**PTSD and the Dharma**

In the exploration of Buddhism and mental health, the topic of Post Traumatic Stress Disorder (PTSD) is worth exploring. The identification of PTSD evolved from “shell shock” in WWI to PTSD after the Vietnam War. It was originally considered to be strictly combat related, but also included being assaulted with a gun in civilian life. As the understanding of the underlying conditions and causes of those conditions became more apparent over time, the list of causative factors expanded to include the results of any near death traumatic experience, then to include the aftermath of rape or forcible sexual molestation. More recently, it has included being a direct witness of a trauma-inducing event, which could include surviving a tornado, or the violent death of someone personally valued.

The characteristic symptoms of PTSD generally include:

* avoidance of situations that might trigger emotionally charged memories associated with traumatic experiences. An example would be someone who was robbed who would have a hard time going into the area where the robbery occurred.
* Intrusive memories or nightmarish dreams associated with the traumatic experiences. An example would be a nightmare that includes imagery associated with a combat event from the past.
* “Flashback” episodes, during which the person’s emotional arousal distorts the ability to contextualize a situation. An example might be a person over-reacting to the sound of a car backfire, who would drop to the ground as if a mortar round just exploded.
* Hypervigilance and emotional volatility, which could include episodes of anxiety/panic, rage/aggression, depression, or even dissociative states such as blackouts. This might involve being easily startled when surprised by someone’s unexpected proximity, or incidents of road rage.
* Unstable interpersonal relationships that could significantly interfere with family or professional life. Emotional volatility could cause serious interpersonal dynamics that could get the person fired.
* An impaired ability to appropriately assess risky or dangerous situations. This might involve a person who was physically abused as a child becoming involved in a series of domestic abuse relationships as an adult.
* Vulnerability to substance abuse or dependency. Many drugs have an emotionally numbing effect; if someone was physically injured during the traumatic event, subsequent painkilling drug prescriptions would lead to dependency.
* Vulnerability to “adrenaline rush” or self-destructive behaviors, including suicide. An example might be a combat veteran who becomes deeply involved in motorcycle racing, or becomes a forest fire fighter.

According to the Sidran Institute,

* An estimated 70 percent of adults in the United States have experienced a traumatic event at least once in their lives and up to 20 percent of these people go on to develop posttraumatic stress disorder, or PTSD.
* An estimated 5 percent of Americans—more than 13 million people—have PTSD at any given time.
* Approximately 8 percent of all adults—1 of 13 people in this country—will develop PTSD during their lifetime.
* An estimated 1 out of 10 women will get PTSD at some time in their lives. Women are about twice as likely as men to develop PTSD. (downloaded 10/17/17 from Sidron.org)

There is some indication that vulnerability to PTSD can be inherited. It seems that children of holocaust survivors may be more susceptible to PTSD. One wonders to what extent the recent spate of traumatizing mass killings, devastating tropical disturbances and forest fires around the world has increased the likelihood of PTSD.

**WHAT HAPPENS TO THE BRAIN AS A RESULT OF PTSD?**

Modern neuroscientific research can reveal how the structure of the brain is modified through neuroplasticity, which involves changes in the degree of connectivity between neurons in the brain. Some stressors increase the connectivity and some reduce the connectivity.

There are several areas of the brain where the effects of trauma are evident:

1. The amygdala is a cluster of neuronal nuclei, and there are two of them, one in each hemisphere. Its function is to assess data input to determine potential threats. It is known that when the amygdala is chronically overstimulated, it becomes oversensitized to potential threats. This would foster hypervigilance and chronic anxiety.
2. The hippocampus is another cluster of neuronal nuclei, one in each hemisphere, situated immediately behind the amygdala. Its function is to foster a process that correlates the activity of the amygdala into a context, that is, how is the stimulus related to prior experience, and what degree of threat does the stimulus present. It is known that the hippocampus is smaller in a person affected by PTSD. It is uncertain whether the reduced size of the hippocampus is the result of PTSD, or that a reduced hippocampus makes a person more vulnerable to PTSD.
3. The ventromedial prefrontal cortex is also found in both left and right hemispheres, just behind the mid-line of the forehead. Its normal function is to regulate the activity of the amygdala, and this function is impaired when PTSD is present.

**HOW CAN MINDFULNESS MEDITATION PRACTICE BENEFIT SOMEONE WITH PTSD?**

The problematic experiences associated with PTSD can be considered as a more potent and dysfunctional manifestation of craving and clinging. Craving is the felt sense of urgency of an experience. Neurologically, it is the unchecked activity of the amygdala, which comes about when the function of the ventromedial prefrontal cortex is ineffective. Clinging is the misrepresentation of reality by the areas of the brain that function to cultivate effective cognitive and behavioral responses to a situation; this is the manifestation of the diminished effectiveness of the hippocampus.

It has been well documented that regular mindfulness meditation practice actually changes the structure and functioning of the amygdala, hippocampus and medial prefrontal cortex (along with other important areas of the brain). The activity of the prefrontal areas is strengthened significantly, so that the overactivity of the amygdala is reduced. Additionally, the prefrontal areas regulate the associations between the amygdala, hippocampus and areas of the brain where long-term memory processes operated. Additionally, the prefrontal areas modulate the nucleus accumbens, which is an area of the brain between the amygdala and the prefrontal cortex. The functions of the nucleus accumbens is strongly involved in the sort of craving associated with drug addiction and other impulsive acting out behaviors associated with PTSD.

Over time, the effects of the meditation practice induce more balanced interactions between these neuronal areas to allow for more serenity and inner awareness. These conditions support the ability to be more aware of the intrusive flashback phenomena without identifying with them or acting out on them.

Mindfulness and lovingkindness meditation has been researched and applied to veterans of the Vietnam, Iraq and Afghanistan wars with beneficial outcomes, particularly when combined with cognitive therapy (specifically Mindfulness Based Cognitive Therapy, MBCT) and what is called “Exposure therapy”. Cognitive therapy encourages participants to be mindful of the intrusive thoughts as just memory traces, not relevant to current circumstances (see reference to the car backfire, above), and support more beneficial thoughts and behaviors. Exposure therapy combines mindfulness practices with verbalized reports of recalled traumatic encounters. The enhanced activity of the ventromedial prefrontal cortex that results from the mindfulness practice changes the patterns of associations that manifest the intrusive flashback phenomena—the recurrence of them is reduced in potency.

Interestingly, there is research that strongly suggests that associating the mindfulness practice with visualizing or being exposed to drug seeking cues is reduced also. This practice is called Mindfulness Based Relapse Prevention (MBRP).

Mindfulness based interventions are not meant to be considered as a “magic bullet” that will overcome the highly disruptive and enduring dynamics of PTSD. The practices are meant to be practice along with other interventions, as a foundational approach that amplifies the benefits from other psychotherapeutic interventions, including peer group therapy, psychopharmacology and other disciplines.