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SEXUALLY BASED POST TRAUMATIC STRESS DISORDER

BY

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DISSERTATION APPROVAL

This dissertation submitted by Catherine L. Moritz has been read and approved by three faculty members of the American Academy of Clinical Sexologists at Maimonides University.

The final copies have been examined by the Dissertation Committee and the signatures, which appear here, verify the fact that any necessary changes have been incorporated and that the dissertation is now given the final approval with reference to content, form and mechanical accuracy.

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VITA

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ABSTRACT

This paper explores, compares, and contrasts the prevalence, neurobiological underpinnings, and environmental influences of specified comorbid disorders that commonly manifest in the aftermath of trauma and are associated with Post-Traumatic Stress Disorder (PTSD). To this end, the paper reviews various types of sexual trauma and how different responses and symptoms manifest with regard to differences in age and gender. A neurobiological overview, attachment theory, risk factors, the role of learning, memory, emotion, and brain development are included. These key components were included to form a basis from which to facilitate a greater understanding of key elements that are pertinent to the development of PTSD and associated comorbid disorders. Although this paper explores different types of trauma exposures that may result in the development of PTSD, the primary focus is on sexual traumatization. The effect of various types of sexual molestation and manifested response in both genders, during childhood and adulthood is explored, compared, and contrasted. The categories of comorbid disorders included are dissociative, anxiety, and mood. The question of whether comorbid disorders are truly comorbid or actually part of the spectrum of conditions and symptoms related to trauma is included and identified as the basis for future research.

CONTENTS

DISSERTATION APPROVAL.....	ii
ACKNOWLEDGEMENTS.....	iii
VITA.....	iv
ABSTRACT.....	v
CHAPTER 1	1
DEFINITIONS.....	1
Types of Sexual Trauma	2
Differences Associated with Gender	19
Prevalence	28
CHAPTER 2	34
NEUROBIOLOGICAL OVERVIEW OF SBPTSD AND PTSD.....	34
Brain Development	42
Attachment Theory	46
CHAPTER 3	52
PRECURSORS AND POSSIBLE CAUSES OF EXACERBATION	52
Role of Learning, Memory, and Emotion in SBPTSD	52
Risk Factors	69
CHAPTER 4	77
COMPULSION TO REPEAT THE TRAUMA.....	77
CHAPTER 5	85
DISSOCIATIVE DISORDER AND TRAUMA.....	85

CONTENTS

CHAPTER 6	96
POST-TRAUMATIC STRESS, MOOD AND ANXIETY DISORDERS	96
CHAPTER 7	105
POST-TRAUMATIC STRESS DISORDER WITH COMORBID DISORDERS VERSUS PTSD AS A SPECTRUM DISORDER.....	105
BOOK REVIEW BIBLIOGRAPHY	110

CHAPTER 1

DEFINITIONS

For the purpose of this paper, the definition of Post Traumatic Stress Disorder (PTSD) will follow the DSM-IV R criteria. The sexual behaviors used in the definition of sexual trauma in this paper are those sexual behaviors perpetrated upon a victim that result in traumatization of the victim and the development of PTSD. This paper will discuss sexual abuse as those specific behaviors outlined below that produce PTSD based on the victim's response to the experience.

Further, this paper will differentiate between sexually traumatizing incidents that may result in the development of PTSD and other types of traumatic incidents. This paper will use the term Sexually Based Post Traumatic Stress Disorder (SBPTSD) to describe the development of PTSD initiated by sexual abuse that traumatized the victim. To facilitate an understanding of the use of the terms sexual trauma and sexual abuse in this paper, definitions are included.

This writer dislikes and struggles with the use of the term sexual abuse, due to its ambiguous nature. There is a lack of consensus among professionals and the general population concerning what behaviors are abusive and to what degree the behaviors are abusive. There is excessive use of the term both within and outside of the mental health profession.

For the purpose of this paper, both the term sexual trauma and sexual abuse will be associated with the behaviors outlined below. To formulate a distinction between the two terms this writer will use Ellis' ABC's for clarity:

- A - Standing for the Activating event will be the sexually abusive behaviors, as defined below, by the perpetrator on the victim against the victims will.

- B – Is the Belief based on the perspective of the victim that matches the criteria in the DSM-IV R for the development of PTSD. Beliefs are both an antecedent and a risk factor for developing SBPTSD.
- C – The Consequence is the development of SBPTSD, which is initiated due to the beliefs about the activating event.

What this means is the sexual behaviors outlined below for sexual abuse will be the same behaviors that combined with Ellis' ABC's result in the development of SBPTSD. For the purpose of this paper, sexual abuse and trauma will not be limited to heterosexual or homosexual activities, number of participants, gender, or age. It includes any unwanted sexual activity, whether or not there is physical contact, based on the victim's perspective of the abuse. Sexually abusive behaviors resulting in sexual trauma include regular sexualized beating, sexual torture, regular giving of enemas, intercourse, fellatio, cunnilingus, forced mutual masturbation and incestuous activities. Incestuous activities often are the basis for the development of SBPTSD, regardless if the incest was direct (where the abuser was the primary caregiver) or indirect (where the primary caregiver initiated or allowed the abuse to take place). Included in the definition of sexually abusive activities are:

- Masturbation by a perpetrator
- Licking, kissing, and sucking of breasts, genitals, and anus
- Sexual mutilation
- Forced sexual activities of any kind with humans, animals, or objects
- Sexual slavery
- Pederasty
- An unaware victim of or a forced participant in the perpetrator's paraphilic activities

Types of Sexual Trauma

Numerous types of sexual molestation, exploitation, and abuse can lead to SBPTSD as defined in the beginning of this chapter. Many mental health and research professionals consider

SBPTSD as one possible cause underlying several mental health problems and dysfunctions in both children and adults (Mullen and Fleming, 1998). Sociologists and historians have documented sexual abuse and trauma in all cultures throughout history (DeMause, 1991). Sexual abuse can occur anywhere, anytime, and in numerous and diverse situations including satanic rituals, torture, and gang rape. Incest, rape, and mutilation of sexual organs are types of sexual abuses that may or may not take place in the presence of other people. Incest is universally prohibited in all cultures, yet virtually found in all cultures (1991).

Researchers began studying childhood sexual abuse and trauma when adults victimized as children began to disclose their experiences. These adults attributed their dysfunctions and difficulties to childhood sexual molestation (Mullen and Fleming, 1998). One common consequence of sexual victimization is the continuation of the abuse cycle. This is where the victim becomes the abuser. It is theorized that former victims who became perpetrators experience a compulsion to repeat their trauma. Becoming a predator is more common in males than females (more in Chapter 4).

One type of sexual predator is the pedophile, whose sexual cathexis is age and gender specific prepubescent children (Granzig, 2002). Pedophiles appear to engage in an obsessive-compulsive pattern and groom prospective victims by befriending children who are loners, giving them attention and gifts (2002). Pedophiles may molest hundreds of children during their lifetime (2002). Not only do pedophiles suffer from obsessive-compulsive thinking, but they commonly are fragmented and depressed (DeMause, 1991).

Pedophiles understand what they do is wrong. They often drink in order to quiet their conscience so they can carry out their sexual cathexis (Granzig, 2002). Alcohol, a depressant,

slowly puts the brain to sleep. Alcohol crosses the blood brain barrier and first affects the frontal lobe of the brain. The frontal lobe is the part of the brain that houses the domain of inhibition. Inhibition tells us what behavior is or is not acceptable. Drinking quiets the frontal lobe so that one becomes less inhibited. This allows the pedophile to do things they know is wrong. Once a pedophile has had a couple of drinks, their conscious becomes quiet. Then, they can sexually molest their victims.

Psychotherapists and researchers who specialize in pedophilia report that pedophiles were commonly traumatized as youths. Although pedophiles both dread and desire to be with their mother, they perpetuate a cycle of sexual abuse in an attempt to reconnect to the mother and child relationship (DeMause, 1991). This may be due to an attachment rupture (see Chapter 2). In the past, common belief was that most pedophiles were male. There is currently growing research, however, which indicates that females, too, are pedophiles (Granzig, 2002). Granzig teaches that female pedophiles are involved in bathing, dressing, and the general care of children so they are rarely recognized and reported (2002). Additionally, women who sexually molest male adolescents are often not considered abusers by their victims so are they not reported. There is a more thorough discussion of the lack of males reporting sexual abuses by women later in this chapter.

Pedophiles are not the only type of sexually traumatized victims that become predators. Becoming the perpetrator allows a prior victim to gain a sense of control and removes them from the role of the victim. As predators they decide where, when, how, and with whom sexual abuses will occur. Investigators have noted that male victims tend to become aggressive and victimize others, while female victims tend to become depressed and withdrawn. Female

victims, like children, are at risk for re-victimization. This difference in gender response is due to many factors and is explored further in the next chapter.

Sexual traumatization, especially incest, can be conceptualized in the context of perpetuating a generational cycle of sexual abuse. DeMause expounds on an earlier definition given in this paper by describing direct incest as sexual activity between nuclear and extended family members who are not spouses and indirect incest as children provided to others for the purpose of sexual molestation (1991). Clinical studies indicate that indirect incest is motivated by the caregiver's incestuous wishes (1991).

Eighty-one percent of sexual abuse is experienced before puberty and 42 percent of sexual abuse under the age of seven (DeMause, 1991). Not only are adults sexually molesting children but older children and teens are also sexually molesting younger children. Some research indicates that individuals under the age of 18 perform 50 percent of child sexual molestation and 20 percent of all rapes (1991).

One common misconception about children who suffer from sexual molestation is that children who live in lower socioeconomic households are sexually traumatized more frequently than children whose socioeconomic status is higher. We now know that childhood sexual molestation crosses all cultural, social, and economic barriers and is widespread in our country. Although Americans suffer from this tragedy, incidents of sexual victimization are even higher in eastern countries.

All countries formally ban incest and sexual molestation of children. Historically, however, all institutionalized forms of pedophilia were customary due to what DeMause calls the infanticidal childrearing mode (1991). This mode involves children in non-western countries

used for the emotional needs of adults. In the past, children were not valued like they are today. Not only were children used for sexual pleasure, but approximately 50 percent of children were killed by their parents (1991). The infanticidal childrearing mode includes many types of sexual molestation of children by adults including adults masturbating their children, concubinage, sex slavery, child and temple prostitution, incestuous marriage, ritualized pederasty, unichism, and child marriage (1991).

Childhood marriage, a part of eastern cultures for centuries dates back as far as 300 B.C. in India. Historically, girls were married as early as six or seven years old. This was rationalized as a defense against the seduction of young girls by males. These marriages, however, were normally consummated immediately. Commonly, child brides became pregnant and died in childbirth due to physical immaturity.

To avoid the rape of their daughters, Indian mothers would bring their daughters with them everywhere. The belief in the Indian culture was that young girls were so over-sexed, that by the age of seven, they needed to be saved from their lust by marriage (DeMause, 1991). Indians believed young females needed sexual discipline (rape) via the consummation of marriage so they would learn that the husband was the master. This rational for raping young girls was the foundation of the Indian family for hundreds of years (1991). In the Indian religion, fathers who allowed their daughters to reach puberty without being married were condemned to hell. It was not until the 1920's that Catherine Mayo, a researcher who did extensive investigations of these situations, laid the groundwork for the first child marriage laws in India.

China, like India, also endorsed child marriage. In China, the popular ancient sim pua system of marriage was practiced. Commonly, parents adopted an infant of opposite sex from their biological child and raised the children as siblings. When the children were older, parents would force them to marry one another. Although these marriages were not technically incestuous, they were psychologically incestuous (De Mause, 1991). Some adopted children were not forced to marry their siblings; instead, various members of the adopting family used them for sexual pleasure.

Japan, too, participated in incestuous marriages. This practice was prevalent in court circles. Inbreeding became so pervasive it affected both the health and size of the offspring from these marriages (DeMause 1991). In rural areas of Japan, fathers married their daughters if their wives died or became incapacitated. Although communities publicly voiced moral disapproval of families who lived in open incestuous marriages, families who participated in these marriages did not believe it was immoral (1991). Not only was incest practiced in marriage but it was also prevalent in the tradition in which children were educated about sex. Older boys instructed younger boys who practiced by physically introducing girls to sex. This was done with the girl's parents' knowledge. The boys were given instructions to use gentle persuasion, but there was no guarantee that they did.

Another common practice in eastern cultures is the masturbation of children by their parents. In India, mothers masturbated their male children to make them into men and female children to help them sleep. Japanese mothers, also, masturbated their children to induce sleep. Commonly, the male members of the nuclear family masturbated both male and female children

in front of other family members (DeMause, 1991). In some cultures, a young male's father masturbated him in front of other men to show off the strength of the child's ejaculation (1991).

The family bed is another common tradition practiced in virtually all non-western cultures (DeMause, 1991). In this practice, the child sleeps in the family bed for several years and observes sexual intercourse between the parents. DeMause points out that it is impossible to know if observation is the only role that children play during sexual activity in the family bed (1991). Indian children sleep in the parents' bed until the children are approximately five years old. Then, they sleep with other adult members of the extended family, which is considered a gesture of closeness and affection (1991). Sleeping with relatives continues even after marriage. Traditionally, married men remain emotionally distant from their wives. Brothers of the husband sleep with the wife so the wife has some companionship and does not feel lonely (1991). Sleeping in the family bed until adolescence is the norm in Japan. Many Japanese families still practice *dakine*, which entails an adult sleeping with a child while physically embracing the child.

China also embraces the eastern traditional sleeping pattern of the family. Although they deny incest, young Chinese girls do not have an intact hymen. DeMause's explanation for this is that the girls' caretakers clean the vagina so thoroughly that it breaks the hymen in the process (1991).

In China, the vagina is considered to be very powerful (Granzig, 2002). Chinese believe that a woman's vagina is so powerful that it takes a man's strength through their semen during intercourse (2002). The Chinese believe that women ejaculated yin, a life force, during sex and man could gain that life force if he refrained from ejaculation (2002). In order to teach young

males to keep their life force and undermine the power of the vagina, they practiced refraining from orgasm while having sex with young underdeveloped girls (DeMause, 1991). Additionally, Chinese males directed their erotic feelings toward the woman's feet, mainly the big toe (2002). The Chinese molded young girls' feet to look like a penis (2002). To accomplish this they bend all the girls' toes under, except the big toe, binding them tightly in that position. Molding the feet is a tremendously painful process, which takes several years. Sometime, girls had to amputate several toes because they putrefy due to lack of circulation (1991). Once the process was completed, the foot became a penis substitute and the focus of the male's excitement (2002). Granzig explains that during sex the powerful vagina is ignored while the penis shaped foot, especially the big toe, is caressed, sucked, licked, and adored (2002). This ritual opens another set of questions concerning the sexual excitement of males by a symbolic penis, which is too expansive for this paper.

Clitoridectomy, another type of mutilation traditionally practiced in the Arabian culture, is a type of sexual torture that is not even rationalized as part of their religious doctrine. Clitoridectomy dates back to pre-dynastic Egyptian times and is currently practiced in many Middle Eastern and African countries (Granzig, 2002; DeMause, 1991). Clitoridectomy, also called Pharaonic circumcision, is considered female circumcision. During clitoridectomy, the girl's labia and clitoris are cut off and the remaining flesh is sewn together. There remains only a small opening through which the female can urinate and release menstrual blood. This small opening prevents females from eliminating properly which causes infections. In order to have intercourse the vagina is cut or torn open. This is usually done on the wedding night by the husband with his penis and is extremely painful (2002). When a female gives birth, the vaginal

opening is enlarged for the baby. After birth, the vagina is sewn together tight to enhance the husband's sexual pleasure (2002).

Granzig explains the rationale for this procedure is to save little girls from their sexual desires so they will stop masturbating (2002). There is no anesthesia administered for the clitoridectomy. Sometimes, clitoridectomy is done with the mother's permission and under her supervision. Female family members often perform the procedure in the kitchen with a knife. Currently, many mothers are protesting this practice and are trying to protect their daughters from female family members whom they fear will perform the operation against their wishes (2002). Often, victims suffer from complications and sometimes die. Surviving females are left frigid.

DeMause claims clitoridectomy is an incestuous act that often elicits sexual excitement in the adults that attend the operation (1991). In some areas adults come to watch. Different regions have different rituals associated with the procedure. In Siwa, the girl's mother masturbates her prior to the mutilation; in Morocco, prostitutes come to the ceremony to relieve the sexual tensions of the adults; and, in Australia, the procedure in the Aboriginal culture may be followed by group rape (1991).

Sexual mutilation of children is considered indirect sexual abuse. Another customary indirect sexual attack on children, practiced in many eastern cultures, is the custom of parents giving their children to older men to become servants or wards (DeMause, 1991). These older men take sexual advantage of these children. In India, some fathers encourage this seduction and give their daughters to a friend, who raises them as if they were their own (1991).

The practice of sexual slavery and temple prostitution has long been a part of the history in these eastern cultures. Parents consider it an honor that their child is physically pleasing enough to be chosen to be a temple prostitute. Priests and visitors regularly use temple child prostitutes for their sexual pleasure. This ritual may have evolved because sex between adults is considered emotionally risky and is discouraged. To ensure that romantic love does not interfere with adult relationships Indian children are trained to have sex without romantic attachment (DeMause, 1991).

This education begins with children sleeping in the family bed. Next, while still very young, they are sent to sex dormitories to sleep. There they receive sexual instructions from older children. The sex dormitory system is used in several countries. Many of the dormitory systems are similar. For instance, the sex dormitory system of the Muria is similar to that of a number of other Asian and African groups (DeMause, 1991).

To ensure there is no emotional attachment between partners in the dormitories sex partners are rotated. In some dormitories, a girl might be asked to choose a sexual partner. If she refuses, she may have a partner assigned or be gang raped by males in the group (DeMause, 1991). Older men often visit the dormitories to engage in sex with the children. Children are sent to sleep in the dormitories as young as age two. Normally, they are not forced to participate in sexual activities until approximately age five (1991). This age is selected because younger children, when forced to participate in sex, wet the bed, cry, and have nightmares.

Childhood sexual abuse and traumatization exists in all cultures and in every country. Children who live with abusive parents are at their parents' mercy because children do not have the resources to survive alone. Although some older children may have the strength and size to

escape physically, they are emotionally immature and lack resources to escape the psychological captivity (Lambert, 2003). Psychological captivity, facilitated by brainwashing, is what prevents battered wives and hostages from attempting to escape. Individuals, who suffer prolonged or extreme abuse, are at risk to develop Stockholm Syndrome (2003). Battered wives and victims of Stockholm Syndrome go through a process by which they identify with their captors. This creates intense loyalty to the abuser. This familiar phenomenon is both perplexing and frustrating to the legal and helping professions.

Tollefson states that loyalty is one way in which we demonstrate devotion, attachment, and affection to our country, employers, and families (1993). It is also an important factor in developing cohesiveness (1993). When one person trusts another and that trust or loyalty is broken, it is considered betrayal. Captors and caregivers indoctrinate their victims to become extremely loyal to them. Tollefson states that in the abuser-victim relationship disclosing secrets, considered a form of treason, is punishable by exile or death (1993).

In hostage situations, the indoctrination process starts when the captive threatens the victim with physical violence and/or death (Lambert, 2003). Often, threats are backed up by demonstrations of violence where the victim suffers or witnesses the suffering of others (2003). One study of victims suffering with Stockholm Syndrome found 100 percent of ritual-abuse survivors and 96.9 percent of sexual abuse survivors were threatened with physical harm (2003). Additionally, 87 percent of ritual abuse survivors and 75 percent of sexual-abuse survivors were threatened with death (2003). Victims believe that there is no escape, they only hope to survive. Since the victim's survival depends on the abuser's will, the victim develops a deep

psychological dependence upon the captor/abuser (2003). One example of Stockholm Syndrome is the well-publicized Elizabeth Smart case where she was abducted from her bedroom in 2003.

Not all victims of childhood sexual abuse are traumatized to the point of developing Stockholm Syndrome. This writer, however, thinks it is possible to see some parallels in Stockholm Syndrome victims and victims of childhood SBPTSD. Tollefson succinctly states that in normal childhood, monsters are in our dreams, but for childhood sexual abuse victims the monsters are in the house (1999).

Captors/abusers isolate their victims, which increases the victim's psychological dependency. Isolation cuts the victims off from help. Victims learn they are helpless to escape so they stop trying. Learned helplessness, a well-documented phenomenon, often continues even when an escape route becomes available (Sapolsky, 1998). For example, in the Elizabeth Smart case, she did not identify herself right away when a police officer asked her who she was. Although the police officer was Elizabeth's avenue to safety, the indoctrination and resulting psychological dependency on the captor coupled with the phenomenon of learned helplessness kept her from recognizing and accessing help immediately.

Additionally, in response to a threat, humans activate automatic and unconscious neurobiological responses that result in fight, flight, or freeze behaviors. If a victim attempts to fight or escape and the response proves to be ineffective and dangerous, the victim automatically and unconsciously defaults to a freeze response (Sapolsky, 1998). If in the face of threat, fighting or fleeing behavior is discontinued, the disuse of these behaviors results in their extinction (Perry, 2000). Freezing is common in victims of childhood neglect and sexual molestation (2000).

When flight or fight is no longer an option, victims abdicate their sense of identity, relinquish their perspective on reality, and identify with the captor (Lambert, 2003). They do whatever they are told in order to survive. For the victim it is important to know how the captor thinks so they can anticipate and perhaps even manipulate the abuser. Victims exist in a closed value system. The only value system available is the one they learn from their captor. The captor indoctrinates the victim instilling the captor's beliefs about victim and the world.

Victims, like prisoners of war, are brainwashed while being physically and/or psychologically tortured or until they are so confused and terrified that they begin to believe what their captors say. Brainwashing, which is facilitated by repeated threats and assaults, results in the neurobiological threat response where victims dissociate (see chapters two and five). Tollefson, an expert in brainwashing, describes dissociation as the ability to make what is real unreal (1999). He explains that while in a dissociative state people stop filtering incoming information and record and store the information without questioning the content (1999). This means that the victim's hardwired neurological threat response of freezing and dissociation allows the victim to take in the abuser's values and record and store the information uncritically. Neurobiological threat responses, dissociation, and recording and storing of information are further explored throughout this paper.

In this manner, victims take on the abuser's worldview and behave in a manner congruent with the indoctrinated belief. When a captor tells the victim not to tell anyone else what is going on, the victim obeys first out of fear and later due to the brainwashing process. Part of that process involves the systematic destruction of the victim's trust in anyone other than the abuser. Lambert reports that hostage victims are told their friends and families do not love them, causing

the victims much confusion and pain (2003). Confusing matters even more, there may be random times when a captor is kind. This is extremely confusing and damaging to the victim. As victims become more and more confused about life, the abuser continues to indoctrinate them with their values and worldview. Through the process of indoctrination, the victim may permanently take in and accept the confusing and dysfunctional worldview of the abuser and/or captor (2003).

When a captor shows kindness to the victim, it confuses the victim to such an extent that the victim splits psychologically in order to accept it (Lambert, 2003). Kindness is extremely difficult for the victim to accept because they hate the captor. If the victim splits into parts, one part can hate the abuser while another part loves and accepts the kindness (2003). Tollefson teaches that trauma victims also split so that an altered personality can take on aspects of the experience, which are too horrific and painful to be experienced by the main personality (1999). Splitting is a phenomenon that correlates positively with childhood sexual molestation and the development of Dissociative Identity Disorder (DID) (1999).

The development of DID is commonly seen in victims of satanic ritualistic abuse and repetitive, horrific physical or sexual abuse that occurs before the age of seven (Tollefson, 1999). Seven is the age by which the personality is formed (1999). By manifesting altered personalities, the victim develops different parts of themselves whose job it is to carry out specific tasks that are too psychologically horrific for the main personality. As the personality splits and fragments the mind creates an amnesia barrier between alters, allowing the individual to survive without consciously acknowledging the altered parts of their self (1999). An act of kindness by the captor takes on great significance for the victim who expects only cruelty (Lambert, 2003). In

order to enjoy any memory of the captor's kindness, the victim splits thereby keeping the memory separate from the main personality so the memory is not ruined by memories of abuse (2003).

For example, a child named Katie, five years old, has a father who repeatedly sexually abuses her. Katie's personality has not yet completely formed. She is psychologically unequipped to deal with sexual abuse. Since the abuse is so overwhelming, Katie's personality splits and manifests an altered personality named Sally. Sally takes on the job of being raped by her father. Manifesting Sally allows Katie to remain consciously unaware of the sexual abuse so she can function and survive. In this example, Katie's dear old dad starts to beat her up prior to raping her. Neither Sally nor Katie knows how to deal with the beatings. Therefore, Katie manifests Bertha, who endures the beatings. Each time Katie is traumatized in a different manner, she manifests an altered personality as a defense mechanism. The alter takes on the task of dealing with the different abuse. Tollefson points out curiously, that each alter's name begins with the same letter of the alphabet as the first letter of the task they perform (1999) For example, Sally's task is to have sex and Bertha's task is to take the beatings.

Another defense mechanism, pathological transference, helps captives accept random acts of kindness. Through transference, the captive develops false adoration for their captor. The victim rationalizes that the captor could kill them but chooses not to and occasionally is even kind (Lambert, 2003). Transference allows the victim to comply with the captors demands while decreasing terror so the victim does not go very insane (2003). Transference is evident in victims who have been taught by their abusers that love is sex. Sexually traumatized children are

at risk to be abused again because they have learned that sexual abuse is something that people can and will do to them (Munro, 2000).

Once a victim believes the abuser's value that sex equals love, the victim may develop a sexualized response to the abuser (Lambert, 2003). Sexualized responses and other traumatic bonding are apparent in abuser victim relationships. Victims tend to continuously choose abusive partners. Their choice of partner reflects an unconscious desire to get it right this time. The victim believes the abuser's values that they are worthless, ugly, dirty, broken, shameful, and ugly so they work hard to change (Tollefson, 1999). Regardless of how hard the victim works, they are powerless to change things because, due to the indoctrination process, the victim believes that only the abuser has that authority to acknowledge the change (1999). The dilemma continues because no matter how victims try to fix things the abuser continues to tell them they are not good enough (Lambert, 2003). These dynamics are involved in the choice of an abusive partner by a victim of SBPTSD.

This writer hypothesizes that when a victim first meets an abuser, they tend to feel comfortable with each other. The victim notices a feeling of familiarity between them. What the victim does not realize is that the familiarity is based on the common thread of abuse that runs through all of their intimate relationships. Sexual abuse victims, especially those who have been abused from youth, become desensitized to abusive relationships.

Additionally, Tollefson says SBPTSD victims sabotage relationships with appropriate loving partners (1999). Being loved and cared for is incongruent with the internalized abuser's values that forms the victim's self-image and therefore is intolerable (1999). Abusers seek victims in an attempt to satisfy a twisted need for a sense of power and control. Many

individuals who suffer with SBPTSD are compelled to engage in a self-perpetuating compulsive cycle of abuse. This cycle manifests from a compulsion to repeat the early traumas (Munro, 2000). Victims who suffered violent sexual trauma may become sexual predators who engage in violent aggressive behaviors including rape (more in Chapter 4).

Rape, an aggressive unwanted forced sexual act may be a traumatic reenactment or may be due to other factors. Rape victims may be victimized by someone they know or by an unknown assailant. Experts report that approximately 90 percent of rapes go unreported (Hughes and Sandler, 1987). Of those reported, approximately 60 percent of the victims know the rapist (1987). One form of rape, date rape, is where the victim dates the perpetrator. According to reports concerning date rape, the majority of victims are women ranging in age from 15 to 25 years old (1987). Date rape occurs on all American college campuses (1987). Some women acknowledge rape while other women believe the rationalization that the man was so turned on he could not stop.

In studies where men have admitted forcing themselves sexually on women, none of the men considered themselves rapists (Hughes and Sandler, 1987). Part of the thinking that leads to date rape may be based on traditional male and female roles in our society. Although roles are changing, American males are still taught to be aggressive and competitive. They are encouraged to have strong sexual feelings and to experiment sexually. The combination of these factors can lead men to believe that sex is their right (1987).

Conversely, women are socialized to be more passive and dependent. Women are often taught to be less aggressive and assertive than men. Unlike men, females who experiment sexually are commonly labeled sluts or whores. Although current attitudes are changing, this

double standard is still active in many cultures. Double standards are evident in the myth that a female doesn't engage in sex out of curiosity or for pleasure but she is swept away with passion by the sexual prowess of the male overriding her sense of decency (Hugh and Sandler, 1987). Some male believe that regardless of female protests the female really wants him or that he has a right to take her (1987). Women who do not give in to sexual advances by men are often called prick teasers.

Regardless of whether the dynamic of date rape includes reenactment of prior traumas or is due to the date rape mentality, date rape happens when the female says no but the male has sex with her anyway. Many date rape perpetrators do not acknowledge themselves as rapists (Hugh and Sandler, 1987). This writer hypothesizes that these men buy into the mentality that support their actions.

Not all rapists are male; females also rape. It is currently difficult to know how valid the statistics are concerning female rapists due to under-reporting by male victims. Male rape victims often do not report the incident. Granzig explains that men often do not report sexual aggression or abuse by females for many reasons including the fact that many men do not interpret sexual aggression by a female predator as victimization (2002).

Differences Associated with Gender

This section explores how responses manifest differently between genders. When studying individual differences in response to sexual trauma, it is important to understand the basis for the differences. While exposure to trauma is necessary for the development of PTSD and SBPTSD, not everyone who is exposed will develop SBPTSD. Yehuda, et al. report that

approximately nine percent of males and 20 percent of females exposed to trauma will develop PTSD (2003). Research shows a twofold increase in the prevalence of PTSD in women versus men (2003). When studying the difference in threat responses between the genders, it is important to factor in the nature of the traumatic incident and the age of the victim at the time. A study of both genders with similar risk factors including age, support system, and type of exposure, however, would be necessary to provide clearer comparison of prevalence rates than is currently available.

Females tend to utilize a dissociative pattern of adaptation in the face of threat while males are prone to hyperarousal (Perry et al, 1966). If the victim is young and the threat is severe, both genders are apt to freeze and dissociate (van der Hart et al., 2000). Dissociation is a coping mechanism that manifests along a continuum of intensity. The continuum begins with immobilization and feelings of helplessness and terror that can escalate into total dissociation. Other forms and degrees of dissociation will be discussed further in Chapter 5.

When a victim experiences physical pain from sexual or physical abuse, the body initiates opioid activation (a secretion of the body's own natural morphine-like substance) which results in pain reduction (Perry et al., 1966). Opioid activation coupled with dissociation, prevents the victim from being totally overwhelmed by pain and the immediate realization that they have suffered a wound (1966). This is highly adaptive in a situation where a victim is fighting for survival. For example, a soldier in combat is wounded fighting for his/her life. If the soldier is overwhelmed by pain and can't fight, he/she might be killed. To allow the soldier to continue to fight, their neurobiological survival mode would initiate opioid activation, which when coupled with dissociation, would prevent the soldier from becoming paralyzed by pain (1996). It is

because of this process that a soldier may be unaware of a wound until the fighting stops. During survival mode, the blood flow is directed away from the skin to the muscles and organs to oxygenate them for effort (Rothschild, 2000). Directing the blood in this manner decreases the volume of blood in the skin effectively reducing bleeding from a surface wound. This allows a soldier who is not mortally wounded to sustain intense physical effort and reduce the risk of bleeding to death (see Chapter 2).

Men and women often respond differently to threats. One commonly acknowledged gender response difference to sexual abuse involves the initial responses of either dissociation or hyper-arousal. Men tend to become hyperaroused while women and children tend to dissociate (Davis and Breslau, 2003). Dissociation is considered a major risk factor and predictor for the development of SBPTSD and PTSD (Chapter 3). Davis and Breslau noted that adverse traumatic incidents also correlate positively with the development of SBPTSD and PTSD. They looked at statistical reports, which indicated that males are exposed more often to adverse traumatic events than females. Further investigation suggested that when a female is exposed to an adverse traumatic event they are more likely to develop SBPTSD and PTSD than males (2003).

Davis and Breslau divided traumatic incidents into categories of assaultive violence, injury and/or shocking incidents, learning about another's traumatic incident, and the unexpected death of a friend or relative (2003). Next, they studied the frequency of traumatic events in each category for genders. The results showed that the category where victims developed PTSD and SBPTSD most frequently is the assaultive violence category, which includes rape, sexual assault, torture, kidnapping, and being wounded (2003).

Although the assaultive category was the one in which victims developed PTSD and SBPTSD most frequently, the literature differs on the rate of prevalence of PTSD and SBPTSD between males and females. For instance, Mullens and Fleming claim that the rate of frequency for boys who are sexually assaulted rivals that of girls even when events involved penetration (1995). Conversely, Davis and Breslau report that while women actually experienced less total number of assaultive incidents, they experienced both rape and sexual assault more frequently than men (2003).

Davis and Breslau explain that the increased rate for rape incidence and sexual assault for females does not alone account for their higher incident of SBPTSD (2003). Females had a higher rate of SBPTSD and PTSD in every type of traumatic event in the assaultive violence category. For instance, in the assaultive violence category, females developed PTSD and SBPTSD at a rate of 38 percent versus 15 percent for males (2003). This indicates that regardless of whether a woman is sexually or physically assaulted she has the same odds of developing SBPTSD or PTSD. Non-assaultive categories showed less significant difference between genders.

Another difference between genders involves the expression of SBPTSD. Women generally manifest more symptoms and suffer a longer course, approximately 60 months for women versus 24 months for men (Davis and Breslau, 2003). Response differences between genders in the assaultive violence category were reported by Davis and Breslau but are too expansive to include in this paper.

One trauma response difference between genders may be due to differences in size and strength. Women, who normally are smaller and weaker, tend to freeze and dissociate. Freezing

might be the most adaptive response because it may prevent or minimize physical injury and increase chances for survival. In rape and other sexual assault, victims are overpowered and often report feelings of helplessness. When a victim is overpowered, their automatic neurobiological response, unconsciously and instantaneously, chooses the most adaptive response, which will optimize chances for survival (see Chapter 2). If one's survival mechanism determines that dissociation is the most adaptive, hyperarousal is extinguished while dissociation is simultaneously initiated.

Survival mechanisms and associated patterns are not consciously chosen by the victim. Instead, survival mechanisms are hardwired in human neurobiology and initiated outside conscious awareness. These responses are activated automatically and instantaneously in response to threatening and novel stimuli. The threat response includes fight, flight, or freeze behaviors. As mentioned earlier, both females and children tend to freeze and dissociate, while male adolescents and adults are more likely to become hyperaroused and aggressive. Male aggressive responses include fight or flight behaviors (Perry et al., 1996; Rothschild, 2000).

Perry et al., point out that if our early male ancestors responded to attacks by animals or other men by freezing, they could be killed and perhaps consumed (1996). This writer believes this fits in with the survival of the fittest theories that are based on the strongest and/or most adaptive of the species surviving. Anthropological literature and history describes how clans of primitive man raided other clans and killed the male members of that clan. Women and children were normally taken as property.

Historically, when our male ancestors were threatened by another tribe, they became hyperaroused and would fight or flee, depending on the most adaptive response. Often, men

fought in an attempt to save their lives and the lives of other clan members. When the clan was defeated, freezing would be the most adaptive response for women and children. Freezing and dissociation would increase their chances of survival. Captors would not want to deal with aggressive or difficult captives and so they would be more likely to kill them (Perry et al., 1996).

Freezing by women increases their odds of survival along with that of their offspring. A dissociative response would assist them by numbing the emotional impact. Numbing made it easier for a captive to comply with the captor's demands. Additionally, numbing would allow captives to later engage in problem-solving thinking that would be impossible in a state of absolute terror.

Victims of both genders of SBPTSD tend to manifest comorbid psychiatric disorders. It is important when studying epidemiological data concerning the incidence of comorbid psychiatric disorders to factor in gender and age at the time of the incident(s) (see chapter seven). During childhood, more boys than girls are taken to mental health professionals for help with behavioral problems (Perry et al., 1996). Boys with histories of trauma are often diagnosed with disorders that manifest in externalizing behaviors such as ADHD and conduct and Oppositional Defiant Disorder (ODD) while girls with similar histories are more often given diagnosis of internalizing disorders including depressive, anxiety, or dissociative disorders (1996). Perry et al., hypothesize that many of the adults who take children for psychiatric services are often the individuals who abused to the children (1996).

Lisak's research analyzed the content of a study that used a population of 26 adult men who had suffered childhood sexual molestation. Lisak found psychological themes that appeared to be typical long-term adaptations to childhood sexual molestation. Various other researchers

also identify similar themes for male childhood sexual abuse victims. Lisak's psychological themes include (1997):

1. Anger
2. Betrayal
3. Fear
4. Homosexuality issues
5. Helplessness
6. Isolation and alienation
7. Legitimacy
8. Loss
9. Masculinity issues
10. Negative childhood peer relations
11. Negative schemas about people
12. Negative schemas about self
13. Problems with sexuality
14. Self-blame
15. Shame and humiliation
16. Guilt

Tollefson observed that victims of SBPTSD commonly experience pain, fear, guilt, shame, and depression, struggles with low self-esteem, self-incrimination, betrayal and loyalty issues, powerlessness and the inability to trust (1999). When Lisak questioned men in his study concerning feelings of anger, the men said they experienced anger as frightening and confusing (1997). Fear was the emotion acknowledged most frequently by the men. Some men stated that at times they experienced overwhelming rage and were afraid they would become violent (1997).

SBPTSD victims indicated that fear often began with intrusive thoughts and feelings of panic (Lisak, 1997). Fear in trauma victims often is perpetuated by feelings of helplessness that

were similar to the feelings experienced during the traumatic incident. Fear, and other psychological themes originating from sexual trauma, is often generalized to other areas of the victims' lives. The men in Lisak's analysis expressed difficulty discussing feelings of helplessness. Men who had been sexually victimized by females reported that they felt helpless in heterosexual encounters. Many researchers interested in sexual trauma have identified both heterosexual and homosexuality issues in sexually traumatized victims including sexual orientation, confusion, and homophobia. Lisak notes that homophobia for some men in the study had become an obsession (1997).

Any type of intimacy can be frightening for sexual abuse survivors. Intimacy can trigger traumatic memories. Traumatic memories are often experienced as if they were currently happening, not as a memory from the past. When this happens, victims feel as if they are reliving the trauma. In this way, the experience remains current instead of being a part of one's past.

Some victims report feeling out of control with their sexuality (Lisak, 1997; Granzig, 2002). They become promiscuous and lack boundaries. Others may become sexually compulsive and focus on fantasy and masturbation, which may be an attempt to control the fantasies. As mentioned earlier, some victims who were repeatedly molested may develop a sexualized response to their abuser. These various responses are reenactment behaviors that manifest as an attempt to gain control over abuse that the victim feels is inevitable (more in Chapter 4).

Furthermore, victims often feel undesirable. This has a tremendous impact on their lives. Feeling undesirable facilitates isolation and a feeling of alienation that results in the victim

having less opportunity for intimacy. Lisak notes that isolation and alienation are the most destructive components of childhood trauma (1997). Victims that isolate and feel alienated from others will fail to seek support, help, validation, and feedback concerning their traumatic incidents. Consequently, they make decisions about themselves based on their acceptance of Tollefson's identified abusers values. Based on the phenomenon of acceptance of abuser's values, childhood sexual molestation victims believe they were victimized because they are different or bad (1997).

Tollefson explains how victims continue to relive, mentally and psychologically, an incident through daydreaming, a form of dissociation (1999). Victims often daydream reviewing the memory of the incident for what they did wrong. They do this because they believe it is their fault or they could have stopped it. This only serves to increase their feelings of shame, blame, and guilt, which exacerbates feelings of alienation. Perhaps the most devastating thing that happens to male victims is when they get the courage to disclose their sexual trauma and are not believed. Many people in our culture, including some mental health professionals, do not believe that men can be sexual victims (Granzig, 2000; Lisak, 1997).

Lack of belief that men are sexually abused and victimized ties into issues of masculinity. Men in America are socialized to be strong. This means they are not supposed to talk about pain, fear, feelings of hopelessness, or losses. The men in Lisak's review who were able to acknowledge losses frequently reported they cannot remember missing years of their childhood. This is a common phenomenon in both genders of childhood sexual trauma victims.

It is easy to see that childhood sexual trauma often leaves its victims confused, isolated, and unable to trust in themselves or others. Victims form both negative self and worldviews.

Self-hatred is common. Traumatized people commonly draw these conclusions and feel they deserve nothing. Unconsciously, they sabotage anything good in their lives.

Prevalence

Several studies show that PTSD is one of the most common psychiatric disorders (van der Kolk et al., 1995; Novac, 2001). Yehuda writes that it is the fourth most common DMS-IV R disorder and is suffered by approximately seven to 14 percent of the general population (Yehuda, 2000; Novac, 2001). Other studies using DSM-IV R criterion A for PTSD estimates prevalence to vary from three to 58 percent (Yehuda and McFarlane, 1995). A number of studies show a lifetime prevalence rate for PTSD for approximately one to nine percent of the general population (1995). SBPTSD and PTSD, however, have a 15 percent prevalence rate for psychiatric inpatient populations and is linked to high levels of comorbidity and chronicity (1995).

Various researchers have investigated the link between childhood traumatic experiences and the increased risk of developing a wide variety of neuropsychiatric symptoms during adolescence and adulthood (Tjaden and Thoennes, 2003). Rates of PTSD and SBPTSD among psychiatric patients are generally high (Yehuda and McFarlane, 1995). Individuals, however, differ greatly in degree of functioning. It is important to consider the risk factors outlined in the following chapter in order to gain understanding of the different degrees of functioning and manifestation of symptoms between genders and individually.

An important risk factor that appears to be predictive for the development of SBPTSD is the nature of the incident. Traumatic incidents that are intentional and include interpersonal

violence are estimated to produce SBPTSD and PTSD at a rate of between 50 to 75 percent (Yehuda, 2000). Other categories of trauma including automobile accidents and natural disasters are estimated to result in the development of PTSD in approximately 10 percent of the victims (2000). Prevalence rates of PTSD for the criminal population range between 19 to 75 percent while persistent and chronic PTSD range as high as 47 to 50 percent for prisoners of war and concentration camp survivors (Yehuda and McFarlane, 1995).

Epidemiological studies document that of persons who suffer PTSD and SBPTSD, approximately 50 percent exhibited transitory symptoms that lasted approximately two to three years (Yehuda and McFarlane, 1995). A report concerning Vietnam PTSD victims by the National Vietnam Veterans Readjustment Study documented that 20 years after the war 15.2 percent of the victims still suffered from their traumatic experience (van der Kolk et al., 1995).

In reviewing prevalence rates, it is important to note that the outcome of a study depends upon many factors. Statistical studies are often skewed by the nature of the sample and the type of assessment. Factors include the type and number of questions that are being asked as well as the importance of the questions that are being omitted.

Childhood sexual molestation in both genders has been documented as a high risk factor for both the development of SBPTSD and other neuropsychiatric disorders. This is important for health professionals to note when assessing patients of both genders. The results of a prevalence study completed in 1996 showed that there is a one in six ratio of boys who are sexually molested before the 16 years of age (Hopper, 2002).

Interestingly, there is currently emerging evidence suggesting that one in three individuals who have been sexually molested as children, lack conscious recall of the incident

(Hopper, 2002). This correlates positively with the age of the victim at the time of the trauma and the degree of emotional closeness of the abuser to the victim (2000). DeMause states that determining accurate prevalence rates for sexual molestation is confounded by the emotional difficulties victims experience in reporting the incident (1991). The following chapter explores the role of emotion and corresponding physiological arousal that may account for some fraction of the lack of conscious recall.

DeMause believes another factor that may influence assessment outcome is that most researchers who write about childhood sexual molestation are advocates of pedophilia (1991). He believes they are writing in the hope that they can justify sexual relationships with children via normalization by demonstrating the frequency in which these types of incidents take place (1991). DeMause writes that several sexologists including Edwardes, Masters, Schutz, Pomeroy, and Kinsey have questioned in their writing whether or not sexual molestation of children is detrimental (1991). Additionally, DeMause reports that these sexologists have proposed in their writings sex between adults and children could be a positive experience for both the child and the adult (1991). Although sexual molestation research in the United States dates back to 1929, the research was mostly ignored because the public believed the children were lying (1991). The American Humane Association reported a rate of 7,000 incidents of childhood sexual molestation in 1976, which increased to 113,000 incidents in 1985 as reported by the American Medical Association (1991). Despite the growing number of sexual molestation, many researchers continue to ignore the figures and have dismissed non-contact experiences as non-abusive or traumatic (1991).

In the late 1970's and the early 1980's approximately 24 investigations of childhood sexual molestation, using a large enough population to warrant statistical validity were conducted. In comparing these studies, DeMause believed the differences in outcomes was due to the definition of sexual molestation that was used. He eliminated non-contact sexual abuse, included evidence of force, and outlined an age difference of five years beginning when the victim was 12 years old. Once adjusted, the assessment resulted in rates ranging from six to 45 percent for females and three to 30 percent for males (1991). Lower prevalence rates were found in the studies that used written questionnaires or brief telephone calls. Studies by Wyatt, Russell and other researchers resulted in higher rates using face-to-face interviews. DeMause compared those studies and found that 38 percent of women in Russell's study and 45 percent in Wyatt's study reported childhood sexual molestation with approximately 50 percent being identified as direct incestuous acts (1991). The U.S. Department of Health and Human Services reported in 1993 estimated figures show 217,700 new cases of childhood sexual abuse yearly (1997). Prevalence rates for other countries are included in the next chapter.

As noted earlier, males are less likely to report sexual trauma. This happens for a number of reasons. There is evidence that boys are sexually molested at a younger age than girls (DeMause, 1991). It is possible that boys may have been too young to remember the incident. DeMause's finding for memories of childhood sexual molestation in the United States is 30 percent for females and 40 percent for males with 50 percent of females versus 25 percent of males reporting the incidents as incestuous (1991). DeMause factored corrective items into these results, which he believes gives a more accurate rate. Corrective items include the lack of conscious recall for any type of trauma before the age of five and a graph for sexual abuse

distribution, which ranges from two to 16 years of age. These corrections resulted in incidence rates of 60 percent and higher for girls and 45 percent for boys (1991).

Studies with male college students document prevalence rates from as low as approximately four percent ranging to 28 percent. Self-report assessments, where participants were asked to determine whether or not an experience was abusive, generally produced under reporting of sexual molestation (Hopper, 2000). Higher prevalence rates for male participants, approximately 8 percent, are generally reported when questions describe sexual behaviors but do not require the participant to determine whether the behaviors were abusive (2000).

Not only do differences exist when determination of abuse is requested, but studies that use a definition of sexual abuse also produce different outcomes. The assessments that use a definition, which includes many types of sexual behaviors, produce the highest rates ranging from the low to high 20's (Hopper, 2000). When an assessment questions whether the sexual act was unwanted, the prevalence rates drop (2000). Hopper hypothesized that by adding terminology that describes the sexual episode as unwanted, lowers the prevalence rates when assessing both genders, especially males. This may be due to the common male victim's belief that they wanted or were responsible for the incident. Adding age or age range also increases prevalence rates in studies with males (2000).

Hopper reported that a study conducted by Bagley, Wood, and Young assessed sexual molestation which used a specified age range, a definition of sexual behaviors, and specified that the incident was unwanted, resulted in multiple episodes being reported at identical rates for both genders (2000). In that study, the prevalence rate for females who developed SBPTSD doubled the rate for males (2000). Face-to-face interviews tend to result in a lower prevalence for males.

Many researchers believe this is due to the belief that males are not sexual victims. Many of these types of studies have been conducted in psychiatric inpatient settings, which historically have a low reliability for sexual abuse history (2000).

The rates for adults raped in prison cited on the Stop Prison Rape Website as one in five for men and one in four for women (2003). The Commonwealth Fund conducted a survey in 1988 that resulted in approximately 31 percent of American women reporting physical and/or sexual abused by a male partner (Tjaden and Thoennes, 2003). The National Violence Against Women Survey conducted from November 1995 to May 1996 shows that 25 percent of women reported rape and/or physical traumatization by a their current or former husbands and boyfriends or someone they dated (2003).

Most likely to be reported are rapes committed by strangers. Forty-one percent of rapes and sexual assaults that were reported to police between the years of 1992 and 2000 were committed by strangers versus 24 percent that were committed by known assailants (Hopper, 2003). Rape and intimate partner sexual traumatization, including stalking, physical assaults, and homicide by an intimate partner resulting in health-related costs of approximately \$6 billion dollars yearly, approximately \$4 billion for direct physical and mental health services and around \$2 billion for loss of productivity in wages (2003).

CHAPTER 2

NEUROBIOLOGICAL OVERVIEW OF SBPTSD AND PTSD

Prolonged stress makes people sick. A person's response to threatening or emotional situations involves genetics. Everyone inherits a gene for anxiety. The anxiety gene can be either long or short. People with long anxiety genes remain calmer in emotional situations while those with short anxiety genes are prone to become more anxious and excited.

When an individual is stressed, the body tries to balance itself and return to homeostasis. Homeostasis is the state in which the body is operating with sufficient levels of acidity, temperature, oxygen, and other physiological components all working together (Sapolsky, 1998). In this state, a individual can function at an optimal level considering their age, the time of day, and current situation (1998). Stress throws the body out of allostatic balance, the mechanism by which the body stabilizes during change and returns to homeostasis.

There are different homeostasis set points for different circumstances (Sapolsky, 1998). Allostatic load occurs when an individual is exposed to prolonged stress and the body does not produce sufficient stress hormones to regulate the stress response (1998). This leaves the stress response out of control. It is as if the automatic switch, which allows a person to return to homeostasis after a stressful event, is broken. When this happens, the person does not adapt to events and continues to over-respond to familiar stimuli (Sapolsky, 1998). Repeated over-response to stress is destructive and tiring to the body.

The body's primary job is to survive. It will use energy to survive first and put all other energy needs on hold. During a stress response, the body prepares for flight or fight. This takes

an enormous amount of energy. In prolonged stress, the ongoing survival response takes precedence, which leaves no time for growth and repair. Eventually, this takes its toll on the major systems in the body (Sapolsky, 1998; Rothschild, 2000; McEwen and Lasley, 2002). Major body systems wear down due to allostatic load leaving one unable to return to homeostasis. Stress is accompanied and perpetuated by lack of sleep, exercise, and improper diet. All these factors increase anxiety, which further exacerbates the cycle.

Bodies need rest for growth and repair. When we are awake, our energy is used to maintain allostatic balance and to engage in daily activities. Individuals undergoing stress use an enormous amount of energy. They may crave sugar and carbohydrates, which is known to increase serotonin levels. During stress, one's survival response commands glucose. To accommodate that demand, simple forms of fat and protein are removed from their storage space in the body and used in fight or flight (Sapolsky, 1998). This is why people tend to eat simple carbohydrates and sugars as comfort foods when under stress. Simple sugars and refined carbohydrates, however, put a strain on the endocrine system.

The endocrine system works in unison to maintain allostatic balance. Increasing the workload on the pancreas causes stress on the adrenal glands. During chronic stress, the body feels tired from trying to return to homeostasis. Individuals try to increase their energy level by drinking caffeinated beverages. Caffeine overrides the body's signal to rest, works the adrenals overtime, and creates a false sense of energy.

If the stress lasts long enough, the body's energy supplies become depleted and major systems are exhausted leaving it vulnerable to disease. During continuous stress, a women's menstrual cycle may cease or become irregular due to insufficient energy levels needed to

maintain it (Sapolsky, 1998). Both genders report a decreased interest in sex during stress (1998). This is because testosterone, which is involved in sex drive, is produced in the adrenal glands, which become exhausted with too much stress. McEwen and Lasley report that stress illness costs the United States economy over 200 billion dollars each year (2002).

People who suffer with SBPTSD have been exposed to an inescapable stressful incident, which was so overwhelming that they were unable to cope (van der Kolk, Bessel et al., 2002). During a traumatic incident, a victim's sense of safety is destroyed and they hyperfocus on their vulnerability (Miller, 1998). Prior to the trauma exposure, mentally stable individuals perceive the world as predictable and controllable. Van der Kolk et al. identify lack of predictability and controllability as key elements in the maintenance of SBPTSD (1995).

Individuals need to feel safe and believe the world is somewhat predictable so they can make plans to meet their needs and desires. During planning, people normally think through available options and determine the appropriate selection before they act (van der Kolk et al., 1995). Traumatized individuals lack the ability to internalize options and make plans because their emotions remain so intense that the Central Nervous System (CNS) responds as if the person is in constant danger (1995).

SBPTSD victims exhibit abnormal psychophysiological responses. They respond to triggers (things that consciously or unconsciously remind them of traumatic events) regardless of how long ago the event occurred. Triggers begin as specific reminders and generalize to neutral stimuli. Psychophysiological responses to triggers include abnormal acoustic startle response (ASR) which includes conditioned, instantaneous automatic reactions involving increased heart and breathing rates, increased blood pressure, and muscle tension. ASR initiates a sequence of

autonomic and muscular processes mediated by excitatory amino acids including glutamate, and aspartate. These responses travel along neuronal pathways that affect areas of the brain, which activate the CNS, and stimulus evaluation centers (van der Kolk, 1994). Curiously, researchers have documented abnormalities in habituation to the ASR in PTSD victims as well as individuals who have recovered from PTSD (1994). This begs the question of whether the ASR response makes a person vulnerable to PTSD or does PTSD decrease one's capacity to evaluate stimuli and respond with appropriate physiological responses.

SBPTSD develops after an exposure to an event which the person experiences as extremely distressing and traumatic (van der Kolk, 1994). Extreme distress causes a release of endogenous threat-response neurohormones, including epinephrine, oxytocin, cortisol, vasopressin, and endogenous opioid all of which prepare the body to mobilize the necessary energy to mount a threat response (1994). Arousal is mediated by the limbic system located between the brain stem and the cerebral cortex (Rothschild, 2000). The limbic system regulates the emotions, survival responses, and behaviors associated with survival. When there is a perceived threat, the limbic system and the autonomic nervous system (ANS) work together to evaluate stimuli and launch a threat response via the Hypothalamic Pituitary Axis (HPA) (2000).

Once the HPA perceives a threat (regardless of whether the threat is real or not), the Sympathetic Nervous System (SNS) activates and prepares the body for fight or flight. The SNS releases Corticotropin-Releasing Hormone (CRH) and activates the Locus Coeruleus, a region in the brain which secretes epinephrine and norepinephrine throughout the neo-cortex, the limbic system, and other parts of the CNS. This process assists with memory consolidation while preparing the body for fight or flight (Sapolsky, 1998; van der Kolk, 1994; Yehuda, 2003).

Simultaneously, CRH interacts with the pituitary gland, which releases Adrenocorticotrophic Hormone (ACTH) and the anterior pituitary, which releases glucocorticoids from the adrenals (Sapolsky, 1998; Rothschild, 2000; van der Kolk, 1994). Cortisol is the neurohormone responsible for stopping the secretion of epinephrine and norepinephrine, thereby halting the threat response. Once the threat response is stopped, the body decreases allostatic load and returns to allostatic balance or homeostasis. People who suffer from SBPTSD and PTSD have lower levels of cortisol. It is hypothesized that they do not secrete enough to stop the threat response (Sapolsky, 1998; Rothschild, 2000; van der Kolk, 1994).

Yehuda reviewed an unpublished study by Heidi Resnick where blood cortisol levels were taken from 20 acute female rape victims. Three months later, all the women were evaluated for SBPTSD. The women were asked if they had a prior history of sexual trauma. It is noteworthy that the women who had a prior history of sexual trauma developed SBPTSD at a higher rate than women with no prior history (Yehuda, 2003). Researchers question whether previous trauma blunted the cortisol response so that women with prior rape histories were predisposed to develop SBPTSD or if these women originally had lower baseline levels of cortisol, which facilitated the development of SBPTSD (2003).

Some studies indicate that victims who develop SBPTSD have increased cortisol and SNS arousal immediately following trauma. This is an indication that the body is attempting to halt the threat response. Catecholamines (releasing hormones) and glucocorticoids (inhibiting hormones) have a modulating effect on one another. Catecholamines (adrenaline) initiate the arousal response to threat and it is believed that corticosteroids normalize the arousal (van der Kolk 1994). If there is a blunted glucocorticoid response or insufficient cortisol to inhibit the

catecholamines, the body remains in a state of hyperarousal. An imbalance of these neurohormones caused by extreme or excessive exposure to traumatic incidents can permanently alter one's coping mechanisms (Yehuda 2003). Traumatic triggers in the form of intrusive memories and thoughts, flashbacks, can further compromise the stress response system resulting in changes in how the body deals with anxiety (2003).

Researchers suspect that decreased serotonin levels play a role in SBPTSD and PTSD. A decrease in serotonin levels is associated with impulsivity and aggressiveness in humans. Temperament and experience also affect levels of serotonin in the CNS (van der Kolk, 1994). It is not surprising that a combination of components associated with decreased serotonin, certain temperament and experiences that can include impulsive, aggressive, and suicidal behaviors, correlates positively with childhood trauma (van der Kolk, 1994).

Behavioral studies with animals having low serotonin levels show similar behaviors as those found in humans including a diminished capacity to modulate arousal. Lack of modulation is documented to result in increased levels of irritability, sensitivity, excitability, emotional arousal, and aggression in a variety of situations ranging from mild stimuli such as being in a novel situation to more intense situations such as pain (van der Kolk, 1994). These types of behaviors are exhibited by individuals suffering with SBPTSD. Serotonin Reuptake Inhibitors (SRRI) are used to treat preoccupation with traumatic memories in SBPTSD patients and obsessive thinking for Obsessive Compulsive Disorder (OCD) patients. Sufficient serotonin levels may be involved in the ability to respond appropriately and adapt to changing environments (van der Kolk, 1994). PTSD and OCD patients lack flexibility and habitually respond to internal cues that are inappropriate and incongruent with the situation.

Apart from hyperarousal and the associated fight or flight response, individuals who are exposed to trauma may also utilize a freeze or dissociation adaptation mode when necessary (Chapter 1). When young animals or children are attacked by a larger and/or stronger organism, a fight or flight response may be counterproductive so they may freeze. Freezing, like all survival modes, is automatic and determined by the limbic system. Freezing is adaptive; it allows the victim to be undetected or left for dead. Freeze is mediated by the HPA axis and the release of cortisol (Sapolsky, 1998).

In any threat response, the body prepares for the possibility of pain. Fear activates the secretion of endogenous opioid peptides and analgesics to inhibit the intensity of the pain that may occur during defensive behaviors (van der Kolk, 1994). Endorphins or enkephalins (the body's painkillers) support flight, flight, and freeze behaviors by quieting the pain signal. If the victim can't escape or fight back, the parasympathetic nervous system (PNS) kicks in resulting in tonic immobilization (Sapolsky, 1998). Many rape victims have suffered much shame because they do not understand this neurobiological response and do not understand why they failed to fight back.

When there is a lack of completion of the freeze response and the victim experiences ongoing dissociation along with the associated endorphinergic secretion, a kindling of the trauma response may potentiate (van der Kolk, 1994). The secretion of endorphins and enkephalins acts as a chemical reward similar to that involved in the type of reward experienced when an individual takes pain medication and feels relief. This reward response may contribute to victims who compulsively reenact traumatic events (see Chapter 4).

Kindling results from unresolved peritraumatic dissociation and is initiated by triggers to traumatic memory. Not only does stimulus associated with the traumatic event trigger the memory but previously neutral stimuli are generalized to trigger the memory as well. Kindling is an oscillatory phenomenon that represents general biological functions occurring in various biological systems including the endocrine, autonomic, and neurohormonal, which proceed in a bimodal manner in response to chemical or behavioral stimuli (van der Kolk, 1994). This process may be the body's biological attempt to reestablish homeostasis and decrease allostatic load by returning the system to its normal rhythmic and balanced fluctuation (van der Kolk, 1994; Sapolsky, 1998). Cyclical autonomic dysfunction may lead to symptoms exhibited in trauma victims and is also involved in affective disorders, predominantly Bipolar I (1994).

Some victims fail to recover from immobilization or freeze response. This involves the retention of energy that was initiated by fear but not used because fight and flight behaviors were not activated (Scaer, 2001). This results in increased levels of adrenalin, which drives memory and the associated triggered symptoms of trauma (2001). When animals emerge from immobilization, they shake to dissipate the stored energy. It may look as if they are having a seizure. Humans, however, do not have a mechanism with which to dissipate the stored energy after immobilization. Freezing and dissociation are associated with parasympathetic tone, learned helplessness (see Chapter 3), and impaired cognitive functioning including concentration, memory, and learning (van der Kolk, 1994). Dissociation appears to perpetuate the cycle of trauma by containing the physiological arousal that strengthens memories and generalizes the threat response to previously neutral stimuli.

Brain Development

There are consequences of childhood trauma which including developmental consequences. Prenatal and traumatic stress during the first years of life influence brain development and the stress response by increasing the reactivity of the HPA axis and facilitates aging of the brain (McEwen and Lasley, 2002). It is well documented that childhood abuse and trauma cause developmental delays and deficits in the regulation of emotions and cognitive abilities. This suggests there are alterations of the stress response system that adversely impacts the developing brain (De Bellis, 1999). Childhood sexual trauma can result in SBPTSD, depression, hippocampal atrophy and cognitive impairment, obesity, skeletal fractures, liver and lung disease, sexual promiscuity, suicide, and cancer (2002).

Hammer and Copeland assert that the brain is built by biology and developed by social interactions and human contact (1998). Biologically, the brain's deoxyribonucleic acid (DNA) begins the process by following the genetic code inherited from parents. DNA is a gene. Genes are chemicals. DNA is made from protein that is converted to amino acids that behave as an enzyme and change one chemical into another (1998). Humans have 99.9 percent of the same DNA. It is the remaining one-tenth of one percent difference in DNA that accounts for approximately three million inherited variations among individuals (1998). Problems in DNA can have devastating results which significantly limit one's mental development.

Humans inherit many genes which determine and predispose them to a variety of conditions including mood, anxiety, gender, height and weight, illness, and intelligence functioning. Genes control specific aspects of the brain's chemistry. Each gene manufactures a receptor protein, which interacts with and responds to stress hormones (Hammer, Dean, and

Copeland, 1998). Differences in gene inheritance coupled with life stressors make the difference between being happy, anxious, or depressed. It is interesting to note that the gene we inherit for anxiety is also responsible for the expression and development of depression (1998).

The serotonergic system is an important system and is involved in many bodily functions. It begins in the raphe nuclei in the midbrain and spreads throughout various brain areas, glands, and the limbic system (Hammer and Copeland, 2002). Although it stimulates large regions of the brain and impacts mood, behavior, and self-concept, it has only one serotonin transporter and one serotonin gene, which dictates its structure (2002).

Temperament is also influenced by genetics (Hammer and Copeland, 2002). Investigators studying anxiety have associated prenatal heart rate with levels of anxiety in infants. Temperament is also influenced by learning (2002). It is associated with perception and reactions to stimuli, which may be stored in emotional memory (2002). For example, consider two children. One child appears to be naturally curious and adventurous. This child experiences joy while happily exploring novel situations. The other child, exposed to the same situation, experiences fear and panic. The chemistry that determines the children's behavioral response is genetically determined in the limbic system, which is also involved with emotional memory storage (2002). As a child reacts to many situations with the same type of response, that response becomes a habit. In this example, curiosity expressed by one child and fear expressed by the other child becomes their respective automatic, unconscious, default reaction for many situations.

Character is formed through memories and learning. But, unlike temperament, these memories involve the cerebral cortex which is the brain's manager versus the limbic system

which is involved with emotional memory (Hammer, Dean, and Copeland, 2002). Character is based on the beliefs that are formed and learned through interactions with societal norms and self-concept (2002). Character can regulate temperament traits such as neuroticism, emotional sensitivity, and anxiety if an individual is rewarded for positive behaviors, has an internal locus of control, and possesses a positive self-concept (2002).

The brain develops from the inside out and the bottom up as the child matures. The bottom of the brain, the brain stem and the diencephalons, is associated with more primitive functioning and responses (Perry, 2001). As an individual grows and develops, the higher less impulsive brain take more control over emotions so they are less reactive or impulsive. The brain's capability to modulate impulses and reactivity involves interplay between the higher, cortical and sub-cortical areas, and lower brain (2001). Chronic traumatic stress interferes with this process by increasing activity in the brainstem while simultaneously decreasing the cortical areas modulating function (2001).

An infant's brain not only develops in a particular direction but it also develops and organizes structurally in a use-dependent fashion (Perry, 2001; van der Kolk, 1998). The pattern of development reflects the repetition of experiences and functions that are associated with infancy. As a child grows, normally they are increasingly exposed to experiences that allow them to learn coping skills dealing appropriately with frustration, impulsivity, anger, etc. As they practice handling these emotions, the modulating capacity of the higher brain is strengthened and increased. There is a sequential age-related and cortically-mediated development of the ego and super-ego functions which inhibit the more primitive reactive impulses (Perry, 2001).

If the CNS is deprived of the optimal, time-sensitive, developmental experiences necessary to develop fully the cortical, sub-cortical, and limbic areas, the lower brain will become dominate resulting in immature and even violent behaviors (Perry, 2001). The brain's sensitivity to stress during infancy and childhood depends upon the stage of development and level of maturity. During the early years, chronic stress and exposure to violence and trauma results in neurobiological threat responses that affect normal neurodevelopment. Stress and trauma influence the pattern and emotional intensity of sensory and affective experiences, which can alter migration, neurogenesis, synpatogenesis, and neurochemical differentiation (2001). As mentioned earlier, chronic stress and trauma create functional deficits and developmental delays.

When an infant or child is continuously exposed to chronic stress, the stress response is strengthened through repeated use. Repeated use causes the associated neural system to organize and structurally develop permanently in a way that reflects the strengthening of that system. This means that important structural and cellular functions, including emotional, behavioral, and cognitive functions, will be permanently altered and the brain will configure and develop physically to reflect those alterations as it grows (Perry, 2001).

The brain continues to increase in intracranial volume until the age of 10 (De Bellis, 1999). By two years old, the brain has reached 75 percent of its adult weight, approximately three pounds, and has most of its intracranial volume and approximately 100 billion neurons, most of which are present at birth (McEwen and Lasley, 2002; De Bellis, 1999). The brain keeps a map of the body and its nerve cells. As an infant receives input, it begins to connect neurons in a manner that represents the data collected, a process known as plasticity

When a mature brain undergoes stress, it can pause, recover, and renew itself through plasticity and neurogenesis (McEwen and Lasley, 2002). Plasticity is involved in organization and structural development of the brain (2002). When input creates enough excitation and stimulation in the brain, the brain makes new synapses to record the experience (more in Chapter 3). The more synapses connected to a specific experience the more likely that event will become a permanent memory. Significant stress causes the brain to reconfigure so it can protect itself from permanent damage (2002). Individuals become traumatized when internal and external resources are insufficient to deal with external threat.

Attachment Theory

Many researchers are investigating the affects of trauma at different ages. Much research focuses on secure versus disorganized/disoriented attachment (Type D) and how it affects the developing brain. As mentioned earlier, normal development involves interplay between biology and social interactions. Humans need social support so they can develop a sense of safety, power, and control. Attachment theory says that secure attachment, which is produced by attuned infant-caregiver interactions and normal genetic inheritance, is vital for healthy psychological development.

At birth, an infant has instincts and reflexes that deal with the basic biological functions, but they cannot survive without a primary caregiver (Rothschild, 2000). They need a caregiver to meet those biological and psychological needs, which helps to facilitate physical and developmental growth and maturity. Researchers agree that infants need appropriate nurturing from a caregiver in order to achieve normal development of the brain, and CNS, so they can be

emotionally healthy. Without this nurturing, the infant is left to its own devices to integrate positive and negative experiences. Because an infant or young child has few and immature coping mechanisms, they are vulnerable to stress and need a caregiver to intervene in order to protect them. If they are not protected and are chronically exposed to stress or traumatization, they may become predisposed to psychological disorders of mood, dissociation, PTSD, addiction, and other psychiatric dysfunctions (Shore, 2001; Rothschild, 2000).

An individual's response to a perceived threat is determined by their physical and psychological maturity and innate variations in physiologic reactivity (van der Kolk, 1989). During infancy and childhood, an appropriate primary caregiver normally helps a child modulate physiological arousal by taking care of their needs, protecting them from adverse situations, and comforting them. When there is no caregiver or the caregiver is emotionally unavailable, rejecting, abusive, or depressed, the immature infant or child is left to modulate their own level of arousal which is normally either insufficient or excessive (1998).

Attachment behavior is an important biological function that is necessary for infant survival and for survival of the species (van der Kolk et al., 1995). Attachment ruptures or disturbances appear to have long-term neurobiological and biopsychosocial consequences. These consequences include an adverse affect on learning, coping, immunity, affect regulation, and level of consciousness. Results also include a decrease in the infant's capacity to develop meaningful social affiliations and a tendency to organize experiences somatically (1995). Studies of the affect of childhood physical and sexual trauma show when critical stages of CNS development are disrupted it causes permanent disturbances and alterations.

The basic function of the brain is to gather information concerning the interaction between the body and the environment and make adjustments that facilitate survival (Schore, 2001). In the first three years of human life, the right hemisphere of the brain is rapidly maturing while the left-brain remains immature. This right brain growth spurt involves nuclear and mitochondrial genetic material that is influenced by the social-affective environment (2001). It is now known that social and environmental experiences are vital to the differentiation of brain tissues (2001).

A critical stage of early brain development, shortly after birth, correlates positively with high energy for receptivity between the caregiver and infant. During this critical stage, the caregiver and infant begin to interact in specific patterns that allow them to adapt to one another. Appropriate interactional patterns that are established between caregiver and baby promote healthy infant affect regulation. These patterns are right brain activities. This is part of the social-emotional attachment process. This process includes infant-caregiver bonding and attunement and dysregulation and regulation of both bodily and affective arousal in the aftermath of stress and trauma (2001). During this time, the brain is enormously sensitive to anything that may affect it negatively. Additionally, during this critical stage of early brain development, the brain needs more energy than any other time throughout the lifespan.

Researchers currently believe that during this critical stage, cortical and subcortical networks made up of synapses over-produce synaptic connections. The synapses compete to attach to selected connections, the ones most adaptive to handle input from the environment (Schore, 2001; Sapolsky, 1998). The brain is programmed genetically to develop based on this organization and structural interaction. Not all synapses attach with a connector, which leaves

extra-unattached synapses. These synapses die off which is the way the brain fine-tunes and self-organizes its structure and physically shapes the brain (Schoore, 2001; Sapolsky, 1998). This means that the brain develops and organizes structurally depending upon a combination of stage of development, genetic inheritance, and the type of attachment between the primary caregiver and the infant. Attachment, therefore, can effectively help the brain either expand or decrease the development of adaptive functioning.

Ratley says that bodily expressions are the way in which infants first communicate emotions to their mother (2002). Darwin thought that the muscular movement involved in facial expressions are inherited (2002). We now know that crying, laughing, and other facial expressions are facilitated by neural circuitry in the brain and are neurobiologically hard-wired responses that present shortly after birth without the benefit of teaching (Rothschild, 2000). MRI studies evidence that at approximately eight weeks of age a normal infant's brain undergoes a rapid metabolic change in the visual cortex (Schoore, 2001). This is also a critical stage for synaptic connection in the occipital cortex to be further developed through visual stimuli (2001).

During that time, infants prefer human faces. They track faces and engage in mutual staring, especially with their mother. This behavior increases cognitive and social arousal for the infant. The mother helps to regulate the infant's intensity of arousal through the process of synchronization. Synchronicity is a match between the mother and infant's activity that promotes positive mutual play interspersed with appropriate periods for the infant to rest and recover (Rothschild, 2000). It is the mother's task to read her infant's cues and to adjust her level of activity to match that of the infant. The ability of the mother to regulate arousal in the infant requires that the mother regulate herself and behave in a manner that assists the

developing infant. During synchronization, as infant and caregiver move from high to low levels of arousal, a mother and infant recreate an internal psychophysiological state that is very similar to the others (2000).

It is widely known that shifts in energy are the basic elements of emotion and the way in which emotional information is transmitted (Rothschild, 2000). It is through infant-mother interactions that an infant expands its capacity to evaluate stressful and novel stimulus and begin to develop coping skills. If an infant can cope they can begin to explore, tolerate, and learn from experiences, thereby effectively increasing their capacity to adapt (Schore, 2001).

As previously stated, survival depends on the ability to adapt to situations and to return to homeostasis in the face of a threatening or novel event. Response to the stimuli initiates a neurochemically hardwired behavioral response resulting in allostatic load or asynchrony. The interplay of various physiological systems, discussed earlier in the chapter, regulate the autonomic and somatic elements of the threat response along with the inherent emotional state. Emotions depend upon the interaction of the ANS and the brain (Schore, 2001). Physiological states are communicated between the SNS and the cranial nerves via somatomotor and visceromotor control systems regulating expressions of emotion (2001).

Additionally the limbic system, which regulates coping and emotion of processing, is involved in the formation of facial expressions, which the caregiver uses to understand the infant's experience (Schore, 2001; Rothschild, 2000). If the infant experiences stress and the mother is not attuned, the attachment bond is ruptured causing asynchrony. Asynchrony can be repaired when it is followed by synchrony. Synchrony involves the caregiver being attuned and using facial responses and cues that motivate the infant to adapt to stimuli by increasing or

decreasing excitation in the neuromodulatory system in the brain stem (2001). The neuromodulatory system is responsible for emotional and arousal states and regulates and coordinates growth-promoting, stress related functions, and the timing of the developmental process (Schore, 2001).

Type D attachments, early negative caregiver relationships, and adverse experiences, inhibit appropriate neurochemistry vital to effective emotional regulation and proper organization and structural development during critical periods (Schore, 2001). Disruptions result in maladaptive functioning and lack of flexibility (2001). It is not uncommon in Type D attachment that the mother may be suffering from PTSD, depression, and other psychiatric disorders making her emotionally unavailable (Schore, 2001; Lott, 1998; van der Kolk et al., 1995). Type D attachment is often exhibited by infants and children who have suffered abuse and neglect. They are constantly trying to return to homeostasis without the assistance of an appropriate, attuned, mentally healthy and stable caregiver.

Prolonged allostatic load exposes the developing limbic neuronal connectors to stress neurotransmitters such as cortisol and glutamate for extended periods (Shore, 2001). Over-exposure to these neurotransmitters can activate excitotoxic receptors causing neurotoxicity and elimination of synapses along with neuronal death in important affective areas in the limbic system (2001). This process can create permanent alterations and problems in directing emotions and appropriate adaptation. Infants and children who suffer from SBPTSD and PTSD often have a decreased capacity to adapt and learn which results in a lack of normal healthy organization and structural development of the brain which leaves them vulnerable for further stress (2001).

CHAPTER 3

PRECURSORS AND POSSIBLE CAUSES OF EXACERBATION

Role of Learning, Memory, and Emotion in SBPTSD

Emotions, learning, and memory all have an effect on each other. Emotions can significantly impact learning and memory both positively and negatively. To gain understanding of their respective roles in SBPTSD this section begins with a summary of the Polyvagal Theory of Emotion. This theory will serve as a neurophysiological foundation for understanding the evolution of emotions in humans.

The Polyvagal Theory of Emotions is based on the connection between the evolution of the ANS, affective experiences, verbal communication, the expression of emotions, and contingent social behavior (Porges, 1997). The theory is derived from a phylogenetic shift in the neural regulation of the ANS. This shift is necessary to allow organisms to increase their capacity to control metabolic output (energy). Controlling metabolic output is an integral part of the threat response.

This theory is based upon the phylogenetic dependence on the structure and function of the vagus nerve, the parasympathetic nervous system's (PNS) primary nerve (Porges, 1997). There are three stages of phylogenetic neural development that are involved in the phylogenetic shift and associated increase in metabolic control. The first two stages involve a primitive unmyelinated vagal system while the last stage is more advanced and is myelinated.

Stage one facilitates digestion and decreases cardiac output during a threatening or novel situation in order to protect metabolic resources (Porges, 1997). It is associated with

immobilization or freezing behaviors. Stage two involves the spinal sympathetic nervous system (SNS) which increases metabolic output and stops digestion to conserve energy needed for flight or fight (1997). Stage three, exclusive to mammals, regulates cardiac output (1997).

The mammalian vagal system originates in the brain stem, which controls facial muscles including expression and vocalization. As presented earlier, attachment theorists believe healthy mother infant bonding and associated interactive behaviors facilitate the development of complex social behaviors. One way the mammalian system helps assist in the development of socially appropriate behavior is by helping humans remain calm via an inhibitory effect on sympathetic pathways to the heart (Porges, 1997).

Phylogenetic development of the ANS is hypothesized to be an organizing principle for human emotion. It is based on the hypothesis that the phylogenetic evolution of ANS provides an organizing principle for affective experiences and determines limits on social behavior (Porges, 1997). In general, this theory proposes that phylogenetic development results in increased neural control of the heart, which allows for rapid adjustments in metabolic output when necessary. This increases the capacity of the CNS to regulate behavioral responses to environmental challenges.

To facilitate an understanding of the Polyvagal Theory of Emotion a summary of the rules and assumptions have been included.

1. In order to have emotion there has to be communication between the brain and the ANS (Porges, 1997). Information concerning one's physiological state is communicated from the body to the brain. This is crucial to the psychological

- experience of emotion because the brain communicates and controls the expression of the emotion (1997).
2. The Polyvagal Theory of Emotion hypothesizes that evolution has altered the ANS's structure.
 3. Both the experience and expression of emotion are derived from those structural changes.
 4. The mammalian ANS retains some of the features of the older ANS.
 5. The phylogenetic level of the ANS determines affective states and associated social behavior.
 6. The ANS initiates responses dictated by the phylogenetic structure on a continuum. The continuum begins with the most recently evolved structural adaptations. If that structure produces a response that is insufficient, the organism reverts to the most primitive structures and associated responses in the system.

There are five phylogenetic-dependent response systems.

- One involves a chemical excitatory system that increases heart rate.
- The second decreases heart rate in an effort to conserve metabolic resources.
- The third system is a spinal SNS system that activates neural excitation to speed up mobilization.
- The fourth involves regulation of the adrenal medulla system to gain increased control over the release of circulating catecholamines. These hormones support and assist in continued utilization of metabolic resources required to sustain effort.

- The fifth system involves the mammalian vagal system that allows for transitory mobilization without metabolic shut down by the primitive vagal system or metabolic excitation by SNS.

These phylogenetic-dependent response systems are associated with three neuroanatomical constructs that are connected to particular emotional subsystems in humans. The subsystems are involved in experiencing and expressing emotion. Each subsystem is initiated by specified motor output from the CNS, which manifests a specific adaptive survival response pattern. These subsystems conserve metabolic resources so that energy is available when needed. Van der Kolk notes that mammals appear to have memory storage mechanisms, which correlate positively with memory consolidation and stress hormone secretion (1994). This process is thought to evaluate the importance of sensory input, which is based on the strength of the memory trace (1994).

A section of the frontal lobe, the ventromedial cortex, is responsible for emotions (Ratey 2002). Emotions are involved in the process of making decisions. Emotions are felt in the body and have a behavioral component, which manifests physically via motor activity. That is how one feels them. Emotions related to sexual trauma include anger, rage, shame, guilt, fear, anxiety, and terror (Rothschild, 2000 and Tollefson, 1994).

Researchers have identified four basic emotions and theorized that other emotions are combinations of the basic four. Ratey identifies these as fear, anger, sadness, and joy that he states are associated with different functions and patterns of activities in either the right or the left hemisphere of the brain (2002). An increase in right brained activity indicates negative

signals and depression while increased activity in the left-brain is positive and experienced on a continuum from happiness to mania (2002).

Fear, and its associated mental and physical survival response, is an extremely powerful and enduring emotion. The fear response is automatic. The memory of what is feared and all the things associated with that memory are programmed to be remembered within the context of fear. This means that a person who experienced a frightening event may not remember some elements of the event once they are calm. This happens because the original event was recorded and stored in a state of fear, which involves the limbic system, and specific brain regions involved with emotion and survival as outlined in Chapter 2.

When the individual accesses the memory in a calm state, they are operating from the neo cortex, which houses the domains of reason and logic. This is not the area of the brain in which the original memory was stored. If that person finds themselves in the same type of fear provoking situation again, the limbic system and brain region, where the original memory was stored will be activated, allowing the person to access fully all elements of the original memory.

If, due to hyperarousal, the fear response malfunctions and an individual who is exposed to the same trigger repeatedly responds with fear and fails to desensitize to the stimuli, the fear response becomes habitual. Additionally, the fear response may generalize to more and more stimuli, which then becomes the default mode from which the individual operates in a growing number of situations. These same dynamics are involved in state dependent learning.

This writer believes that coupling the previous discussion of state dependent learning and combining it with the principals of Pavlov's well known theory of conditioned learning will form a foundation from which to facilitate an understanding of the manifestation of fear as a

conditioned response in the aftermath of trauma. For example, SBPTSD victims commonly exhibit ASR (see Chapter 2) as a consequence of traumatization. ASR indicates that the victim is being continuously triggered to a state of hyperarousal. Continuous hyperarousal has been implicated in fear response malfunction and generalization of the fear response as discussed above. What this means is that just as Pavlov's dog were conditioned to generalize an automatic neurobiological hardwired response to food to include a bell, a previously neutral stimuli, so may victims of SBPTSD generalized and couple the ASR to an ever-increasing number of previously neutral stimuli. As the ASR, or other responses, becomes the habitual default response in most situations, enduring physiological changes may result.

An example is included for clarity. In this example, a child is repeatedly raped by her father who pumps gas in a gas station and consequently smells like gasoline. Fearfully, the child anticipates her father's return from work because he routinely gets home earlier than her mother, comes into her room, and rapes her. When he comes through her bedroom, she smells gasoline. As this scenario is repeated, the smell of gasoline, a previously neutral stimulus, becomes associated with trauma of the sexual abuse. After rape is repeated, coupled with the scent of gasoline, the child becomes conditioned to respond to the scent of gasoline with a fear response in anticipation of sexual abuse. This is similar to Pavlov's dog responding to the bell by salivating in anticipation of a steak. The child becomes more hyperaroused, as she continues to scan the environment for threats, and the fear response malfunctions. The malfunctioning fear response begins to become her default response and she generalizes more and more previously neutral stimulus to the sexual trauma. Eventually, she manifests a fear response when she goes to a gas station. Next, the victim begins to generalize a response to men who wear gas station

uniforms. In this manner, the fear response becomes subsequently more generalized to all uniforms and all men.

The emotion of fear and its physical response is involved in anxiety, panic, and phobias. Individuals who suffer from anxiety engage in faulty thinking. They engage in a negative self-talk, which includes a negative internal monologue utilizing fortune telling which predicts a negative, sometimes catastrophic, future, which exacerbates and underlies their condition. Anxiety leaves one fearful. As an anxious fearful perspective is applied to an increasing number of situations, a fear response begins to generalize and include more of the person's world. As this process continues, anxiety can increase to such an extent that the person may develop agoraphobia, social anxiety, and/or any of the other anxieties listed in the DSM-IV R. Fear and anxiety are emotions commonly felt by SBPTSD survivors. The biology of the response to terror and its manifestation in the body produces feelings of fear and anxiety, which are paramount in the development of SBPTSD.

People, who are afraid, tend to worry. Worry is involved with serotonin levels, which are regulated by an anxiety gene (Ratey, 2002). Humans inherit an anxiety gene, which predisposes them to anxiety or depression or may manifest both disorders (2002). There are two versions of the anxiety gene, one longer version and one shorter version (2002). The longer version is associated with increased levels of serotonin and lower anxiety while the shorter version indicates decreased serotonin levels and higher levels of anxiety. The shorter version makes people feel restless and more sensitive to internal and external cues. People with the shorter version are more at risk to habitually over-respond and develop SBPTSD in response to sexual abuse.

Another basic emotion, anger, underlies several disorders including heart attack and stroke. Anger can be expressed on a continuum that increases to rage. It is a way to put up a barrier and say no. Anger is commonly expressed when people feel threatened or hurt (Ratey, 2002). In the aftermath of sexual trauma, anger can generalize and become associated in many aspects of the victim's life. The cues that signal anger may, however, be outside of the victim's conscious awareness.

People, whose anger spirals to rage and aggressiveness, have lower levels of activity in the frontal cortex, an area of the brain, which houses restraint and wisdom (Ratey, 2002). When the frontal cortex does not inhibit anger, the emotion and associated thoughts can become out of control. People with decreased frontal cortex activity have difficulty expressing their emotions and thoughts. This is seen in people diagnosed with ADHD, brain trauma, and substance abuse (2002). Additionally, victims of sexual molestation and abuse may experience increased levels of anger. As noted in Chapter 1, sexually traumatized men tend to externalize these emotions behaviorally. Chapter 4 will discuss how post traumatic anger and aggressiveness, along with other emotions, are involved with sexually traumatized victims who feel a compulsion to repeat the trauma.

Sadness is an emotion experienced by trauma victims. Sadness is a response to loss. When one experiences sadness, there is increased activity in the left amygdala and the right frontal lobe (Ratey, 2002). If sadness is prolonged, activities in these brain regions increase. It is hypothesized by several researchers that over-stimulation in these brain regions causes neuronal dysfunction because it depletes serotonin levels. Serotonin is involved in many

functions, one of which is facilitating chemical transmission of information from neuron to neuron.

Decreased serotonin levels can result in depression and numbing of feeling. Long-term depression is considered the underpinning of forgetfulness (Sapolsky, 1998). Evidence shows that depression is associated with traumatic stress and can result in atrophy in parts of the brain (1998). In chronic stress and trauma, the body requires more glucose (energy) to be released continuously in order to prepare for a threat response. If stress is sustained for approximately 30 minutes, the body returns glucose levels to baseline. If the stress continues, the body inhibits glucose to the hippocampus. This reduced glucose level along with excessive stress hormones can cause neurons to shrivel and result in long-term depression of the memory function of the hippocampus (1998). This has been evidenced by MRI images. The longer a person suffers depression, the greater the atrophy of the hippocampus. It is of interest to researchers that although both victims of depression and SBPTSD have hippocampal atrophy, approximately 50 percent of depressives secrete too many glucocorticoids while SBPTSD victims secrete less than the average amount (Sapolsky, 1998). It is unclear whether people who develop SBPTSD do so because of the trauma, which results in excessive secretion of glucocorticoids causing the hippocampus to atrophy, or if the hippocampus was smaller to begin with and these individuals were, therefore, predisposed to develop SBPTSD (1998).

Joy, another identified basic emotion, is also associated with neurotransmitters such as endorphins, and enkephalins which cause individuals to feel good (Ratey, 2000). Feeling good is part of an internal reward system that is involved in motivation and learning (2002). Motivation determines the amount of energy and attention that the brain will give to a situation (2002). This

may be what is involved when a child is diagnosed with ADD but the parents refuse the diagnosis because they know the child can attend when involved in an activity that the child finds pleasurable. The pleasurable activity releases the neurotransmitters that cause the child to feel good so it is internally rewarding and motivating. Because the child is naturally stimulated to release the proper chemistry when involved in an activity they find pleasurable, they can attend and remember everything associated with the activity. Pleasure and joy are emotions involved in goal-directed activity, which fills our basic needs by creating tension that pressures us to act in order to feel better (2002).

Situations and stimuli are labeled emotionally by the extended amygdala, the primary pleasure center of the brain, which determines the level of motivation (Ratey, 2002). The cingulate gyrus links emotion and motivation by processing internal and external sensory input, which is linked with the basal ganglia for motor activity and to the hippocampus for memory (2002). Malfunction of this process, which can be a neurological malfunction, produces apathy, anxiety, and difficulty in making decisions (Ratey, 2002). In order to make a decision, memory has to be working properly. Decision-making is a frontal lobe activity, which involves levels of serotonin and the interpretation of events by the amygdala. Panic is driven by the amygdala and produces hyperarousal. If the hyperarousal becomes significant, enough the amygdala will signal the nucleus basalis in the extended amygdala to send acetylcholine to the sensory cortex, which encodes and stores the memory (2002). Acetylcholine is the neurotransmitter that handles information processing in the cerebral cortex where memory takes place (McEwen and Lasley, 2002). When panic becomes generalized to associated stimuli, a negative feedback loop is repeated and strengthened in the same manner previously discussed so that a panic response can

be generalized to unrelated stimuli and situations. This is one way in which people are thought to manifest social anxiety (2002).

Other emotions, including shame, dictate how people feel. Shame is involved with learning via cultural norms. Shame can stop us from behaving inappropriately. It is commonly manifested as a consequence of sexual trauma and can be a factor in the development of SBPTSD. Sexually traumatized individuals tend to blame themselves for not stopping the incident, regardless of whether or not they had the resources to do so. This is true even of victims who were sexually molested as children who had no control over the situation. Shame in excess wreaks havoc in many domains of one's life. Shame, as discussed in Chapter 1, is one of the reasons males do not seek professional help for sexual trauma.

Shame and other emotions connected with trauma are often reinforced because the survivor frequently relives the traumatic event via intrusive thoughts, flashbacks, and nightmares (Tollefson, 1994). Reliving releases stress hormones and kindles the strength of the memory trace causing a self-perpetuating feedback loop, which results in increased physiological arousal (van der Kolk, 1994). Strengthening of the memory trace may continue to exacerbate a subclinical sexual based posttraumatic response into a clinical SBPTSD via the limbic system (1994).

The limbic system, described in Chapter 2, is considered part of the CNS. It is involved in memory storage and recall. Additionally, as outlined in the Polyvagal Theory, it is active in the interpretation of emotions and associated behavior necessary for survival. This process begins with sensory input routed to the thalamus, then to the cortex to create a thought, on to the basal ganglia which determines activity, and finally to the limbic system where sensory input

determines the emotional significance (van der Kolk, 1994). This is a continuous ongoing process.

Processing of sensory input is mostly unconscious. Only novel or significantly threatening input is eventually brought to the attention of the neocortex (Rothschild, 2000). Many researchers agree that the amygdala is involved in assigning feelings of significance to sensory input and directing the flow of input based on whether or not the input is novel or threatening. If the amygdala determines that the input is significantly threatening or novel, it directs the input to the attention of the neocortex. It is there that personal meaning is assigned and integrated with the person's internal representation of the world, which may be connected to a traumatic memory and its associated emotional impact (van der Kolk, 1994; Tollefson, 1995).

Once meaning is assigned, the amygdala directs emotional behavior by involving the hypothalamus, basal forebrain, and hippocampus (van der Kolk, 1994). Sensory input is believed to record spatial and temporal components of memory via the septo-hippocampal system, which is also involved in categorizing, and storage of an experience (1994). It is believed by many investigators that the hippocampus plays a role in evaluating spatial and temporal events that are not related and compares them to previously stored events to determine if the new event involves punishment, reward, or novelty (1994).

Researchers acknowledge that as the CNS matures, memory storage also matures. Infants store things through physical sensations or sensorimotor and perceptual representations. This makes sense because infants do not yet have language. As one matures, perceptions are organized and recorded with symbolic and linguistic mental representation were they are linked with other experiences and existing knowledge (van der Kolk, 1994).

Linking our experiences with existing knowledge involves memory and is how we learn. There are two kinds of memory. Memory that organizes events in a narrative form as a story is called semantic, explicit, or declarative memory. These terms will be used interchangeably throughout this paper. This form of memory is associated with facts and events. These memories are stored with a time line, which allows a person to access a memory as something from the past. These memories contain the where, how, and when associated with an event. This type of memory is important in conscious memory recall and involves the hippocampus and the prefrontal cortex (Scear, 2001).

Explicit, declarative, or semantic memory involves an active and constructive process that depends on existing mental schemata (van der Kolk, 1994). This process associates new information with a foundation of existing previous experiences (1994). New information seeks out information that is somewhat similar or associated with the new data (Sapolsky, 1998). Once the new information finds similar data, the new information attaches to previously recorded experiences (1998). This is how new stimuli generalizes to existing memory and attaches meaning that may or may not be related based on the strength of the memory trace and connected emotional significance (1994).

Once new information is integrated into existing schema, it can never be accessed separately (van der Kolk, 1994). This means that it will always be altered by previous experiences, which include the associated emotional state of the previous experience and decisions made about those experiences (1994). Memories of events that are stored without intense emotional content are stored with a narrative as a story that changes and deteriorates with time (1994). In other words, non-emotional memories are notoriously inaccurate. Conversely,

emotionally charged, trauma-based memory, which involves explicit memory, is combined with both variably accurate verbal and visual representation of an event (Scaer, 2001). Emotional content appears to assist memory.

Our ability to connect and assimilate new information involves the septo-hippocampal system (van der Kolk, 1994). Assimilation and storage of new data can be disrupted by internal and environmental stressors, including stress hormones, which can decrease hippocampal functioning (1994). When stressors are significant enough to disrupt the hippocampus recording of mental representations of events, one records the experience somatically (1994). This means that if an event has an emotional content, which elicits a stress or threat response, the system is flooded with stress hormones that may interfere with normal memory storage.

Trauma interferes with declarative memory (van der Kolk, 1994). The definition of SBPTSD and PTSD involve memory disturbances. Trauma can affect a variety of functional memory disturbances including global memory impairment, traumatic amnesia or hyperamnesia, dissociative processes, and sensorimotor organization of traumatic events (van der Kolk and Fisler, 1995). Although trauma interferes with declarative memory, it does not interfere with implicit or nondeclarative memory (1995). These memories are stored in a system that controls conditioned emotional responses along with the sensations and behaviors related to the incident (1994). At times, the emotional impact of the event interferes with the ability to translate events into words.

Recall of traumatic events are stored and retrieved with all the emotional impact of the original event. They are state-dependent. This means that memories are available when the person is in the same state, as discussed earlier, as the original incident. So, if a victim has been

triggered by either internal or external stimuli, to a state that is similar to the state at the time of the event they can more easily remember it.

Traumatic memories tend to remain stable over time (Ratey, 2002). They, as mentioned earlier, are experienced as if they are happening now instead of in the past. This may be because somatic experiences are not processed in a narrative form or stored in specific space and time in one's personal history. They are stored in symbolic form like the forms used by the unconscious when we dream at night (Tollefson, 1999). Often, there is no narrative explanation for the feelings associated with the events. They intrude into the present in the form of flashbacks or intrusive memories.

The threat response that is triggered during intrusive thinking is linked to the serotonin levels. The proper amount of serotonin is needed to activate the septo-hippocampal system to inhibit activation of the threat response until it is needed (van der Kolk, 1994). When an individual is under significant stress, the amount of serotonin available to the septo-hippocampal system can be insufficient, resulting in a threat response to intrusive thoughts, flashbacks, and nightmares.

Stress is also involved in memory consolidation and can either hinder or help it. The duration of the stressor is important. Short-term stress can enhance memory because glucocorticoid secretion for a short period of time works with the hippocampus to create Long Term Potentiation (LTP) (Sapolsky, 1998). LTP is considered the cellular underpinning of learning (Sapolsky, 1998). This occurs when there is enough glutamate, a neurotransmitter, to create excitement in the synapse to pass information from one neuron to the next. When the

same synapse is repeatedly stimulated, less glutamate is needed which indicates that LPT, hence learning, has taken place (1998).

One stress hormone, epinephrine, helps us to develop memory of unpleasant things (McEwen and Lasley, 2002). It works in the blood vessels, which pass through the brain, but not in the brain itself (2002). This is unlike cortisol, which actually enters and interacts with the brain (2002).

Although short-term stress can facilitate memory, long-term intense physiological hyperarousal disrupts concentration and learning (van der Kolk et al., 1995). Using animal models, researchers agree that there is a large quantity of neurohormones secreted during trauma, which interferes with LTP and creates an over-consolidation of traumatic memories (van der Kolk, 1994). NE is thought to be associated with LTP (1994). Although it can enhance memory function, too much interferes with memory storage (1994). Additionally, depending upon the amount of stress hormones including endogenous opioids, vasopressin, oxytocin, endorphins, and cortisol, memory function may be enhanced or depressed (1994).

Trauma victims may experience hyperamnesia or amnesia in response to an event. It is not unusual for victims to experience trouble remembering normal events. Victims may experience hyperarousal followed by dissociation when triggered by trauma-related stimuli. Both these responses interfere with effective memory storage due to an excessive secretion of endogenous opioids and NE, which interferes with storing the event as an explicit memory (van der Kolk, 1994). These chemicals also hinder concentration, attending, and remembering which are necessary for learning. Many traumatized individuals are continuously triggered so they may exhibit symptoms similar to Attention Deficit Disorder (ADD).

In the aftermath of trauma, learning may be further impeded by loss of some maturational achievements, where the victim regresses to earlier coping mechanisms (van der Kolk, et al., 1995) Sexually traumatized children are known to wet the bed. Adults who were previously independent may exhibit dependency and inability to make decisions.

Maturational achievements and other skills are learned through the interaction of the brain and the ANS. The brain interprets and regulates all the input gathered from the five senses, via the ANS, concerning bodily functions (Rothschild, 2000). As discussed earlier, information is chemically transmitted via neurotransmitters or neurohormones. The difference between hormones and neurotransmitters is that neurotransmitters work within the same organ while neurohormones work throughout the body. Neurohormones link neurons with strings of synapses called neural connectors that are specifically configured in such a manner that they allow individuals to perform complex tasks (2000).

Neural connectors are dedicated to specified tasks such as smiling or blinking. Configurations of neural connectors may be conceptualized as a neural net (sets of synapses). As previously discussed, when one takes in new information, it is assimilated by associating it with things already learned. New information forms a neural connector (which takes approximately one and one half seconds) which seeks out similar information stored in a neural net and connects itself to it. It is through neural nets that a person ties together thoughts, perceptions, and feelings to specific events. Once a neural connector connects with a neural net, the information is assimilated and is changed to incorporate past thoughts, perceptions, and feelings.

Cognitive memory involves a present experience being linked to recall of past similar experiences, which are encoded, recorded, and stored with the past information attached to it

(Rothschild, 2000). Learning also involves the process of assimilation and linking to past similar stored data. For trauma victims, learning may be seriously impaired. This happens as victims generalize new stimuli by forming neural connectors that connect to the neural nets containing recorded traumatic events and responses. If the new information is generalized to the threat response, it is changed and is no longer evaluated as the original information but through the context of the associated threat response. Activation of the threat response impedes the learning process.

Risk Factors

Many researchers have identified a variety of combinations of factors, which increase the risk for developing SBPTSD after exposure to a traumatic event. There is a consensus that risk factors can be predictive. Which factors are the most significant, however, varies from researcher to researcher. Epidemiological studies have identified clusters of factors which researchers consider interrelated (Yehuda, 2003). Studying resiliency in PTSD is difficult because it is not a dichotomous variable (2003). Almost all survivors of trauma exhibit some symptoms after an exposure. Yehuda reports that 94 percent of those exposed exhibit symptoms that typically last for at least one month (2003). Some researchers hypothesize that because most people exhibit a universal set of reactions, those who develop PTSD may be displaying an inability to recover from those reactions.

Sapolsky identified low Socio-Economic Status (SES) as one factor that correlates positively with chronic arousal associated with the stress response (1998). Several researchers agree that poverty, lack of education and support, differences in ethnicity, and lower intellectual

functioning are interrelated factors that increase the risk of developing PTSD after an exposure. These factors are also believed to increase the risk that one will be exposed to a traumatic incident (Yehuda, 2003).

Along with low SES, numerous studies identify the family's psychiatric history as also an important predictor or risk factor (Dietrich, 2001; Yehuda, 2003). Several researchers and studies indicate that children whose parents have a positive history of PTSD, anxiety, and depression have an increased risk of developing PTSD. Twin studies reveal that perhaps 30 percent of PTSD symptoms may have a genetic basis. A genetic basis, however, is not yet firmly established (2003).

Although there is no clear genetic basis to establish the intergenerational effects of parents' trauma and the impact of modeling, it is believed that traumatized parents may teach children their neurotic traits (Portney, 2003). Consistent literature on generational trauma and its effect on the second generation has only become available post-Holocaust. Several studies of children of Holocaust survivors indicate the existence of a factor of vulnerability carried by healthy children of survivors (2003). Even if a genetic basis is established, it is probable that Holocaust survivors may model poor coping skills and teach their children their experiences and associated responses based on the belief that the world is unsafe.

Although most people experience some symptoms after a traumatic experience, not everyone develops a serious stress reaction. Individuals who feel unsafe do not trust others and generally do not cope well with stress. They also have an increased likelihood of developing PTSD if exposed to trauma (Yehuda, 2003). Conversely, the belief that one is in control leads to a better outcome (Dietrick, 2001). The American Psychiatric Association conceptualizes PTSD

as a somewhat learned response that includes a subjective affective component to a significant traumatic event, which is related to a combination of several predisposing risk factors (2001). These include, but are not limited to, type of trauma, severity, duration, and proximity (2001).

Although learning can be a factor in developing SBPTSD, it is also possible that victims manifest comorbid disorders, which confound the diagnosis. As mentioned earlier, not everyone who is exposed will develop PTSD, but there is a plethora of literature suggesting that exposure to trauma correlates positively with psychiatric difficulties. It is noteworthy that the DSM-IV R includes symptoms of other disorders and features of comorbid disorders under the category of PTSD in the section on associated features.

Recently, there has been more exploration of predisposing factors including genetically inherited risk factors, which suggest that some vulnerability factors increase the risk of developing PTSD (Yehuda and McFarlane, 1995). Although the risk of developing PTSD is increased by the presence of predisposing risk factors, it cannot be predicted solely by genetic inheritance. Researchers are unclear whether risk factors for PTSD and SBPTSD indicate a predisposition of PTSD specifically or a general predisposition to mental illness if one experiences significant stress (1995).

Children who have been traumatized commonly exhibit anxiety disorders, behavioral disturbances, and chronic hyperarousal (van der Kolk, 1994). A history of psychological and behavioral problems indicates a higher risk for the development of SBPTSD (Yehuda, 2003). As noted earlier, the age of the victim at the time of the trauma is significant. It is believed that the younger the victim, the more damaging the consequences (Rothschild, 2002). Younger children have fewer resources available to deal with a trauma. Growing amounts of literature document

various effects of trauma at different ages and developmental stages (Hopper, 2002; van der Kolk, 1994). There is some evidence that children who are maltreated may experience physiological changes that increase the risk of exposure to traumatic stressors and the development of PTSD to subsequent stressors (Dietrick, 2001). Relational trauma, including those perpetrated by parents, step-parents, trusted adults, or other family members, are generally considered to have a larger impact on the victim as discussed in Chapter 1. Mullen and Fleming found women with histories of child sexual abuse had over five times the rate of physical abuse and were three times as likely to report emotional deprivation (1998).

Other important risk factors include whether the incident involved deliberate humiliation of the child and how normal the abuse is considered by the family and their culture (Hopper, 2002). Many studies document that intrafamilial abuse creates a complex post-traumatic syndrome (Chapter 7). Dietrich reports that the National Comorbidity Survey found the risk of PTSD is the highest for individuals whose history is positive for childhood physical trauma, childhood neglect, and rape (2002).

Mullen and Fleming claim that the long-term consequences of childhood sexual abuse are modified either negatively or positively by experiences subsequent to the trauma (1998). Children who could confide in and are supported by their mother or primary caregiver have fewer long-term problems and a better prognosis than those who do not (Mullen and Fleming, 1998; Rothschild 2002). Relationships where the child feels loved and where they can discuss negative feelings can be extremely beneficial post-trauma (2002).

As previously mentioned, isolation and alienation is common for victims of SBPTSD. Being supportive helps a child reach out and accept opportunities to be involved with others.

The appropriate feedback from supportive adults helps children to feel less alienated while providing corrective information that assists the child to let go of shame, blame, and guilt. Achieving success socially, academically, and/or athletically is also helpful as it improves the victim's self-esteem and empowers them to achieve affective social interactions with peers (Mullens and Fleming, 1998). Although researchers have identified many factors that influence the development of PTSD and SBPTSD, we currently do not know what factors make one more resilient (van der Kolk, 1994).

Dietrick indicates there is a dose-response relationship between the intensity of the event and the development PTSD (2001). Duration, proximity and severity of the event are commonly acknowledged as important predictive variables (Dietrich, 2001; Hopper, 2002; Rothschild, 2000; Yehuda, 2003). The nature of the event, whether or not it involves violence such as rape, sexual torture, or combat, appears to be a more potent factor for events where interpersonal violence is involved (2003). Yehuda reports that violent acts produce PTSD and SBPTSD in approximately 50 to 75 percent of survivors while auto accidents and natural disasters produce less than ten percent (2003).

Many researchers believe that magnitude, social support, and prior traumatic experiences are the most significant predictors for developing chronic SBPTSD (van der Kolk, 1994). Although researchers differ on which variables or combination of variables are most predictive, several epidemiological studies support severity as extremely significant. If the event is severe enough, individuals without predisposing vulnerability factors are still likely to develop PTSD and SBPTSD (Dietrick, 2001). Conversely, when the magnitude of the trauma is lower, it may

be the existence of risk factor(s) that determines whether or not the victim will develop PTSD or SBPTSD (2001).

Dietrick identified five combinations of event variables that initiate possible causal pathways leading to the development of PTSD and SBPTSD. These pathways include low to high magnitude of events in various combinations of low, moderate, or high risk factors (Dietrick, 2001). Depending upon the combination of variables, outcomes vary. Dietrick describes a variety of outcomes from temporary distress, which may dissipate with support, to severe, chronic, or complex PTSD that may develop if the victim is left unsupported (2001). The extent of injury suffered during sexual molestation influences the type and level of peritraumatic reaction as well as the associated physiological threat response (2001). If an injury is extensive, the body will struggle longer to return to homeostasis. This increased physiological stress, due to allostatic load, increases the risk of developing SBPTSD (see Chapter 2).

Repeated occurrences and a number of different types of traumatic events also increase the risk of developing PTSD (Dietrick, 2001). Yehuda and McFarlane note that prior traumatic experiences influence biological responses to acute trauma and affect the long-term course of the disorder (1995). Studies document that female rape victims who have suffered prior rapes are three times more likely to develop SBPTSD than those who were raped only once (Yehuda and McFarlane, 1995). A study concerning rape and the development of SBPTSD measured cortisol levels in female rape victims' just hours after their rape. The results showed that women who had been previously raped had low cortisol levels while women with no prior rape history had higher than normal cortisol levels (1995).

According to Mullen and Fleming, childhood rape and other sexual traumas are more frequent in families who are disorganized and socially deprived (1998). Many factors, however, make up what constitutes social deprivation. Children are more at risk when there are marital problems such as domestic violence and lack of supervision due to single parenting, divorce, and separation. Marital dysfunction and the presence of a stepparent positively correlate with higher incidents of sexual molestation of children by both intrafamilial and extrafamilial perpetrators (1998). Poor attachment between the parent and the child may be reflected in lack of protection, supervision, and level of care, which leaves the child, exposed to the sexual perpetrators. As noted earlier, pedophiles often look for children who have lack of adequate adult supervision. These children are often shy and more vulnerable to attention and affection, which makes them easy targets for pedophiles (Granzig, 2002). Shyness may be inherited and is associated with anxiety.

Shy children consistently activate the right frontal area of the brain while bolder children activate the left frontal area regardless of whether or not they are under stress (Hammer, Dean, and Copeland, 1998). Highly anxious and depressed adults also use the same pattern of right frontal activation (1998). The frontal areas of the brain play an important role in controlling emotions. It is important to note that the right side is more involved in regulating negative emotions while the left is involved with positive emotions (1998). If a person's brain develops structurally in a state-dependent manner, children who utilized the right frontal area brain more during critical growth periods become right brain dominant. Dominance of the right or left frontal areas plays a key role in perception of and response to internal and external stimuli (Culpepper, 2003).

Studies of both shy and bold children reveal that shy children have more cortisol in their saliva than bolder children (Hammer, Dean, and Copeland 1998). Additionally, they have tighter muscles, greater increases in blood pressure when they stand, and bigger increases in heart rate while under mental or physical stress (Hallowell, 1997). These children are predisposed to responding negatively to a variety of circumstances and appear to suffer more from stress. Considering the biological underpinning of shyness and its positive correlation to anxiety, shyness increases vulnerability for people who experience sexual trauma to suffer from SBPTSD.

While shyness may predispose an individual to developing PTSD, research shows that experiencing peritraumatic dissociation (dissociation at the time of the trauma) is considered one of the most important predictors for the long-term effects of trauma (van der Hart and Fisler, 1995). Peritraumatic dissociation includes increased heart rate, flashbacks, nightmares, daydreaming about the event, and exaggerated startle response (Novac, 2001).

CHAPTER 4

COMPULSION TO REPEAT THE TRAUMA

Childhood sexual molestation victims manifest a wide range of behavioral responses. Individual responses are based on many risk factors outlined in Chapter 3. This chapter will explore the phenomenon of reenactment. Reenactment is exhibited by victims of both genders. The differences between trends of manifestation of reenactment between genders will be explored.

Both female and male childhood sexual abuse victims commonly exhibit increased anxiety concerning adult intimate relationships. Female victims experience increased anxiety, which often manifests in either avoidance or promiscuity. Promiscuity is a subjective term, which is considered a devaluation of self (Mullen and Fleming, 1998). It indicates a change in the victim's attitude toward their sexuality (1998). Interestingly, studies reveal that female childhood SBPTSD victims tend to evaluate their sexual behaviors as more promiscuous than non-victimized females engaging in similar types of sexual activities (van der Kolk, 1989). Various researchers found that the majority of female childhood sexual abuse survivors who engaged in prostitution, substance abuse, and suicide attempts had not made a conscious connection between the abuse and their current behaviors (van der Kolk, 1989). A random community sample of female childhood sexual abuse victims, which asked what problems the victims, attributed to their prior abuse, resulted in three percent reporting problems to prior abuse, although 20 percent reported they were promiscuous as adolescents (Mullen and Fleming, 1998).

The literature shows an increased risk of precocious sexual activities, teenage pregnancy, and social isolation for women who had suffered childhood sexual molestation (Mullen and Fleming, 1998). Another random community sample of women showed 38 percent reported rape or attempted rape after the age of 14 (van der Kolk, 1989). Of the 38 percent, 68 percent reported childhood incest (1989). Additionally, there is a two-fold increase in female victims with a history of physical violence in their marriage and unwanted sexual advances by authority figures (1998). It appears that sexual abuse victims tend to enter relationships with abusive partners. These partners are often emotionally unavailable and dominate in the relationship, which parallels the abuse victims suffered in childhood. Victims may enter these types of relationships due to lack of self-esteem, boundaries, and/or a neurotic compulsion to repeat the trauma (1998).

It is well documented that confrontation with violence changes a person's worldview. Once a person has been traumatized, not only is their worldview altered but their self-image is also altered. Victims struggle to incorporate the abuse into their basic belief system, which includes their self-worth and role in the world. Incorporation of the trauma involves a search for meaning. Some victims externalize their locus of control and blame the perpetrator for the abuse while others internalize the locus of control and blame themselves. Victims who assume responsibility for abuse may try to assume control over it. Others believe they have no control. The prognosis for victims who believe that they are responsible for the trauma is a better prognosis than for those who believe they have no control. Believing there is no control leaves these victims feeling helpless and hopeless.

Children commonly blame themselves because they believe they caused the abuse or at least should have controlled it. When the perpetrator is the victim's parent, the child often assumes the blame. This is because it is important for the child to believe their parent is good so that they are not overwhelmed by the terror and anger (van der Kolk, 1989). Anger is a common emotion experienced by sexual abuse victims regardless if it is directed at self or others. Either way it is a serious problem for victims, which is linked to various reenactment behaviors reminiscent of past trauma (1989).

Victims, especially children, seek attachment during exposure to external threats. They develop strong emotional ties to their abuser (see Chapter 1). Risk factors, which are predictive and strengthen traumatic bonding, include captivity, lack of support, outside influence, and permeability (van der Kolk, 1989). In childhood sexual abuse and spousal battering there is a cycle of submission to sexual abuse and violence, which is followed by reconciliation. In this cycle, tension mounts between the victim and the abuser, which leads to abuse and reduces the tension. The victim emotionally dissociates during abuse, which lends a surreal quality to the event. Dissociation may manifest disbelief or denial that the abuse has occurred. After the abuse, the abuser may plea for forgiveness. The victim, who wants to believe the abuse will never happen again, forgives the abuser to restore the fantasy of fusion and symbiosis (1989). This cycle is reinforced both by the excitement before the violence and the peace and surrender afterward (1989).

In traumatic bonding, the victim's traumatic memories are often dissociative and state dependent (van der Kolk, 1989). This means that the full force of the emotional impact, including the intensity of the fear and pain associated with the event, is not fully accessible until

the person is in the same state (see Chapter 3). The phenomenon of state-dependent memories may combine with the victim's indoctrinated abuser values and result in the victim remaining in abusive relationships. This may help explain why some women remain in relationships with abusive men.

Individuals who are repeatedly exposed to sexual and/or physical violence may normalize it and accept it as a part of their life. Their family's dynamics may involve violence and sexual abuse between the parents followed by reconciliation. Children in these types of families learn that they have no control over this pattern so they accept and expect it. As adults, these individuals lack boundaries and nonviolent coping mechanisms. They are often poor at communicating emotions. Females often attempt to fix relationships by trying to be perfect and utilizing co-dependency behaviors. As mentioned earlier, the abuser is the only one with the authority to evaluate the success of the victim. Abusers cannot allow the victim to succeed, however, because the abuser would then relinquish their power and control, leaving the victim defenseless.

The primary biological determinant in the continuance of violent abuser victim relationships is experience (Perry, 1997). Additionally, the exposure to violence predisposes individuals to use violent behavior (1997). Physical violence of all types, including sexual violence, can be the result of impulsive reactive behaviors or due to remorseless predatory aggressiveness (1997).

Violent behaviors, including rape, can be sexualized by the victim (Chapter 1). As previously mentioned, women who were raped are more likely to be raped again. Additionally, females who were sexually perpetrated as children have an increased risk of engaging in

prostitution (van der Kolk, 1989). Males are more prone to respond to childhood sexual molestation by becoming more violent in adolescence and adulthood than females. Male victims engage in behavioral reenactments of childhood traumas differently than women. Women tend to become either promiscuous or avoid intimacy and become depressed (1989). Women may experience an external locus of control, which leaves them helpless, hopeless, and prone to revictimization.

Behavioral reenactment is a major cause of violence. Criminals often have a history of physical and sexual abuse as children. Several prominent researchers of childhood sexual molestation find a positive correlation between earlier sexual trauma and subsequent victimization of others (van der Kolk, 1989). A study that looked at self-mutilation by male criminals indicates that a constellation of withdrawal, hyperractivity, impaired perception of pain, and violence against self or others could possibly be traced to lack of appropriate social attachment and bonding in infancy (1989). There is evidence that children who are physically or sexually abused and neglected often engage in self-destructive behaviors including anorexia and self-mutilation. Self-mutilators and individuals with Munchausen disorder consistently have a history of childhood sexual molestation. Many researchers conclude that these behaviors may be the result of primitive behavioral patterns that were initiated in the early years of life in response to aggressive caregivers and attachment ruptures (1989).

The development of the ego and super-ego is sequential (van der Kolk, 1989). The functions of the ego and super-ego are cortically mediated and involve an inhibitory capacity, which modulates the lower, primitive, part of the brain (1989). The lower brain is immature, emotional, and aggressive so modulation is necessary in order for an individual to engage in

mature appropriate behaviors. There is much literature documenting the brain's development upward from the bottom to the top. If there is interruption or interference in the development of the higher brain, especially during critical time periods, an individual's cortical, sub-cortical, and limbic system may not reach its optimal development (1989). Underdevelopment of the upper brain regions can result in the individual exhibiting immature, primitive, reactive behavior, which predisposes them to utilize violence (1989).

Lack of appropriate nurturing, via attachment and excess exposure to trauma, can result in permanent alterations to the CNS. These permanent alterations can impair one's coping skills and ability to modulate emotional reactivity. When victims become perpetrators, they may display lack of empathy or remorse. This may be due to the lack of development in specific brain regions that allows one to feel connected to others (Perry, 1997). It is important to note that many individuals who were emotionally neglected by their caregivers in childhood do not become violent. Non-violent victims of sexual abuse and emotional neglect may have several experiences including a sense of loss of self, engaging in abuser victim relationships, and remaining emotionally detached from others (1977).

Children, who are exposed repetitively to physical or sexual violence, are more likely to be violent (Perry, 1997). This can be due to many factors that include modeling, desensitization, impulsivity, increased level of reactivity, and underdevelopment of the higher brain regions due to problems with attachment or brain injury (1997). Children, who are raised with physical or sexual violence, are often characterized by their persistent display of hyperarousal and hyperactivity (1997).

Some violent behaviors manifest as impulsive, predatory, or defensive. Regardless of how violent behaviors are manifested, there are many factors involved in determining outcome. People that are extremely dangerous share a combination of malignant experiences (Perry, 1997). Most of these individuals have experienced difficulties with attachment, repetitive threats and violence, and have endured chaotic family life as children (1997). Often, they have lived in chronic fear. Through caretaker's modeling of aggressive behaviors, these victims learn that aggressive people get what they want. Victims who engage in violent behavioral reenactment may believe that sexual abuse is inevitable. Based on this belief they may decide to gain control by becoming the predator instead of remaining the victim.

Sexually abused children who live in a state of inescapable fear often suffer dysregulation of the serotonin and endogenous opioid system (van der Kolk, 1989). Serotonin is involved in regulation of other neurotransmitters that mediate emotional reactions during aggression and arousal (1989). As discussed in Chapter 2, research indicates that endorphins and enkephalins, from the endogenous opioid system, are secreted during stress and threat. There is now evidence that endogenous opiates mediate human social attachment (1989). Brain circuits that maintain attachment behaviors are endowed with opioid receptors. If these receptors are chemically activated, there is a decrease in gregarious behaviors (1989). Animal studies, conducted with mice, indicate that lack of care giving over the first few week of life decreases the amount of opioid receptors in the cingulate gyrus in the brain (1989). Isolation and loss of social support decreases opioid activity in the brain, which disrupts circuits that mediate loneliness and panic (1989). Conversely, when an isolated person reestablishes social contact, endogenous opioid and other neural changes decrease distress and strengthen social bonding (1989).

Opioid systems are also involved with brain systems that regulate sex steroid secretion and levels of social stress (van der Kolk, 1989). As noted earlier, intense emotions and stressors can block pain by increasing endorphins and enkephalins (1989). When traumatized individuals are triggered to re-experience traumatic incidents, the threat response stimulates endogenous opioid secretion, which can provide temporary relief from anxiety. In attachment, an attuned caregiver can appropriately regulate their response to sooth a distressed infant that modulates the infant's arousal. In this situation, the endogenous opioid system interacts with central noradrenergic activity and inhibits hyperarousal (1989). Childhood neglect and abuse victims do not appear to initiate the secretion of endogenous opioids at the same level of stimulation as non-traumatized securely attached children (1989).

In order to activate the release of endorphins and enkephalins from the endogenous opioid system, individuals may engage in a variety of addictive behaviors. These behaviors may include compulsive behavioral re-enactment, engaging in abuser-victim relationships, anorexia, sexual masochism, self-mutilation, and violence against others. Additionally, activation of the endogenous opioid response can produce dependence and withdrawal that is similar to what is experienced in exogenous opioid abuse (van der Kolk, 1989).

CHAPTER 5

DISSOCIATIVE DISORDER AND TRAUMA

Pierre Janet, a prominent French researcher, is commonly thought of as the father of dissociation. A century ago, he studied dissociative disorders and hysteria. At that time, the condition of hysteria included a broad range of symptoms. More recently, these symptoms have been re-categorized to include dissociative disorder, borderline personality, conversion, somatization, and PTSD. Janet studied all of these expressions of mental illness and concluded that dissociation was a common denominator and central characteristic of all of them (van der Hart and Friedman, 1980).

Janet hypothesized that more than one level of consciousness could be experienced outside of conscious awareness (Rothschild, 2000). Today, we acknowledge his hypothesis and are more knowledgeable of altered states of consciousness and dissociation. People daily experience altered states. Most automobile drivers can relate to driving home and being surprised when the car enters the driveway. Although their body drove the car, their mind was elsewhere. One may have witnessed others that were driving while in an altered state. For example, it is not unusual at a traffic light to see other drivers talking to themselves. While their body is in the drivers' seat, their mind is certainly elsewhere. It is possible that the driver is driving while in an altered state of mind and not in the present moment. Daydreaming is another example of an altered or dissociative state where the body is one place while the mind is elsewhere.

Although dissociation is common, clinical dissociation is hypothesized to be a neurobiological phenomenon that commonly occurs under significant stress (van der Hart and Friedman, 1980). It is an altered state of awareness that covers a broad array of phenomena running along a continuum from forgetfulness to splitting into different personalities as in the case of DID. Symptoms of dissociation include feelings of numbness, depersonalization, varying degrees of amnesia, out-of-body experiences, absence of emotion, and unexplainable irrational and incongruent behaviors (Rothschild, 2000). It is believed to underlie and be a predictive factor in the development of SBPTSD.

Dissociation can function as a protective defense mechanism by allowing an individual to gain emotional distance from events or traumatic memories. During a traumatic incident, dissociation is conceptualized to be a way in which the mind attempts to escape a traumatic experience when the body cannot (Rothschild, 2000). It can be adaptive because it protects the victim from experiencing the full impact of the fear, terror, and/or horror experienced during a traumatic incident.

Investigators and clinicians find that dissociation during childhood trauma is common. As discussed in previous chapters, children tend to dissociate in the face of trauma more frequently than adults do. When children respond to trauma with dissociation, that response can become habitual, continue into adulthood, and in some extreme cases may result in the development of DID (Turkus, 2003). PTSD is classified under anxiety disorders yet dissociation plays a major role. As mentioned before, dissociation is considered the most important predictor that a trauma victim will develop PTSD and SBPTSD while also being a major symptom.

A person's reality is connected to the emotional content of the events in their life. What a person experiences is that person's reality. Perception is involved in determining the emotional intensity assigned to an experience. If enough negative emotional significance is assigned to an event, the event may be perceived as traumatic.

During a traumatic event, victims automatically utilize adaptive defense mechanisms described in Chapter 2. One mechanism of dissociation, depersonalization, allows the victim to detach from the incident enough so that they can survive (Miller, 1998). Depersonalization is a subjective phenomenon of one's perception that allows a participant to feel as if an event is happening in slow motion (1998). Many people have described a distortion in time perception after having been in an automobile accident. Although the accident occurred in seconds, the victim may have experienced it as if it took much longer.

As discussed earlier, with significant trauma, an individual relives the event through intrusive thinking, nightmares, daydreaming, and flashbacks. This is an attempt of the mind to deal with the overwhelming emotional impact. This attempt may take many forms including denial, numbing behaviors, dissociative fuge states, violent emotional attacks, behavioral reenactment, development of comorbid psychiatric conditions, and subsequent amnesia and tremors (Miller, 1998). Furthermore, immobilization or freezing adaptations to threats may manifest in patterns, which include daydreaming states, loss of speech, motor or hysterical sensory dysfunction, and triggered emotional responses as reactions to the original traumatic incident.

The basic principle and underlying mechanism of dissociation involves the splitting-off of the part of the memory or perception associated with the trauma so that the victim can

mentally escape from an incident from which they could not physically escape (Miller, 1998). Through dissociation, the victim escapes the unbearable anxiety, which triggers the area of the mind that stores the unresolved trauma (1998). In this manner, the victim unconsciously affords themselves relief from conflict (1998). Hysterical dissociation may manifest in such a way that it appears as if the victim is nonchalant about the incident, however, that is not the case (van der Kolk, 1996).

Researchers hypothesized that in the neurophysiology of trauma, temporalizing and contextualizing processes are disrupted due to peritraumatic alterations in the limbic system (van der Kolk, 1996). Many psychiatric disorders are associated with feelings of disruption of both time and reality. When a person experiences a traumatic memory, time is distorted. This causes confusion due to the feeling they are reliving an event instead of revisiting it. Time distortion is due to the traumatic event initiating a dissociative state, which alters time perception as a coping and defense mechanism.

Normally, our mind uses time to organize experiences so they are distinguishable from past, present, and future experiences (van der Hart and Steele, 1997). Organizing time is useful as a screening mechanism and is initiated when simultaneously occurring events become overwhelming (1997). Extreme time distortion, however, is counter productive and causes disorganization to the extent that it disturbs one's perception of identity (1997). Realization of trauma psychologically organizes it such a way that the memory can be stored in its proper time line is in one's past history.

Realization is a component of normal thought, which involves the process of two separate functions that regulate each other. These integrative activities connect novel data to previously

stored data through assimilation. This is a continuous process, which organizes the present and allows an organism to maintain equilibrium in daily living (van der Hart and Friedman, 1980). Reproductive activities allow one to access integrations from the past.

Non-realization of traumatic events varies in degrees. This means that a trauma victim may experience non-realization, which results in amnesia for the traumatic event and may include major time disruption (van der Hart and Steele, 1997). Trauma victims are often terrified of knowing, so they are often resistant to realization. Difficulties with realization, affect regulation, and time are hallmark features of dissociative disorders and SBPTSD and PTSD (1997).

Victims of trauma may exhibit symptoms for recent or distant events (van der Hart and Steele, 1997). Researchers have noted that trauma victims frequently cannot recall years of their childhood. This is believed to be the result of repetitive assaultive sexual and physical abuse and neglect. Amnesia for non-abusive periods may be a defense mechanism used to avoid stimuli that could trigger traumatic memories (1997). Individuals who have difficulty remembering recent past events may have been completely dissociative during the abuse and are unable to access the memory. In these cases, the traumatic memory may only be accessible in the emotional state in which they were stored.

Inability to remember past and recent events may be due to the process of generalization of traumatic triggers. Generalization can occur to such an extent that the victim is continuously triggered and re-victimized. This could result in that person dissociating most of the time. Hypervigilance interferes with memory. It is common in trauma victims and evidenced by the victim continuously scanning the environment to determine whether or not they are safe.

Scanning precludes their capacity to attend to the current situation. Hypervigilance is often misinterpreted as lack of attention and may be diagnosed as ADD. The diagnosis of ADD is further justified by clinicians because the victim experiences trouble with concentration, memory, and is easily distracted. Trauma victims may hyperfocus on elements of safety to the exclusion of everything else. They may not remember things because they do not pay attention to them. To remember something one must attend to it. SBPTSD victims experience changes in attention and the way they integrate and store new stimuli.

Van der Hart and Friedman interpreted Janet's studies concerning psychological automatism, which is psychological behavior not consciously motivated or caused, in psychiatric patients who suffered from hysteria (1980). In psychological automatism, normal thought and the associated integrative activities necessary to keep an individual in equilibrium, appeared to be absent or dysfunctional (1980). These patients manifested symptoms associated with reproductive activities designed to preserve and reproduce the past (1980).

Reproductive activity facilitates access to past integrations including traumatic memories. Traumatic memories tend to gain emotional intensity each time they are triggered. When triggered, the victim accesses the original memory with all the emotional impact along with previously neutral stimuli, which, through assimilation and learning, has become generalized and added to the trauma. Through a process, the brain determines and assigns intense emotional significance to the stimuli, increasing the number of traumatic triggers stored in the neural net. As the neural net increases, the victim's world includes more triggers that can initiate traumatic memory and re-traumatize them. It is not surprising to this writer that Janet discovered most of his hysteria patients suffered from unresolved, dissociated, traumatic memories.

Janet further hypothesized that feeling and movement is inseparable and involves conscious factors (van der Hart and Friedman, 1980). This concept is part of the Janet's structural model of the mind, which included psychological automatism. Although Janet believed that in psychological automatism, consciousness might not be part of one's personal consciousness, perception, or sense of self, he did believe that behavioral patterns themselves were determined by conscious factors (1980). This model equated psychological automatism with proprioceptive functions, which utilize sensory nerves to provide feedback concerning one's body position, along with the regulatory and modulating activities of the mind (1980). Furthermore, Janet believed that psychological automatism could manifest either totally or partially. Total psychological automatism occurs when the mind is totally preoccupied with reproductions of past traumatic memories. Partial automatism occurs when only a part of the mind is occupied. In both partial and total automatism, dissociated systems of fixed thoughts and corresponding functions operate subconsciously. These dissociative systems may exist in various forms ranging from primitive to more sophisticated, including catalepsy.

In catalepsy, one loses sense of self while the mind is fully occupied with a single thought and a single automatic action (van der Hart and Friedman, 1980). Hysterical crisis, a form of dissociation, involves amnesia and may exist on a somewhat more sophisticated level forming the basis from which a victim reenacts a traumatic event(s). DID involves automatism combined with other psychological phenomenon forming complex states (1980). These activities can range from simple images or thoughts and their associated feeling and body sensations to the manifestation of identity disruption as in depersonalization and DID.

Dissociation manifests when one's integrative capacity is disrupted. This results in the splitting off and separation/isolation of specified psychological regulating activities (van der Hart and Steele, 1997). Depersonalization is part of the dissociative spectrum where the victim experiences a loss of sense of self within a specific time frame. During that time, the victim's perception of self and time is altered. Depersonalization, like most dissociative manifestations, is often the result of an attempt to adapt to trauma. It is associated with chronic early childhood neglect and attachment issues (Chapter 2) (1997). Symptoms include identity disturbances, evidence of the absence of appropriate stimulation necessary for development of a healthy body image, regulation and modulation of affect, and decreased sensory organization (1997).

The development of DID is commonly associated with childhood SBPTSD. As mentioned earlier, a victim who is significantly traumatized may manifest altered personalities. These alters have their own identity, purpose, history, personality, perception, and worldview which are separate from the main personality and operate out of their personal awareness. Alters often take on specific tasks that are not in the individual's repertoire. In order to complete specific tasks alters switch from one to another. This happens commonly if the victim is triggered to relive a traumatic memory. Switching can occur rapidly and may involve many alters who may have experienced the trauma (van der Hart, et al., 1993). While reliving an event, a victim may manifest alters who are only aware of the traumatic event(s) or only alters who are unaware (1993). Troubled alters, especially child alters, switch quickly among themselves in an unsuccessful attempt to reduce the terror resulting from accessing traumatic memories (1993). A negative feedback loop is formed through the process of switching, which was manifested as an attempt to decrease dysfunction and dysphoria, yet only exacerbates it and

initiates more switching (1993). Turkus notes that poly-fragmented DID victims, which have over 100 alters, may be the result of repeated sadistic abuse by various perpetrators over an extended period of time (2003). Switching is commonly followed by amnesia for a variable period of time for which the individual cannot account (van der Hart and Steel, 1980).

Dissociation may develop into DID where the altered identities are involved in specific parts or areas of the body such as in the case of Somatic Dissociation (Scaer, 2001). Dysfunction in these victims presents as physical deficits that cannot be accounted for physiologically. Physicians often assign a variety of diagnoses and deem the cause to be psychologically tied to stress and anxiety (2001). Stress and anxiety are a common denominator in these patients.

Conversion, another form of dissociation, is most commonly diagnosed in victims with low SES from undeveloped countries with primitive cultures (Scaer, 2001). Conversion may affect balance, vision, hearing, vestibular senses, sensations, speech, and motor processes (2001). Although the symptoms of Conversion are varied, they have common components that lead to an unidentified neurophysiologic process or mechanism (2001). Conversion victims experience hyperarousal similar to the hyperarousal in SBPTSD victims. Difficulties with speech are common including speech elocution, stuttering, word blocking, and uncommon speech patterns (2001). In most cases, sensory loss affects one side or the upper extremities of the victim's body. When a person suffering from conversion is presented with visual stimulus introduced from the side where the trauma was first realized, they often experience both sensory loss and hyperarousal (2001).

Researchers have discovered that when testing physical boundaries with trauma victims, the area where the victim first perceived the threat will elicit a conditioned arousal reflex if a

stimulus is presented to that side (Scear, 2001). In the same manner in which a SBPTSD victim dissociates their mind, conversion victims dissociate areas of their body. They dissociate the area or side that is involved with somatic and proprioceptive procedural memories associated with the trauma (2001).

Often, trauma victims experience a dissociative reaction when triggered to traumatic memories, often resulting in further traumatization (van der Hart, et al., 1993). Manifestation of dissociative symptoms often occurs immediately following a triggered response. There are two broad categories in which this occurs. The first is switching to alters, which has already been discussed, and the second is Brief Reactive Dissociative Disorder (1993). This dissociative reaction manifests several symptoms and involves the persistence of one or more of these symptoms, which includes a sense of numbing, derealization, stupor, distortion of perception, amnesia for emotionally distressful incidents, depersonalization, and intrusive feeling of terror exclusive of evidence of additional physiological arousal (1993).

All types of dissociative disorders involve both positive and negative dissociative symptoms. Over many years, different researchers have coined their own terms to identify these observations. Regardless of which terms one uses for discussing somatoform dissociative symptoms, most focus on the concept of inhibitory and excitatory manifestations of functional dissociation used by Myers (van der Hart, et al., 2000). In Myers' concept, one dissociated state suffers from loss or inhibition, while another suffers symptoms of overwhelming sensorimotor experiences and reactivations of their traumatic event(s) (2000). Negative dissociative symptoms emphasize losses, which in many cases are permanent or continuous phenomena including mental stigmata paralysis, anesthesia, analgesia, amnesia, and depersonalization

(2000). Positive dissociative, intermittent phenomena or mental accidents, may be transient and changeable, and include hyperesthesia, dissociative pain, and reliving the traumatic experience (2000).

The structural view of somatoform dissociation involves the division of the personality where dissociation, intrusions, and alterations result in the symptoms outlined in appendix two. The structural view believes that negative symptoms in a victim are due to dissociative losses, which are contained in an altered personality. The altered personalities house the amnesic content of the mind including the positive symptoms, which subsequently intrude into consciousness as spasms or tics (van der Hart, et al., 2000). This means that the victim actively avoids traumatic reminders while simultaneously suffering from the negative symptoms or functional losses (mental stigmata) that are contained in the altered personality. These negative symptoms intermittently intrude into the victim's consciousness (mental accidents) due to lack of integration of the two states of consciousness.

Functionally, somatoform dissociative symptoms are thought to manifest from the main personality's avoidance of trauma while the altered state remains hyperfocused on the trauma. At times, symptoms intrude into personal consciousness. Symptoms can, however, manifest more readily when the altered state dominates consciousness and the main personality becomes unaware. This mirrors an earlier discussion in this paper based on Tollefsonian Theory of PTSD and the positive correlation of altered personalities and amnesia barriers. This writer believes that dissociation, although listed in a separate category apart from PTSD in the DSM-IVR, is an integral part of PTSD and that both PTSD and dissociative disorders may be better served if new criteria rendered them as part of the same disorder.

CHAPTER 6

POST-TRAUMATIC STRESS, MOOD AND ANXIETY DISORDERS

People who suffer from SBPTSD commonly present with comorbid psychiatric disorders. In this chapter, commonalities and differences between SBPTSD, anxiety, and mood disorders will be compared and contrasted. Although trauma, anxiety and mood symptoms vary, these disorders often present together. Some symptoms are typical of all three disorders while others are particular to only one or two. Symptoms that are shared by all three disorders include sleep disturbances, lack of energy, hostility, emotional sensitivity and reactivity, self-hatred, isolation, alienation, anger, fear, self-sabotaging behaviors, numbing behaviors, and feelings of doom, shame, blame, guilt, and brokenness.

There are several psychological and neurobiological theories and explanations concerning the manifestations of symptoms. For example, sleep disturbances are common in mood, anxiety, and post-traumatic patients. Individuals with mood disorders may find themselves having trouble going to sleep, getting up in the morning, and/or sleeping too much throughout the day. In Bipolar I, this may be due to oscillation in energy levels that are associated with circadian rhythm which leaves the client unable to sleep in a mania and unable to get out of bed during depression. Bipolar II and major depression patients may sleep too much due to decreased cortisol levels. Cortisol, normally high in the morning, allows one to change from a horizontal sleeping position to a vertical position. It helps increase blood pressure and is involved in other physiological adjustments necessary to keep the body in homeostasis

(Sapolsky, 1998). Adjustments in blood pressure are necessary in the morning to assist with blood flow to the brain so people don't pass out when they get out of bed.

Serotonin levels are also associated with depression and anxiety. Serotonin is involved in many of the body's systems. Like cortisol, it increases in the morning and decreases in the evening. Sufficient serotonin levels are necessary to maintain energy levels and good mood. As the evening approaches serotonin levels drop and melatonin levels increase, which decreases energy levels and allows one to sleep. Normally, these two neurohormones balance one another. Insufficient levels of serotonin and/or melatonin correlate positively with lack of energy, concentration, and energy.

SBPTSD victims also experience sleep disruptions. They may experience nightmares and fear sleep or remain too hypervigilant and unable to sleep. Inability to sleep due to increased SNS arousal is also a main concern for anxiety patients. Both depressive types and anxious patients may have problems with obsessing. In depression, obsessing is labeled rumination. Anxious individuals may be unable to stop obsessing. Both anxious and depressed patients have increased activity in the orbital cortex, the part of the brain that is active when people worry, fear, and obsess.

For individuals suffering with anxiety, a negative, fearful, or worrisome thought crosses their mind and they obsess about it. Normally, if a worrisome thought enters an individual's mind who does not suffer from anxiety, the thought would activate the orbital cortex briefly and then be routed to the neocortex to be evaluated for validity, and dismissed if it is irrational. In anxiety patients, it is as if the switch that allows the thought to leave the orbital cortex and travel

to the neocortex is broken. In anxiety victims, the orbital cortex is over-active. These patients may report that they cannot sleep at night because they cannot stop thinking.

Lack of sleep stresses the body. Studies concerning stress and depression find increased levels of glucocorticoids in approximately 50 percent of depressives (1998). It appears that anxiety and depression may exacerbate or result in stress. Sapolsky hypothesized that it is the psychological content of the stressor that determines whether anxiety, depression, or both may manifest as a comorbid disorder in the aftermath of trauma (1998).

Studies by Nemeroff linked abnormalities in the HPA axis with childhood trauma and depressive disorders (1999). Nemeroff hypothesized that hypersecretion of CRF may be a major causal factor in depression (1999). Many depressive patients hypersecrete CRF that can interact with the pituitary gland resulting in the type of endocrinopathy involved in depression (1999). Several researchers verified this claim through animal studies. In various studies where the brains of laboratory animals were injected with CRF, the animals exhibited signs and symptoms typically seen in humans with mood and anxiety disorder. Later experiments, injecting CRF into human brains, produced the same results. It is important to note that not all depressives have abnormal levels of CRF. Continued studies conducted by Nemeroff, Banki, and Bissette found some depressives had normal levels while others were extremely high (1999). Increased levels of CRF were not present in patients who suffered from schizophrenia or bipolar I (1999). Other studies by various researchers also evidenced patients with PTSD had significantly elevated CRF levels.

Raadsheer and his colleagues took Nemeroff's study further (Lott, 1999). These researchers examined the brain tissue of patients who died with untreated depression by actually

counting the number of neurons in the hypothalamus that contained CRF. This study resulted in these patients having two-and-a-half times the number of CRF neurons than people who had not been depressed (1999). Hypersecretion of CRF should create downregulation in the CRF receptors postsynaptically (1999). Nemeroff and colleagues hypothesized that early childhood sexual or physical traumatization coupled with a genetic susceptibility may result in a type of plasticity-associated increase in CRF neuronal activation (1999). This could mean that traumatized individuals may have more neurons than people who have not suffered trauma or that trauma victim's CRF neurons are more active (1999).

Prevalence rates for depression in the normal population are approximately 20 percent (Sapolsky, 1998). As mentioned earlier there is a genetic component for both anxiety and depression, which can manifest from the same gene. There are a variety of types of depression, which manifest somewhat differently via different biological underpinnings (1998). All depression is cyclical. Most depressives suffer from repeated episodes as seen in major depression, bipolar, and Seasonal Affective Disorder (SAD). SAD correlates positively with patterns of exposure to sunlight and circadian rhythm. Circadian rhythm is a pattern repeated approximately every 24 hours (1998). Repeated episodes of depression are believed to be a pattern that the brain learns and is tied into one's body clock. Neurochemical depression is linked to this body clock and linked with several previously identified neurotransmitters.

Earlier in this paper, there was a discussion concerning the role that stress plays in the depletion of norepinephrine, which is involved, with arousal in SBPTSD and anxiety. The depletion of norepinephrine and the associated arousal is further exacerbated by the enzyme tyrosine hydroxylase, which synthesizes norepinephrine at a faster rate (Sapolsky, 1998). It is

widely known that people who suffer from a major depressive episode do so after they have experienced a significant amount of stress and/or a traumatic incident.

Constant stress can create an endocrine maker for depression, which manifests in resistance to dexamethasone (Sapolsky, 1998). Dexamethasone decreases the brain's capacity to acknowledge the presence of circulating glucocorticoids (1998). In Chapter 2, glucocorticoids and stress were acknowledged to disrupt memory and cause long-term depression and forgetfulness. Glucocorticoids have the capacity to cause changes in serotonin, dopamine, and norepinephrine, which correlates positively with the stress-depression connection (1998). Sapolsky hypothesized that the stress-depression relationship may only be relevant for the first few episodes of depression after which the endogenous rhythmic biological clock may determine the expression of a pattern of cycles (1998).

The brain and one's inner body clock and associated circadian rhythms are susceptible to cortisol and respond to light and dark or day and night (McEwen and Lasley, 2000). Light, dark, serotonin, melatonin, cortisol and other stress hormones are all involved in wake sleep cycles, mood, and energy levels (2000). Additionally, these factors are associated with mood, anxiety, and SBPTSD.

Hostility is another common factor in these disorders and is associated with harm reduction (Hamer and Copeland, 1998). Self-hatred and/or dissatisfaction with ones self may be present in anxiety, depression, and traumatized patients. Hostility is also linked to traumatized and anxious patients whose responses may be behavioral reenactment of trauma or fear (1998). The common thread of hostility can be traced to emotional sensitivity and emotional reactivity (1998).

Emotionally sensitive, depressed, and anxious people tend to feel that things are bad whether or not it is the truth (Hamer and Copeland, 1998). When a person continues to respond to events with bad feeling, their response becomes habitual (1998). Emotional sensitivity may be a result of interaction between DNA, character, temperament, learning, and life's events. Additionally, it may be a predisposition to or a symptom of mood, anxiety, and/ or PTSD. This may also be true for several other symptoms listed above.

Individuals suffering from trauma, anxiety, and mood disorders avoid their feelings by engaging in numbing behaviors instead of attending to environmental demands (van der Kolk et al., 1995). Due to this hyperfocus on internal cues and sensations, they lose touch with people, and the activities that at one time gave them pleasure (1995). Numbing in depression is part of the depressive's baseline function so it is somewhat different from PTSD victim's numbing which begins as a response to external cues (1995).

Victims of SBPTSD commonly lose motivation and interest in normal or previously pleasurable activities and experience anhedonia, which is associated with depression. As mentioned previously, they utilize numbing behaviors in order to deal with their negative feelings and often experience problems with sleep. This represents a loss of neuromodulation, which characterizes PTSD (van der Kolk, et al., 1995).

Additionally, traumatized individuals automatically and habitually respond emotionally to stimulus without the benefit of understanding what is upsetting them (van der Kolk et al., 1995). They experience overwhelming feelings of fear, worry, anger, and panic in situations that appear to be incongruent with that level of emotional intensity. Fear, worry, anger, and panic are all symptoms of anxiety that may shut the victim down or cause them to become hyperaroused

(1995). At times, anxiety, mood, and trauma patients experience such intense levels of anxiety that it alters normal signals in the brain and initiates panic. When this happens, the person can experience a panic attack suddenly with no apparent antecedent. This happens when a person has experienced so much stress that the brain receives a false alarm (Ross, 1994).

For panic attack sufferers, this and many other clinicians prescribe a cognitive-behavioral plan to teach patients breathing and relaxation techniques to use while simultaneously following a plan to facilitate rational thinking. The cognitive piece breaks the pattern of anxiety-producing thoughts, which trigger the physiological threat response. Additionally, relaxation and breathing techniques interrupt the threat response by slowing respiration and heart rate while relaxes the body. Rately hypothesized that people who suffer from anxiety may exaggerate and misinterpret signals from their body causing them to be emotionally sensitive (2002). Furthermore, when victims of SBPTSD are triggered and access a somatic memory, they may experience feelings of anxiety (2002).

SBPTSD victims alternate between hyperarousal of the ANS and exhaustion (Rothschild, 2000). Because SBPTSD victims are often triggered and relive traumatic memories, they become further traumatized by fear of the physical response. Fear initiates arousal in the ANS. Fear of experiencing the fear becomes the self-perpetuating negative feedback loop that keeps the cycle going by triggering traumatic memories, which exacerbates anxiety, and panic attacks. As trauma/anxiety victims experience increased anxiety and panic attacks in new surrounds and with new events, they continuously generalize new internal and external cues that serve as traumatic triggers. This makes more areas of their lives frightening and more places unsafe. As victims continue to experience panic and anxiety, they can become increasingly confused and

unable to discern between safety and danger. In order to protect themselves, trauma/anxiety victims significantly restrict their world. Some victims restrict their world to such an extent that most situations, people, and places begin to feel unsafe. This is the dynamic involved in Agoraphobia.

The formation of traumatic memory involves increased levels of cortisol, which interfaces with the amygdala and hippocampus (Chapter 2). Increased levels of cortisol are involved with anticipatory angst, worry, and fear, which are initiated whether or not the situation warrants it (McEwen and Lasley, 2002). Increased levels of stress hormones interacting with the amygdala causes hypervigilance, which exacerbates stress (2002). These factors working together can facilitate and underlie the cycle of panic and anxiety, which stresses the system to the extent that one's physical and mental health decompensates.

As individuals attempt to cope with stressors, arousal increases in the SNS. Increased SNS arousal can serve as a marker for anxiety (Sapolsky, 1998). People who suffer with depression have a distorted perception that nothing will improve, so they give up trying to cope. These individuals often withdraw becoming further isolated and depressed. They operate in a closed system in which there is no positive feedback.

Conversely, anxiety victims perceive stress as ongoing and pervasive so they continuously over-utilize their coping strategies (Sapolsky, 1998). An extreme version of this attempt to control the environment is evident in OCD patients who engage in rituals in order to keep disaster at bay (1998). Commonly, these patients release excessive amounts of glucocorticoids, including catecholamine, epinephrine, and norepinephrine, which prepare the individual for the next stressful event (1998).

When one looks at the biopsychological underpinnings of depression, it is necessary to include the role of stress. SBPTSD patients suffer from both anxiety and depression. SBPTSD and depressive patients often share the same types of feelings and symptoms mentioned earlier. With major depression, anxiety can intensify to such a degree that the patient presents as delusional (Sapolsky, 1998).

Guilt and grief are often common elements in anxiety, depression, and trauma. Guilt can take on a life of its own and color every decision a person makes. Victims of SBPTSD commonly report intense feelings of guilt. Granzig rationalizes that manipulation of sexual organs produces sexual pleasure and is sometimes experienced by sexual victims although the abuse was unwanted. Sexually traumatized victims often report feelings of overwhelming guilt because they experienced physical pleasure at the hands of their abuser (2002). Even those who experienced no pleasure or perhaps even experienced pain, often feel guilty for not stopping the abuse, regardless of their age or the situation at the time. Feelings of guilt are pervasive and rob the victim of experiencing pleasure in their lives.

Lack of pleasure coupled with the perception that things are getting worse and are beyond one's control causes frustration and depression. Depressives isolate, secluding them from accessing a support system. Loss of control, lack of support and outlets for frustration lead to anhedonia and learned helplessness, which are all characteristic of depression (Sapolsky, 1998). Learned helplessness additionally results in lack of motivation, which exacerbates psychomotor retardation, another symptom of depression (1998).

CHAPTER 7

POST-TRAUMATIC STRESS DISORDER WITH COMORBID DISORDERS VERSUS PTSD AS A SECTURM DISDORER

Investigators of PTSD have identified an overwhelming number of comorbid psychiatric disorders. Currently, most psychiatric disorders are diagnosed according to their symptoms. PTSD is diagnosed primarily by its etiology, which may or may not be in sync with its symptoms (Jung, 2001). The longitudinal course of SBPTSD and PTSD and the associated risk factors tend to confuse diagnostic determination further. Pure PTSD, a term used by researchers to define a syndrome without the presence of other psychiatric disorders, is rare (Yehuda and McFarlane, 1995; van der Kolk et al., 1996). The trauma literature reveals that trauma is a pathogen not only for trauma specific psychopathology but for general pathology as well (Novac, 2001).

Epidemiological studies of PTSD find an enormous degree of comorbidity with other axis one disorders (van der Kolk, et al., 1996). Most survivors of SBPTSD and PTSD develop other comorbid disorders including psychoses, dissociative, personality, anxiety, affective, substance abuse disorder, post-concussion syndrome, chronic pain, and other psychiatric complications (Novac, 2001; Jung, 2001, Miller, 1998; van der Kolk et al., 1996). Documentation defines a positive correlation between sexual trauma and borderline personality disorder, self-mutilation, pyromania, substance abuse, GID, sexual dysfunction, and DID (2001). The rate of prevalence for trauma experienced by DID patients is approximately 80 percent, much of which was due to sexual trauma suffered during childhood (2001).

Generally, psychiatric disorders which are comorbid with PTSD tend to develop over time (Yehuda and McFarlane, 1995). Interestingly, individuals who no longer meet the criteria for PTSD often continue to suffer from symptoms of comorbid disorders. Patients with major depression and earlier trauma tend to present with reversed functional shifts and bipolarity (Novac, 2001). Current PTSD sufferers also present with symptoms of somatization, dissociate disorder, and affect dysregulation (van der Kolk et al., 1996). Prevalence rates for chronic PTSD victims exhibiting symptoms of these comorbid disorders range from 50 to 90 percent (1995).

Somatization leaves one unable to identify the emotional significance of physiological states and is regularly associated with amnesia (Chapter 5). In Chapter 3, a discussion of the Polyvagal Theory of Emotions outlined the importance of the communication of the body, via the ANS, to the brain. The involvement of the brain is crucial in the psychological experience of emotion and the execution of a response. In review, there are five identified phylogenetic-dependent responses. These have corresponding neuroanatomical constructs connected to emotional subsystems. These subsystems are initiated by specified motor output from the CNS and manifest a specified adaptive survival response. Studies repeatedly find a correlation between somatization and dissociation as well as between somatization and PTSD (van der Kolk et al., 1996). Both dissociative disorder and somatization used to be categorized as prominent features under the category hysteria.

In Chapter 5, dissociation was defined as alterations in integrative functions of identity, memory, and consciousness (van der Kolk et al., 1996). This writer hypothesizes that there may be an argument for the role of SBPTSD in initiating dissociation as an adaptive threat response via the Polyvagal Theory of Emotion. Dissociation could interfere with identifying the

emotional valence of the physiological response while simultaneously producing amnesia for the event. Van der Kolk, et al., points out that improving on a single dimension of the PTSD, dissociative somatization affect dysregulation axis, affects all other dimensions (1996). Currently, no scientific evidence concludes that dissociation, affect regulation, and somatization alone cause the symptoms suffered by a victim of PTSD (1996). Studies conducted for the DSM IV Field Trails for somatization disorder used a population of 100 women who currently met the criteria for this disorder. Of the 100 women in the study, 90 percent reported some type of abuse with 80 percent of the abuse being sexual abuse (1996).

Although the importance of dissociation in PTSD has been acknowledged, PTSD is presently listed as an anxiety disorder. Several researchers believe that PTSD should come under the heading of dissociative disorders because dissociation is one the main defense responses utilized by victims to deal with the pain of sexual and/or physical trauma. Two studies that reviewed the psychological profiles of patients who scored high on the Dissociative Experience Scales (DES) revealed a positive correlation with childhood traumatization (van der Kolk et al., 1996). State Hospitals' admissions departments evaluated patients using the DES and found scores above 25 percent (1996). This rate was much higher than the rate for controls. Of the 25 percent who were positive for childhood traumatization, 100 percent reported sexual abuse (1996).

Due to strong correlation between PTSD and dissociation, many researchers believe the diagnosis of PTSD should be categorized as a dissociative disorder. Jung disagrees and argues that dissociation does not occur in several anxiety disorders which are so often associated with PTSD, including GAD and OCD (2001). Researchers who agree with Jung may do so to the

lack of affect regulation so often exhibited by these victims. As previously discussed, these victims also exhibit chronic hyperarousal, attention-narrowing, and impulsive risk-taking behaviors including chronic self-harmful and suicidal behaviors (van der Kolk et al., 1996). These are all behaviors associated with anxiety disorders. It is noteworthy that these symptoms correlate positively with Type D attachment which is prevalent in abused infants and children (1996).

Jung reports that his clinical experience suggests that early violent repeated sexual trauma often lends itself to the development of severe psychotic features including hallucinations, disorganized thinking, confusion, and lack of contact with reality (2001). Nonviolent sexual abuse occurring later in life is more often associated with less severe disturbances in psychosexual development including borderline and other personality disorders (2001).

As discussed in Chapter 2, postnatal cortical development is significantly impacted by the environment. The orbitofrontal cortex is the area of the brain which controls the process of alternating emotions (Schore, 1994). For optimal development in the orbitofrontal cortex there must be a balance of positive and negative external stimuli which facilitates structural and neurochemical development (1994). The prefrontal neurotransmitter system is very sensitive to environmental stress. Exposure to traumatic stress can cause structural alterations in the frontal lobe which are associated with the limbic system (1994). Structural alterations can cause fundamental ego-syntonic behavioral changes which may result in the lack of empathy and pathological narcissism along with the development of other personality disorders (1994).

Descriptive psychiatry currently demands differentiation between syndromes that appear after one has been exposed to a traumatic incident. The various symptoms that present over time

make determining whether or not PTSD is a disorder associated with various comorbid disorders or a spectrum disorder, which deserves further investigation and possible reclassification, difficult. It is hard to know whether a spectrum theory, currently postulated by some researchers, would be credible because of the significant overlap of symptoms that is present in the current diagnostic criteria. Additionally, the diversity in symptoms associated with SBPTSD and PTSD begs the question if they are secondary to comorbid disorders or truly symptoms of PTSD.

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