

# THE NEUROPSYCHOTHERAPIST



VOLUME 7 ISSUE 3

## EDITORIAL



**W**elcome to our March edition when the world makes its shift of seasons to autumn in the southern hemisphere and spring in the north. What does a change of season bring? Perhaps it is the important reminder that we are always moving through some sort of change, which is useful if we are to maintain our curiosity and flexibility. To that end, we are focusing this month on the application of neuropsychotherapy: where we can take the knowledge and how it can be utilised for the benefit of others. All of us at *The Neuropsychotherapist* believe that everyone benefits when a practitioner shares the way they practise and where they have chosen to focus their attention. We encourage you to read these applied NPT articles for what resonates with you, what you agree with, and especially for what you question. When you question, we urge you to open your own door of exploration, be it through the literature or from experience. We learn from each other in so many ways.

The Science of Psychotherapy website and *The Neuropsychotherapist* magazine is still the place where you are invited to share in the wealth of knowledge both as a user and a contributor. Our articles and video-based education programs are valuable contributions to your continuing education; at the same time, we look forward to you sharing your knowledge with us and our community. We have many ways for you to do this throughout the website. I encourage you to join our forum discussions, add to our blogs, write for the magazine, and if you think of something we are not doing, please tell us, and we will see what we can create. Be a part of the growth and development of our profession in whatever way most effectively reflects your strengths and capabilities.

Our feature article by Derrick Hassert grounds us with “A Neuropsychological Analysis of Self-Injurious Behavior”, giving us a sensitive insight into this difficult subject and arriving at some wise recommendations for us to think about. Then we begin our tour of our three applied NPT articles from practitioners who are sharing their knowledge and experience: Mary Bowles brings us Part 2 of “An Integrated Rapid Memory Reconsolidation Approach”; Jan Sky describes her approach that is the basis for her popular ESI (Executive State Identification) training in “The Power to Change”; and Karen Ferry introduces us to the Benson the Boxer storybook and program manual, resources she has developed to help children deal with situations of loss, in “Grief and Loss in Young People: A Neuroscience Perspective”.

There are so many ways that we can apply and integrate the information that is emerging in neuroscience. Finding the relevance to our human experience in order to create beneficial change and growth is a task we feel that “neuropsychotherapists” can accept. It is certainly a challenge, and though we may not get it right all the time, we have confidence that those things that are reliable and robust will emerge over time, for the benefit of our future health and well-being.

RICHARD HILL | **EDITOR**

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AN INTEGRATED RAPID MEMORY RECONSOLIDATION APPROACH:

# *Rapid Resolution Therapy*

MARY BOWLES

PART 2



## NEUROPSYCHOTHERAPEUTIC FRAMEWORK

**N**europsychotherapy teaches us, through consistency theory, that human beings have five major brain needs. These are survival-brain needs that must be met before the limbic system will defer back to the thriving brain (Grawe, 2007; Rossouw, 2014, 2016). Establishing the needs of the survival brain before trying to enhance a thriving state is a bottom-up before a top-down approach. There must be an understanding in psychotherapy that we cannot think our way out of our survival brains; we have to feel our way out. My job as a therapist is to ensure survival needs are met before trying to enhance a client's thriving state. The neuropsychotherapeutic framework requires that therapists help to enrich every client's senses of motivation, safety, connection, control, and self.

### MOTIVATION

Motivation requires the production of dopamine. Dopamine, a neurotransmitter, has many functions, including involvement in such things as movement, memory, and attention (Schultz, 2007). Another important role for dopamine is in the human reward system. Dopamine production occurs with satisfying experiences and when predictions based on earlier learning experiences, both conscious and unconscious, are satisfied. When a prediction is satisfied, dopamine molecules get excited and people feel forms of motivation as they turn on the thriving brain—an approach state—or to the survival brain—an avoidant state (Rossouw, 2014, 2016). As in the case of coping through meditation versus coping through the use of alcohol, motivation occurs whether the outcome will be effective or ineffective. One's past memories predict future dopamine production regardless. If one learns such coping has been useful, the brain may lean toward using that coping technique again. Human brains are motivated toward certainty and predictability because the amygdala retains high level emotional memories that might affect survival. This is also why humans gravitate toward certainty and predictability, even in chaos. Even chaos can be predictable and offers

certainty, thus it can be dopamine producing.

I mentioned conscious and unconscious learning, so it is also necessary to explain a way to discuss and understand unconscious and conscious brain activity with clients. A metaphor that works well for adults is to remember one's vehicle driver training. When people begin learning how to drive, they must actively consider which pedal to use, which way to move the indicator, look left, look right, use the mirrors, and to know the traffic signs and signals. Subsequently, people drive from one town to another and never think about the pedals or the indicator. When you see a sign to slow down, your foot comes off the pedal without thought. The brain works in automatic ways even when you are not consciously aware it is working.

### SAFETY

For survival, humans need safety. Without safety, the thriving brain does not work to its full potential. Consider you are swimming in a tank of perfect water and I say to you, "Please do this simple math:  $3 + 1 + 2 + 4$ ". In a tank of water, this would typically not be an issue if one has learned addition. Now consider, you are in a shark tank and I say to you, "Please do this simple

math: 3 + 1 + 2 + 4.” In a shark tank it is unlikely that you will hear the numbers, let alone be able to put them together. Brains do not learn to have a thriving brain (approach state) from a survival brain (avoid state) experience. In a shark tank, brains react. The survival brain reacts to ensure survival and works 10 times faster than the thriving brain (Rossouw, 2016). This is why hitting a child as punishment teaches him or her to avoid that response, not to approach an understanding of the problem.

The survival brain requires physical as well as emotional safety before it will defer energy to the thriving brain (Rossouw, 2014, 2016). Safety is also consciously and unconsciously inferred with comfort. As I discussed previously (Part 1), human perceptions of threat to safety can activate a fight, flee, or freeze response regardless of whether that response is useful (an actual threat) or not (a perceived threat). For instance, because our brains are designed to fight, flee, or freeze in response to aggression, when someone yells, others near the yeller often experience a fight, flee, or freeze response. Yelling can often eliminate a sense of emotional safety. While yelling is not an actual threat, but rather an indicator of a potential threat, the

brain may nevertheless perceive it as a threat, and the body will become activated to fight, flee, or freeze. Even if the person does not act, the sensation is still present (an avoid state).

## CONNECTION

Connection (attachment) is another need. Humans need to establish connection at the neural level, as well as connection with other humans. Human beings are social animals, and without connection with others they cannot further their species and are at greater risk. Consider another social animal, a deer say, separated from its herd. Because he is alone, the deer is at greater risk of being attacked. In a herd, a deer must only be faster than one other deer, and there are many other deer scanning the environment for signs of threat. So, when isolated from a group, a deer’s brain and



body produce electrochemical signals that increase the deer's hypervigilance to an attack. Human beings respond similarly. When isolated from one's group, an individual's brain and body heighten his/her stress state. It is a biological response. While humans seldom have to flee a lion in the bush, as in hunter-gatherer days, one still had only to be faster than one other hunter-gatherer. So, without connection, our brains cannot achieve their highest potential thriving state.

Connection is also crucial for social bonding. Touch and eye contact produce oxytocin, which encourages bonding, but oxytocin is also thought to protect against mental and physical illness (Grippe, Trahanas, Zimmerman, Porges, & Carter, 2009). Oxytocin also reduces activation in the HPA (hypothalamus-pituitary-adrenal) axis (Smith & Wang, 2014).

## CONTROL

Humans have a need for control over their own lives. Control is not about the ability to control everything in one's environment, but instead to influence one's environment to reduce chaos and rigidity—what Dan Siegel (2010, 2012a, 2012b, 2015, 2016, 2018) calls integration, a state of being differentiated, but linked. A great example Siegel uses to describe differentiation and linking is as in a choir: "With each singer's voice both differentiated from the other singers' voices but also linked, harmony emerges with integration" (Siegel, 2018, p. 10). As humans we are linked, but we are also differentiated, or different from one another. We must promote and support integration for self and others in order to thrive as a collective whole. Integration is important in every aspect of one's neuropsychotherapeutic needs. What one person perceives as safety, connection, motivation/satisfaction, and control may not be perceived the same by someone else.

## SELF

As Rossouw (2016) noted, one's sense of self is supported by the previous four needs of safety, connection, control, and motivation. When our environment is not enriched to support such needs, our perception of self is often poor, and our individual mental and physical health may also be at risk. I believe Siegel (2018) explains neuropsychotherapeutic needs quite well when he says:

When we differentiate and link, we integrate. We become balanced and coordinated in life when we create integration. Various scientific disciplines may use other terminology, but the concept is the same. Integration—the balancing of differentiation and linkage—is the basis for optimal regulation that enables us to flow between chaos and rigidity, the core process that helps us flourish and thrive. Health comes from integration. It's that simple, and that important. (p. 10)

## UNDERSTANDING RAPID RESOLUTION THERAPY

More than meeting the necessary steps for successful memory reconsolidation, rapid resolution therapy (RRT) has a number of useful components. RRT uses story-telling (by the clinician, not the client), metaphor, education, laughter, and hypnosis when needed. Much like meditation, hypnosis down-regulates the brain. Rossouw (2014) observed that hypnosis has been found effective for managing the perception of pain as it interferes with the brain's typical communication patterns. Likewise, Siegel (2013, pp. 1–2) has this to say about meditation:

With repetition, an intentionally created state can become an enduring trait of the individual as reflected in long-term changes in brain function and structure. This is a fundamental property of

neuroplasticity—how the brain changes in response to experience. . . . This electrical change in brain function is thought to reflect the cultivation of an ‘approach state’, in which we move toward, rather than away from, a challenging external situation or internal mental function such as a thought, feeling, or memory. Naturally, such an approach state can be seen as the neural basis for resilience.

Siegel is also well-known for the aphorism: *Where attention goes, neural firing flows, and neural connection grows* (Siegel, 2018).

Hindsight bias is the tendency to look back (knowing what happened) and falsely think that the outcome was more accurately predictable than it actually was when the decision was made (Kubany & Manke, 1995; Popiel, 2014; Williams, 1993). Hindsight bias contributes to creating a mismatch between prior and subsequent beliefs.

This may be a surprise for many—except RRT therapists: validation is not a mismatch or prediction error; validation is an agreement. Validation helps us connect to one another, but it does not help the hippocampus into action. And why, as a therapist, would I validate a belief I am working to help a client change? A RRT therapist does not say to a client such things as: “That must have been very difficult for you.” Both the therapist and the client know the answer is yes. RRT therapists will offer a new experience instead, thus activating the hippocampus to apply a different context. For example, I might say, “Let’s clear that up” with the goal of keeping them present and not hijacked by the amygdala (Siegel & Bryson, 2012).

Dr. Connelly offers a useful example of changed context when he talks about “putting your pants on”. I prefer to use the word “shoes” instead as I explain, “You can remember putting your shoes on today (because it is stored in your short-term memory, the hippocampus), but if I ask you to tell me about putting your shoes on

yesterday, you will usually draw a blank. Your brain has discharged the memory as useless information because there is no emotion attached to the memory. You know you put your shoes on yesterday, but your brain knows there’s nothing that needs to be done about what’s not happening.” When this new learning is applied to the context of a traumatic memory, a client often experiences the awareness and felt sense that, indeed, no action needs to be taken toward or away from an experience that is no longer happening.

An RRT therapist would not validate a client struggling with earlier choices they wished they had not made. An RRT therapist would offer the argument that it is not possible to have done any better. I support such an argument by explaining the triune brain and how in a fight, flee, or freeze response, the effective problem-solving part of the brain is not even active and that humans do not see glaringly better options and choose the bad one. If those options were available and truly better at the time, one of those options would have been chosen. Connelly also teaches us to ask the question: “Can you do what doesn’t occur to you?” The answer is always no. These statements are not reasoning with the client, rather they are eliciting more satisfying emotions.

During each of my memory reconsolidation presentations I am asked the question: “If you don’t validate, how do you connect with your clients?” My answer is a reminder that I have connected from the very beginning with proof that humans are all normal within the context of their own lives. I remind them that our brains store a hundred trillion different experiences, and with 7.5 billion people on the planet, the mathematical likelihood that any two people are the same is zero. We are all normal, but we are not always effective. My goal is to help clients stop trying to be normal and just focus on being more effective. In our often amygdala-driven culture, I believe human beings

do not hear that enough. I want only to enrich their environments and ensure that one person's meaning does not offer proof of another's intent.

Another explanation that clarifies how unspoken meaning is often interpreted in our culture is the unspoken belief that the level of our love equals the level of our grief when someone dies. If you were to attend a loved one's funeral and immediately after want to attend a comedy show, what might members of your culture say? That you are disrespectful? That you are inconsiderate or rude? That you didn't love or care about that family member? Likely, yes. However, because neurons that fire together, wire together (Hebb, 1949), you could be doing the very best thing for your brain by avoiding living for an extended period of time in frozen grief. But because others whom you care for and who fear losing connections to you might look disapprovingly upon you, you might be motivated instead to avoid the possibly healthier response to grief and agree to a less effective response—that going out

would be rude. Thus, you accept their meaning. Or you might go to the comedy show but try not to get caught, which could result in guilt or anxiety. In actuality, going to a comedy show would not mean you don't care. That is only what your culture might say it means. When you don't agree with that cultural meaning, because you know yourself, you might just do what would be more effective for your brain and attend the comedy show. Such a response is a hard prospect for someone who is not well differentiated.

Our culture indirectly teaches that guilt will make you a better person. A mother may snidely remark, "Am I the only person who does dishes around here?" Rather than directly asking her child to wash the dishes she applies guilt. Perhaps my favorite storied-metaphor for treating guilt, shame, and embarrassment is my adapted "guilty surgeon" script (Connelly, 2016). Consider you have a clone and this clone is a surgeon. This surgeon is thinking about all his/her experiences with guilt, shame, and/or embarrassment. He/she,



while stressing about those experiences, is going into surgery one day and it is your loved one's day to be on the table. Do you want them to be on the table? Do you want to be on the table? The answer is most likely no.

Guilt, shame, and embarrassment don't make anyone a better person. Those emotions motivate you to make someone else more comfortable. They benefit someone else, so that person's behavior serves a purpose in the relationship. But it's not intentional, it's just what others have culturally learned over time is effective and your responding to their emotion-laden request is quite rewarding (dopamine producing). Meeting their need is more likely to encourage them to use such ineffective behaviors again. After all, even rats learn to respond by pushing a lever repeatedly when rewarded. If you always provide a reward, you are teaching others you always will, rats and humans alike. When you learn that guilt does not make you a better person, you learn to respond more effectively to other's applications of guilt, for instance. Others will learn because the reward is not followed by the request. When more satisfying predictability exists

in a different belief, dopamine levels increase to encourage motivation to the new belief. This elicits the effortless permanence Ecker, Ticic, and Hulley (2012, 2013) describe. A person knows it because they feel different, immediately: no thought process is necessary to maintain the different way of feeling.

Often surprisingly, laughter is another component of RRT. Many are surprised by the frequency of laughter in an RRT therapist's office! After all, neurons that fire together, wire together, so why would we not apply humor to an experience that is no longer happening? Laughter in the face of trauma does not mean the trauma had no effect on you, but it does help your brain "get it" that the traumatic event is no longer happening so nothing needs to be done about it. One cannot be in an approach state and an avoidant state at the same time. When we can laugh, our survival brain knows there's no threat. Have you ever seen or heard of a person being chased by a tiger while laughing? Our true survival response does not allow that. Smiling and laughter activate the hippocampus, which down-regulates the brain toward



a thriving state and enhances dopamine and serotonin release (Rossouw, 2013, 2014, 2016). Laughing when a stored traumatic or stressful memory is active also encourages memory reconsolidation because of the mismatch experience. Thus, new emotional learning that no fight, flee, or freeze response is necessary can be stored with the reconsolidated memory.

Also surprising in RRT is the lowered risk of vicarious trauma for the clinician. Few details need to be shared as new emotional learning can happen with the activation of reasonably tolerable details. These emotional learnings can then be applied to less tolerable details of an event. In fact, RRT therapists are generally looking for meaning, not details. As the new emotions provide a sense of safety the client demonstrates little reluctance. And when reluctance is present, the clinician will help clear that associated detail through memory reconsolidation. In RRT, when reactivating a memory, it is usually unnecessary and counterproductive to ask for more information about a trauma history than one would write in a newspaper headline. My previously disclosed interrogation experience came to my awareness through the RRT technique Connelly calls "ghostbusting", when I was asked to recall when I had experienced a similar response to my fear of public speaking (Connelly, 2016). I was not asked to provide details. A brain-based therapist should be cautious to never strengthen a traumatic memory by asking for too many details about the event, or to activate it without changing it. Instead, clinicians should redirect to a thriving brain state when they recognize signs of the fight, flee, or freeze response. Such an approach can be easily accomplished with hypnosis, guided meditation, or redirection of attention toward an imagined positive experience to interrupt activation of the survival brain.

As an RRT therapist I advocate for treatments

that reduce the need for medication. Medication can encourage an individual to approach new experiences so networks can be transformed, but medication only changes the neurochemical signals being transmitted across synaptic connections, not the synaptic connections themselves. I have concerns that medication may also suppress a client's ability to experience new emotions to a capacity useful for new emotional learning experiences. Additionally, I advocate for treatments that minimize pathologizing clients.

I encourage clients to seek out clinicians educated in neuroscience, and likewise I encourage clinicians to seek out neuroscience. RRT can change the stigma attached to mental health and requires a clinician to demonstrate his or her credibility with every client. It holds clinicians accountable for offering their clients tools, as opposed to having to come up with their own skills through therapy. RRT opposes psychopathologizing. Cultural stigma teaches that mental health issues are something to be avoided, so pathologizing activates an avoidant state. One's senses of motivation, safety, connection, control, and self are not enhanced but inhibited with a diagnosis. RRT may, as yet, be a little-known model for treating mental health issues, but it is no less revered in the hearts of its rapidly growing successfully treated client and trained clinician population.

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## BIOGRAPHY



**Mary Bowles**, LMFT, RRT, MIAAN(Cert), is a Colorado state licensed marriage and family therapist, a certified applied neuroscience practitioner with a focus on neuropsychotherapy, a certified rapid resolution therapist, and an elected member of the management committee of the International Association of Applied Neuroscience (IAAN). Mary is in private practice and is the executive director and founder of the MindWise Institute. She is trained in interpersonal neurobiology and has completed Level 3 Gottman Method training for therapy with couples. Mary advocates for the cultivation of equal-value approaches to working with all humans in all areas of life and reducing stigma in mental health.



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**Rita Princi**  
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**Dr John Arden**  
Psychologist,  
Author, Presenter  
California, USA



**Mary Bowles**  
Marriage and Family Therapist,  
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**Daren Wilson**  
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## Pre-Conference Workshop with Dr John Arden, USA Mind-Brain-Gene: Toward Psychotherapy Integration Tuesday 21 May 2019



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# Laughter May Be Best Medicine for Brain Surgery

Neuroscientists at Emory University School of Medicine have discovered a focal pathway in the brain that when electrically stimulated causes immediate laughter, followed by a sense of calm and happiness, even during awake brain surgery.

The effects of stimulation were observed in an epilepsy patient undergoing diagnostic monitoring for seizure. These effects were then harnessed to help her complete a separate awake brain surgery two days later.

The behavioral effects of direct electrical stimulation of the cingulum bundle, a white-matter tract in the brain, were confirmed in two other epilepsy patients undergoing diagnostic monitoring. The findings are scheduled for publication in the *Journal of Clinical Investigation*.

Emory neurosurgeons see the technique as a “potentially transformative” way to calm some patients during awake brain surgery, even for people who are not especially anxious. For optimal protection of critical brain functions during surgery, patients may need to be awake and not sedated, so that doctors can talk with them, assess their language skills, and detect impairments that may arise from resection.

“Even well-prepared patients may panic during awake surgery, which can be dangerous,” says lead author Kelly Bijanki, PhD, assistant professor of neurosurgery. “This particular patient was especially prone to it because of moderate baseline anxiety. And upon waking from global anesthesia, she did

indeed begin to panic. When we turned on her cingulum stimulation, she immediately reported feeling happy and relaxed, told jokes about her family, and was able to tolerate the awake procedure successfully.”

Outside of use during awake surgery, understanding how cingulum bundle stimulation works could also inform efforts to better treat depression, anxiety disorders, or chronic pain via deep brain stimulation.

Previous investigators have reported that direct electrical stimulation of other parts of the brain can trigger laughter, but the demonstration that anti-anxiety effects observed with cingulum bundle stimulation can provide meaningful clinical benefits make this study distinct, says senior author Jon T. Willie, MD, PhD, who performed the surgeries reported in the paper. He is assistant professor of neurosurgery and neurology at Emory University School of Medicine.

Additional Emory authors include Joseph Manns, PhD, Cory Inman, PhD, graduate student Sahar Harati, Nigel Pedersen, MD, Daniel Drane, PhD, and Rebecca Fasano, MD. Authors who are now at Mount Sinai in New York City are Ki Sueng Choi, PhD, Allison Waters, PhD, and Helen Mayberg, MD, all previously at Emory.

Lying under the cortex and curving around the midbrain, the cingulum bundle has a shape resembling a girdle or belt—hence its Latin name. The area that was a key to laughter and relaxation lies at the top and front of the bundle. The bundle is a logical target because of its many connections among brain regions coordinating complex emotional responses, Willie says.

The location of cingulum bundle stimulation is distinct from other brain locations that process reward, such as the ventral striatum, which has been targeted for the treatment of depression and addiction. Because the cingulum bundle is a crossroads for white matter connecting several lobes, Willie and his team may be affecting widespread networks throughout the brain.

Willie says the locations of initial electrode placement were chosen in order to record brain activity and locate the onset of the first patient’s seizures. The electrode initially used to stimulate the cingulum bundle was inserted into the brain in a way that was different than standard, he says. The unique trajectory was necessary because of the first patient’s previous surgeries; the approach was from the rear (see illustration), leading to a broader extent of cingulum bundle being sampled and therefore accessible for electrical stimulation.

The JCI paper says that cingulum bundle stimulation “immediately elicited mirthful behavior, including smiling and laughing, and reports of positive emotional experience.”

“The patient described the experience as pleasant and relaxing and completely unlike any component of her typical seizure or aura,” the authors write. “She reported an involuntary urge to laugh that began at the onset of stimulation and evolved into a pleasant, relaxed feeling over the course of a few seconds of stimulation.”

As a test of her mood and thought processes, the researchers tested how the first patient viewed faces and whether she interpreted them as happy, sad, or neutral. Cingulum bundle stimulation shifted her view of faces so that they were interpreted as happier. This effect, called “affective bias”, is known to correspond with the reduction of depressive symptoms and suggests a potential use of cingulum stimulation in treating depression.

The two other patients that underwent cingulum stimulation and behavioral testing did not undergo awake surgery for epilepsy treatment. Upon stimulation, they both also smiled and reported mood elevation and pain relief, and at higher levels of current, experienced laughter. During stimulation, one of the later patients took tests of attention, memory, and language and

performed normally, except for delayed verbal recall on a list-learning task.

The researchers envision cingulum bundle stimulation as potentially applicable to surgery for brain tumors, as well as epilepsy.

"We could be surer of safe boundaries for removal of pathological tissue and preservation of tissue encoding critical human functions such as language, emotional, or sensory functions, which can't be evaluated with the patient sedated," Bijanki says. "In addition, although substantial further study is necessary in this area, the cingulum bundle could become a new target for chronic deep brain stimulation therapies for anxiety, mood, and pain disorders."

Source: Emory University



# Millions On Prescription Sleeping Pills Would Sleep Through a Fire Alarm

**W**idely prescribed 'benzodiazepine' sleeping pills suppress the sleeping brain's ability to wake us when it senses a threat. But an alternative class

of hypnotics currently under development could allow users to rouse in the event of an earthquake, fire alarm or intruder, according to a new study.

In a trial of one of the main class of prescription sleeping pills, half the participants slept through a fire alarm as loud as someone vacuuming next to their bed. But a newer alternative preserves the ability to wake in response to danger signals, according to a new research.

Published this week in *Frontiers in Behavioral Neuroscience*, the study showed that mice given the experimental hypnotic drug DORA-22 wake as quickly when threatened as drug-free sleepers – and then fall back asleep as quickly as ones given standard sleeping pills, once the threat is gone.

Common sleeping pills muffle your sleeping brain's 'intruder alert'. Even during sleep the brain continuously processes sensory information, waking us if it detects a threat. But the most widely prescribed class of sleeping pills, known as benzodiazepines, makes us less likely to rouse in response to sensory input.

"Benzodiazepines stimulate the widespread brain receptor GABA-A, which makes us sleepy but also suppresses off-target brain areas – including the 'gatekeeper' that decides which sensory inputs to process," explains study senior author Professor Tomoyuki Kuwaki of Kagoshima University, Japan.

Over the last decade, researchers have been developing a new class of hypnotic drugs called dual orexin receptor antagonists (DORAs). DORAs more selectively target the brain's sleep/wake pathways, which gives them safety advantages over benzodiazepines. These include a reduced 'hangover effect', with DORAs less likely to affect driving ability the day after use.

Kuwaki and colleagues hypothesized that the

selectivity of DORAs could make them a safer alternative during sleep as well – by allowing the brain's sensory gatekeeper to stay vigilant to threats.

## **DORA-22 ALLOWS MICE TO WAKE TO A THREAT, BUT STILL HELPS THEM SLEEP**

The group tested their theory on mice.

The mice were dosed and tested after dark, when they are normally most active. One group was administered DORA-22, another a benzodiazepine called triazolam, and a third group was given a placebo as a control.

"DORA-22 and triazolam had similar sleep-promoting effects, extending the duration of deep sleep by 30-40% compared to placebo," reports Kuwaki.

One to four hours after dosing, the deep-sleeping mice were presented with a threatening stimulus: the smell of a fox, a high-pitched noise like a dog whistle, or trembling of their cage. The trembling frequency was designed to match that of an earthquake – a serious threat in Kuwaki's native Japan and many other parts of the world.

"As expected, arousal in response to these threatening stimuli was delayed significantly in the triazolam treatment, but not in the DORA-22 treatment, compared to placebo."

Even more promising, the sleep-promoting effect of DORA-22 remained after the rude awakening.

"Even though the DORA-22-treated mice were quickly woken by a threat, they subsequently fell back asleep as quickly as with triazolam, and significantly faster than with placebo."

To help demonstrate that the delay in waking to a threat during triazolam treatment was due specifically to inhibition of sensory gating in the brain, the researchers also tested the sleeping mice with a non-

sensory stimulus.

“The three groups woke equally quickly when we suddenly reduced the amount of oxygen in their cage. This suggests that the delay in rousing to threatening stimuli caused by triazolam was not caused by a general inhibition of waking systems in the brain.”

### **HUMAN STUDIES ARE NEEDED TO CONFIRM DORA SAFETY AND EFFICACY**

“Although it remains to be seen whether DORAs have the same properties when used in humans, our study provides important and promising insight into the safety of these hypnotics.”

Since 2014, another DORA called suvorexant has gained regulatory approval in Japan, the USA and Australia. So far, the high cost and limited clinical testing of suvorexant have limited its use, amid concerns that doses high enough to significantly improve sleep lead to drowsiness the following day. New DORAs currently in development could overcome this hangover effect if they are cleared more quickly from the body than suvorexant, so that their effects are less likely to last beyond bedtime. Keep your eyes peeled.

**Source: *Frontiers***

# THE POWER TO *change*

JAN SKY

Your brain and the mind hold the secret to your ability to change: “The mind is the seat of consciousness”, writes Olivia Goldhill (2016), “the essence of your being.” Without a mind, we are not meaningfully alive, she adds. But what exactly is the mind, and where is it?

If the brain can be clearly defined as the physical substance, then is the mind the conscious product of those firing neurons?

Yet the mind goes far beyond the physical workings of the brain. Dan Siegel, a professor of psychiatry at UCLA School of Medicine and founder of the Mindsight Institute, describes his (and our) exploration for a definition of mind in the title of his book: *Mind: A Journey to the Heart of Being Human* (Siegel, 2016).

This article looks at both brain function and mind capacity to explore the linkages between the neuropsychotherapeutic and cognitive behavioural approaches that facilitate changes in the brain. The working model of behaviour change used here will not only demonstrate that change is possible but also help people to understand that, while change is indeed possible, it is not necessarily instant.



“The mind is everything.  
What you think  
you become.”

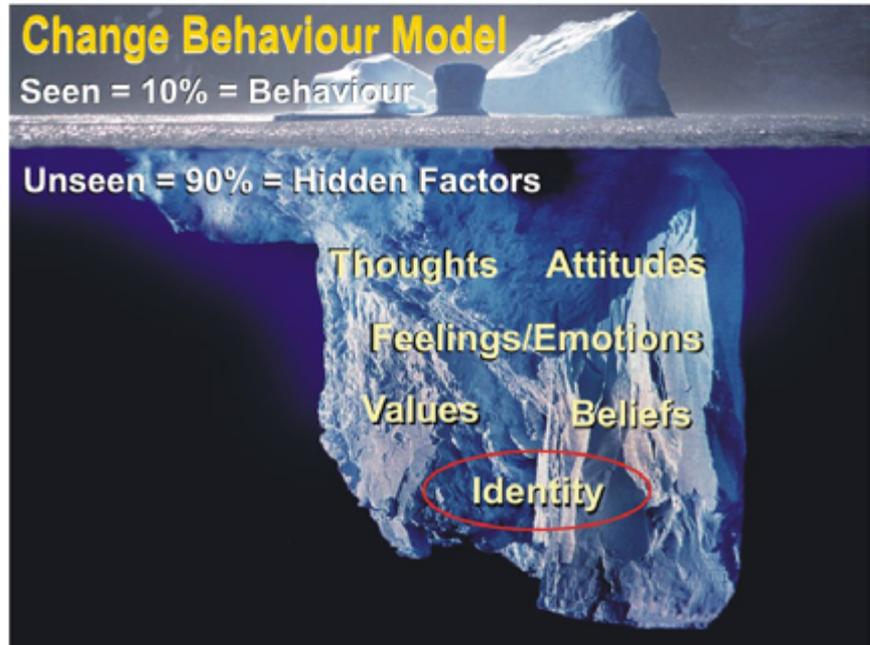
Buddha (popular attribution)

A needed behaviour change for many people might be to change a pattern of repetitive thoughts or internal dialogue. For example, repetition of dialogue in one's head is a behaviour that, when repeated over time, can become habitual and/or addictive. While some habitual behaviours (e.g., personal cleanliness) are clearly beneficial, others are the opposite of this and may be considered to be negative and/or inhibitive behaviours. From a brain perspective, the process of repetitive thoughts has been described as neural looping (Rossouw, 2013). If the thought—and the following behaviour—inhibits progress in life, then it is negative in nature. The neural loop starts in the limbic region of the brain and loops up through to the right prefrontal cortex (RPC). The limbic region, particularly the amygdala, stores negative emotional experiences, and looping in conjunction with the RPC results in negative thinking and actions (Rossouw, 2013). Internal dialogue associated with beliefs and values can also be activated.

## THE CHANGE BEHAVIOUR MODEL

### IDENTITY

Like the human brain, the change behaviour model works from the bottom up, illustrating that our identity—how we think about ourselves—needs to be the first



place to start to activate change. However, in many practices, whether coaching or counselling, we often start at the top, with thoughts, attitudes, and feelings.

As the diagram indicates, 90% of what needs to change lies beneath the surface. What is seen by others represents just 10% of who we are, and that is displayed by our behaviour. This 90% is internal and stored in the brain, mind, and body.

Our behaviour is impacted by our own self-perception, or who we think we are (our identity); our beliefs and values (some of which have been brought into our present from the past); and our thoughts, attitudes, and feelings. All are stored in the neural network of the brain—stored behaviours that contain multiple thoughts, attitudes, feelings, emotions, values, and beliefs that are ultimately displayed by behaviour, which is then presented to the world around us.

This, I believe, is indicative of a combination of brain, body, and mind capacity.

The therapeutic model I have developed combines a brain-based cognitive behavioural approach with my own work encompassing “ego states” (Watkins

# ‘What the mind can conceive and believe it can achieve’

**Napoleon Hill** (Kimbro & Hill, 1992)

& Watkins, 1997). Emerging from this model is the Executive State Identification (ESI) mapping tool that enables the identification of states that can inhibit our progress toward goals or support us moving forward. I began developing ESI mapping in 2008 to enhance behaviour change by identifying and naming the states.

Based on the idea that states are embedded in the neural network of the brain, the ESI mapping tool has gained international recognition for its simplicity and effectiveness. It allows the practitioner and the client to access and name states that are embedded. Once these have been identified, profiled, and mapped into a sequence, a client is in a far more effective position to begin to bring about the changes needed to achieve their goal (or goals). Clients take ownership of their situation as they map and identify their states with the ESI practitioner, and gradually through growing self-awareness, they begin to identify differently, gaining a greater understanding of when these states were formed. Change can only occur through self-

awareness, hence the effectiveness of the ESI mapping tool.

The various elements of the change behaviour model are described below.

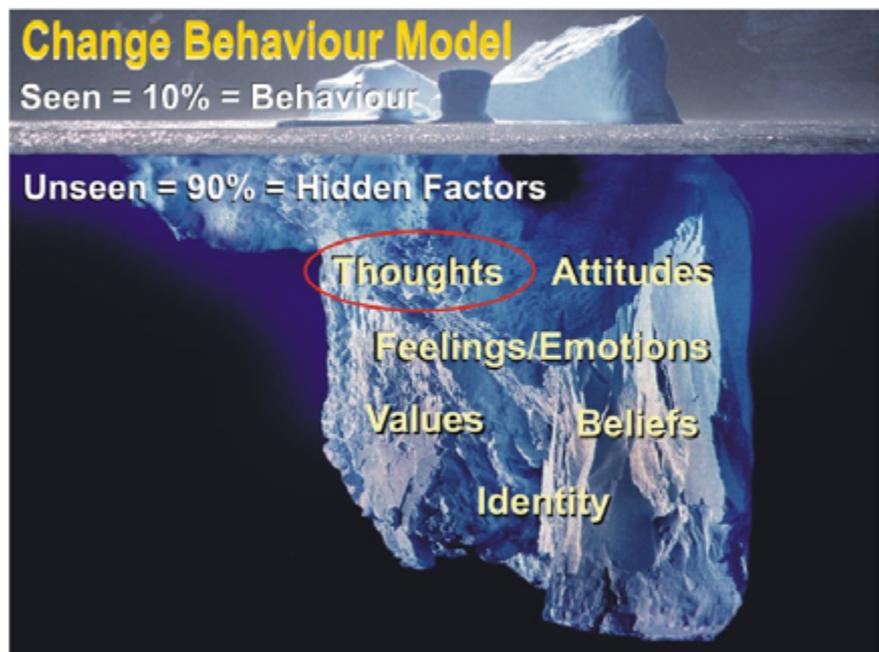
## THOUGHTS

How many thoughts does the human have in a day?

I was unable to find an accurate answer from a reliable source. Some stated 70,000 thoughts, others 40,000 or 50,000 as the correct number. So how many do we have and are each of these thoughts uniquely different? If we take the figure of 50–60,000 a day, that works out at around one thought every second. Let's accept this as a reasonable and acceptable estimate.

Are these thoughts always new thoughts? I suggest that many thoughts, like behaviours, are repetitive, but each one can still be counted as a separate thought. Repetition of thoughts equates to repetition of behaviour. We are reasonably described as “creatures of habit”!

We still do not know how thoughts are created in the



brain. This is known as the “big question” in neuroscience (Chalmers, 1996). But we do know that thoughts arise through a process where neurons transport chemicals to the synapse, enabling an energy charge to cross the synapse to another neuron, in what is called an action potential. The brain’s primary thought-building element, therefore, starts with a brain cell—a neuron—and is activated by chemical processes in the brain that send messages along the axon and across the synapse to another neuron. These messages determine the mental processes that we experience as thinking.

The term “thought” generally refers to any mental or intellectual activity involving subjective consciousness: it can either refer to the act of thinking or the resulting ideas or arrangements of ideas. I also suggest that not all thoughts are our own; they could come from a universal and/or a collective consciousness. The universal mind (or consciousness) constitutes the broader, collective thoughts around a way of life, or religion; or a way of being, such as culture and world view. The collective mind consists of energy fields of thought that can become your thoughts, although sometimes not. Collective thoughts are not always “your” thoughts.

Media, social media, TV, video, news, and other people’s ideas impact greatly upon our thoughts, changing or perhaps rearranging them. For example, the media can play a part in altering your thinking. Look at the current political battles that are occurring around world leaders. Each different media source will suggest a different perspective and your thoughts may align or maybe not align with the reported information.

Here is how it works: an energy field of thought may travel through your mind (from an outside source) and if it resonates with any of your own thoughts it will adhere to the thought in your mind and become yours!

Energy fields are like bubbles of thought that float around—you notice them and decide if you will add

them to our own bank of thoughts or discard them, and whether they are true for you or not – a self-relevance. These are elements of your awareness. A negative bubble of thought can negatively impact your mind and possibly even adhere to a negative thought you may already have about yourself, and if it attaches to an existing thought (such as I am not good enough) then you are more likely to believe that the external thought is true.

Your own mind is the place where you become aware of your thoughts and decide if they are true for you or not. Your mind is where you have awareness. In the change behaviour model, thoughts are at the top of the iceberg, and in order to change behaviour, thoughts need to change. This can be very difficult. First, one would have to ask: Whose thought is this? then How long have I had this thought? and Is it still true today?

Awareness is essential in sorting out the appropriate and inappropriate thoughts. Have you ever found yourself in a situation, maybe when you were a child or a younger person, when someone may have said: Oh, you’re not good enough to attempt that or You’d be mad to take up that challenge? I remember a time when I was about 12 or 13 years old. I’d won a ballroom dancing contest and my name was mentioned in the local newspaper. As I’d never seen my name in print before in a newspaper, I took a red pen and circled it several times. When my father saw this, he told me that I was boasting, and that I should accept the win graciously (and in silence I guess). My immediate thought was I’m not good enough, and I carried that with me for years. That thought would rise to the surface when I was faced with a new challenge that was way outside my comfort zone. It was a thought that became a state for me when, in fact, it had come from my father—so an external, collective thought, transferred to and held on to by me.

That thought rose to the surface when I published

my first book, *The Many Parts of You* (Balboa Press, 2012). After doing all the research and gathering the case studies together, my transcript was edited and then went to the printer to be produced. The boxes arrived at my home, and I sat with the I'm not good enough thought (or state) for quite a while until I allowed another thought (state) to take the executive position.

Have you ever been consumed with thoughts that may have held you back from achieving success? I hope it is becoming clear that if you are to change a behaviour, thoughts around that behaviour must change.

Don't allow your thoughts to destroy the pathway to your goals.

## ATTITUDE

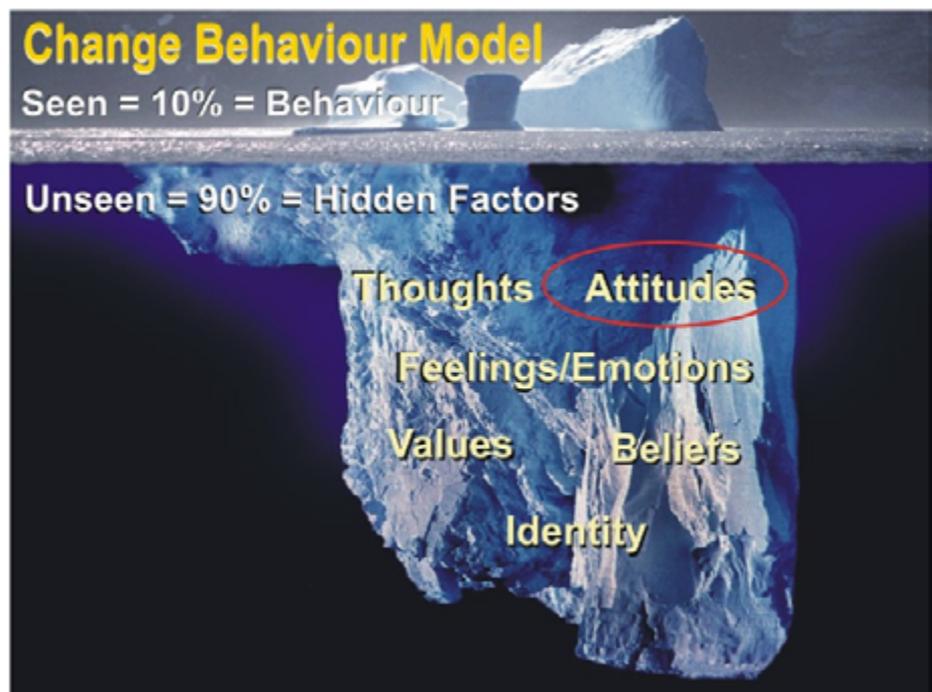
An attitude is an expression of favour or disfavour toward a person, place, thing, or event (Perloff, 2017); Carl Jung defined it as a "readiness of the psyche to act or react in a certain way" (Jung, 1921/1976, p. 414).

Jung observed that attitudes very often come in pairs, one conscious and the other unconscious (Main, 2004). An unconscious attitude can be a past experiences that may once have been supporting, yet in the present reality it is questionable or false, and so the conscious attitude is quite different and even opposite.

To give a personal

example: I once held an attitude toward those who had better qualifications than me as people I wouldn't be able to associate with. This attitude possibly stemmed from my background where neither of my parents were educated to any extent and whose networking circles were limited to family and friends in similar circumstances. As my education expanded and my networks grew, I realised that I had held a conscious attitude toward educated people that was from my past, and the unconscious attitude I retained. My change in conscious attitude shows how an unconscious attitude from the past may not be supported in a current-day conscious attitude.

Unconscious and conscious attitudes are sometimes in alignment and sometimes not. When your attitude is out of alignment (as in my education story) it is referred to as *cognitive dissonance* (Festinger, 1957). Cognitive dissonance is simply a mental battle going on in your mind that doesn't support your motives. It can be experienced as confusing inner mental chatter. In some cases, this battle can disrupt a positive direction toward goals. From an ESI perspective, cognitive dissonance is



when two states are in conflict with each other.

There can also be a form of dissonance when rational and irrational attitudes conflict. This can also interfere with your approach toward your goals.

A rational attitude can be subdivided into *thought* and *feeling* functions that can be either positive or negative (Main, 2004). For example, if you were to rationalise that you'd never be as successful as a high achiever, your attitude toward yourself could be one of "less than", or that the other person you perceived as a high achiever was "better than you".

An irrational attitude can be subdivided into *sensing* and *intuitive* functions. This is when you hold a belief that something may or may not happen, resulting in an attitude that is not based on reality. For example, your attitude toward a particular outcome is based solely on gut feeling with no substantial or reasonable support (e.g., when your teenage child is late home from a party and you become concerned for their safety), or when someone passes a critical comment toward you, you question its validity rather than consider whether the comment is reasonable.

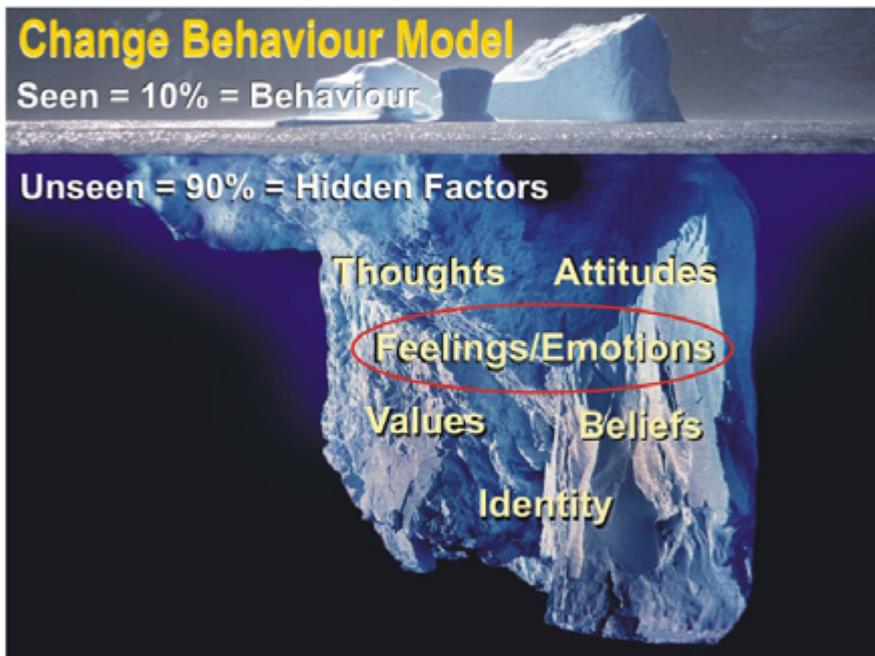
Another example relates to my work in correctional centres in New South Wales, Australia. My rational attitude toward the prisoners is that they are human beings just like me, even though they have chosen a different path and undertaken different behaviours in life to me. We share goals and desires in life that are sometimes the same. On the other hand, an irrational attitude, which would be based on sensing and intuitive functioning, might be a fear that I might find myself in compromising situations with these men despite all the protections and safeguards that I rationally know are in place.

## FEELINGS AND EMOTIONS

While feelings and emotions are terms that are sometimes used interchangeably, there are distinct differences between them.

According to Antonio Damasio (2013), professor of neuroscience at the University of California, feelings are "mental experiences of body states" (p. 143) that arise as the brain interprets emotions, which are themselves physical states arising from the body's responses

to external stimuli. The mental processing of a horrifying event occurs in this order: I am threatened (event), experience fear (emotion) and feel horror (feeling): "Emotions play out in the theatre of the body. Feelings play out in the theatre of the mind" (Damasio, 2003, p. 28).



Emotions and feelings support thoughts, both *organising and disorganising* thoughts; and, along with thoughts, emotions and feelings will directly impact upon our behaviours, actions, and reactions. Thoughts, attitudes, emotions, and feelings are played out through behaviour.

By sharing a personal experience, it may encourage you to explore your emotional past as well.

I remember the feelings that my mother and father held toward people of different cultures. Although very conservative, these feelings were true for them. My parents were British, but I was born and grew up in Australia in a location with very few "foreigners" in our neighbourhood. Conversely, my life today is surrounded by people from all over the world; I have travelled extensively overseas, and the Internet connects me to thousands of culturally different people. I believe that if I were to carry the feelings and emotions of my parents' attitude, then I would certainly be unsuccessful in my life and in my business. This is not to say that my parents were not good people, only that their world was different to mine. In their world emotions were conservative and in my world my emotions and feelings toward success stretch to infinity!

I am excited when I think of the possibilities of success and continue to marvel at how I feel when my dreams can be lived in the expanse of this world. My world feels

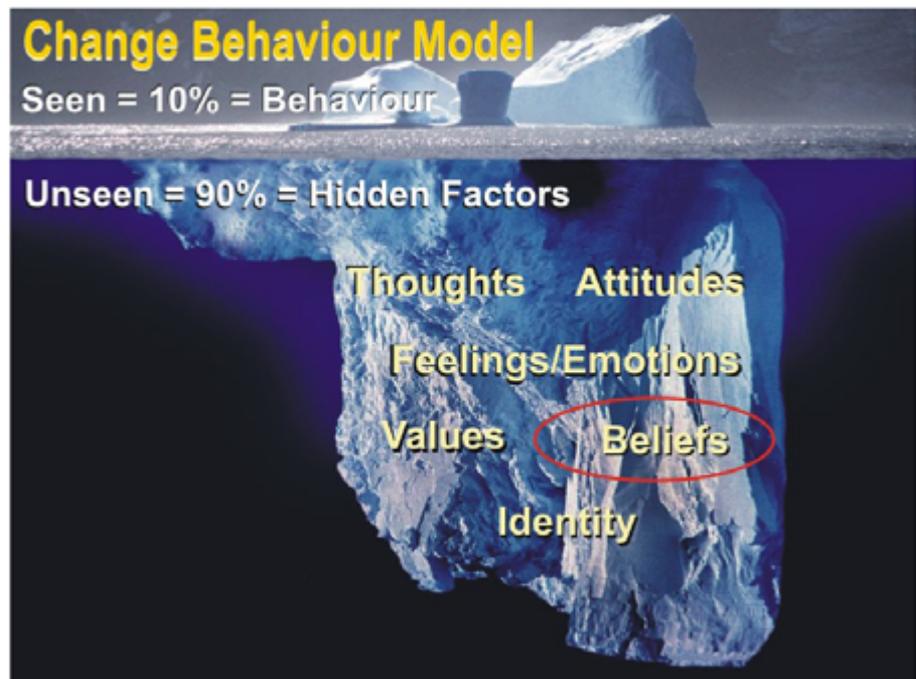
universal. My parents' world was limited to their local community.

## BELIEFS

*Once upon a time there was a princess who lived in a beautiful castle and she was waiting for her prince to come . . .*

Can you remember, as a small child, how stories from books and your own imagination impacted upon your beliefs. According to Henry Epps (2012, p. 20), mainstream psychology has "traditionally treated belief as if it were the simplest form of mental representation and therefore one of the building blocks of conscious thought". Some beliefs are intrinsic, formed during early developmental years. Some of these beliefs remain through to our adult years, some are changed or altered at various periods of our life, and some hold true to our identity while others do not.

The belief that a princess waits for her prince is a belief I let go of many years ago. Today princes can be found in public bars. Mary Donaldson from



Tasmania, Australia, met Frederick, the Crown Prince of Denmark, in a pub in Sydney during the 2000 Olympics; she married her prince and is now Princess Mary of Denmark.

To hold a belief implies the existence of mental states and intentionality: if you believe you will be successful, you set an intention to succeed.

Beliefs can be divided into *core* beliefs—those that are actively thought about—and *dispositional* beliefs—those that are ascribed to someone who has not thought about the issue.

A simple example of a dispositional belief is this: in response to the question “Do you believe that tigers wear pink pyjamas?” a person might assert, “No they don’t!” despite never having thought about that situation before.

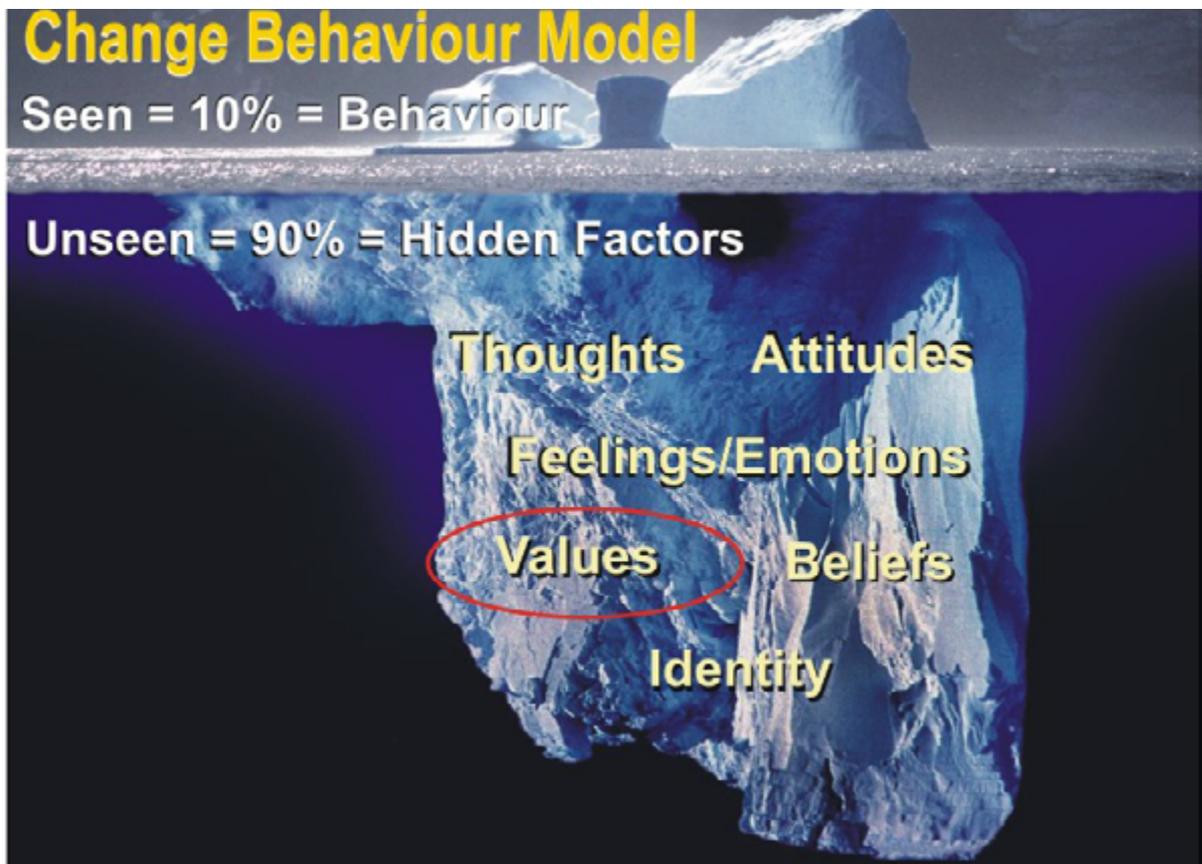
A belief is a mental state that resides very closely

with our attitudes toward different people, situations, places, or events. Beliefs are represented in the mind as sentence-like constructs and can contribute to your internal dialogue that supports or inhibits who you are and what your goals may be (Epps, 2012).

## VALUES

Values reflect our sense of right and wrong or what “ought” to be. Is it appropriate to suggest that values should be changed? Why would you want to change a value that you might hold dear, such as honesty? It is reasonable to assume that you would not want to change that value at all.

Let’s look more closely at values. Values can be ideals like “equal rights for all”, “excellence deserves admiration”, or “people should be treated with respect and dignity”. If these are values you would live by, it



can be upsetting if someone in your family or circle of friends challenges them. Values are important as they can influence your beliefs, feelings and emotions, thoughts and attitudes and, in turn, influence your behaviour.

For example: if you value equal rights for all and you work in an organisation where managers are treated much better than workers, you may form the attitude that the company is an unfair place to work. Consequently, you may not perform well, or you might leave the organisation. If the company had a more egalitarian policy, however, your attitude and behaviours would be more positive because there is a match—a congruence—between your values and the organisation's values.

Values can form in response or in relation to external influences: the way that you were brought up, your parents' values, your peers, and others. Some of these values, although formed in childhood, will still be true for you today, but some values may have changed over time. Life experiences, and the people you associate with, assist to form values, but also to confirm or change values over time. Enmeshed in your goals are your values. These may include values associated with yourself and those values you extend to your external world.

If, for example, your goal is to achieve high earnings, but your values toward money are insignificant or resistant, then there is an incongruence. From a brain perspective, there would be cognitive dissonance—a battle between states. In a situation like this it is likely that the value will be the stronger state (i.e., low value toward money), therefore the goal may be disrupted or not achieved. This requires adjustment of the goal or of the value around money. The factors that contribute to the change will depend on the individual. Which would it be for you? Values are often entwined with beliefs that were formed in the past and might be irrelevant today.

To resolve this dilemma, it would be necessary to reconsider the value given to money, and to ask the following questions:

- Is it important to you to earn high dollars from your career?
- Are your current earnings sufficient, or would you like more?
- If your goal is associated with money, is your value around money limiting your ability to achieve your goal?

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## CONCLUSION

As I said at the start, significant change in behaviour begins with looking at your identity: who you are and how you identify yourself. Identity and behaviour must be in congruence. If you find yourself striving yet not fully achieving, for example, it could be that a state developed at a young age is holding you back, such as a false attitude or belief, or any other factor. All these factors are set out in the ESI change behaviour model.

By starting at the base of this model, with identity, it becomes clear that once you know who you are, or who you see yourself being, the other key factors begin to change in a domino effect.

This model has been used in face-to-face counselling, coaching, and training in corporate contexts and with prisoners with great success. It demonstrates how the limbic region will hang onto beliefs, traumas, and incidents from the past, where they may lie dormant, but once triggered, will rise to the surface and confront your identity.

With a strong sense of self, and working through the factors of the model—engaging a whole-of-brain activity—identification of what adjustments are needed for realignment is possible.

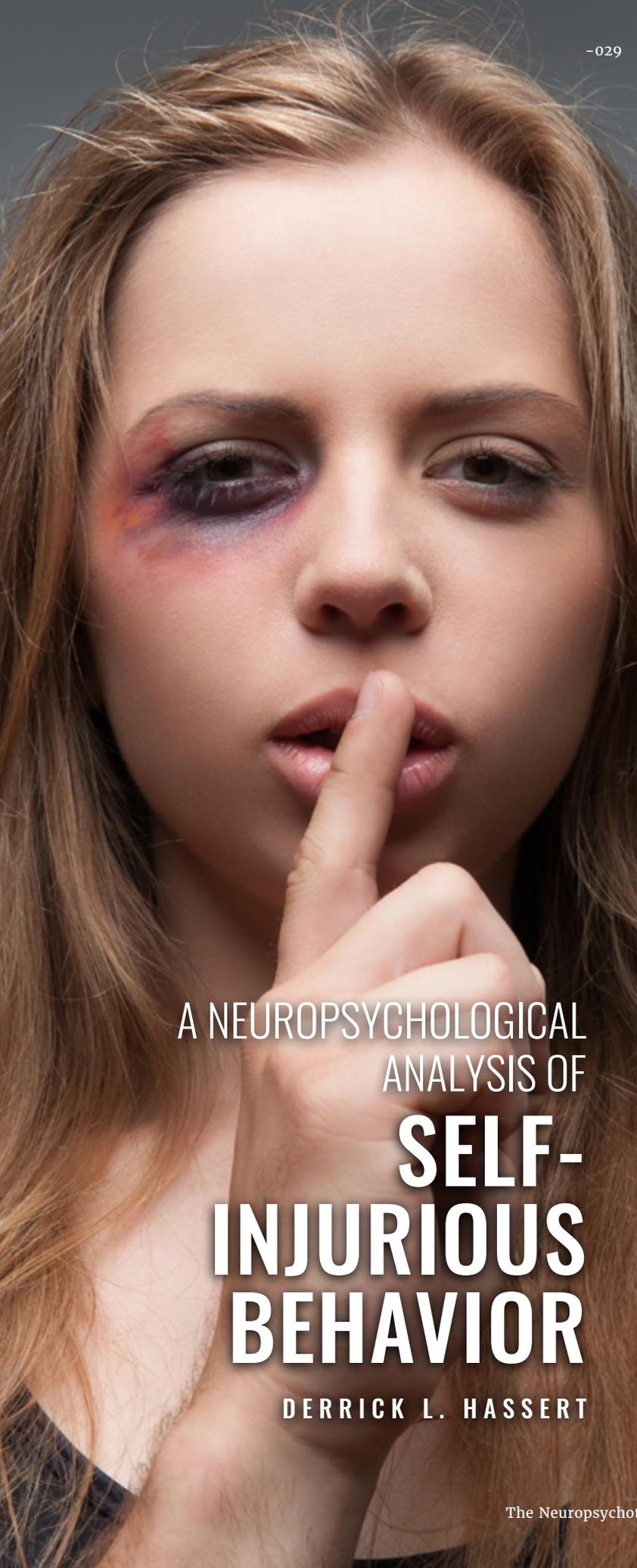
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## BIOGRAPHY



**Jan Sky** is a hypnotherapist, counsellor, author, and speaker. Jan has over 20 years experience working with people to bring about change to their lives, specialising in stress management, anxiety, and weight loss as well as building confidence and self-esteem. She holds a Diploma of Counselling Skills; Diploma of Clinical Hypnotherapy; Graduate Certificate in Sexual Health (Sydney University) and is a registered professional member of ASCH. She is the author of *The Many Parts Of You: Understanding the Puzzle of Your Behaviour* (2012, Balboa Press), where she reveals how to discover the many part of ourselves, and shares the ESI (Executive State Identification) methodology that she developed to help people reconnect to their true selves. Jan is also a highly sought-after speaker and presenter.



A NEUROPSYCHOLOGICAL  
ANALYSIS OF  
**SELF-  
INJURIOUS  
BEHAVIOR**

DERRICK L. HASSERT

A

Attempting a neuropsychological conceptualization of self-harm is admittedly a tentative endeavor, given the variety of behaviors that could be considered and the psychological interpretations of such varied activities. When clinicians first hear about or directly experience patients that engage in self-harm, the initial response can be a mixture of alarm and confusion. Contemplating the putative neurological underpinnings of such behavior can potentially increase our ability to conceptualize self-harm as an intelligible element of human experience, albeit one that is certainly both paradoxical and troubling. In so doing, the hope is that such conceptualizations can be shared in a manner that opens up a productive dialogue between patient and therapist. Enabling patients to grasp the neuropsychological foundation and functional aspects of self-harm could help provide greater clarity and insight into the broader reasons for their actions. This, in turn, could provide a clear basis for the focus and direction

of treatment. While it may initially be difficult to comprehend why someone would voluntarily cause bodily injury to themselves, consideration of the possible psychological functions of the behavior in these populations, as well as the developmental neuropsychology underlying such behavior, may provide an explanatory framework that links development, functional neuroanatomy, affect regulation, and therapeutic focus.

Why do people self-injure? From a psychological perspective in general (and from psychodynamic and behavioral perspectives respectively), self-injurious behavior is assumed to have a rationale, in that the behavior serves a purpose and has a definite function or functions. There are elements of the behavior that, either in the act itself, or in the preparation for the act, or in the aftermath of the act, have distinctly reinforcing



properties or purposeful elements for the individual. From both psychodynamic and behavioral perspectives, there may also be reinforcing aspects of the behavior that the individual isn't explicitly aware of and yet contribute to the performance and persistence of the behavior. As such, a single self-harm behavior may be over-determined, having multiple interconnected lines of causation leading to it as well as multiple consequences leading from it, making it a go-to behavior (or behavior of choice) on the part of the individual (Suyemoto, 1998). While a myriad of possible reasons for self-injury have been posited, a recent meta-analysis of patient responses and interviews by Edmondson, Brennan, and House (2016) revealed a pattern that broadly supports several main psychological functions, perhaps most importantly the capacity of the behavior to assist in regulating emotions. Other reasons for the behavior include exertion of influence on others by engaging in the behavior, punishment of the self or punishment of someone else, coping with dissociative feelings, enjoying the sensations derived from the experience, and averting an actual suicide attempt by engaging in self-injurious actions. Arguably, many of the aforementioned reasons may overlap and interact with one another. For example, the feelings of pain perceived as punishment may be tolerated or enjoyed if the individual is self-critical and view themselves worthy of punishment (Fox, O'Sullivan, Wang, & Hooley, in press); equally, averting a suicide attempt may be directly related to the ability of the behavior to manage strong negative affect that would otherwise be done away with by suicide. A subsequent meta-analysis carried out by Taylor et al. (2018) found comparable reasons reported for self-injury, with the intrapersonal function of regulating distressing or negative emotional states being most prevalent, thus supporting an affect-regulatory function of the behavior (Bresin, Kling, & Verona, 2018). Given the consensus that self-injury is utilized expressly to regulate negative affect, and that

it appears to possess the capacity to do so, it is this function that will be examined in more detail from a neuropsychological perspective.

### **EMOTIONAL PAIN AND PHYSICAL PAIN: LITTLE DIFFERENCE TO THE BRAIN**

First and foremost, pain serves a highly adaptive role in the life of an organism: it alerts the individual to external and internal situations that are likely to endanger the safety and longevity of the organism. The subjective experience of pain is brought about by neurophysiological activity—all pain is quite literally “in your head” even if its origins occur outside of the brain. When an individual experiences pain, the fight-or-flight response from the sympathetic nervous system is often invoked, mobilizing the organism to take action to stop whatever situation is producing the painful experience. A rather basic example of a painful experience is that of placing your hand on a hot

stove or sharp object: tissue damage detected by free nerve endings is relayed via A-delta fibers to the spine (producing a reflexive withdrawal of the hand) and then to the thalamus and various regions of the brain, including subcortical limbic systems and areas of the cortex devoted to bodily representation and motivation and emotion. Quite instinctively and naturally pain tells us which behaviors to stop and which to avoid in order to keep us safe and alive. Self-injury is therefore quite counterintuitive.

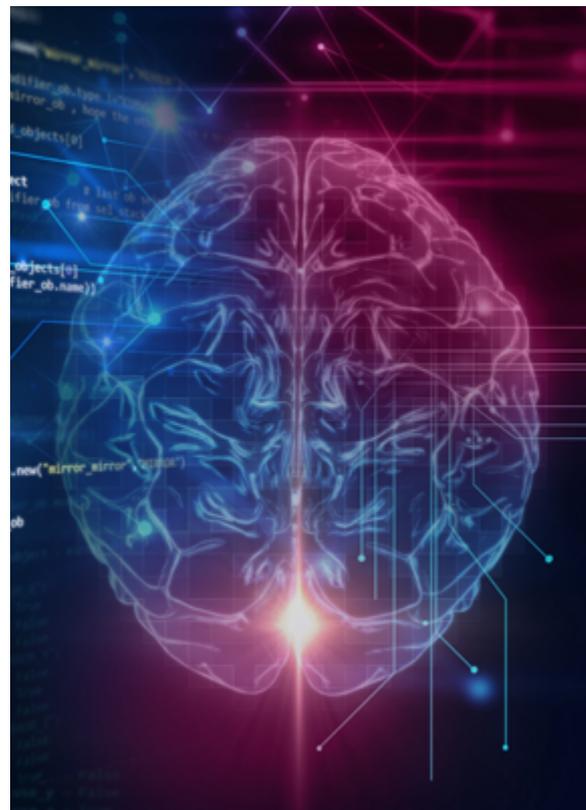
Emotional pain can be confusing from a psychological and behavioral standpoint, given that the situations producing the pain are no longer readily identifiable and therefore more difficult to avoid, escape, or control. For many who self-injure, the pain caused by self-inflicted damage to body tissue is apparently seen as preferable to the pain that comes from uncertainty in relationships (*Will this person leave me?/Does this person love me?*) or from a real or perceived loss in



relationships (*This person has left me/This person does not love me*). Adolescents appear to be at a greater risk of self-harming compared to adults, with adolescent females having the greatest risk (Morgan et al., 2017; Sornberger, Heath, Toste, & McLouth, 2012). Being bullied and/or being a sexual minority also increases the likelihood of self-harm during adolescence (DeCamp & Bakken, 2016). Within the adult population, self-harm behaviors are most prevalent among those meeting the diagnostic criteria for depression or borderline personality disorder. In both adolescent and adult populations, chief among the reasons for self-harm are feelings of low self-worth and fragile self-identity, both of which can be heightened by social exclusion and social rejection. In adolescents this is understandable from a developmental perspective, with this period arguably being quite tumultuous both in terms of the subjective experience of emotion and emotion regulation.

Adolescence is a time of role exploration that may be accompanied by role confusion and an evolving sense of self within a social environment; being bullied during this developmental period is likely to exacerbate any feelings of doubt and self-judgement. Low self-worth may be tied to self-injury as a form of self-punishment due to feeling that in some instances such pain is deserved. While self-punishment may be functionally linked to feelings of low self-worth, a poor sense of self may also be directly related to an inability to cope with strong emotional states induced by social rejection or social exclusion. Particularly among those diagnosed with borderline personality disorder, perceived rejection or abandonment by others can throw an already precarious sense of self into more pronounced disarray due to emotional pain that is experienced as unmanageable. The desire to stop overwhelming emotional pain of this sort ("psychache") is often cited as a reason for attempting suicide (Shneidman, 2005). A possible window into the neuropsychological rationale

behind self-injury has emerged from studies into the neurological basis of pain itself, with neuroimaging studies showing that emotional pain and pain with a basis in tissue damage have similar neuroanatomical meeting points within subcortical structures and the cerebral cortex. In an fMRI study, Eisenberger, Lieberman, and Williams (2003) examined the effects of simulated social exclusion (via interaction in a group video game) while the participants' brain activity was monitored. When intentionally excluded from the game, the anterior cingulate cortex was significantly more active, with self-reported levels of distress correlated highly with activation of the anterior cingulate as well. Perhaps a more telling and provocative finding is that revealed in a study by Kross, Berman, Mischel, Smith, and Wager (2010) where individuals who had suffered recent romantic breakups, when viewing photos of their ex-partner, exhibited increased activity in regions of their brain that were also activated by physical pain



induced by painful temperature increases. Noteworthy is that the participants had experienced recent interpersonal rejection and that the stimuli were visual representations of the individuals who had rejected them. The authors noted that brain areas activated by their recollection of and reflection upon that rejection correlated significantly with brain regions activated by physically painful heat and included the thalamus, the insula, the dorsal anterior cingulate cortex, and the secondary somatosensory cortex:

The brain systems that underlie social rejection developed by co-opting brain circuits that support the affective component of physical pain. The current findings substantively extend these views by demonstrating that social rejection and physical pain are similar not only in that they are both distressing [but in that] they share a common representation in somatosensory brain systems as well. (Kross et al., 2010, p. 6273)

This strengthens the view that emotional pain, because it shares a very similar neurological architecture and occupies much of the same neurological real estate as physical pain, could be perceived as life-threatening to an organism and therefore needs to be taken just as seriously as physical pain (Eisenberger, 2012).

In Fonagy, Gergely, Jurist, and Target's (2002) model of the development of mentalization and Schore's (1994) developmental neurobiological model of human cognitive and affective functioning, emotion regulation is intricately tied to and dependent upon the development of the cognitive and neurological representation of the self. In early life, the infant experiences the strong emotions brought about by hunger, cold, and physical pain. Through these experiences a child learns that an external human force, in the form of the primary caregiver, will predictably and reliably assist them in interpreting and regulating these strong emotional states, especially negative affect states. Physical,



emotional, and verbal reassurance will be provided for negative affective states, and nonverbal and verbal encouragement, and perhaps appropriate containment, will be provided for positive affective states such as joy and excitement. Through these interactions, attachment patterns are formed with the primary caregiver and feelings of security are established (Bowlby, 1988; Horney, 1950). In time, and through experience-dependent learning and development, the child is able to internalize the abilities and capacities modeled by the adult caregiver in regulating emotional states and responses. This internalization of the affect-regulating capacity of the caregiver allows for the development of the self as an affect-experiencing and affect-regulating entity separate from the primary caregiver. This model is echoed in the model of borderline personality traits presented by Meares (2012) linking the disorder to an insufficiently developed sense of self, with related problems in the regulation of negative affect, where

stressful events and interpersonal challenges are viewed apart from a personal and interpersonal narrative, being seen as arbitrary and uncontrollable occurrences. In several neurobiological models of self-concept and affect-regulation (particularly those of Schore and Meares), there is an emphasis on the regulatory role of the frontal cortical structures linked to the limbic system structures implicated in emotional responses to external and internal stimuli.

When the neurological representation or conceptualization of the self has not been developed to the point where significant emotional reactions can be regulated, withstood, and constructively utilized, the experience of these strong emotions may be overwhelming and likely threatening to the very nature of the self and the well-being of the individual. Essentially, there is no overriding self-structure in which to contextualize these painful emotional experiences and few mature psychological defenses that allow these emotional states to be experienced as palatable and surmountable. Neurologically, the ability to internally tolerate or regulate emotional responses would then be tied to the strength or stability of the individual's sense of self. Indeed, in the neurodevelopmental model proposed by Schore (1994), the individual's sense of self is tied intricately to the internalization of the emotion-regulating capacities of the primary caregiver. Caregivers who negate or invalidate the emotional displays of their children fail to provide any point of reference for the internalization of this capacity for affect regulation, leaving the child with the confusing dual perspective that their emotions are both illegitimate and unmanageable: they can't have the emotion, and if they do have the emotion they are told they shouldn't have it. Such responses to emotional displays leave the child with little or no idea as to what to do with emotions when they inevitably occur.

When working with patients who display an

inability to manage, contain, and otherwise make sense of strong negative emotions, a common refrain often heard is: My goal is to not have any emotions at all. For human beings this is an unattainable and unrealistic goal, however. Affective neuroscience and psychodynamic theory are in general agreement in asserting that, arguably, emotions are the foundational core of human experience and consciousness (see Damasio, 1999; Panksepp, 1998; Schore, 1994; Solms, 2013). Furthermore, paraphrasing Freud, suppression of emotion is not an adaptive strategy in the long term, given that emotions always re-emerge in some other form. In the individual who has never learned to tolerate, regulate, or constructively utilize emotions, and perhaps has even learned either from experience or directly via spoken rules that emotions are dangerous things to have, the experiencing of any form of emotional pain can understandably be nearly unbearable. The emotional pain, the psychache, is perceived as a very real, oppressive, and quite threatening phenomenon because it is harnessing the same neurological structures that encode physical damage and existential threat, and there is no conceivable way for the individual to defend against it given the current limitations in processing of emotions. A fairly logical—perhaps even reasonable—solution to this problem, from the stance of the one experiencing this uncontrollable and persistent pain, would be to introduce a painful experience that was fully understood and fully controllable. This is partially in line with the classical gate theory of pain proposed by Melzack and Wall (1965), wherein other sensory signals (such as touch and pressure) occurring at the site of tissue injury can alter the experience of the pain caused by the injury. Indeed, if this concrete and predictable physical pain were to overlap neurologically with the unpredictable emotional pain, it could perhaps have the ability to overwrite the emotional pain, supplanting it at least temporarily. One of the perceived benefits of inducing physical pain is that the physical pain may

not only unseat the emotional pain temporarily, but also that the physical pain has a discernible beginning and end, providing not only a clear sense of control but also a strong sense of relief when the pain subsides. In line with the respective theorizing of Fonagy et al. (2002), Mearns (2012), and Schore (1994) linking deficiencies in self-concept with deficiencies in the self-regulation of affect, limbic system structures such as the anterior cingulate cortex and the amygdala tend to be hyperactive in individuals diagnosed with borderline personality disorder (Niedtfeld, Schulze, et al., 2010; Plener, Bubalo, Fladung, Ludolph, & Lulé, 2012), and activation of these brain regions has been found to decrease after the experience of painful physical stimuli (Niedtfeld, Kirsch, et al., 2012; Niedtfeld, Schulze, et al., 2010; Schmahl et al., 2006), meaning that "pain might result in increased inhibitory interactions (i.e., negative coupling) between neural areas associated with the processing of emotions and brain regions supporting the regulation of negative affect" (Niedtfeld, Kirsch, et al., 2012, p. 6).

If self-injury can prevent an individual from carrying out a full-blown suicide attempt by containing or overriding emotional pain, it could perhaps be reasoned that the self-injurious behavior is therefore preferable to such an act. However, it has been found that over time the practice of self-injury may reduce resistance to engaging in suicidal behavior—possibly by reducing the barriers to engaging in such behavior (given that the behavior has been consistently reinforced and ingrained in the circuitry of the basal ganglia) and/or due to escalation of the injurious behaviors needed to produce the requisite feelings that have come to be expected as necessary to reduce emotional pain—with the result that "individuals who self-injure with an increased capacity to endure pain may be at an increased risk for negative outcomes" (McCoy, Fremouw, & McNeil, 2010, p. 376). As noted above, one of the goals of self-injury is arguably to supplant and/or reduce emotional

pain, the psychache frequently noted as a reason for attempting suicide. The increased tolerance to physical pain created by repeated self-injury would result in the behavior producing far less pain than the individual desires, however, leaving little to reduce or cover the uncontrollable emotional pain. Self-injury, subjectively one of the most useful tools to temporarily mask the psychache, would then effectively be taken from the suffering patient's tools for affect control and they might therefore consider there was no other option available to them to alleviate their emotional suffering than suicide.

## **ADDRESSING SELF-INJURY THROUGH DEVELOPING THE SELF**

A number of different therapeutic approaches have been utilized to treat individuals who engage in self-injurious behavior, especially adults diagnosed with borderline personality disorder. In reflecting on the finding that self-injury appears to neurobiologically inhibit areas associated with negative affect in such individuals, Niedtfeld, Kirsch, et al. (2012, p. 7) comment that the "implications for psychotherapy of borderline personality disorder can be deduced, accentuating the importance of distress tolerance strategies substituting dysfunctional attempts to diminish emotional tension. Additionally, it seems crucial to strengthen emotion regulation strategies." Indeed, current treatments that have shown to be effective in reducing the occurrence of such behaviors appear to address underlying psychological difficulties tied to the primary functions of self-injury, specifically affect regulation. Successful treatment with dialectical behavior therapy (DBT) — perhaps one of the best-known therapeutic approaches for borderline personality disorder — includes the development of affect tolerance and the adaptive experiencing and utilization of emotional information as key components of the therapy (Chapman, 2006).



DBT has also been found to adaptively decrease the hyperactivity of the amygdala in patients with borderline personality disorder (Goodman et al., 2014) in a manner that may be directly related to the ability of self-injury to mediate the response of the amygdala (Niedtfeld, Schmitt, et al., 2017). Through the development of affect tolerance and the integration of emotional information into the life of the individual, the ability to cope with emotional pain is increased and recourse to self-injury is therefore likely to be decreased. Similarly, and yet from a different theoretical perspective, the psychodynamic therapies have also been found to successfully treat the symptoms of borderline personality disorder, including reducing self-injurious behaviors (see Levy, Yeomans, & Diamond, 2007 for a review), and have been found to decrease amygdala hyperactivity in depressed patients (Buchheim et al., 2012), a finding that fits both with the neuropsychological evidence and theorizing for borderline personality disorder and its links to self-injury.

Self-harm, albeit dysfunctional as a long-term

solution to intrapsychic pain, is a behavior that the individual has included in their repertoire to regulate, or eliminate, negative emotional experiences and compensate for an inability to do so in a psychological manner. Affect regulation then is not so much a strategy as a necessary and integral component of the healthy development of a sense of self, which is normally rooted in the child's developing or developed capacity to internalize a caregiver's ability to regulate and guide emotions. Indeed, it isn't simply tolerance or regulation of emotions that is key here, but rather it is the appropriate utilization of affective states—which are ultimately unavoidable—that ideally develops within psychotherapy as an integral component of a more fully developed sense of self. Psychodynamically oriented and attachment-based psychotherapies can utilize the psychotherapeutic relationship as a safe place to explore affectively charged material in a supportive and validating way distinct from the negating, invalidating, absent, or perhaps even abusive way in which emotions may have been addressed by caregivers during critical

stages in development (Costello, 2013).

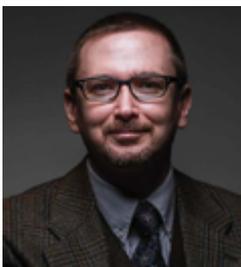
From the perspective of the therapist working with individuals with a history of parental neglect, emotional trauma, or trauma of an interpersonal nature, helping the patient move toward a more fully developed sense of self will be a key component of the therapeutic process. Indeed, for such individuals the therapeutic relationship (as well as the context in which it occurs) may be one of the most stable frameworks and emotionally affirming interpersonal connections that the person may be exposed to. As such, it can be a place where the therapist can mirror the importance of the patient's emotional life and model ways of adaptively responding to its significance, affirming the centrality of the patient's emotional core. Within such a supportive framework and relationship, appreciating and exploring the neurological representations of pain and emotional/feeling states is a potential way to productively assist the individual to remove what is not wanted and integrate something beneficial and affirming into the interpersonal, psychological, and emotional space that is wanted.

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# *Grief & Loss in Young People:*

A NEUROSCIENCE PERSPECTIVE

KAREN FERRY

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## DEVELOPMENT BACKGROUND

Benson the Boxer was developed as a psychoeducational tool to assist children and young people deal with situations of loss and to facilitate pathways towards healing.

Too often life throws curve balls, and unfortunate, often traumatic, situations occur. Sadly, children are never immune, and they will inevitably experience situations where their world is completely turned upside down. Statistics reveal that by the age of sixteen, 68% of children will experience at least one extraordinary event that is frightening and possibly life-threatening (Everstine & Everstine, 2013).

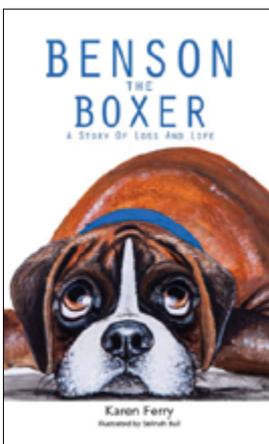
The clinical research shows that children exposed to loss, grief, and trauma experience neurobiological changes in emotions, thinking patterns, and behaviour (Howard, 2013; Rossouw, 2014). Many instances of loss have lasting consequences, particularly if a child physically witnesses or has direct exposure to the traumatic event. If the trauma involves the death of a family member or loved one, particularly when the child had a close relationship to the person, the trauma on the brain is even more intense (Joshi, Lewin, & O'Donnell, 2005). Further, that trauma is even more severe, with greater negative reactions, if the loss occurs in a place a child once considered safe (Joshi et al., 2005). Other contributing concerns include situations where children have experienced previous or repeated situations of loss, those who live in dysfunctional family

environments where nurture and support is minimal, and children without other significant caring people in their lives.

We like to think that children are resilient and “get over” a loss quickly. And many do. However, a Swedish study by Josefin Sveen and colleagues at Uppsala University found that more than half of the children surveyed (n = 174) had not worked through their grief 2–9 years after the death of a sibling (Sveen, Eilegård, Steineck, & Kreicbergs, 2014). And if children experience the death of a parent before the age of 19, there is a significant increase in anxiety and depression in adulthood (Luecken, 2008).

Experiencing loss is inevitable: loved ones die; divorce and separation occur all too frequently; most people move house, change schools, and suffer illness and accidents sometime in their lives; and many experience natural disasters, war, and political unrest resulting in displacement and the loss of childhood innocence and joy. All these situations can create intense emotional pain for a child and trigger activation of implicit memory systems that dominate other brain activities, ensuring that the distressing, fear-filled memories are deeply encoded in the brain in an effort to protect the individual (Noel, Chambers, McGrath, Klein, & Stewart, 2012).

The brain processes incoming sensory signals from the moment we are born and throughout our life continues to form intrinsic memories that are pivotal to



*Benson the Boxer: A Story of Loss and Life* by Karen Ferry. Cortxion, Upper Beaconsfield, Victoria, Australia, 2018, 82 pages; illustrated by Selinah Bull. Paperback, \$19.95. ISBN 978-0-648-3275-09

*Benson the Boxer Program for Loss and Grief* by Karen Ferry. Cortxion, Upper Beaconsfield, Victoria, Australia, 2018, 200 pages; illustrated by Selinah Bull. Paperback, \$39.14. ISBN 978-0-648-3275-16



the development of behaviour and the way we adapt to our environment (Perry & Szalavitz, 2006). Emotions are powerful in memory formation. Family environments of nurture, enjoyment and safety all form positive memories in a child. Experiences that are painful and frightening are especially memorable because the brain has an instinctive reaction to protect and feel safe. When negative experiences occur (i.e., things that are painful, sad, or frightening), we adopt certain behaviours to avoid the distress. Distress avoidance is a fundamental psychological need (Grawe, 2007), and

in order to fulfil it our behaviours shift to maximise pleasurable experiences and feel safe (Grawe, 2007)

The release of the neurochemical dopamine is closely linked to our need for pleasure and motivates us to turn to behaviours that bring some relief from the anxiety or sadness we may be experiencing (Grawe, 2007). However, dopamine is released both for behaviours that are beneficial, such as play, exercise, connecting with others, and behaviours that can have long-term detrimental effects on our well-being, such as taking stimulants or pain suppressants, withdrawing, or hiding away (Grawe, 2007; Rossouw, 2014).

It is important, therefore, to help a child address and deal with painful memories, or subsequent reminders of the loss and traumatic event are likely to bring about the same physiological and psychological fear reactions as occurred when the event first happened (Cohen, Mannarino, & Deblinger, 2017; Linden & Rutkowski, 2013; Medina, 2014). When loss is

not addressed, the anxiety and fear a child experiences can become generalised and indiscriminate, resulting in the same level of fear taking over even when there is an inherently innocuous reminder of the traumatic incident (Cohen et al., 2006). New fears that have no apparent relationship to the original trauma commonly intrude (Cohen et al., 2017; Linden & Rutkowski, 2013). Hypervigilance and a foreboding sense of impending doom begin to impinge on a child's ability to engage in normal developmental activities. This can lead to

anxiety-driven protection behaviours, so that the child is unable to manage even low-intensity stress in future situations (Cohen et al., 2017, Howard, 2013). In order to escape the pain of negative experiences, it is common for a child to either disassociate and withdraw, or they may display hyperaroused, demanding, and disinhibited behaviours (Howard, 2013). Both reactions can have very negative psychosocial repercussions, but if the behaviours are repeated frequently then behavioural schemas are forged and embedded in the brain, setting patterns for how stressful situations are managed in the future.

### **THE BENEFITS OF USING BENSON THE BOXER AS A PSYCHOEDUCATIONAL TOOL**

When a child presents in therapy after experiencing a significant loss, a cognitive psychopathology approach is commonly taken to treat the child's fear-based

thoughts and responses. This top-down approach assumes the child has effective cognitive ability to address unhelpful thoughts and behaviours. However, children suffering loss and trauma are generally anxious, fearful, and a little confused (Linden, & Rutkowski, 2013). And therapy itself can be fearful! A child being told they are going to "see someone" for treatment after a loss (be that a loss due to a death, parental divorce, or any change that has resulted in anxiety) can believe there something wrong with them. Most children are uncertain what "treatment" or "therapy" is about. The environment of the therapy room is unfamiliar and the therapist unknown, all adding to the fear and anxiety the child is presently experiencing.

Before any therapy begins, the child's limbic system must be calmed by ensuring the child feels relaxed, comfortable, valued, and safe. A positive therapeutic alliance begins with a smile, displaying warmth and showing genuine care that are all part of building a



positive rapport with a child. But what next?

Many therapists feel totally out of their depth when counselling children. A child's attention span is short, they can be fidgety and restless, or they may not "gel" with the therapist: many adults are keenly aware that children are not shy when it comes to expressing their dislike for a particular place or person. Fear may result in the child clamming up, or not being able to provide any more than an occasional yes or no, a nod or a grunt.

Storytelling and reading to a child are good ways for the therapist to engage with the child, right brain to right brain, and hold their interest (Rossouw, 2012). Children enjoy the stories and they can help create a positive therapeutic alliance as a framework of trust is generated (Geldard, Geldard, & Foo, 2013). Engaging in storytelling together inadvertently fulfils some vital psychological needs, in particular, the need to feel connection with the therapist, so that a child feels safe in sharing their vulnerabilities, and provides opportunities to build strong attachments (Allison & Rossouw 2013).

An equally important psychological need is providing the child with a sense of control. This can be achieved during the story when the therapist (the reader) invites the child to turn the pages, hold the book, point to various features in the pictures, choose to hold a soft toy while listening, or simply to choose the part they would like to read. The story of Benson provides orientation and can help give some insight into the way a child is feeling about their own personal situation of loss. Experiential evidence has shown that reading *Benson the Boxer* to a child has been the catalyst for a cathartic experience due to the normalizing of emotions the individual may be feeling. Interestingly, this has also been helpful for adults.

The *Benson the Boxer* story can help calm distress and anxiety surrounding situations of childhood loss. The artwork immediately captures a child's attention, and as the story progresses there is a sense of

understanding of what grief and emotional pain look like, normalizing the child's behavioural reactions. It acknowledges and names the emotions associated with grief and sadness and outlines the neuroscience behind the protection behaviours a child may have adopted.

The story of Benson's loss and grief provides children with opportunities to share their own personal journey of loss as they identify with Benson's pain. Engaging a child in a story uses a bottom-up approach, down-regulating the stress response, activating predominantly the right frontal cortex, the primary area affected by the emotional or social pain commonly associated with loss (Dahlitz, 2017). The stories are accompanied by bright, colourful, and engaging illustrations that enhance the activation of positive memories by facilitating new memory networks. *Benson the Boxer: A Story of Loss and Life* identifies with the loss a child is experiencing, allowing their own personal grief to unfold.

## THE STORYBOOK

*Benson the Boxer: A Story of Loss and Life* is a beautifully illustrated picture book that tells the story of Benson, a boxer dog, and the loss of his best friend, Lucy Labrador. As a psychoeducational tool, the book is suitable for helping a child or young person through many situations of loss, be that the death of a pet or loved one, an accident that results in a disability, an illness, or maybe a divorce or separation. Within the framework of the story, the author has addressed how the brain reacts to situations of loss and grief and woven in strategies for moving forward. Therapists, teachers, and parents will similarly find within the story framework appropriate questions to ask and how to talk to an individual who is grieving the loss of a loved one. Every page in the *Benson the Boxer* storybook provides opportunities for those working with children to ask

questions, explore understandings, identify meanings, and observe a child's reactions. The therapist can unobtrusively explore the child's feelings surrounding their personal loss, help to name emotions, and then assist the child in identifying how that feels inside their body. Older children begin to relate, not just to death, but to other areas of loss that have affected them and those close to them.

## PROGRAM MANUAL AND WORKSHEETS

The manual *Benson the Boxer Program for Loss and Grief* complements the storybook and is designed to provide guidance for clinicians, educators, parents and other caregivers, and to provide insight into the neuroscience surrounding situations of loss, grief and trauma. It is filled with tips and best-practice ideas for any adult who works with children and young people. The attractive and colourful activities are designed not to be difficult or challenging but to be discussion starters that can be developed. They provide unobtrusive and non-threatening ways of talking through emotions surrounding loss, building right-brain to right-brain connections and opening neural pathways. There is a deliberate attempt to focus firstly on Benson's emotions and behavioural responses, then to transfer the focus to the child. This approach is an attempt to normalize what a child is feeling as they sense a partnership with Benson in their shared experience of grief. Identifying with Benson's loss and his accompanying emotional and physical pain helps a child verbally express his or her own personal feelings. This is particularly relevant and useful for a child who may find the words difficult to express, perhaps young children, or children with a disability, or children who just can't find the words to express their grief (Cohen, Mannarino, & Deblinger, 2006; Linden & Rutkowski, 2013).

The activities are varied. They are not set to benchmark standards as would be found in a classroom

setting. This is purposeful! It is imperative to ensure children don't feel they are in a classroom with just another worksheet to complete. Creative therapists, educators, and parents can expand on the activities if they wish, or use them as a starting point for further discussion. The worksheets encourage the child to identify, acknowledge, address, and name their feelings of loss. There are ideas for moving forward from that feeling of being stuck or trapped that is a common experience after a loss. The program guide is not a lengthy manual filled with psychological jargon; rather, it is designed for time-poor practitioners, educators, and parents and offers concise explanations on how to get the most from this resource.

## SUMMARY AND OVERVIEW

*Benson the Boxer: A Story of Loss and Life*, is about Benson the boxer dog and his best friend Lucy Labrador. Life is fun and exciting for this mischievous, inseparable pair, until one day the unimaginable happens, Lucy is killed in a road accident. The tragedy leaves Benson feeling alone and miserable. Anxiety, fear, guilt and sadness fill his days and stop him doing things he used to enjoy. Benson hides away and becomes trapped in his memories of fear and sadness.



## IN BRIEF: THE BENEFITS OF BENSON THE BOXER AS A PSYCHOEDUCATIONAL TOOL

The aim of Benson the Boxer storybook and manual is to make a way for children to cope with situations of loss. The resource recognises that those who have lost someone or something precious will never forget, but it also provides opportunities, through psychoeducation, for a child's loss to be acknowledged, identified, named, and addressed. Benson the Boxer encourages children to sit with the loss and grieve, and then to move beyond protection behaviours that have the potential for long-term negative consequences. It provides practical ideas and strategies for moving forward so that there can be wellness and thriving, even after tragedy and loss.

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Australian artist Selinah Bull creates original works that span multiple media. From personal artworks to fine art photography, each piece is created with love and attention to detail. Selinah has loved art and design for as long as she can remember and she especially enjoys creating fun, imaginative and whimsical paintings for children. Her inspiration comes from being able to touch people's lives with her artworks. Selinah lives and works on the Far North Coast of NSW, Australia.

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Cover, 40-47: Selinah Bull

Pages 4, 6, 9, 10, 14, 16, 19, 29, 30, 31, 32, 33, 36: Bigstock.com

ISSN: 2201-9529

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