Polyvagal Theory and Emergency Responders: How our Nervous Systems Impact our Lives

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Emergency responders frequently face critical incidents and crisis situations. Their bodies and minds are trained to react in the moment. However, most are not trained how to wind back down after a call, returning to a baseline of calm and safety. Many responders note that they try to do the "right things" to take care of their mental health and well-being but find that those actions fail to have the desired impact. They are left wondering why. The answer might lie in polyvagal theory. Created by Dr. Stephen Porges in 1994, polyvagal theory is a framework that explains how the autonomic nervous system responds to stress and trauma and how it influences our emotions, behaviors, and social interactions. Porges proposed that the vagus nerve, which connects the brain to various organs, including the heart, lungs, and gut, has evolved to support three different states of the nervous system: ventral vagal, sympathetic and dorsal vagal.

Through the lens of this theory, responders can better understand their own nervous system responses to stress and trauma and develop strategies to regulate their states, promoting safety, healing and well-being.

Polyvagal theory proposes that the nervous system has three states that correspond to different levels of perceived safety or threat: the ventral vagal state, the sympathetic state and the dorsal vagal state. The ventral vagal state is the optimal state for health and well-being, as it enables connection with others, effective communication and emotional regulation. The sympathetic state is activated when danger or challenge is perceived. It increases heart rate, blood pressure and muscle tension to allow for fight or flight. The dorsal vagal state is triggered when we feel trapped, hopeless or helpless. It causes us to collapse or withdraw from the world through immobilization, dissociation or shutdown.

According to polyvagal theory, these three states are hierarchical, meaning that we first try to use the ventral vagal state to cope with stress, then the sympathetic state if the ventral vagal state fails, and finally the dorsal vagal state if the sympathetic state is ineffective. It also says that our nervous system is constantly scanning the environment for cues of safety or danger, without us being aware of it. This process is called neuroception. Our nervous systems respond to what our neuroception detects. If we become stuck in the "response" or "trapped state" with activation of the sympathetic or dorsal vagal inappropriately, we find that the "right things" we do to take care of our

health are not effective. We need to shift our states toward ventral to really benefit from those healthy behaviors.

Because, emergency responders are exposed frequently to crisis situations, our focus on our environments has naturally shifted. Career or volunteer, they are trained to assess situations, anticipate the worst outcomes, and take actions to mitigate. This focus on prevention of negative outcomes can increase their natural negativity bias, shifting their neuroception toward threat mode even in nonthreatening situations. The resulting negative or crisis focused thoughts can create internal states that push toward sympathetic or dorsal vagal states, preventing the nervous system's return to a baseline of safety and calm. Frequent exposure to high levels of stress and trauma, if not counter balanced, can affect mental health and well-being. This may explain why research has shown that emergency responders experience higher rates of depression, anxiety, post-traumatic stress injury (PTSI), substance misuse and suicide than the general population.

Polyvagal theory can help responders understand how their nervous systems react to stress and trauma and how to recover and enhance performance. Responders may experience frequent shifts between the sympathetic and dorsal vagal states, depending on the nature and intensity of the situations they encounter. They may also have difficulty accessing the ventral vagal state, which is essential for restoring balance and resilience. This can lead to chronic dysregulation of the nervous system, which can manifest as depression, anxiety, PTSI or other mental health challenges.

One of the practical implications of polyvagal theory for responders is that they need to actively foster being in a ventral vagal state as much as possible, on and off the job. This can be done by engaging in activities that promote feelings of safety, connection and relaxation, such as:

- Time with supportive friends and loved ones

- Breathing exercises to decrease heart rate and calm the nervous system

- Mindfulness practices to help stay present and increase awareness of sensations and emotions

- Body movements to release tension and increase flexibility

- Music or singing to soothe the brain and stimulate vocal cords

- Hobbies to engage the mind constructively and create a flow state

- Humor and playfulness to lighten moods and foster connection

- Compassion and kindness toward ourselves and others

Another implication for responders who experience persistent or severe symptoms of depression, anxiety, PTSD, or other mental health issues is that seeking qualified professional mental health help can decrease suffering and speed recovery. Therapy can help with processing traumatic experiences, managing the nervous system, and strengthening coping skills. Some of the therapeutic approaches that are based on or compatible with polyvagal theory include eye movement desensitization and reprocessing (EMDR), cognitive-behavioral therapy (CBT), dialectical behavior therapy (DBT), sensorimotor psychotherapy (SP), somatic experiencing (SE), neurofeedback (NF), or polyvagal-informed therapy (PIT).

Polyvagal theory is often called the science of safety. It can help responders understand how their nervous systems respond to stress and trauma and how to heal. By enhancing the ventral vagal state and seeking appropriate treatment when needed, responders can improve their mental health and well-being, increasing their satisfaction on the job and in life.