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## The Compulsion to Repeat the Trauma

### Re-enactment, Revictimization, and Masochism

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During the formative years of contemporary psychiatry much attention was paid to the continuing role of past traumatic experiences on the current lives of people. Charcot, Janet, and Freud all noted that fragmented memories of traumatic events dominated the mental life of many of their patient and built their theories about the nature and treatment of psychopathology on this recognition. Janet<sup>75</sup> thought that traumatic memories of traumatic events persist as unassimilated fixed ideas that act as foci for the development of alternate states of consciousness, including dissociative phenomena, such as fugue states, amnesias, and chronic states of helplessness and depression. Unbidden memories of the trauma may return as physical sensations, horrific images or nightmares, behavioral reenactments, or a combination of these. Janet showed how traumatized individuals become fixated on the trauma: difficulties in assimilating subsequent experiences as well. It is "as if their personality development has stopped at a certain point and cannot expand anymore by the addition or assimilation of new elements."<sup>76</sup> Freud independently came to similar conclusions.<sup>43,45</sup> Initially, he thought all hysterical symptoms were caused by childhood sexual "seduction" of which unconscious memories were activated, when during adolescence, a person was exposed to situations reminiscent of the original trauma. The trauma permanently disturbed the capacity to deal with other challenges, and the victim who did not integrate the trauma was doomed to "repeat the repressed material as a contemporary experience in instead or . . . remembering it as something belonging to the past."<sup>44</sup> In this article, I will show how the trauma is repeated on behavioral, emotional, physiologic, and neuroendocrinologic levels, whose confluence explains the diversity of repetition phenomena.

Many traumatized people expose themselves, seemingly compulsively, to situations reminiscent of the original trauma. These behavioral reenactments are rarely consciously understood to be related to earlier life experiences. This "repetition compulsion" has received surprisingly little systematic exploration during the 70 years since its discovery, though it is regularly described in the clinical literature.<sup>12,17,21,29,61,64,65,69,88,112,137</sup> Freud thought that the aim of repetition was to gain mastery, but clinical experience has shown that this rarely happens; instead, repetition causes further suffering for the victims or for people in their surroundings.

Children seem more vulnerable than adults to compulsive behavioral repetition and loss of conscious memory of the trauma.<sup>70,136</sup> However, responses to projective tests show that adults, too, are liable to experience a large range of stimuli vaguely reminiscent of the trauma as a return of the trauma itself, and to react accordingly.<sup>39,42</sup>

## **BEHAVIORAL RE-ENACTMENT**

In behavioral re-enactment of the trauma, the self may play the role of either victim or victimizer.

### **Harm to Others**

Re-enactment of victimization is a major cause of violence. Criminals have often been physically or sexually abused as children.<sup>55,121</sup> In a recent prospective study of 34 sexually abused boys, Burgess et al.<sup>20</sup> found a link with drug abuse, juvenile delinquency, and criminal behavior only a few years later. Lewis<sup>89,91</sup> has extensively studied the association between childhood abuse and subsequent victimization of others. Recently, she showed that of 14 juveniles condemned to death for murder in the United States in 1987, 12 had been brutally physically abused, and five had been sodomized by relatives.<sup>90</sup> In a study of self-mutilating male criminals, Brach-y-Rita<sup>7</sup> concluded that "the constellation of withdrawal, depressive reaction, hyperreactivity, stimulus-seeking behavior, impaired pain perception, and violent aggressive behavior directed at self or others may be the consequence of having been reared under conditions of maternal social deprivation. This constellation of symptoms is a common phenomenon among a member of environmentally deprived animals."

### **Self-destructiveness**

Self-destructive acts are common in abused children. Green<sup>53,54</sup> found that 41 per cent of his sample of abused children engaged in headbanging, biting, burning, and cutting. In a controlled, double-blind study on traumatic antecedents of borderline personality disorder, we found a highly significant relationship between childhood sexual abuse and various kinds of self-harm later in life, particularly cutting and self-starving.<sup>143a</sup> Clinical reports also consistently show that self-mutilators have childhood histories of physical or sexual abuse, or repeated surgery.<sup>52,106,118,126</sup> Simpson and Porter<sup>126</sup> found a significant association between self-mutilation and other forms of self-deprecation or self-destruction such as alcohol and drug abuse and eating disorders. They sum up the conclusions of many studies of this problem in stating that "self-destructive activities were not primarily related to conflict, guilt and superego pressure, but to more primitive behavior patterns originating in painful encounters with hostile caretakers during the first years of life."

### **Revictimization**

Revictimization is a consistent finding.<sup>35,47,61</sup> Victims of rape are more likely to be raped and women who were physically or sexually abused as children are more likely to be abused as

adults. Victims of child sexual abuse are at high risk of becoming prostitutes.<sup>38,72,125</sup> Russell,<sup>120</sup> in a very careful study of the effects of incest on the life of women, found that few women made a conscious connection between their childhood victimization and their drug abuse, prostitution, and suicide attempts. Whereas 38 per cent of a random sample of women reported incidents of rape or attempted rape after age 14, 68 per cent of those with a childhood history of incest did. Twice as many women with a history of physical violence in their marriages (27 per cent), and more than twice as many (53 per cent) reported unwanted sexual advances by an unrelated authority figure such as a teacher, clergyman, or therapist. Victims of father-daughter incest were four times more likely than nonincest victims to be asked to pose for pornography.

## **RE-EXPERIENCING AFTER ADULT TRAUMA**

There are sporadic clinical reports,<sup>12,59</sup> but systematic studies on re-enactment and revictimization in traumatized adults are even scarcer than in children. In one study of adults who had recently been in accidents,<sup>68</sup> 57 per cent showed behavioral re-enactments, and 51 per cent had recurrent intrusive images. In this study, the frequency with which recurrent memories were experienced on a somatic level, as panic and anxiety attacks, was not examined. Studies of burned children<sup>131</sup> and adult survivors of natural and manmade disasters<sup>67,124</sup> show that, over time, recurrent symbolic or visual recollections and behavioral re-enactments abate, but there is often persistent chronic anxiety that can be interpreted as partial somatosensory reliving, dissociated from visual or linguistic representations of the trauma.<sup>141</sup> There are scattered clinical reports<sup>64,65,109</sup> of people re-enacting the trauma on its anniversary. For example, we treated a Vietnam veteran who had lit a cigarette at night and caused the death of a friend by a VietCong sniper's bullet in 1968. From 1969 to 1986, on the exact anniversary of the death, to the hour and minute, he yearly committed "armed robbery" by putting a finger in his pocket and staging a "holdup," in order to provoke gunfire from the police. The compulsive re-enactment ceased when he came to understand its meaning.

## **SOCIAL ATTACHMENT AND THE TRAUMA RESPONSE**

Human beings are strongly dependent on social support for a sense of safety, meaning, power, and control.<sup>14,15,93</sup> Even our biologic maturation is strongly influenced by the nature of early attachment bonds.<sup>137</sup> Traumatization occurs when both internal and external resources are inadequate to cope with external threat. Physical and emotional maturation, as well as innate variations in physiologic reactivity to perceived danger, play important roles in the capacity to deal with external threat.<sup>77</sup> The presence of familiar caregivers also plays an important role in helping children modulate their physiologic arousal.<sup>146</sup> In the absence of a caregiver, children experience extremes of under- and over-arousal that are physiologically aversive and disorganizing.<sup>38</sup> The availability of a caregiver who can be blindly trusted when their own resources are inadequate is very important in coping with threats. If the caregiver is rejecting and abusive, children are likely to become hyperaroused. When the persons who are supposed to be the sources of safety and nurturance become simultaneously the sources of danger against which

protection is needed, children maneuver to re-establish some sense of safety. Instead of turning on their caregivers and thereby losing hope for protection, they blame themselves. They become fearfully and hungrily attached and anxiously obedient.<sup>24</sup> Bowlby<sup>16</sup> calls this "a pattern of behavior in which avoidance of them competes with his desire for proximity and care and in which angry behavior is apt to become prominent."

Studies by Bowlby and Ainsworth<sup>1</sup> in humans, and by Harlow and his heirs<sup>58,114</sup> in other primates, demonstrate the crucial role that a "safe base" plays for normal social and biologic development. As children mature, they continually acquire new cognitive schemata in which to frame current life experiences. These ever-expanding cognitive schemes decrease their reliance on the environment for soothing and increase their own capacity to modulate physiologic arousal in the face of threat. Thus, the cognitive preparedness (development) of an individual interacts with the degree of physiologic disorganization to determine the capacity for mental processing of potentially traumatizing experiences.<sup>137,141</sup>

## **SEX DIFFERENCES**

The frequency with which abused children repeat aggressive interactions has suggested to Green<sup>53</sup> a link between the compulsion to repeat and identification with the aggressor, which replaces fear and helplessness with a sense of omnipotence. There are significant sex differences in the way trauma victims incorporate the abuse experience. Studies by Carmen et al.<sup>22,71</sup> and others indicate that abused men and boys tend to identify with the aggressor and later victimize others whereas abused women are prone to become attached to abusive men who allow themselves and their offspring to be victimized further.

Reiker and colleagues<sup>113</sup> have pointed out that "confrontations with violence challenges one's most basic assumptions about the self as invulnerable and intrinsically worthy and about the world as orderly and just. After abuse, the victim's view of self and world can never be the same again: it must be reconstructed to incorporate the abuse experience." Assuming responsibility for the abuse allows feelings of helplessness to be replaced with an illusion of control. Ironically, victims of rape who blame themselves have a better prognosis than those who do not assume this false responsibility: it allows the locus of control to remain internal and prevent helplessness. Children are even more likely to blame themselves: "The child needs to hold on to an image of the parent as good in order to deal with the intensity of fear and rage which is the effect of the tormenting experiences."<sup>113</sup> Anger directed against the self or others is always a central problem in the life of people who have been violated. Reiker concludes that "this 'acting out' is seldom understood by either victims or clinicians as being a repetitive re-enactment of real events from the past."

## **THE SEPARATION RESPONSE**

Primates have evolved highly complex ways to maintain attachment bonds; they are intensely dependent on their caregivers at the start. In lower primates, this dependency is principally expressed in physical contact, in humans this is supplemented by verbal communication. McLean<sup>93</sup> suggests that language is an evolutionary development from the mammalian separation cry that induces caregivers to provide safety, nurturance, and social stimulation. Primates react to separation from attachment figures as if they were directly threatened. Thus, small children, unable to anticipate the future, experience separation anxiety as soon as they lose sight of their mothers. Bowlby has described the protest and despair phases of this response in great detail.<sup>14,15</sup> As people mature, they develop an ever-enlarging repertoire of coping responses, but adults are still intensely dependent upon social support to prevent and overcome traumatization, and under threat they still may cry out for their mothers.<sup>57</sup> Sudden, uncontrollable loss of attachment bonds is an essential element in the development of post-traumatic stress syndromes.<sup>45,88,92,138</sup> On exposure to extreme terror, even mature people have protest and despair responses (anger and grief, intrusion and numbing) that make them turn toward the nearest available source of comfort to return to a state of both psychological and physiologic calm. Thus, severe external threat may result in renewed clinging and neophobia in both children and adults.<sup>8,41,111</sup> Because the attachment system is so important, mobilization of social supports is an important element in the treatment of post-traumatic stress disorder (PTSD).

## INCREASED ATTACHMENT IN THE FACE OF DANGER

People in general, and children in particular, seek increased attachment in the face of external danger. Pain, fear, fatigue, and loss of loved ones and protectors all evoke efforts to attract increased care,<sup>8,41,111</sup> and most cultures have rituals designed to provide it. When there is no access to ordinary sources of comfort, people may turn toward their tormentors.<sup>14,38,80,102</sup> Adults as well as children may develop strong emotional ties with people who intermittently harass, beat, and threaten them. Hostages have put up bail for their captors, expressed a wish to marry them, or had sexual relations with them;<sup>31</sup> abused children often cling to their parents and resist being removed from the home;<sup>31,80</sup> inmates of Nazi prison camps sometimes imitated their captors by sewing together clothing to copy SS uniforms.<sup>11</sup> When Harlow observed this in nonhuman primates, he stated that "the immediate consequences of maternal rejection is the accentuation of proximity seeking on the part of the infant."<sup>114</sup>

Walker<sup>145</sup> and Dutton and Painter<sup>31</sup> have noted that the bond between batter and victim in abusive marriages resembles the bond between captor and hostage or cult leader and follower. Social workers, police, and legal personnel are constantly frustrated by the strength of this bond. The woman's longing for the batterer soon prevails over memories of the terror, and she starts to make excuses for his behavior. This pattern is so common that women engaged in these sorts of relationships become the recipients of intense anger for social service personnel. They are then called masochistic, and like other psychiatric terms, this can be employed pejoratively rather than conveying an understanding of the underlying causes and treatment of the problem. Walker<sup>145</sup> first applied ethnology to the study of traumatic bonding in such couples. A central component is captivity, the lack of permeability, and the absence of outside support or influence.<sup>31,62,119,145</sup> The victim organizes her life completely around pleasing her captor and his

demands. As Dutton and Painter point out, "her compliance legitimates his demands, builds up a store of repressed anger and frustration on her part (which may surface in her goading him or fighting back during an actual argument, leading to escalating violence), and systematically eliminates opportunities for her to build up a supportive network which could eventually assist her in leaving the relationship."

Walker<sup>145</sup> has clarified the operation of intermittent reinforcement paradigms in such relationships, applying the animal model of punishment-indulgence patterns. In child abuse or spouse battering, this mechanism is accentuated by the extreme contrast of terror followed by submission and reconciliation. When such negative reinforcement occurs intermittently, the reinforced response consolidates the attachment between victim and victimizer. During the abuse, victims tend to dissociate emotionally with a sense of disbelief that the incident is really happening. This is followed by the typical post-traumatic response of numbing and constriction, resulting in inactivity, depression, self-blame, and feelings of helplessness. Walker<sup>145</sup> describes the process as follows: "tension gradually builds" (during phase one), an explosive battering incident occurs (during phase two), and a "calm, loving respite follows phase three). The violence allows intense emotional engagement and dramatic scenes of forgiveness, reconciliation, and physical contact that restores the fantasy of fusion and symbiosis.<sup>87,140</sup> Hence, there are two powerful sources of reinforcement: the "arousal-jag" or excitement before the violence and the peace of surrender afterwards. Both of these responses, placed at appropriate intervals, reinforce the traumatic bond between victim and abuser.<sup>31,145</sup> To varying degrees, the memory of the battering incidents is state-dependent or dissociated, and thus only comes back in full force during renewed situations of terror. This interferes with good judgment about the relationship and allows longing for love and reconciliation to overcome realistic fears.

## **VULNERABILITY TO DEVELOP TRAUMATIC BONDING**

At least four studies of family violence<sup>40,48,63,132</sup> have found a direct relationship between the severity of childhood physical abuse and later marital violence. Interestingly, nonhuman primates subjected to early abuse and deprivation also are more likely to engage in violent relationships with their peers as adults.<sup>134</sup> as in humans, males tend to be hyperaggressive, and females fail to protect themselves and their offspring against danger. Neither sex develops the capacity for sustained peaceful social interactions.<sup>134</sup>

People who are exposed early to violence or neglect come to expect it as a way of life. They see the chronic helplessness of their mothers and fathers' alternating outbursts of affection and violence; they learn that they themselves have no control. As adults they hope to undo the past by love, competency, and exemplary behavior.<sup>46,87,145</sup> When they fail they are likely to make sense out of this situation by blaming themselves. When they have little experience with nonviolent resolution of differences, partners in relationships alternate between an expectation of perfect behavior leading to perfect harmony and a state of helplessness, in which all verbal communication seems futile. A return to earlier coping mechanisms, such as self-blame,



numbing (by means of emotional withdrawal or drugs or alcohol), and physical violence sets the stage for a repetition of the childhood trauma and "return of the repressed."<sup>1,42,46,137</sup>

## **BIOLOGIC RESPONSES TO TRAUMATIZATION**

Chronic physiologic hyperarousal to stimuli reminiscent of the trauma is a cardinal feature of the trauma response, well documented in a large variety of traumatized individuals, including victims of child abuse, burns, rape, natural disasters, and war.<sup>2,78,84,107,133,142</sup> Because of their decreased capacity to modulate physiologic arousal, which leads to reduced ability to utilize symbols and fantasy to cope with stress, they tend to experience later stresses as somatic states, rather than as specific events that require specific means of coping.<sup>142</sup> Thus, victims of trauma respond to contemporary stimuli as if the trauma had returned, without conscious awareness that past injury rather than current stress is the basis of their physiologic emergency responses. The hyperarousal interferes with their ability to make calm and rational assessments and prevents resolution and integration of the trauma.<sup>142</sup> They respond to threats as emergencies requiring action rather than thought.

Chronic hyperarousal in response to new challenges is also found in animals exposed to inescapable shock.<sup>5</sup> In fact, this phenomenon drew our attention to the possibility of using this animal model for the study of human traumatization.<sup>142</sup> Human beings and other mammals are very similar biologically in respect to such relatively uncomplicated behaviors as fight, flight, and freeze responses. Exposure to inescapable aversive events has widespread behavioral and physiologic effects on animals including (1) deficits in learning to escape novel adverse situations, (2) decreased motivation for learning new options, (3) chronic subjective distress,<sup>94</sup> and (4) increased tumor genesis and immunosuppression.<sup>143</sup> All this is the result not of the shock itself but of a helplessness syndrome that is a result of the lack of control that the animal has in terminating shock.

Several neurotransmitters have been shown to be affected by inescapably fearful experiences in animals; they have low resting cerebro-spinal fluid (CSF) norepinephrine, but under stress they respond with much higher elevations than other animals. Something has disturbed the organisms capacity to modulate the extent of arousal.<sup>37,95,115,116,142</sup> Dysregulation of the serotonin system has been implicated in this.<sup>123,139</sup> Serotonin is thought to be the neurotransmitter most involved in modulating the actions of other neurotransmitters;<sup>19</sup> it has also been implicated in the fine tuning of emotional reactions, particularly arousal and aggression.<sup>18</sup> Traumatization also causes dysregulation of the endogenous opioid system in both animals and humans. We will discuss this phenomenon and how this could explain the clinical phenomenon of compulsive re-exposure to trauma.

## **STATE-DEPENDENT LEARNING**

Both Janet<sup>74</sup> and Freud observed that early memory traces can be activated by later events that cause partial reliving of earlier traumas in the form of affect states, anxiety, or re-enactments. Their patients generally had a poor memory for traumatic childhood events, until they were brought back, by means of hypnosis, to a state of mind similar to the one they were in at the time of the trauma. In the past few decades, these notions have gained scientific confirmation with the discovery of state-dependent learning; for example what is learned under the influence of a particular drug tends to become dissociated and seemingly lost until return of the state similar to the one in which the memory was stored. State dependency can be roughly related to arousal levels. For example, state-dependent learning in humans is produced by both psychostimulants and depressants: alcohol, marijuana, barbituates, and amphetamines as well as other psychoactive agents.<sup>32</sup> Reactivation of past learning is relatively automatic: contextual stimuli directly evoke memories without conscious awareness of the transition. The more similar the contextual stimuli are to conditions prevailing at the time of the original storage of memories, the more likely the probability of retrieval. Both internal states, such as particular affects, or external events reminiscent of earlier trauma thus can trigger a return to feeling as if victims are back in their original traumatizing situation. Thus, battered women who otherwise behave competently may experience themselves within the battering relationship like the terrified child they once were in a violent or alcoholic home.<sup>119</sup> Similarly, war veterans may be asymptomatic until they become intimate with a partner and start reliving feelings of loss, grief, vulnerability, and revenge related to the death of a comrade on the battlefield but that are now incorrectly attributed to some element of the current relationship. Disinhibition resulting from drugs or alcohol strongly facilitates the occurrence of such reliving experiences, which then may take the form of acting out violent or sexual traumatic episodes.<sup>107</sup>

During states of massive autonomic arousal, memories are laid down that powerfully influence later actions and interpretations of events. Long-term activation of memory tracts is observed in animals exposed to a highly stressful stimulus.<sup>51,81</sup> This phenomenon has been attributed to massive noradrenergic activity at the time of the stress.<sup>129</sup> In traumatized people, visual and motoric reliving experiences, nightmares, flashbacks, and re-enactments are generally preceded by physiologic arousal.<sup>30</sup> Activation of long-term augmented memory tracts may explain why current stress is experienced as a return of the trauma.

## **"RETURN OF THE REPRESSED" OCCURS IN SITUATIONS OF THREAT**

Under ordinary conditions, most previously traumatized individuals can adjust psychologically and socially. Studies have shown this to be true of victims of rape,<sup>82</sup> battered women,<sup>63</sup> and victims of child abuse.<sup>53</sup> Nonhuman primates subjected to extended periods of isolation may later become reasonably well integrated socially. However, they do not respond to stress in the same ways as their nontraumatized peers. Studies in the Wisconsin primate laboratory have shown that, even after an initial good social adjustment, heightened emotional or physical arousal causes social withdrawal or aggression.<sup>86</sup> Even monkeys that recover in other respects tend to respond inappropriately to sexual arousal and misperceive social cues when



threatened by a dominant animal.<sup>4,95,101</sup> Animals with a history of trauma also have much more intense catecholamine responses to stress<sup>85</sup> and a blunted cortisol response.<sup>25</sup>

Stress causes a return to earlier behavior patterns throughout the animal kingdom. In experiments in mice, Mitchell and colleagues<sup>98,99</sup> found that arousal state determines how an animal will react to stimuli. In a state of low arousal, animals tend to be curious and seek novelty. During high arousal, they are frightened, avoid novelty, and persevere in familiar behavior regardless of the outcome. Under ordinary circumstances, an animal will choose the most pleasant of two alternatives. When hyperaroused, it will seek the familiar, regardless of the intrinsic rewards.<sup>99</sup> Thus shocked animals returned to the box in which they were originally shocked, in preference to less familiar locations not associated with punishment. Punished animals actually increased their exposure to shock as the trials continued.<sup>98</sup> Mitchell concluded that this perseveration is nonassociative, that is, if uncoupled from the usual rewards systems, animals seek optimal levels of arousal,<sup>10,122</sup> and this mediates patterns of alternation and perseveration. Because novel stimuli cause arousal, an animal in a state of high arousal will avoid even mildly novel stimuli even if it would reduce exposure to pain.

### **"THE COSTS OF PLEASURE AND THE BENEFITS OF PAIN"**

Solomon<sup>127</sup> proposes an "opponent process theory of acquired motivation" to explain addictive behavior that originates in frightening or painful events. He points out that frequent exposure to stimuli, pleasant or unpleasant, may lead to habituation; the resulting withdrawal or abstinence state can take on a powerful life of its own and may become an effective source of motivation. In drug addiction, for example, the motivation changes from getting high (pleasure) to controlling a highly aversive withdrawal state.

In contrast with drug taking, which initially is pleasant, many initially aversive stimuli, such as sauna bathing, marathon running, and parachute jumping, may also be eventually perceived as highly rewarding by people who have repeatedly exposed themselves to these frightening or painful situations. Parachute jumpers, sauna bathers, and marathon runners all feel exhilaration and a sense of well-being from the initially aversive activities. These new sources of pleasure become independent of the fear that was necessary to produce them in the first place. Solomon concludes that certain behaviors can become highly pleasurable: "...if they are derived from aversive processes they can provide a relatively enduring source of positive hedonic tone following the removal of the aversive reinforcer. Fear thus has its positive consequences."<sup>127</sup>

Solomon and colleagues have applied these observations to imprinting and social attachment. Their research showed that young animals responded with increasing distress to repeated separations.<sup>66</sup> Habituation did not occur, and attachment in fact increased, provided that the imprinting object was presented at fairly regular intervals. Starr<sup>130</sup> demonstrated that there is a critical decay duration, the time that it takes for the withdrawal response to the original stimulus to wear off. If the reinforcing stimulus of the imprinting or attachment object is presented at intervals greater than the critical decay duration, increased attachment does not occur. However, animals earlier exposed to repeated separations are more vulnerable to increased distress upon

later separations: "repeated exposures to the imprinting object took less time and fewer exposures than did the original exposures." The strength of the imprinting eventually decays by disuse, but some residues of past experiences remain and facilitate the reactivation of the temporarily dormant system. Readdiction to nicotine and opiates occurs much faster than the initial addiction. If Starr is correct, similar processes account for social attachment to aversive objects and thus "the law of social attachment may be identical to the law of drug addiction."<sup>130</sup>

Solomon and coworkers established experimentally that animal and people become habituated to the original stimulus, whether it is morphine, parachute jumping or marathon running, but the withdrawal syndromes that follow a large number of arousing events retain their integrity over time, and recur when the original stimuli are reintroduced.<sup>127</sup> Thus, the positive reinforcer loses some of its power, but the negative reinforcer gains power and lasts longer: parachute jumpers continued to feel exhilarated after jumping, even when they feel less year beforehand. Solomon hypothesized that endorphins are secreted in response to certain environmental stresses and play a role in the opponent process. We have recently found evidence that supports this view.

## **ADDICTION TO TRAUMA**

Some traumatized people remain preoccupied with the trauma at the expense of other life experiences<sup>137,141</sup> and continue to re-create it in some form for themselves or for others. War veterans may enlist as mercenaries,<sup>128</sup> victims of incest may become prostitutes,<sup>47,120,125</sup> and victims of childhood physical abuse seemingly provoke subsequent abuse in foster families<sup>53</sup> or become self-mutilators<sup>143a</sup> Still others identify with the aggressor and do to others what was done to them.<sup>21,39</sup> Clinically, these people are observed to have a vague sense of apprehension, emptiness, boredom, and anxiety when not involved in activities reminiscent of the trauma. There is no evidence to support Freud's idea that repetition eventually leads to mastery and resolution. In fact, reliving the trauma repeatedly in psychotherapy may serve to re-enforce the preoccupation and fixation.

Many observers of traumatic bonding have speculated that victims become addicted to their victimizers. Erschak<sup>33</sup> asks why the batterer does not stop when injury and pain are apparent and why does the victim not leave? He answers that "they are addicted to each other and to abuse. The system, the interaction, the relation takes hold; the individuals are as powerless as junkies."

## **ENDOGENOUS OPIATES AND ATTACHMENT**

Thus Starr,<sup>130</sup> Solomon,<sup>127</sup> Erschak and others may be right in postulating that people can become physiologically addicted to each other. There is now considerable evidence that human attachment is, in part, mediated by the endogenous opiate system. Research in non-human primates shows that social attachment is related to the development of core neurobiologic functions in the primate brain. Early disruption of the attachment bond causes longlasting

psychobiologic changes that not only reduce the capacity to cope with subsequent social disruption but also disturb parenting processes and create similar vulnerability into the next generation. In recent years knowledge about the brain circuits involved in the maintenance of affiliative behavior are precisely those most richly endowed with opioid receptors.<sup>83</sup> Behavioral studies show that the endogenous opioid system plays an important role in the maintenance of social attachment. According to Panksepp and colleagues, the separation response in rats can be inhibited with doses of neuroactive agents to have yielded reliable behavioral effects. Minute injections of morphine abolish both the separation cry in rat infants and the maternal response to it.<sup>100,103-105</sup> Morphine-treated mothers (1 mg per kg) disregard male intruders, often attempting no defense of their offspring at all. One mother permitted a male intruder to eat her pups.

Blocking of opioid receptors with naloxone causes increased huddling in nonhuman primates, where as activation of brain opioid systems can decrease gregariousness.<sup>34,104</sup> Lack of caregiving during the first few weeks of life decreases the number of opioid receptors in the cingulate gyrus in mice.<sup>13</sup> Panksepp and colleagues have shown that the loss of social support decreases brain opioid activity and produces withdrawal symptoms; emotive circuits mediating loneliness-panic states are apparently activated or disinhibited. Re-establishment of social contact may, among other neural changes, activate endogenous opioid systems, alleviating separation distress and strengthening social bonds.<sup>103</sup> If brain opioid activity fulfills social needs, opioid blockade might be expected to influence such other forms of gratification as sex. Indeed, opioid systems interact with the brain systems that regulate sex-steroid secretion,<sup>56</sup> and naloxone facilitates sexual behavior in some mammals.<sup>49,96</sup>

High levels of stress,<sup>3</sup> including social stress,<sup>97</sup> also activate opioid systems. Animals exposed to inescapable shock develop stress-induced analgesia (SIA) when re-exposed to stress shortly afterward. This analgesic response is mediated by endogenous opioids and is readily reversible by the opioid receptor blocker naloxone.<sup>79</sup> In humans elevations of enkephalins and plasma beta endorphins have been reported following a large variety of stressors.<sup>26,28,73</sup> In testing the generalizability of the phenomenon of SIA to people, we found that seven of eight Vietnam veterans with PTSD showed a 30 percent reduction in perception of pain when viewing a movie depicting combat in Vietnam. This analgesia can be reversed with naloxone.<sup>107,143b</sup> This amount of analgesia produced by watching 15 minutes of a combat movie was equivalent to that which follows the injection of 8 mg. of morphine. We concluded that Beecher<sup>9</sup> was right when, after observing that wounded soldiers require less morphine, he speculated that "strong emotions can block pain" because of the release of endogenous opioids. Our experiments show that even in people traumatized as adults, re-exposure to situations reminiscent of the trauma evokes as endogenous opioid response analogous to that of animals exposed to mild shock subsequent to inescapable shock. Thus, re-exposure to stress may have the same effect as the temporary application of exogenous opioids, providing a similar relief from anxiety.<sup>50</sup>

Field<sup>113</sup> has suggested that normal play and exploratory activity in infants are dependent on the presence of a familiar attachment figure who modulates physiologic arousal by providing a balance between soothing and stimulation. She, Reite,<sup>115,116</sup> and others have shown that in the absence of the mother, an infant experiences by psychological disorganizing extremes of under- and overarousal. This soothing and arousal may be mediated by alternate stimulation of different neurotransmitter systems, in which the endogenous opioid system is likely to play a role,

especially in subjective experience of safety and soothing. Endogenous opioids decrease central noradrenergic activity,<sup>6</sup> and their activation may thus inhibit hyperarousal. Childhood abuse and neglect may cause a long-term vulnerability to be hyperaroused, expressed on a social level as decreased ability to modulate strong affect states. "On a continuum from low to high physiologic arousal there is an optimal level for every organism. The shape of an individual's optimal stimulation curve may depend on the level of stimulation received during early experience."<sup>37</sup> As a result, people who were neglected or abused as children may require much higher external stimulation of the endogenous opioid system for soothing than those whose endogenous opioids can be more easily activated by conditioned responses based on good early caregiving experiences. These victimized people neutralize their hyperarousal by a variety of addictive behaviors including compulsive re-exposure to situations reminiscent of the trauma.

## **CHILDHOOD TRAUMA, ENDOGENOUS OPIOIDS, AND SELF HARM**

If recent animal research is any guide, people, particularly children, who have been exposed to severe, prolonged environmental stress will experience extraordinary increases in both catecholamine and endogenous opioid responses to subsequent stress. The endogenous opioid response may produce both dependence and withdrawal phenomena resembling those of exogenous opioids. This could explain, in part, why childhood trauma is associated with subsequent self-destructive behavior. Depending on which stimuli have come to condition an opioid response, self-destructive behavior may include chronic involvement with abusive partners, sexual masochism, self-starvation, and violence against self or others. In a recent study, we found that patients' reports of early childhood physical and sexual abuse were highly correlated with self-mutilation and self-starvation in adulthood.<sup>143a</sup> This controlled study supports numerous other clinical reports about the relationship between childhood abuse and self-destructive behavior.<sup>52,106,118</sup> In these people, self-mutilation is a common response to abandonment; it is accompanied by both analgesia and an altered state of consciousness, and it provides relief and return to normality. The pain, cutting, and burning are apparent attempts at "repairing the cohesiveness of the self in the face of overwhelming anxiety."<sup>35</sup> This pattern is reminiscent of spouse abuse described by Walker:<sup>145</sup> "tension gradually builds, an explosive battering (self-mutilating) incident occurs, and a 'calm, loving respite' follows."

Bach-y-Rita<sup>7</sup> studied men who were in prison because they habitually took out their frustrations on others violently. He found that they started to self-mutilate in prison when no external object of violence was available. Thus acts of violence that the perpetrator regards as horrible may, in fact, produce somatic calm.

The evidence for involvement of the endogenous opioid system in self-mutilation is fairly good. A recent study found increased levels of met-enkephalins in habitual self-mutilators during the active stage of self-harm, but not 3 months later.<sup>27</sup> Opioid receptor blockade has been found to decrease self-mutilation.<sup>60,117</sup> The specific biologic factors that account for the relief felt by these traumatized people who habitually harm themselves or others are still unknown.

## TREATMENT IMPLICATIONS

Compulsive repetition of the trauma usually is an unconscious process that, although it may provide a temporary sense of mastery or even pleasure, ultimately perpetuates chronic feelings of helplessness and a subjective sense of being bad and out of control. Gaining control over one's current life, rather than repeating trauma in action, mood, or somatic states, is the goal of treatment.

Although verbalizing the contextual elements of the trauma is the essence of treatment of acute post-traumatic stress, the essential elements of chronic post-traumatic reactions generally are retrieved with difficulty and often cannot be dealt with until reasonable control over current behavior can assure the safety of both the patient and those in the patient's immediate surroundings. Failure to approach trauma-related material very gradually leads to intensification of the affects and physiologic states related to the trauma, leading to increased repetitive phenomena. It is important to keep in mind that the only reason to uncover the trauma is to gain conscious control over the unbidden re-experience or re-enactments. Prior to unearthing the traumatic roots of current behavior, people need to gain reasonable control over the longstanding secondary defenses that were originally elaborated to defend against being overwhelmed by traumatic material such as alcohol and drug abuse and violence against self or others. The trauma can only be worked through after a secure bond is established with another person. The presence of an attachment figure provides people with the security necessary to explore their life experiences and to interrupt the inner or social isolation that keeps people stuck in repetitive patterns. Both the etiology and the cure of trauma-related psychological disturbance depend fundamentally on security of interpersonal attachments. Once the traumatic experiences have been located in time and place, a person can start making distinctions between current life stresses and past trauma and decrease the impact of the trauma on present experience.<sup>137</sup>

Self-help organizations for people with addictions or with backgrounds that include childhood traumas or parental addictions have elaborated a model of treatment that appears to address many of the core issues of repetitive traumatization. These groups provide people with both human attachments and a meaningful cognitive frame for dealing with the sense of helplessness that is central to these problems.. They focus on the development of "serenity," which can be understood both as a state of automatic stability and of being at peace with one's surroundings. These groups teach that the way to gain this serenity is by learning to trust, by surrendering, and by making contact and developing interpersonal commitments. They provide a support network that attempts to avoid the barriers that people create to bolster their individual differences, and they thus endeavor to circumvent the shame of being helpless and vulnerable that perpetuates social isolation. Shame and social isolation are thought to promote regression to earlier states of anxious attachment and to addictive involvements. In these circles it is said that: "No pain is so devastating as the pain a person refuses to face and no suffering is so lasting as suffering left unacknowledged."<sup>23</sup> There is emphasis on living in the here and now, generally with the acknowledgement that in contrast to victimized children, adults can learn to protect themselves and make a conscious choice about not engaging in relationships or behaviors that are known to be harmful. The underlying assumption is that conclusions drawn from a child's

perspective retain their power into adulthood until verbalized and examined. In a group context, victims can learn that as children they were not responsible for the chaos, violence and despair surrounding them, but that as adults there are choices and consequences.<sup>23,137</sup>

These groups also teach that in order to avoid repetition, one has to give up the behavior, drug, or person involved in the addiction. Acknowledging the addictive quality of the involvement is known as overcoming denial. Avoiding acknowledging the feelings promotes acting out. Traumatized people need to understand that acknowledging feelings related to the trauma does not bring back the trauma itself, and its accompanying violence and helplessness. There must be emphasis on finding replacement activities and experiences that are more rewarding, successful and powerful in the immediate present. These may include being of help to victims of similar traumas as one's own.

Psychotropic medicines may be of help to decrease autonomic hyperarousal and decrease all or none responses. Lithium, beta blockers, and serotonin reuptake blockers such as fluoxetine, may be particularly helpful. By decreasing hyperarousal, one decreases the likelihood that current stress will be experienced as a recurrence of past trauma. This facilitates finding solutions appropriate to the current stress rather than the past.<sup>139</sup> The use of medications that affect the opioid system should be regarded as experimental and at this time needs to be avoided except in life-threatening cases.

In our last study on patients with borderline personality disorder Judith Herman and I (unpublished data, 1988) asked our self-mutilating subjects what had helped them most in overcoming the impact of their childhood traumas, including their self-mutilation. All subjects attributed their improvement to having found a safe therapeutic relationship in which they had been able to explore the realities of their childhood experiences and their reactions to them. All subjects reported that they had been able to markedly decrease a variety of repetitive behaviors, including habitual self-harm, after they had established a relationship in which they felt safe to acknowledge the realities of both their past and their current lives.

## SUMMARY

Trauma can be repeated on behavioral, emotional, physiologic, and neuroendocrinologic levels. Repetition on these different levels causes a large variety of individual and social suffering. Anger directed against the self or others is always a central problem in the lives of people who have been violated and this is itself a repetitive re-enactment of real events from the past.

People need a "safe base" for normal social and biologic development. Traumatization occurs when both internal and external resources are inadequate to cope with external threat. Uncontrollable disruptions or distortions of attachment bonds precede the development of post-traumatic stress syndromes. People seek increased attachment in the face of danger. Adults, as



well as children, may develop strong emotional ties with people who intermittently harass, beat, and, threaten them. The persistence of these attachment bonds leads to confusion of pain and love. Assaults lead to hyperarousal states for which the memory can be state-dependent or dissociated, and this memory only returns fully during renewed terror. This interferes with good judgment about these relationships and allows longing for attachment to overcome realistic fears.

All primates subjected to early abuse and deprivation are vulnerable to engage in violent relationships with peers as adults. Males tend to be hyperaggressive, and females fail to protect themselves and their offspring against danger. Chronic physiologic hyperarousal persists, particularly to stimuli reminiscent of the trauma. Later stresses tend to be experienced as somatic states, rather than as specific events that require specific means of coping. Thus victims of trauma may respond to contemporary stimuli as a return of the trauma, without conscious awareness that past injury rather than current stress is the basis of their physiologic emergency responses. Hyperarousal interferes with the ability to make rational assessments and prevents resolution and integration of the trauma. Disturbances in the catecholamine, serotonin, and endogenous opioid systems have been implicated in this persistence of all-or-nothing responses.

People who have been exposed to highly stressful stimuli develop long-term potentiation of memory tracts that are reactivated at times of subsequent arousal. This activation explains how current stress is experienced as a return of the trauma; it causes a return to earlier behavior patterns. Ordinarily, people will choose the most pleasant of two alternatives. High arousal causes people to engage in familiar behavior, regardless of the rewards. As novel stimuli are anxiety provoking, under stress, previously traumatized people tend to return to familiar patterns, even if they cause pain.

The "opponent process theory of acquired motivation" explains how fear may become a pleasurable sensation and that "the laws of social attachment may be identical to those of drug addiction." Victims can become addicted to their victimizers; social contact may activate endogenous opioid systems, alleviating separation distress and strengthening social bonds. High levels of social stress activate opioid systems as well. Vietnam veterans with PTSD show opioid-mediated reduction in pain perception after re-exposure to a traumatic stimulus. Thus re-exposure to stress can have the same effect as taking exogenous opioids, providing a similar relief from stress.

Childhood abuse and neglect enhance long-term hyperarousal and decreased modulation of strong affect states. Abused children may require much higher external stimulation to affect the endogenous opioid system for soothing than when the biologic concomitants of comfort are easily activated by conditioned responses based on good early caregiving experiences. Victimized people may neutralize their hyperarousal by a variety of addictive behaviors, including compulsive re-exposure to victimization of self and others. Gaining control over one's current life, rather than repeating trauma in action, mood, or somatic states, is the goal of treatment. The only reason to uncover traumatic material is to gain conscious control over unbidden re-experiences or re-enactments. The presence of strong attachments provides people with the security necessary to explore their life experiences and to interrupt the inner or social isolation that keeps them stuck in repetitive patterns. In contrast with victimized children, adults

can learn to protect themselves and make conscious choices about not engaging in relationships or behaviors that are harmful.

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