### Topic

*Play, Well-Being, & The Mind*, by Daniel J. Siegel, M.D.

In this 90-minute video, Dr. Dan Siegel delves into an interpersonal neurobiology view of play, exploring how entering a state of trust and connection enables new forms of awareness to emerge – including learning to become aware of one’s own awareness – and how these states influence one’s conceptualization of time, one’s drive for certainty, and one’s ability to socially engage. Learning to become more present allows us to free ourselves from expectations and assumptions and to become open to possibility, curiosity, and a broader range of potentiality in the unfolding of experience, allowing us to cultivate more joy and well-being in our relationships with ourselves and each other.
Applications for all Professionals and General Interest

A. The Science of Play (2:43-8:51)
- Affective neuroscience studies emotional life across evolutionary stages
- While the experience of emotion is influenced by various regions of the brain and the body, this activity tends to activate the cortex; emotional experience correlates to activity in the subcortical region

<table>
<thead>
<tr>
<th>Primal Emotion</th>
<th>Affective Feeling</th>
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<tbody>
<tr>
<td>Seeking</td>
<td>Enthusiasm</td>
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<tr>
<td>Rage</td>
<td>Angry</td>
</tr>
<tr>
<td>Fear</td>
<td>Anxious</td>
</tr>
<tr>
<td>Lust</td>
<td>Passionate &amp; Aroused</td>
</tr>
<tr>
<td>Care</td>
<td>Tender &amp; Loving</td>
</tr>
<tr>
<td>Panic</td>
<td>Lonely &amp; Sad</td>
</tr>
<tr>
<td>Play</td>
<td>Joyous</td>
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B. The Purpose of Play (8:51-26:26)
- Play is difficult to operationally define in specific terms, as it varies across species and cultures. A playful state can be conceptualized broadly as behavioral combinations that have no particular intended outcome intended. Other forms of play involve exploration with a directed purpose. Here are some examples of forms of play:

<table>
<thead>
<tr>
<th>Classification of Play Behavior</th>
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<tbody>
<tr>
<td>Exercise play</td>
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<td>Exercise play with objects</td>
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<tr>
<td>Object play</td>
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<tr>
<td>Construction play</td>
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<tr>
<td>Social contingency play</td>
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<tr>
<td>Rough-and-tumble play</td>
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<tr>
<td>Fantasy play</td>
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<td>Games with rules</td>
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"The study of play has been traditionally problematic because play ‘borrows’ its behavioral elements from other behaviors, such as sex and aggression. That is, the behavioral repertoire comprising play also encompasses behaviors that we might usually be more likely to assign to other behavioral contexts, such as agonistic

encounters (e.g., Chalmers, 1984). With this caveat in mind, it has often been said that play is defined by what is it not; thus, all too often it becomes a default explanation for a behavior that appears functionless (Martin & Caro, 1985).”

- Kerrie P. Lewis

- It is important to note that the opposite of play is not work as many may guess, but can be seen instead as depression – the shutting down of vitality and the inability to create new combinations
- Play is an innate, primary emotional drive associated with activity of the cortex; it is a fundamental part of life for us as mammals
- Trauma can inhibit the ability to play, as the states of receptivity necessary for play are replaced by states of reactivity in response to threat or perceived threat

<table>
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<tr>
<th>The Four Fs of Brain Stem Reactivity in response to Threat</th>
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<tbody>
<tr>
<td>Fight</td>
</tr>
<tr>
<td>Flight</td>
</tr>
<tr>
<td>Freeze</td>
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<tr>
<td>Faint</td>
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</tbody>
</table>

- While brainstem activity promotes survival as a reaction to threat, reactivity inhibits playfulness; however, activating the limbic regions of the brain promotes social engagement - a resource for coping with stress that supports receptivity

C. The Cognitive Neuroscience of Play (26:26-40:02)

- Interaction with the environment and perception of external sensation—sometimes called exteroception – or sensing and perceiving energy arising from within the body – interoception - each involve the activation of sensory receptors, stimulating neural firing processes throughout the body and in the sensory areas of the brain; through this flow of energy and information in the nervous system, we create a neural representation of our experience, which then somehow, in ways no one has been able to explain, either causes or at a minimum is associated with the subjective, mental representation of experience

  - Exteroception: energy arising from the external environment and sensed by us
  - Interoception: energy arising from one’s internal experience

- These neuronal foundations of mental representations result in a schema – or mental model – of experience, which influences future perception of future experiences. While schemas allow us to make sense of experiences quickly and efficiently, they also affect the way we experience the world through nonconscious assumptions and expectations.
Play can be seen to liberate us from top-down processing, allowing us to experience the present moment with receptivity, creativity, and awareness.

Mindfulness: “The awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment by moment.” – Jon Kabat-Zinn

D. Play & Presence (40:02-51:32)

- Since play is engagement in new combinations, it may build on bottom-up processes. Life, in contrast, can lead to the recurrence of automatic, top-down processing, dulling awareness so that the uniqueness of each moment disappears. In this way, play is a powerful form of “freeing the mind.” Let’s look at how we become more “present” with play:

Presence = Pre- (before) + Sense (to sense)

- Actual reality occurs before it is sensed by the nervous system—our sense, perception, and cognition; our memory and reflections—are all steps away from the present moment
- There is no such thing as perfect perception since past experiences interact with and alter existing neural structure and influence the filtering of perception of present experience
- However, the closer we get to presence, the less fixed or constrained perception is by these prior experiences and the mental models that have been constructed from them; playfulness brings us closer to this open space of presence, allowing us to let go, at least in that moment, temporarily, of the drive for certainty and, instead, drop into the pre-sensed moment with openness and curiosity to the unfolding of moment-to-moment experience

E. Play & Time (51:32-1:01:30)

- Time is considered by some contemporary physicists to be simply a mental construct—a top-down, categorical belief; culture determines how we share this construct with each other and reinforces the shared view that something is really “flowing” or that we are “out of time” when these may all be socially shared, mental models of a very different actual physical reality
• From this viewpoint, the only “time” that truly exists is the present moment but with several features correlated to what we consider past or future:

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<th>Construct of Time</th>
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<tr>
<td>Past</td>
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<tr>
<td>Future</td>
</tr>
<tr>
<td>Present</td>
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• Through play, we allow ourselves to:
  1. Be open to the experience of emotions that arise in the present moment
  2. Trust, which activates the limbic, social engagement system - allowing us to be rather than plan
  3. Embrace spontaneity and uncertainty, creating a yes-and experience (rather than a no-but experience), which we see, for example, in improvisation

F. Play & Uncertainty (1:01:30-1:29:27)

• If one is only living to achieve an outcome in the future or is overly focused on the past, he or she may no longer be attending to the present moment, which is emergent

• Emergent processes arise from complex systems, according to mathematics’ probability and systems theory

• One emergent process is self-organization

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<tr>
<th>Complexity Theory: Features of a Complex System</th>
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<tr>
<td>1. Open</td>
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<td>2. Chaos capable</td>
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<td>3. Nonlinear</td>
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• The mind, as an aspect of a complex system, can be seen as an embodied and relational, emergent, self-organizing process that regulates energy and information flow

• Optimal self-organization of this system requires integration – the differentiation or specialization, and, ultimately, the linkage of aspects of a system including the brain and interpersonal relationships; without integration, chaos, rigidity, or both emerge, resulting in a state of dysfunction; with integration, harmony and the ability to adapt emerge

• Since worries about the past or future inhibit experience of the present, we must learn to embrace uncertainty; this emergent property of the complex system of the mind is innately playful
### Quantum Physics and the Nature of Reality: Important Findings

<table>
<thead>
<tr>
<th>1. Conscious Observation</th>
<th>The act of observation of a photon – the fundamental element of light energy – collapses the wave function or reduces the state function: a photon can be a particle or acting like a probability distribution, like a wave. The act of being aware – conscious observation – changes energy patterns and changes the probability function into a certainty (acting like a particle, no longer like a wave)</th>
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<tbody>
<tr>
<td>2. Entanglement</td>
<td>The finding that changing the state of one entity instantaneously changes the position of a related entity like an electron somewhere else; this suggests an interconnectedness that “acts at a distance”...could this include the mental experience of individuals? Not known, but...?</td>
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<tr>
<td>3. Reality as Probability &amp; Potential</td>
<td>Reality is based on probabilities – not certainties; mindfulness practices, like the wheel of awareness practice, strengthen our abilities to be consciously aware. <em>Energy</em> is the capacity to do something, and a range of energy probabilities from 0% to 100% exists</td>
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<table>
<thead>
<tr>
<th>Subjective Experience</th>
<th>100% probability = Certainty</th>
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<tbody>
<tr>
<td>Neural Firing</td>
<td>0% probability = Uncertainty, or <em>Infinite Possibility</em></td>
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<tr>
<td>Plateaus of probability</td>
<td>Plateaus of probability constrain these options as mood or intention; specific thoughts or emotions or memories are depicted as in peaks of activation—the transformation of possibility into actuality</td>
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<tr>
<td>The hypothesis: awareness arises when energy level is in the infinite plane of possibility – free from top-down influence and, instead, a source in openness and the source of possibilities</td>
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</table>
• Play occurs in transforming a range of states of probability and possibility, as we relax the need for certainty and free ourselves from automatic, top-down processes that limit our scope of awareness; we then allow experience to simply arise and emerge, exploring peaks of certainty and dropping back down into the plane—the source of “presence”

• When we embrace gratitude of being alive, become open to present moment experience, and shift awareness to potentials and possibilities, we can become more playful and present, moving us from the fixed peaks of certainty and plateaus of probability, and instead to experience and cultivate joy and well-being in our personal and interpersonal lives
Annotated Bibliography of Books Referenced and for Further Reading

1. For All Professional Groups, Parents, and General Interest


engagement systems to the reactive states of fight, flight, freeze, or feign death (faint).

i. Siegel, D. J. (2012). *Pocket guide to interpersonal neurobiology: An integrative handbook of the mind*. New York, NY: W.W. Norton & Company. A non-linear (and playful!) book that enables readers to explore the field of interpersonal neurobiology by flowing through passages and passions at their own discretion, the *Pocket Guide* provides a journey into IPNB in which the topic of the mind and the process of reading are parallel experiences.


(More Reading for Mental Health Professionals, Educators, Executives and Coaches on the next page.)
2. More Reading For Mental Health Professionals, Educators, Executives, and Coaches


c. Panksepp, J. (1998). *Affective neuroscience: The foundations of human and animal emotions*. New York, NY: Oxford University Press. This original text is supplemental reading for those that are looking for more complexity than the *Archaeology of Mind*.

d. McGonigal, J: (not yet published—out late 2015): *SuperBetter: A revolutionary approach to getting happier, braver, and more resilient*—powered by the science of games. New York: Penguin. An exciting summary of the use of games to promote well-being following concussion, and even in our general life, the author provides personal stores and data from over half a million subjects supporting this approach to the power of play to promote well-being.