

**Title:**

Neurobiology of Sexual Assault

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**Session Title:**

Rising Stars of Research and Scholarship Invited Student Poster Session 1

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**Keywords:**

college-aged females, sexual assault and tonic immobility

**References:**

Campbell, R. (2012, December 2). The Neurobiology of Sexual Assault: Implications for First Responders in Law Enforcement, Prosecution, and Victim Advocacy. Retrieved December 8, 2015. Hayes, J. P., Labar, K. S., McCarthy, G., Selgrade, E., Nasser, J., Dolcos, F., & Morey, R. A. (2011). Reduced hippocampal and amygdala activity predicts memory distortions for trauma reminders in combat-related PTSD. *Journal of Psychiatric Research*, 45(5), 660-669. Retrieved March 1, 2016. Muldoon, S. D., Taylor, S. C., & Norma, C. (2015). The Survivor Master Narrative in Sexual Assault. *Violence Against Women*, 22(5), 565-587. Retrieved March 1, 2016.

**Abstract Summary:**

A literature review was conducted regarding how victims neurologically react when they are sexually assaulted. Items such as tonic immobility, neurotransmitters that are released during the event, and memory recall after the trauma were evaluated.

**Learning Activity:**

LEARNING OBJECTIVES	EXPANDED CONTENT OUTLINE
The learner will have a basic understanding of tonic immobility and how the victim becomes tonically immobilized.	The poster presents a summarized section of what tonic immobility is and how it affects victims. It also displays quotes of victims who have experienced tonic immobility and how they reacted to it.
The learner will understand why the victim cannot remember events of the trauma and can understand why this poses a major problem when dealing with law enforcement.	The "Memory" section on the poster describes how hormone fluctuations during a trauma affect the functions of the hippocampus and the amygdala. During an assault, the victim releases a flood of hormones which causes the hippocampus to become compromised, meaning memories are not formed correctly.

**Abstract Text:**

Sexual assault is a widespread problem. Nationally 19.3% of all women have reported being raped and 43.9% of all women have reported sexual assault other than rape (however, it is estimated that only 16% of these incidences are reported to law enforcement). A literature review was conducted and the goal of this research is to apply neurobiological theory of tonic immobility to understand underreporting of sexual assault. Tonic immobility (AKA "rape-induced paralysis") is defined as an uncontrollable mammalian response in fearful and inescapable dangerous situations. Driven by the reptilian brain, this is a

documented natural instinct found in many animals, such as sharks, rabbits, possums, and frogs. In sexual assault, the theory states that many victims' natural instinct is to freeze, making them unable to fight back. In addition, during tonic immobility, naturally occurring opiates, cortisol, and catecholamines are released in the body, and the hippocampus and amygdala cannot process memories because both of these structures are highly sensitive to hormonal fluctuations. Theoretically, these neurobiological responses protect the victim from both physical pain as well as preventing memories and strong emotions. The implications of these neurobiological responses during the sexual assault have implications for the victim in several ways. First, victims doubt their own memories, and may blame themselves for "not fighting back," feeling shame and avoiding disclosure. In addition, these responses impact the prosecution process. Officers who are unaware of neurobiological happenings may have skewed views of the event, also believing that since the victim did not fight back, the sex was consensual. The victim may present no emotion when recalling the event. Law enforcement is then inclined to believe that the story is false since "no person would act this way after a trauma". Victim advocacy in nursing requires understanding and assisting victims and law enforcement to be educated about these natural biological processes. Once law enforcement has a better knowledge background about this, they will be less likely to re-victimize the victim, which could help increase reporting these cases. Nurses must work with these groups to endorse education, promote safety, and prevent any further trauma to the victim.