene in service of more effective organizations and a better world; and *who we are*—our competencies, resilience and agility as practitioners. This chapter is designed to help you think through how you might take part in this evolution and answer the question as to what would you do differently now that you are more aware of new findings in brain-mind research. It is organized as follows:

1. Evidence of the revolution in peer reviewed journals
2. The case for an interpersonal neurobiology approach
3. Implications for OD
4. The 4 Capabilities Model: A Mind-Brain approach to practice

Evidence of The Revolution

How has the neuroscience revolution translated into research that has the potential to inform organization development practice? Here we briefly examine two sources of peer-reviewed publications: (1) traditional management journals and (2) the *NeuroLeadership Journal*. We separate these two sources because they are largely independent.

Traditional Management Journals: A Tempest in a Brain Scan?

Practitioners looking to traditional management journals for ideas about applying neuroscience discoveries will find occasional general suggestions for practice hidden in the shadow of a heartfelt debate

about the value of using brain imaging data to inform selecting and developing leaders. Advocating an intelligent partnership between neuroscience and leadership studies, Butler and Senior (2007) proposed Organizational Cognitive Neuroscience (OCN), suggesting we consider brain activity as part of a larger puzzle that includes environmental circumstances. Both brain activity and the environment shape and reshape our physiology, which in turn impact cognitive functioning. This recommendation, however, had very little follow through until years later when Waldman, Balthazard, and Peterson (2011) proposed that neuroscience and its associated methodologies (when compared to traditional observational or survey methodologies) held the potential for broader understanding of what bolsters inspirational leadership behavior.

A 2013 special issue of the *Journal of Management Inquiry* explored both the perils and potential associated with applying neuroscience to leadership. Lindebaum (2013) cautions against reductionism and using neurofeedback for screening leaders, warning that we may pathologize normal behavior under the guise of building better organizations. Similarly, McLagan (2013) asserts that the inspirational model of leadership is limited, and suggests we use new discoveries to expand our concept of leadership, rather than reinforcing old models to create a narrow class of superleaders. In response, Ashkanasy (2013) warns against overreacting and likens the current debate to the trajectory of research on emotional intelligence (EI). EI began with pure science, sidetracked into less rigorous applications, and ultimately led to useful application. Similarly, Cropanzano and Becker (2013) acknowledge the limitations of brain imaging tools, however assert the potential for improving human circumstances including organizations, workplace conditions, and personal growth.

Given the largely theoretical tone of the debate, the voice of application coming from traditional journal outlets is faint. Some exceptions are Holmer's (2013) discussion of how lessons from neuroscience can reduce the defensiveness associated with management learning initiatives. The most directly relevant article for practitioners is Gondo, Patterson, Trujillo, and Palacios' (2013) discussion of how mindfulness may reduce automatic and nonconscious behaviors and potentially increase change readiness. While we agree with the value of increasing mindfulness, we suggest that mindfulness alone will not help us integrate the implicit memories and experiences that create automaticity—including our resistance to change.

In summary, Boyatzis' (2014) suggestion that potential applications of neuroscience to the field of leadership development has

implications for management education, advising, and coaching pretty much sums up the current state of the field. This is promise in the shadow of controversy with few practical suggestions coming from the mainstream management journals.

The Field of NeuroLeadership and The NeuroLeadership Journal

As mainstream management scholars debated the merits and dangers of applying emerging discoveries, consultant and researcher David Rock and his colleagues, many of them social and affective neuroscientists, took a more entrepreneurial approach and introduced the concept of neuroleadership. Ringleb and Rock assert that neuroleadership:

> ...explores the neural basis of leadership and management practices, effectively bringing about the interface between the tools of social cognitive and affective neuroscience, cognitive neuroscience, integrative neuroscience, neurobiology and other domains with neuroscience, and questions and theories from the leadership and management social sciences. The research objective of this field is to improve leadership effectiveness within institutions and organizations by developing a science for leadership and leadership development that directly takes into account the physiology of the mind and the brain. (2008, p.1)

From the beginning, Rock and his colleagues had an explicit strategy to bring together scientists and leaders to formulate a research agenda that would break through some of the existing orthodoxy in the fields. Ringleb and Rock co-founded the NeuroLeadership Institute in 2007 and in 2008 established the peer reviewed *NeuroLeadership Journal*. Since its inception the journal has published 35 articles grouped around the following topics: decision making and problem solving, emotional regulation, collaborating with and influencing others, and facilitating change. These topics are roughly correlated to the main focus of social and cognitive neuroscience, which includes: understanding others, understanding ourselves, controlling oneself, processes that occur at the interface of self and others, and the nature of automatic vs. controlled processing (Lieberman, 2007).

While a complete review of the *NeuroLeadership Journal* catalogue is outside the scope of this chapter, we have selected an article in each category that we have found particularly useful in reinforcing the importance of a mind-brain perspective to our students and clients.

Table 4.1. *NeuroLeadership Journal Foundational Articles*

Category	Article	Key Insights
Facilitating Change	Davis, J., Balda, M., Rock, D., McGinniss, P., & Davachi, L. (2014)	Attention (optimal arousal for learning): dangers of split attention, including the "spillover" of multi-tasking from individuals to observers. Generation: need to create "scaffolding" that links content and change expectations to personal and group meaning. Opportunities to "write" content in one's own handwriting. Emotion: value of positive affect to enhance learning. Spacing: 20 minute rule, importance of "digesting" time for sustainable learning.
Decision Making	Lieberman, M., Rock, D., & Cox, C. (2014).	Three step process for mitigating bias that includes: recognizing that bias is part of the human condition, labeling biases in four simple general categories—corner cutting, objectivism, self protection, and time and money biases—and adopting mitigation strategies based on the neural correlates of particular types of bias.

Category	Article	Key Insights
Collaboration	Rock, D., & Cox, C. (2012).	Consideration of social and emotional motivations that impact our collaborative efforts. Key areas are known as SCARF: **S**tatus: Perceived importance relative to others. **C**ertainty: Knowing what is likely to happen. **A**utonomy: Having control over life's happenings. **R**elatedness: Sense of connectedness and similarity. **F**airness: Perceptions of equal or fair process and content.
Emotional Regulation	Ochsner, K. (2008).	Presents five strategies we can implement to regulate our emotions and control our emotional life: 1. Situation selection: Acting in anticipation of an activity (e.g., avoiding a potentially unpleasant event). 2. Situation modification: Change the situation so that it promotes the kinds of feelings that you desire. 3. Attention deployment: Change your focus. 4. Reappraisal: Reinterpreting the meaning to change the emotional impact. 5. Response modulation: Suppressing or enhancing the behavioral response.

We appreciate that the majority of articles published in *NeuroLeadership Journal* include the perspective of a neuroscientist and a leader or manager. Our hope is that these articles will become more generally available through academic databases. For a complete summary of published articles, see *https://www.neuroleadership.com/research/journal/*.

The state of the peer-reviewed literature reflects the nascent stage of the revolution and leaves a gap for those of us interested in the form and the mechanics of an evolution.

What is required? We must get outside of our comfortable (and sometimes smug) disciplinary homes and visit, debate, and create with others who have alternate points of view. An Interpersonal Neurobiology perspective helps us do that.

Interpersonal Neurobiology: The Foundation of an Evolution

As we stepped back to reflect on the current state of the literature and how we might offer a series of evidence based recommendations to our practitioner colleagues, it became clear to us that another way forward was in order. Avoiding reductionism while offering specific suggestions led us to consider how integrating an explicitly interdisciplinary or consilient framework into a series of questions to shape practice might prove useful. Our own work in integrating a mind-brain perspective has been shaped by the field of interpersonal neurobiology (IPNB), an approach that explores the common findings among different fields of study (Siegel, 1999; Cozolino, 2006, 2010).

Interpersonal Neurobiology (IPNB)

Interpersonal neurobiology (Siegel, 2012) is an interdisciplinary approach to understanding how human beings grow and develop throughout their life. An IPNB perspective draws from a wide range of disciplines including: anthropology, biology (developmental, evolutionary, genetic, zoological), cognitive science, computer science, developmental psychopathology, linguistics, neuroscience (affective, cognitive, developmental, social), mathematics, mental health, physics, psychiatry, psychology, social psychology, sociology, and systems theory to help us understand what it means to be human.

Two cornerstones of an IPNB perspective offer a framework for generating some questions to guide a mind-brain practice. The first Siegel calls the triangle of wellbeing: our mind, our brain, and our

relationships, "to put it simply, human connections shape neural connections, and each contributes to the mind" (Siegel, 2012, pg. 3).

We have provided a summary of the three components of well-being below. These three aspects of human experience are equally relevant to understanding a more evolved set of OD practices. As you read, consider the extent to which you can include or exclude these in your own practice.

Table 4.2. *Summary of Siegel's Triangle of Well Being*

Mind	Brain	Relationships
The mind is defined as an embodied and relational process that regulates the flow of energy and information. It includes at least three fundamental aspects: (1) personal, subjective experience; (2) awareness; and (3) a regulatory function that is an emergent, self-organizing process of the extended nervous system and relationships.	The mind is created within a neurophysiological process (brain) and relational experiences. These neurophysiological processes are distributed throughout the nervous system extending throughout the entire body, and shape the flow of energy and information, as well as communication patterns that occur within relationships.	As human beings our primary and most important context are the relationships that we experience. The structure and function of the brain are shaped by experiences, particularly interpersonal relationships.

The second cornerstone of an IPNB perspective is the notion that wellbeing is a function of our ability to differentiate and integrate systems:

> ... without integration, chaos, rigidity, or both ensue. Integration is both a process (a verb) and a structural dimension (a noun), and can be examined, for example, in the functional and anatomic studies of the nervous system" (Siegel, 2012, p. 394)

Siegel (2012) has developed a framework consisting of nine domains of self that when differentiated and integrated promote health and resilience. We submit that each of these contribute to a more effective and integrated practice.

Table 4.3. *Siegel's Nine Domains of Neural Integration*

States of Integration	Description	Intended Outcomes
Integration of Consciousness	The experience of knowing and the awareness of the known. The ability to differentiate what can be known from the five senses, thoughts, feelings, memories, sense of connection to others, bodily sensations, and the ability to know when we are knowing. This is the skill to stabilize attention.	The ability to harness the power of awareness to create choice and change.
Bilateral Integration	Using both the left and right modes of processing, the two sides of the brain work collaboratively with each other. The left mode focuses on logical, literal, and linguistic processes. The right mode is holistic and non-verbal, processing input from the subcortical, limbic system, and brainstem, as well as bodily signals, autobiographical data, and body map.	The ability to value both logic and emotions.
Vertical Integration	Cultivating awareness of input from the body, the brainstem, and the limbic regions combined with vertically higher cortical regions to support reflective awareness.	The ability to process strong emotional data without "flipping our lid" and reacting.
Memory Integration	Attending to elements of implicit memory that are outside of our current awareness to allow previously disconnected representations to become part of a coherent whole. The Hippocampus works with different parts of our brain to create a master picture, helping us make sense of our past experiences.	The ability to become active authors of our own life stories.

States of Integration	Description	Intended Outcomes
Narrative Integration	The observing function of "self" allows us to link our past, present, and anticipated future into a coherent whole. We make sense of our lives through stories that weave the left hemisphere's narrator function with the autobiographical memory storage of right hemisphere's function.	The creation of a coherent narrative to increase understanding and promote new neural pathways.
State Integration	Recognizing, honoring, and nurturing the various aspects or "states" of mind that we inhabit. Some of these states are temporary moods, while others are more persistent; for example, parent, professional, dancer.	The ability to move beyond past patterns by accepting and integrating different aspects of ourselves.
Interpersonal integration	Understanding how we can become part of a healthy "we" while retaining our own identity and essence.	Increased wellbeing, resilience, and learning through emotionally resonant, open, and attuned relationships with others.
Temporal Integration	As humans we have the ability to do mental time travel which carries existential baggage that leads to: longing for certainty, longing for permanence, and longing for immortality. Temporal integration occurs when we face these issues without distraction or denial and accept that they are part of being human.	The capacity to live with the transient nature of life and find comfort in the face of uncertainty.
Transpirational Integration	An awareness of an expanded sense of self to include an interconnected whole without losing a sense of personal identity.	The ability to find happiness and wisdom by understanding that we are part of a larger whole.

Mind-Brain Implications for OD

An IPNB perspective looks for patterns of agreement across disciplines to support insights on optimizing growth and development. Here we propose five principles that provide a foundation for taking a mind-brain perspective into our OD practice.

1. We Are More Than Neurons.

Considering the brain without including the mind and our primary human context, relationships, is reductionist. We propose that an interpersonal neurobiology perspective is more relevant and useful for management and OD applications. At a minimum, this would lead us to consider design criteria that addresses the following:

a. The impact on basic brain functioning that supposes fundamental knowledge of how the brain operates and conditions for optimal functioning. (For more information on brain basics, please see *http://braineducationproject.org/*)
b. The impact on the embodied flow of energy and information that constitutes our mind, including subjective experience, awareness, and the nature and quality of the energy and information that is exchanged in our interactions.
c. The impact on the nature and quality of relationships by what we do and how we show up.

2. The Prefrontal Cortex is Fragile and Sometimes Goes Offline.

Amy Arnsten (2009) likens the prefrontal cortex of our brain to Goldilocks. Our best executive functioning takes a lot of energy as the prefrontal cortex has limited capacity and needs a "just right" level of arousal. Too much stress, too many distractions, and multi-tasking all deplete executive functioning. While our ability to reframe emotionally challenging situations is a valuable skill, it has a tremendous cost in terms of the energy required to restore executive functioning. Yet, the perceived need to multitask and dual process is rampant in our organizations. Being brain wise may be inconsistent with the work design and culture of an organization. As a practitioner, we should consider:

a. How do we support our clients in developing brain friendly environments?
b. How can we help our clients keep from losing track of critical priorities due to overwhelming distractions?

c. Are we willing to confront our own practices and those in our client system that fly in the face of what we know about the mind and the brain?

3. Neuroplasticity is our Friend.

Neuroplasticity, our ability to alter neural structures and the very physiology of the brain, is a fact. We can use our mind to change our brain, develop our mindset and create new options for thinking, performing, and relating (Doidge, 2015). Every time we learn and stretch our minds to include new perspectives we create new neural connections. Conversely, left unexamined our implicit habits and patterns of mind are likely to be reinforced, making change more difficult. Our mindset about growth and learning matters. The ability to be mindful enhances neuroplasticity. Our beliefs about whether learning is fixed or continues to grow impacts our performance and willingness to take healthy risks (Dweck, 2006). Those same beliefs also shape how we assess the growth and development of others (Heslin & VandeWalle, 2008). Neuroplasticity has implications for coaching, teaching, and leadership development. It also has implications for what we can and should expect from our organizational change efforts and our strategies for fostering development and growth. As a practitioner, we should consider:

a. How comfortable are we in surfacing and challenging beliefs about growth and development in our client systems?
b. How do we cultivate an appreciation for risk taking and the notion of successive approximations versus "already baked to perfection" in the systems in which we work?
c. What are we bringing into our practice that fosters stretching and learning in our client base? How comfortable are we with their discomfort during the learning process?

4. The Brain is a Social Organ.

Our brains are social and organizations are our primary social context. Liebermann's (2008) many contributions in the field of social cognitive neuroscience highlight that we are wired for connection. Similarly, Cozolino (2010) has found that neuroplasticity is enhanced in the presence of empathetic and caring others. Siegel goes so far to say that, "Our present state of scientific knowledge suggests that we can solidly affirm that kindness and compassion are to the brain what the breath is to life" (2010, p. 85). Contrast this with Kegan, Lahey, Fleming, and Miller's (2014) recent claim that

that in most organizations people have two jobs, the one they are paid for and the one that requires they manage the anxiety and fear that accompanies cultures where risk-taking and vulnerability stand in the way of social connection and learning. If we are using precious executive attention to manage the anxiety of what happens under the waterline, then our reserves are diminished for the important work of creating stronger relationships and working with complex challenges and opportunities. If organizations are our primary social context and we are wired to connect, what are we connecting to? As a practitioner we should consider:

a. Do we have a caring and compassionate learning community that supports us during times of challenge?
b. What are our strategies for creating a sense of community in the organizations in which we work and consult?
c. How do we use stories and narratives to build these communities?

5. Wisdom and Insight are a Function of Neural Integration.

An IPNB perspective proposes that our well-being and performance is based on our ability to differentiate and integrate the nine domains of neural functioning. Increasing integration supports the flexibility, adaptability, coherence, and stability that allow us to deal with complexity without remaining stuck in chaotic or rigid patterns of behavior (Fosha, Siegel, & Solomon, 2009). Emotions play a special role in integration. Within the brain, an emotion links various systems together to form a state of mind. It also serves to connect one mind to another. Emotional processing prepares the brain and the rest of the body for action, to "evoke motion" (Siegel, 2012, p. 392). As practitioners, we need to ask:

a. Are we fostering self-investigation in ourselves and our clients? Do we view ourselves as subjects of ongoing learning and successive iterations of experimentation?
b. In our coaching and mentoring practices, have our clients developed practices that contribute to on-going self-awareness and integration?
c. How much time have we allowed for the critical reflection that fuels integration?

Four Capabilities Model: Growing the Mind in the Mind-Brain Equation

Using an IPNB framework, we have developed an integrated Four Capabilities model of vertical learning (Lahl & Egan, 2012). These capabilities (dynamic attention, whole person integration, strategic clarity, and authentic collaboration) are critical to who we are as OD practitioners as we expand thinking, improve agility, support high-impact relationships, and make us better versions of ourselves (see *Figure 4.1*).

Dynamic Attention

Dynamic attention is our ability to focus internally (tuning into self) and externally (tuning into others) with the capacity for broad and narrow concentrations. It requires both discipline and insight to know when and where to focus attention (details versus strategy; internal versus others) to create impact.

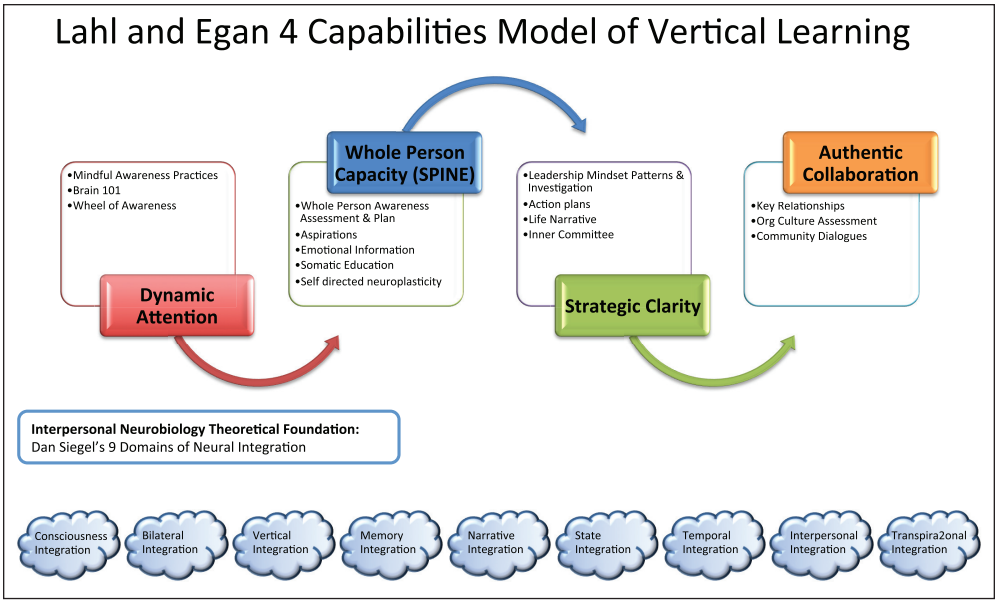

Figure 4.1. Vertical Learning
This figure illustrates four OD practitioner capabilities grounded in an interpersonal neurobiology perspective of mind-brain development.

Table 4.4. *SPINE Dimensions of Whole Person Integration*

Dimension	Description	Reflection Questions
Spiritual	Sense of meaning, purpose and community at work—an interconnected worldview.	Do I take the opportunity each day to look for inspiration and meaning in the work that I do? Do I seek ways to serve a better world? Do I view life as a meaningful journey? Do I have a faith that sustains me in challenging circumstances?
Physical	Ability to manage well-being and energy as well as recognition that our body is a source of information—a well-tuned signaling system.	Do I notice what my body is telling me? Do I take needed breaks to refresh and recharge? Do I recognize when I am operating at my fullest potential?
Intellectual	Ability to think critically, systematically and sort through complex situations and messages. It also refers to comfort with ambiguity and complex information.	Do I expand my problem solving circle to include perspectives that are different from my own? Am I comfortable challenging the status quo thinking in myself and others? Am I comfortable with ambiguity?
Intuition	Ability to see patterns in unrelated data as a source for creativity and insight.	Do I ask what my heart or gut is telling me about the situation? Do I trust and value this source of knowledge? Can I recognize unrelated and unexpected patterns and discern and interpret non-rational information?
Emotion	Ability to value and use emotional information to attune to self and others in service of insight and emotional maturity.	Am I comfortable with a breadth and depth of emotions? Do I view emotions as a legitimate source of information?

Whole Person Integration

Whole person integration refers to how much of our internal resources we bring to our practice. We refer to these internal resources using the acronym SPINE (see *Table 4.4*). SPINE capacity is our ability to develop and integrate the spiritual, physical, intellectual, intuitive and emotional dimensions of ourselves. Each of the SPINE dimensions are associated with powerful individual and organizational benefits when integrated.

Strategic Clarity

Strategic clarity is our ability to step back and assess a situation, challenge our current understanding, seek additional information, incorporate new insights and take action—all in real time. Essentially, it is the capacity to recognize automatic response patterns in the moment and apply different or new insights for a deeper perspective. Humans are complex. Our daily actions are deeply influenced by our past experiences. If unexamined, or examined without insight and wisdom, these experiences can create neural ruts that show up as biases, habits, and patterns that may not serve us. When surfaced, we can ask ourselves—what of this is serving me, what is not serving me and where are some gaps? That process of calling out and investigating our narrative from a wiser, more objective perspective helps us to understand our past with new insight. Insight is the currency of plasticity based behavior change.

Authentic Collaboration

Authentic collaboration is our ability to have meaningful, collaborative relationships that address the issues of accountability and empathy. This shows up in how we operate with our clients, our comfort with power and vulnerability and our ability to create the conditions for high performance along with a compassionate response to the reality of our human condition. This capability is built upon the previous three—we carry our higher levels of consciousness and integration into relationships with others. We are able to facilitate dialogue that elevates collective awareness while recognizing the fragility of social relationships. We move from a strategy of mitigation to one of growth and development for all involved.

Conclusion

We close with two critical questions and an invitation.

How can we become a critical consumer of new research? We need to be able to unflinchingly question systems, cultures, and our own personal choices—particularly those that run counter to the evidence that supports healthy mind-brain functioning. We need to be open to lessons from mind-brain research and adapt them to practice.

How do we encourage action research, field studies, and quasi-experimental designs to deepen our understanding? The study of mindfulness is a model for how we can continue this dialogue. Mindfulness in organizations is of considerable interest in both academic and practice circles. Strongly rooted in both the empirical world of healthcare and spiritual traditions, mindfulness makes strange bedfellows. At the 2014 NeuroLeadership Summit presentation on mindfulness, human resource leaders from Oakley and Ernst and Young shared the stage with neuroscientist and mindfulness expert David Creswell. Less than a month later The Mind and Life International Symposium for Contemplative studies brought together educators, healthcare practitioners, leaders, scholars, and mystics to share practice and research. These venues offer the opportunity for cross-disciplinary, integrated dialogue to further understanding.

We believe the mind brain revolution supports the evolution of OD practice. The biggest issue for those who want to be part of a revolution is courage and conviction. The insights are useful if we apply them ourselves and in partnership with our clients. We have begun this in the classroom, integrating it in Pepperdine's Master of Science in Organization Development (MSOD) program as foundational knowledge for intra- and interpersonal effectiveness. We are partnering with other practitioners and scholars to integrate OD concepts and perspectives with emerging neuroscience and interpersonal neurobiology research. Through our collaborations we find that our own assumptions are challenged and our thinking sharpened by including perspectives from outside of our own disciplines.

Extending the best of who we are, embracing the values of making the world a better place along with improving capacity in individuals and organizations is a tradition started by Lewin. We invite each of you to join us on this evolutionary journey.

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Recommended Resources

Courses and Workshops

NeuroLeadership Institute (*http://www.neuroleadership.com/education*)
The NeuroLeadership Institute offers Certificates and Coaching Certifications to enable you to further your education and expertise in specific areas of neuroscience.

University Certificates

Certificate in Applied Neuroleadership—Pepperdine

Interpersonal Neurobiology Certificate of Completion—Portland State

ATD: Essentials of Brain-Based Learning (*http://www.astd.org/Education/Programs/Brain-Based-Learning?filter=&filter=*)
This online program provide flexible options for you to further your education in brain-based learning. It focuses on the ways the brain absorbs information.

The Academy of Brain-Based Leadership (*http://www.academy-bbl.com/*)
ABL offers a Coaching Certification in the only brain based leadership assessment that includes direct measurement of brain functioning. Their assessment is validated using the world's largest brain database.

Ways to Get Involved

The Social and Affective Neuroscience Society (*http://www.socialaffectiveneuro.org/labs.html*)
This site provides links to labs to find resources on the latest research.

The People's Science (*http://thepeoplesscience.org/join.html*)
Our goal is to make it as easy as possible for you to share your work. We ask researchers to post a "pop abstract" in concert with each submission to a peer-reviewed journal. This gives the public a direct access point to the original work to supplement academic abstracts and any media coverage, while also providing a centralized space for discussion.

Brain Education Project (*http://braineducationproject.org/*)
The Brain Education Project is developing 15 modules covering the topics most relevant to adult learners and the general public to critically consume neuroscience and psychology research. Each module includes cutting-edge scientific content, interactive exercises, contributions from leaders on the topic, multimedia, and clear breakdowns of the skills necessary to fight back against the exploitation or irresponsible application of human sciences. Additional threads provide applied learning spaces for educators, general public, and the workforce.

TED Resources

David Rock, Learning about the brain changes everything, TEDxTokyo (*https://www.youtube.com/watch?v=uDIyxxayNig*)
Teaching people about their brain makes them able to achieve more. Directed towards change agents.

Neuroscience: Mapping and Manipulating the Brain (*http://www.ted.com/read/ted-studies/neuroscience*)
Curated by TED, videos in this series explore the brain and how neuroscientists are interacting with it. Relevant areas of interest, study and coursework include: neuroanatomy, neurology, neuroimaging, systems neuroscience, cognitive neurology, social neurology, optogenetics and philosophy of mind.

Rebecca Saxe, How we read each other's minds (*http://www.ted.com/talks/rebecca_saxe_how_brains_make_moral_judgments*)
Sensing the motives and feelings of others is a natural talent for humans. But how do we do it? Here, Rebecca Saxe shares fascinating lab work that uncovers how the brain thinks about other peoples' thoughts—and judges their actions. (Direct TED Summary)

Molly Crockett, Beware neuro-bunk (*http://www.ted.com/talks/molly_crockett_beware_neuro_bunk*)
Brains are ubiquitous in modern marketing: Headlines proclaim cheese sandwiches help with decision-making, while a "neuro" drink claims to reduce stress. There's just one problem, says neuroscientist Molly Crockett: The benefits of these "neuro-enhancements" are not proven scientifically. In this to-the-point talk, Crockett explains the limits of interpreting neuroscientific data, and why we should all be aware of them. (Direct TED Summary)

Matthew Lieberman, The social brain and its super powers, TEDxStLouis (*https://www.youtube.com/watch?v=NNhk3owF7RQ*)
Neuroscientist Matthew Lieberman explains that through his studies he's learned that our kryptonite is ignoring the importance of our social superpowers and by building on our social intuition, we can make ourselves smarter, happier, and more productive. In this TEDx Talk, Lieberman explores groundbreaking research in social neuroscience that reveals that our need to connect with other people is even more fundamental than our need for food or shelter and that the social pain and pleasure we experience has just as much impact as physical pain and pleasure. (Direct TED Summary)

Carol Dweck, The power of believing you can improve, TEDxNorrkoping (*http://www.ted.com/talks/carol_dweck_the_power_of_believing_that_you_can_improve?language=en*)
Carol Dweck researches "growth mindset"—the idea that we can grow our brain's capacity to learn and to solve problems. In this talk, she describes two ways to think about a problem that's slightly too hard for you to solve. Are you not smart enough to solve it … or have you just not solved it yet? A great introduction to this influential field. (Direct TED Summary)

Additional Videos

Siegal Hand Model (*https://www.youtube.com/watch?v=DD-lfP1FBFk*)
This step-by-step visual walk through of the Hand Model provides a visual representation of how the brain is structured.

SCARF Model (*https://www.youtube.com/watch?v=isiSOeMVJQk*)
This video illustrates a high level overview of the SCARF model. It is tremendous for introducing these concepts to others.

Dirk Lindebaum, If Inspiration is the best form of leadership (*http://www.dailymail.co.uk/video/news/video-1114695/Dr-Lindebaum-inspiration-effective-form-leadership.html*)

Podcast

Tara Brach Podcast (*https://itunes.apple.com/us/podcast/tara-brach/id265264862?mt=2*)
Each podcast begins with a 30-minute mindfulness guided meditation followed by a lesson from Tara.

Books—Recommended Reading List

Neuroleadership: A Journey through the Brain for Business Leaders (*http://www.amazon.com/Neuroleadership-Journey-Business-Management-Professionals/dp/3642301649*)
This book takes you on a journey through the brain, its function and its impact on leadership. The young business field of neuroleadership is founded on the belief that understanding the brain can give leaders new and powerful insights into human behaviour and how to effectively tap

into that knowledge to generate better returns in business. The book approaches the background, history, and major thinkers in the field, but also reassesses the fundamental concept of neuroleadership. The authors look into the fundamental basic needs of human beings, how they are represented in the neural networks, and how this manifests in motivational drives. The book also focuses explicitly on how impactful organizational tools can be from the viewpoint of the brain. By following this methodology, the reader will be able to use the knowledge of neuroscience at the workplace to better address individuals' brains and hence tap into the full power of brains in business. (Amazon Description)

Richard Davidson and Sharon Begley, *The Emotional Life of Your Brain* (*http://www.amazon.com/Emotional-Life-Your-Brain-Live--/dp/0452298881/ref=sr_1_1?ie=UTF8&qid=1413165018&sr=8-1&keywords=The+Emotional+Life+of+Your+Brain*)
What is your emotional fingerprint? Why are some people so quick to recover from setbacks? Why are some so attuned to others that they seem psychic? Why are some people always up and others always down? In his thirty-year quest to answer these questions, pioneering neuroscientist Richard J. Davidson discovered that each of us has an Emotional Style, composed of Resilience, Outlook, Social Intuition, Self-Awareness, Sensitivity to Context, and Attention. Where we fall on these six continuums determines our own "emotional fingerprint." Sharing Dr. Davidson's fascinating case histories and experiments, *The Emotional Life of Your Brain* offers a new model for treating conditions like autism and depression as it empowers us all to better understand ourselves—and live more meaningful lives. (Amazon Description)

Matthew D. Liebermann, *Social: Why Our Brains Are Wired to Connect* (*http://www.amazon.com/Social-Why-Brains-Wired-Connect/dp/0307889092*)
Renowned psychologist Matthew Lieberman explores groundbreaking research in social neuroscience revealing that our need to connect with other people is even more fundamental, more basic, than our need for food or shelter. Because of this, our brain uses its spare time to learn about the social world—other people and our relation to them.

Lieberman argues that our need to reach out to and connect with others is a primary driver behind our behavior. We believe that pain and pleasure alone guide our actions. Yet, new research using fMRI—including a great deal of original research conducted by Lieberman and his UCLA lab—shows that our brains react to social pain and pleasure in much the same way as they do to physical pain and pleasure. Fortunately, the brain has evolved sophisticated mechanisms for securing our place in the social world. We have a unique ability to read other people's minds, to figure out their hopes, fears, and motivations, allowing us to effectively coordinate our lives with one another. And our most private sense of who we are is intimately linked to the important people and groups in our lives. Based on the latest cutting edge research, the findings in *Social* have important real-world implications. Our schools and businesses, for example, attempt to minimize social distractions. But this is exactly the wrong thing to do to encourage engagement and learning, and literally shuts down the social brain, leaving powerful neuro-cognitive resources untapped. The insights revealed in this pioneering book suggest ways to improve learning in schools, make the workplace more productive, and improve our overall well-being. (Amazon Description)

David Rock, *Your Brain at Work: Strategies for Overcoming Distraction, Regaining Focus, and Working Smarter All Day Long* (*http://www.amazon.com/Your-Brain-Work-Strategies-Distraction/dp/0061771295*)

Meet Emily and Paul: The parents of two young children, Emily is the newly promoted VP of marketing at a large corporation while Paul works from home or from clients' offices as an independent IT consultant. Their lives, like all of ours, are filled with a bewildering blizzard of emails, phone calls, yet more emails, meetings, projects, proposals, and plans. Just staying ahead of the storm has become a seemingly insurmountable task.

In this book, we travel inside Emily and Paul's brains as they attempt to sort the vast quantities of information they're presented with, figure out how to prioritize it, organize it and act on it. Fortunately for Emily and Paul, they're in good hands: David Rock knows how the brain works-and

more specifically, how it works in a work setting. Rock shows how it's possible for Emily and Paul, and thus the reader, not only to survive in today's overwhelming work environment but succeed in it, and still feel energized and accomplished at the end of the day. (Amazon Description)

Daniel Siegel, *Mindsight: The New Science of Personal Transformation* (*http://www.amazon.com/Mindsight-The-Science-Personal-Transformation/dp/0553386395*)
This groundbreaking book, from one of the global innovators in the integration of brain science with psychotherapy, offers an extraordinary guide to the practice of "mindsight," the potent skill that is the basis for both emotional and social intelligence. From anxiety to depression and feelings of shame and inadequacy, from mood swings to addictions, OCD, and traumatic memories, most of us have a mental "trap" that causes recurring conflict in our lives and relationships. Daniel J. Siegel, M.D., a clinical professor of psychiatry at the UCLA School of Medicine and co-director of the UCLA Mindful Awareness Research Center, shows us how to use mindsight to escape these traps. Through his synthesis of a broad range of scientific research with applications to everyday life, Dr. Siegel has developed novel approaches that have helped hundreds of patients free themselves from obstacles blocking their happiness. By cultivating mindsight, all of us can effect positive, lasting changes in our brains—and our lives. A book as inspiring as it is profound, *Mindsight* can help us master our emotions, heal our relationships, and reach our fullest potential. (Amazon Description)

Other Resources

Mindfulness Reports (*http://www.nicabm.com/free-resources/*)

Walter McFarland, This is Your Brain on Organizational Change (*http://blogs.hbr.org/2012/10/this-is-your-brain-on-organizational-change/)*

Tobias Kiefer, Neuroleadership: Making Change Happen (*http://iveybusinessjournal.com/topics/leadership/neuroleadership-making-change-happen#.VAX_xGRdWn4*)

Additional Blogs from Terri Egan & Suzanne Lahl (*http://www.entrepreneur.com/author/terri-d-egan-and-suzanne-lahl*)

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