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Emotional Dissociation in Response to Trauma

An Information-Processing Approach

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Pathological reactions to trauma and extreme stress have been noted in the psychological literature for over a century. These reactions were codified in the psychiatric literature as posttraumatic stress disorder (PTSD) (American Psychiatric Association, 1980). The diagnosis of PTSD is made when posttrauma symptoms occur in three domains: emotional, cognitive, and visual reexperiencing of the trauma; avoidance of trauma-relevant stimuli; and general arousal. Since the inception of PTSD as a diagnostic entity, experts have focused on the fear and anxiety components of the disorder (Foa, Steketee, & Rothbaum, 1989; Keane, Zimering, & Caddell, 1985). More recently, trauma researchers have become interested in the phenomenon of affective and cognitive avoidance that is commonly observed following a trauma and has been referred to as dissociation (e.g., Spiegel, Hunt, & Dondershine, 1988), denial (Horowitz, 1986; van der Kolk, 1987), or numbing (e.g., Foa, Riggs, & Gershuny, 1995; Horowitz, Wilner, Kaltreider, & Alvarez, 1980; Litz, 1993; van der Kolk & Ducey, 1989). Common to these constructs is a diminished awareness of one's emotions or thoughts, which is hypothesized to be motivated by self-preservation.

In this chapter we will discuss the construct of emotional dissociation, de-

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scribe the measures that have been used to evaluate it, and review the relevant literature. Finally we will discuss mechanisms that are hypothesized to underlie dissociation and will propose that the presence of dissociation is an indicator of incomplete emotional processing of the trauma.

DISSOCIATION, DENIAL, AVOIDANCE, AND NUMBING: CONCEPTUAL ISSUES

The phenomenon of emotional detachment has gained considerable attention in the late nineteenth century and was conceptualized as a defense against overwhelming emotions (e.g., Breuer & Freud, 1985; Janet 1907, 1989). But it was Janet (1907) who coined the term *dissociation* to describe the lack of connection between aspects of memory or conscious awareness observed during and after extreme stress.

Since these early writings, many experts have noted that dissociation occurs in nonpathological as well as in pathological states (e.g., Bliss, 1984; Braun & Sachs, 1985; Hilgard, 1977; Spiegel, 1963). Nemiah (1981) has proposed two characteristics of pathological dissociation. The first is an alteration in one's sense of identity, as in multiple personality disorder, and the second is a disturbance in the memory of the specific experiences during a dissociative period (usually traumatically induced). The *Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition (DSM-IV) has endorsed this dual view, stating "The essential feature of the dissociative disorders is a disruption in the usually integrated functions of consciousness, memory, identity, or perception of the environment" (American Psychiatric Association, 1994, p. 477).

A third characteristic of dissociation that has been proposed by several experts (e.g., Coons & Milstein, 1986; Putnam, 1989; Spiegel, 1986) is its association with traumatic experience. Accordingly, Spiegel and Cardena (1990) proposed that "posttraumatic phenomenology frequently involves alterations in the relationship to the self (e.g., depersonalization and multiple personality disorder), to the world (e.g., derealization and hallucinatory phenomena), and to memory processes (e.g., psychogenic amnesia, fugue, and multiple personality disorder)" (p. 368). Support for the view that dissociation is etiologically connected to traumatic experiences also comes from clinical observations of children who have suffered repeated exposure to extreme stress such as sexual, physical, or psychological abuse (Terr, 1991). Terr reported that children often use dissociation and numbing to escape the trauma-related memories and the arousal they trigger.

It seems that the construct of dissociation is largely defined by a set of symptoms that have been observed in persons who experienced trauma. These include amnesia, emotional detachment, feelings of depersonalization, out-of-body experiences, dreamlike recall of events, feelings of estrangement, flashbacks, and abreaction. In a review of psychological reactions that ensue from a traumatic experience, Cardena and Spiegel (1993) have suggested that posttrauma dissociative symptoms can be classified into three types of responses: (1) detachment from others and the physical environment, (2) alterations in perceptions, and (3) impairments in memory.

A second construct, denial, was proposed by Horowitz (1986), who noted that a common reaction to trauma is "the massive ideational denial of the event" (p. 16). An examination of the items contained in the scale that Horowitz and his colleagues developed to measure denial (i.e., the Impact of Events Scale; Horowitz, Wilner, & Alvarez, 1979) indicates that denial denotes attempts at cognitive and emotional avoidance (e.g., "I avoid letting myself get upset when I thought about it [the trauma] or was reminded of it," and "I tried to remove it from memory") but not alteration in perception and memory impairment.

A third term that had been introduced into the DSM-III (American Psychiatric Association, 1980) is "emotional numbing." This term is sometimes used interchangeably with denial and avoidance to describe the lack of affective expression in trauma victims (American Psychiatric Association, 1980; Horowitz, 1986). Seven symptoms comprise the avoidance-numbing symptom cluster of DSM-III-R (American Psychiatric Association, 1987) and DSM-IV (American Psychiatric Association, 1994). These include effortful cognitive and behavioral avoidance of trauma reminders, memory loss, and emotional numbing (e.g., loss of interest in activities, detachment from others, restricted affect, sense of a foreshortened future). Thus, the effortful avoidance symptoms are grouped together with those of emotional numbing in the diagnostic nomenclature.

The grouping of avoidance and numbing symptoms into one cluster suggests that the DSM-IV authors had conceptualized emotional numbing and effortful avoidance as an equivalent concept. However, a review of literature on experimental paradigms that elicit PTSD-like symptoms in animals suggests that effortful avoidance and numbing involve separate mechanisms (Foa, Zinbarg, & Rothbaum, 1992). Foa and Riggs (1993) suggested that effortful avoidance may be regulated by strategic psychological processes, whereas numbing may be mediated by biological mechanisms resembling those underlying the freezing behavior in frightened animals. They further proposed that on exposure to trauma-related information, victims first mobilize effortful strategies to avoid the arousal associated with the traumatic memories. When such strategies fails, a "shutting-down" of the affective system occurs; this process is expressed as numbing symptoms. Consistent with the view that effortful avoidance and numbing reflect separate phenomena are findings from a factor analytical study of PTSD symptoms in female assault victims. The numbing symptoms loaded on one factor that also included symptoms of irritability and concentration problems; the effortful avoidance symptoms loaded on a separate factor that included intrusive thoughts, emotional reactivity, hypervigilance, and excessive startle (Foa et al., 1995).

MEASURES OF DISSOCIATION, DENIAL, AVOIDANCE, AND NUMBING

As we noted earlier, many experts agree that dissociation, denial, avoidance, and numbing are common responses to extreme stress. The first accounts of dissociation relied on clinical observations of trauma victims. More recently, information about this phenomenon has been based on measures that have been constructed to serve as operational definitions of dissociation. It is therefore important

to describe measures of dissociation before discussing the empirical data that have employed these measures.

1. *Dissociative Events Scale* (DES) (Bernstein & Putnam, 1986). This is a 28-item scale to assess the frequency and intensity of a range of experiences commonly conceptualized as dissociation and depersonalization in a psychiatric population in general and in traumatized individuals in particular. The DES items pertain to disturbances of memory, attention, identity, and perception. According to Bernstein and Putnam, the DES is a trait measure, although this has not been empirically validated. There are no items about numbing or cognitive avoidance in this scale.

2. *Stanford Acute Stress Reaction Questionnaire* (SASRQ) (Cardena, Classen, & Spiegel, 1991). The long version of this scale has 73 items that tap dissociation and anxiety experiences during and immediately after a trauma. Thirty-three items comprise the dissociation scale that assesses five features: psychic numbing, depersonalization, derealization, amnesia, and stupor. Forty items comprise the anxiety scale that also assesses five features: intrusive thinking, somatic anxiety, hyperarousal, attention disturbance, and sleep disturbance.

3. *Perceptual Alterations Scale* (PAS) (Sanders, 1986). This is a 25-item scale designed to measure normal and pathological dissociation. Like the DES, it conceptualizes dissociation as a trait rather than a state or a pathological feature of a disorder. The scale items were selected from the Minnesota Multiphasic Personality Inventory. A factor analysis yielded three factors: affect and depersonalization, depersonalization and loss of body control, and memory impairment.

4. *Peritraumatic Dissociation Experiences Questionnaire* (PDEQ-RV) (Marmar & Weiss, 1990). This scale is available in two versions: (1) interview (nine items) and (2) self-report (eight items). Similar to the SASRQ, it is designed to obtain information about dissociative reactions and experiences during and immediately after a trauma. The content of the items involve memory loss specific to the trauma, depersonalization, and derealization.

5. *Impact of Events Scale* (IES) (Horowitz et al., 1979). This is a 15-item scale that assesses intrusive reexperiencing and cognitive and affective avoidance. The eight avoidance items assess effortful attempts to avoid emotional reactions to trauma-related stimuli and thoughts about the trauma, but not depersonalization, derealization, and emotional numbness.

6. *PTSD Symptom Scale* (PSS) (Foa, Riggs, Dancu, & Rothbaum, 1993b). Both interview (PSS-I) and self-administered (PSS-SR) versions of this 17-item scale have been validated with female victims of sexual and nonsexual assault. The items correspond to the PTSD symptoms listed in the DSM-IV. Paralleling the DSM-IV, the items are divided into three clusters: reexperiencing (four items), avoidance-numbing (seven items), and arousal (six items). A factor analysis of this scale yielded a numbing factor that combined the following symptoms: detachment from others, irritability, sense of foreshortened future, and emotional numbness (Foa et al., 1995).

7. *The Dissociative Disorders Interview Schedule* (DDIS) (Ross, Heber, Norton, Anderson, Anderson, & Barchet, 1989). The DDIS is a 131-item structured interview developed to make diagnoses of dissociation somatization, major depression, and borderline personality disorder. Ross and colleagues (1989) recommend

the use of this scale with the DES to provide a complete picture of the range and type of dissociation experiences and severity of psychopathology.

Examination of the measures here described suggests that the constructs of dissociation, numbing, and avoidance primarily involve three features. The first pertains to derealization, depersonalization, and memory loss; the second denotes the absence of affect in emotional contexts; and the third relates to effortful cognitive avoidance. Most measures focus on one or two of these features, with the exception of the SASRQ, which includes all three. With these distinctions in mind, we will now proceed to review the empirical literature on dissociation, numbing, and avoidance.

STUDIES OF DISSOCIATION, NUMBING, AND AVOIDANCE

Researchers have documented the presence of dissociative features following a variety of traumatic experiences. The results of these empirical investigations are summarized below, according to the type of trauma.

War Exposure

Using the DES with Vietnam War veterans, several studies have demonstrated that PTSD is associated with increased use of dissociative strategies (Bernstein & Putnam, 1986; Branscombe, 1991; Bremner et al., 1992; Coons, Bowman, Pellow & Schneider, 1989; Huska & Weathers, 1991; Orr et al., 1990). The degree of dissociation, as measured by the DES, was higher in male veterans with PTSD than in alcoholics, agoraphobics, and normals (Bernstein & Putnam, 1986). DES scores were also positively related to the severity of PTSD in combat veterans (Bremner et al., 1992; Waid & Urbanczyk, 1989). However, DES scores were also highly correlated with depression and anxiety, suggesting that the relationship of dissociation to PTSD is not specific but rather reflects the relationship between dissociation and psychopathology.

Several factor analytical studies of posttrauma symptoms in war veterans have identified dissociation as a core feature of PTSD. Silver and Iacono (1984) have conducted a factor analysis on psychiatric symptoms reported by Vietnam combat veterans and have identified four factors: depression, grief-guilt, reexperiencing, and detachment-anger. The latter factor was characterized by emotional detachment and difficulty experiencing emotions. Since PTSD diagnosis was not determined, the relationship of these symptoms to traumatic experiences was not determined. Davidson, Smith, and Kudler (1989) also factor analyzed the DSM-III-R symptoms of PTSD reported by 116 veterans of World War II, Korea, and Vietnam. Three factors were identified: reexperiencing and arousal, avoidance and detachment, and constricted affect and memory impairment. In a third study, Solomon, Mikulincer, and Benbenishty (1989) interviewed soldiers 1 year after the combat and submitted their reported symptoms to a factor analysis. A psychic numbing factor emerged that accounted for 20% of the variance (Solomon et al., 1989). The symptoms that loaded on this factor were: detachment from others and from one's surroundings, numbing of responses, mental escape, and distraction. The second

factor, anxiety reactions, accounted for 11% of the variance. These results point to the prominent position of dissociation in posttrauma sequela.

Several studies have demonstrated that the use of dissociative strategies during combat were associated with chronic posttrauma reactions. Using the IES, Solomon and Mikulincer (1992) evaluated symptoms of intrusion and avoidance in two groups of soldiers: those who suffered combat stress response (CSR), or "battle shock," and those who did not. Soldiers with CSR reported more intrusion and avoidance symptoms 3 years after combat than those without CSR. However, in both groups, intrusion and avoidance symptoms decreased as a function of the time that had elapsed since combat exposure.

In a retrospective study, Bremner et al. (1992) compared the reported dissociation at the time of specific traumatic events in Vietnam veterans with and without PTSD. Dissociation during combat was evaluated using a modified version of the DES. PTSD patients reported more dissociative symptoms during combat traumas than did those without PTSD. A similar study was conducted by Marmar and coworkers (1992). These researchers also examined retrospectively the emotional experiences during combat of female and male Vietnam theatre veterans using the DES and the PDEQ-interviewer version. Consistent with the findings of Solomon et al. (1989) and Bremner et al. (1992), dissociative experiences reported during combat were highly associated with chronic posttrauma reactions.

Taken together, the above studies seem to indicate a common tendency to dissociate during a combat experience, and that such dissociation results in prolonged pathological reactions. However, it is important to note that all three studies used retrospective methodology, and therefore the results should be interpreted with caution. It is possible that individuals with more severe posttrauma pathology are more likely to report the dissociative experiences during the traumatic event than do individuals who have successfully recovered, irrespective of the degree of dissociation they had actually experienced during the traumatic event itself. If the reported dissociation during trauma accurately reflects the degree of dissociation during the trauma, then the argument can be made that although dissociation may provide short-term relief during a stressful event, the use of this coping style hinders recovery later on.

Several laboratory studies have explored dissociative phenomena in combat veterans. Spiegel et al. (1988) found that combat veterans with PTSD were more hypnotizable than their non-PTSD cohorts. Conceptualizing hypnotizability as a measure of dissociation, they concluded that individuals with PTSD dissociate more than those without PTSD. To study emotional numbing, veterans with and without PTSD were given an affective recognition task. As expected, veterans with PTSD had more difficulty evaluating and identifying emotions than those without PTSD (Zimering, Caddell, Fairbank, & Keane, 1993). A different method to examine numbing was employed by Orr (1991). Veterans with and without PTSD were asked to imagine a pleasant scene. No differences emerged between the PTSD and non-PTSD subjects on psychophysiology, self-report of emotional reactions, and facial expression of emotions. Influenced by results from animal experiments demonstrating opiate-mediated analgesia following uncontrollable electrical shocks, Pitman, van der Kolk, Orr, and Greenberg (1990) hypothesized that numbing symptoms in PTSD sufferers is mediated by endogenous opiates. To test this hypothesis,

veterans with and without PTSD were exposed to combat movies. Pain tolerance was used as a measure of numbing. Veterans with PTSD showed decreased pain sensitivity in response to an ice-cold water test after watching the movies. No such decrease occurred when naloxone, an opiate antagonist, was administered, suggesting an opiate-mediated stress-induced analgesia in PTSD. The non-PTSD veterans showed no decrease in pain following the movies.

Abuse in Childhood

Several studies have investigated the relationship between dissociation and PTSD in individuals who were sexually abused in childhood. Using the DES, Coons et al. (1989) evaluated dissociation in psychiatric patients with a variety of diagnoses, including PTSD. A significantly higher incidence of childhood abuse was found among female patients who were referred to a counseling center than among female bulimics attending an eating disorders clinic. Further, the incidence of dissociation and PTSD was significantly higher in the former group.

Using the DES, Sanders and Giolas (1991) examined dissociation and childhood abuse in a group of emotionally disturbed adolescents. Modest correlations between history of childhood abuse and DES score were obtained in this sample, replicating the findings that have been obtained in college students (Sanders, McRoberts, & Tollefson, 1989). Chu and Dill (1990) also found that female psychiatric inpatients with childhood physical or sexual abuse scored significantly higher on the DES than did women without such a history. However, unlike the results of Coons et al. (1989), the severity of the DES scores was not related to diagnoses of PTSD or to dissociative disorders.

Several authors have postulated a relationship between symptoms of borderline personality and childhood abuse (Gelinas, 1983; Herman, Perry, & van der Kolk, 1989). In a retrospective study, Herman et al. (1989) examined the relationship between childhood trauma histories of patients with borderline personality disorder, PTSD symptoms (measured by IES), and the DES. They found a significant relationship between severity of trauma history, severity of PTSD symptoms, and the presence of borderline personality disorder. Also, patients with this disorder generally reported higher DES scores than those without this diagnosis, suggesting a link between sexual abuse, borderline personality, dissociation, and PTSD.

Similar results were reported in a study evaluating the sexual and physical abuse experiences in female and male adults diagnosed with borderline personality disorder using the Diagnostic Interview for Borderline Patients (DIB) (Gunderson, Kolb, & Austin, 1982). Although the DIB is not specifically designed to evaluate a wide range of dissociative experiences, a few items about derealization and depersonalization are included. The results of the study confirmed the hypothesized relationship among childhood sexual abuse, borderline personality, and dissociative symptoms (Ogata, Silk, Goodrich, Lohr, Westen, & Hill, 1990). Finally, Boon and Draijer (1991) reported a high prevalence of child abuse among patients who met criteria for dissociative and personality disorders using the Structured Clinical Interview for DSM-III-R Dissociative Disorders (SCID-D).

The studies described above converge to suggest a relationship among childhood abuse, psychopathology (including PTSD, dissociative disorders, and person-

ality disorders), and tendency to employ dissociative strategies. However, this tendency is associated with general psychopathology and is not specific to PTSD.

Adult Victims of Assault

Symptoms of anxiety and dissociation have also been observed in adult victims of assault (Burgess & Holmstrom, 1976). Moderate dissociation (measured by the DES) in female victims of sexual and nonsexual assault was observed immediately after the assault, which declined over time, reaching a normal range 3 months later (Dancu, Riggs, Hearst-Ikeda, Shoyer, & Foa, in press). As with victims of childhood abuse, dissociation was related to posttrauma psychopathology (e.g., RIES, Beck Depression Inventory, State Trait Anxiety Inventory) in both rape and nonsexual assault victims. Dissociation was also related to PTSD diagnosis in nonsexual victims but not in rape victims. Thus, these results support the view that dissociation is related to general psychopathology rather than PTSD. Riggs, Dancu, Gershuny, Greenberg, and Foa (1992) also found that victims with a history of childhood sexual abuse reported more dissociation than victims without such a history. These findings are consistent with those of Chu and Dill (1990), and together they suggest that trauma in childhood may predispose victims to dissociate after a subsequent trauma in adulthood.

In the factor analytical study mentioned earlier that used the DSM-III-R symptoms of PTSD in recent female assault victims, Foa et al. (1993a) identified three factors: arousal-avoidance, numbing, and intrusion. The items that loaded on the numbing factor were: numbing of feelings, detachment from others, loss of interest, and a sense of foreshortened future. The numbing symptoms best distinguished assault victims with PTSD from those without PTSD 3 months after the assault. These findings concur with those of Solomon and colleagues using the DES with Israeli war veterans (Solomon et al., 1989; Solomon & Mikulincer, 1992). Although the symptoms that comprised the numbing factor differ from those of the DES, both studies reveal association between dissociation and the experience of trauma.

Abduction and Incarceration

In two studies, Kinzie and colleagues (Kinzie, Sack, Angell, Manson, & Rath, 1986; Kinzie, Sack, Angell, Clarke, & Rath, 1989) evaluated the posttrauma reactions of Cambodian adolescents 4 years after being incarcerated in the Pol Pot concentration camps. The victims reported a variety of traumas including separation from family members, starvation, being beaten, and witnessing the deaths of their companions. Four years after incarceration, half of these youths met DSM-III-R criteria for PTSD, 58% avoided memories of the camp, and 43% avoided discussing their traumas. Seven years after incarceration, 48% of the participants had PTSD and 41% exhibited moderate to severe depression. Thus, avoidance of trauma reminders was most common in victims of incarceration years after their traumatic experiences. While no other dissociation symptoms were reported in this study, the high prevalence of PTSD suggests that many victims experienced numbing symptoms. More direct evidence for the presence of dissociative symptoms following incarceration comes from a review of anecdotal accounts of prisoners of war about their emotional experiences during the trauma (Siegel, 1984). Twenty-six percent of the

prisoners evidenced emotional numbing and depersonalization, and 13% experienced out of body experiences.

Accidents

Two studies by Noyes and colleagues examined dissociation in survivors of life-threatening situations (e.g., an automobile accident, a drowning, a fall, a serious illness). The first study consisted of interviewing accident survivors and administering a questionnaire inquiring about dissociative experiences during the trauma. The questionnaire revealed a wide range of dissociative symptoms including detachment, depersonalization, absence of affect, perceptual distortions, and feelings of unreality (Noyes & Kletti, 1977). In the second study, the dissociative symptoms of hospitalized automobile accident survivors and psychiatric patients were examined (Noyes, Hoenk, Kuperman, & Slymen, 1977). Accident victims were asked about their dissociative experiences during the trauma, and psychiatric patients were asked about dissociative experiences during the most recent episode of their illness. A 56-item questionnaire administered in this study was submitted to factor analysis. Three factors emerged for both populations: detachment, mental clouding, and alertness. Both victims and psychiatric patients reported experiences of depersonalization and dissociation; "mental clouding" was prevalent in psychiatric patients, whereas perceptual and time distortions were the predominant symptoms in accident victims. High prevalence of avoidance and numbing symptoms (about 25 to 40%) was also found among adult survivors of severe flame, chemical, electrical, or scald burns (Roca, Spence, & Munster, 1992) and among survivors of the Hyatt Regency Hotel skywalk collapse (Wilkinson, 1983) 4 to 5 months after the trauma.

Natural Disasters

Dissociation and avoidance symptoms have also been reported in victims of natural disasters and appear to be associated with persistent posttrauma psychopathology. Using an expanded version of the Hopkins Symptom Checklist to include PTSD items, Madakasira and O'Brien (1987) evaluated the posttrauma reactions of disaster victims after a tornado in North Carolina. Five months after the trauma, 82% of the victims were bothered by intrusive thoughts, 61% suffered memory loss of the trauma, 57% experienced feelings of estrangement, and 31% avoided trauma reminders.

Two studies used the SASRQ to examine dissociation after a natural disaster. In the first study, two groups of earthquake survivors were compared. One group was evaluated 1 week after the earthquake and the other 4 months later. As expected, more symptoms of dissociation and anxiety were reported by the former than the latter group (Cardena & Spiegel, 1993). In the second study, firestorm survivors were evaluated on two occasions: within the first month after the fire and 7 to 9 months later. Dissociation and anxiety were highly correlated within the first month posttrauma and both symptom clusters followed similar recovery courses. Interestingly, dissociative symptoms were stronger predictors of chronic posttrauma reactions than symptoms of anxiety (Koopman, Cardeña, Classen, & Spiegel, Ch. 17, this volume). Similarly, McFarlane (1986) reported that DSM-III-R

symptoms of avoidance predicted persistent PTSD in survivors of the Ash Wednesday brush fires. These findings, like those of Foa et al. (1995a), point to the cardinal role of dissociation in PTSD.

Witnessing Trauma

Using a short version of the SASRQ, Freinkel, Koopman, and Spiegel (1994) studied anxiety and dissociation symptoms of journalists during and immediately after witnessing an execution. Symptoms of emotional numbing, cognitive avoidance, and derealization were more prevalent than anxiety symptoms. The frequency of the dissociation symptoms reported by this sample was as high as that of survivors of natural disasters (Koopman, Classen, & Spiegel, 1994) but did not persist as long.

In summary, the studies reviewed above indicate that dissociative experiences during and immediately after a trauma are frequent and are strongly associated with persistent posttrauma reactions. Moreover, dissociative symptoms during or shortly after a trauma may be a stronger predictor of PTSD than anxiety symptoms. It is unclear, however, whether the tendency to dissociate has a causal relationship to the development of chronic PTSD. It is possible that both the tendency to dissociate and the vulnerability to develop chronic PTSD are mediated by other factors such as childhood experiences. The strong relationship between childhood abuse and dissociation strongly supports this proposition. Most studies also indicate that dissociative symptoms are not unique to trauma victims; rather, they seem to reflect general psychopathology. How can we explain the relationship between traumatic experiences, dissociation, and psychopathology?

INFORMATION-PROCESSING PERSPECTIVE OF EMOTIONAL DISSOCIATION IN RESPONSE TO TRAUMA

Many authors have noted that emotional experiences are often relived long after the original emotional events have occurred (e.g., Freud, 1920; Lindemann, 1944; Rachman, 1980; Foa & Kozak, 1991). As is apparent from the studies reviewed above, this phenomenon is clearly exemplified in individuals who have experienced traumatic events. Usually, the frequency and intensity of this emotional reexperiencing of the trauma gradually diminishes over time. Thus, shortly after the attack, a rape victim may experience intense fear when reminded of the assault, and with time this fear lessens, although perhaps it never completely disappears.

Rachman (1980) discussed the significance of the processes that underlie the decline of emotional reexperiencing and suggested that when these processes are impaired, psychopathology surfaces. He further proposed that the persistence of neurotic symptoms such as intrusive thoughts, nightmares, excessive fears, and sleep disturbances are signs of unsatisfactory "absorption" of the emotional experience. The overlap between these signs and the symptom criteria for PTSD is striking, and it has lead Foa (1993) to propose that the presence of PTSD reflects impairment in emotional processing of a traumatic experience. If this is true, Foa (1993) suggested, the identification of factors that differentiate trauma victims with

chronic PTSD from victims without PTSD would shed light on the mechanisms that facilitate or hinder emotional processing. Moreover, successful treatment of PTSD can be viewed as assisting in emotional processing, and thus, factors that distinguish individuals who improved with treatment from those who failed to show improvement may further our knowledge of the pathology underlying PTSD.

To explain the mechanism by which cognitive-behavioral therapy reduced pathological anxiety (i.e., signs of impaired processing), Foa and Kozak (1986) extended Lang's (1977, 1979) bioinformation model of pathological fear. Using this framework, we will provide an information-processing analysis of how dissociation impairs the normal processing of a traumatic event, thereby contributing to the development and maintenance of chronic PTSD. We will also provide an explanation of how exposure treatment prevents or negates the deleterious effects of dissociation.

The Cognitive Structure of Fear

Lang (1977, 1979) proposed that fear is represented in memory as a structure that comprises information about: (1) feared stimuli, (2) physiological and motor responses, and (3) interpretive information about their meaning. Lang further suggested that a fear structure constitutes a "program" for escape from threat. If a fear structure is a program for escaping danger, then it must involve information that trauma-related stimuli and/or responses are dangerous. And it is this meaning information, Foa and Kozak (1986) contended, that distinguishes a fear structure from other cognitive structures.

Most people experience fear in some circumstances, which implies the "running" of a fear program. "Normal" fear occurs when an individual perceives actual threat, and it subsides when the danger is removed. When does a fear become pathological? Foa and Kozak (1986) noted that several characteristics distinguish pathological fear. First, fear becomes pathological when it is extremely intense and when it persists, despite information that it is unrealistic. In other words, a pathological fear structure involves excessive response elements, such as representations of avoidance and physiological activity, that are resistant to modification. Second, a pathological fear structure includes unrealistic elements. This implies that stimulus-stimulus associations do not accurately represent the world. For example, for the rape victim who was raped at gunpoint by a tall, bearded man, the elements "tall, bearded man" may become erroneously associated with the stimulus "gun." Third, mistaken associations between nondangerous stimuli and escape or avoidance responses are also characteristic of a pathological fear structure. Indeed, running away from a "tall, bearded man" is not likely to enhance the safety of the victim.

In addition to erroneous association among elements, victims with pathological fear make several evaluative mistakes. First, they commonly believe that anxiety, once experienced, will persist unless they escape the feared situation. Second, they overestimate the probability that the feared stimuli or responses will cause physical or psychological harm. And third, their feared consequences have an extremely high negative valence.

According to Foa and Kozak (1986), different anxiety disorders represent

different pathological fear structures. For example, there is evidence to suggest that erroneous interpretations of fear responses distinguish the structure of agoraphobia from that of simple phobia. Agoraphobics commonly interpret anxiety responses, themselves, as threatening, since they expect these responses to result in physical or psychological harm. For an agoraphobic, stimulus elements such as "tunnels" are not perceived as inherently dangerous; rather, the danger is perceived to exist in the anxiety that these elements engender. In contrast, for simple phobics, the danger lies in the stimulus situation itself, such as "snakes," "airplanes," or "insects."

Foa (1993) suggested that PTSD, like the other anxiety disorders, can be construed as reflecting a pathological fear structure that contains faulty associations and erroneous evaluations. She further proposed that a trauma memory can be viewed as a fear structure. It includes information about stimuli and responses related to the trauma, as well as information about their meaning. The trauma structure of a woman who was raped at gunpoint at her home in the suburbs will include the stimulus elements of "gun," "man," his physical characteristics such as "tall," and "beard," and environmental stimuli such as "home" and suburbs." The response elements will include physiological responses such as "tachycardia" and behavioral responses such as "struggling" and "screaming."

In a trauma memory of a non-PTSD victim, "rape" and "pointed gun" are associated with a "danger" meaning but neutral stimuli such as "man," "home," and "suburbs" are not. In a pathological trauma structure that underlies PTSD, stimuli that are inherently neutral such as "tall, bearded man," "home," and "suburbs" are associated with the meaning "danger." Because many stimuli become associated with danger meaning, the world as a whole is perceived as threatening by the victim with PTSD. Foa and Riggs (1993) have suggested that a pathological trauma structure includes not only erroneous interpretations of stimulus elements but also mistaken interpretations of response elements. In particular, they proposed that responses during the trauma such as "struggling" and "screaming" become associated with the meaning "self-incompetence." A pathological trauma structure also includes particularly intense response elements that are reflected in PTSD symptoms such as excessive avoidance and arousal. In summary, a pathological trauma structure is distinguished by excessive response elements, as well as erroneous interpretations of intrinsically neutral stimuli as dangerous and normal responses to trauma as reflecting self-incompetence.

Modification of the Trauma Structure

Studies have revealed that 95% of female rape victims and 75% of female nonsexual assault victims met symptom criteria for PTSD within the first 2 weeks after the trauma (Rothbaum, Foa, Riggs, Murdock, & Walsh, 1992). It follows that, for most people, immediately after a traumatic experience the trauma memory includes pathological elements such as excessive responses and faulty interpretations. Rothbaum et al. (1992) further noted that over time, only 50% of rape victims and 25% of nonsexual assault victims met criteria for the disorder. This finding suggests that, in the course of time, the trauma structure of many victims undergoes modification.

Foa and Kozak (1986) have suggested that the modification of a pathological fear structure is the essence of emotional processing, and that successful therapy promotes emotional processing. How does emotional processing occur in the natural progression of recovery from a trauma? We argue that the understanding of how cognitive behavioral therapy reduces pathological fear will help us conceptualize natural recovery from a trauma.

Foa and Kozak (1986) proposed that two conditions are necessary for emotional processing to occur. First, therapists must activate the fear structure by providing information that matches the information represented in the structure. For if the fear structure remains unaccused, it will not be available for correction. Second, information provided during therapy must also be incompatible with the pathological elements in the structure. Extending this model, we propose that in order to acquire a spontaneous decline of posttrauma emotional disturbances, the trauma memory, including its emotional elements, must be repeatedly activated by contact with trauma-related stimuli. Further, this contact should include corrective information about the world (e.g., "not all tall, bearded men carry guns and rape") and about oneself (e.g., "screaming during the rape does not mean that I am incompetent").

Dissociation Impedes Emotional Processing

The view that repeated engagement with the trauma memory is important for a successful resolution of the traumatic experience has been shared by many theorists (e.g., Freud, 1920; Horowitz, 1986). In fact, Horowitz (1986) invented the term *completion principle* to denote the natural tendency to process new information until it is "brought up to date" with inner schemas of the self and of the world. A stressful life event, he suggested, includes by definition information that is incompatible with a person's inner cognitive models, and thus requires more processing activity than nonstressful experiences. But the completion principle conflicts with the tendency to avoid trauma reminders in order to protect oneself from emotional pain, the pain that is associated with the trauma. Dissociation or numbing, like avoidance, is a strategy to avert trauma-related distressing emotions (Davidson & Foa, 1991; Spiegel et al., 1988). If recovery (i.e., emotional processing) requires repeated engagement with the trauma memory, then dissociation is expected to impede this process.

Indirect evidence supporting the hypothesis that dissociation impairs emotional processing and hence impedes recovery comes from the repeated finding that dissociation during or immediately after the traumatic experience is associated with later psychopathology. More direct evidence comes from a study examining the facial fear expression of assault victims during therapy that involved reliving of the trauma (Foa, Riggs, Massie, & Yarczower, in press). Assault victims who displayed more intense facial fear expressions and reported greater subjective distress during the first reliving session benefited more from treatment than those who displayed less intense fear. These findings converge with those of other studies that measured fear activation via increase in heart rate. With simple phobics, Lang, Melamed, and Hart (1970) found that clients who evidenced higher heart rate response during the first imaginal exposure to feared stimuli manifested greater

improvement in their phobias. Similar results were reported with obsessive-compulsives: a strong positive correlation was found between heart rate increase during the first in vivo exposure to the patients' most feared situations and change in measures of obsessional fear (Kozak, Foa, Steketee, & Grayson, 1988). In all of these studies, emotional engagement with the feared memory enhanced emotional processing. Conversely, emotional disengagement (i.e., dissociation) hampered emotional processing. Interestingly, in the Foa and co-workers' (in press) study described above, victims who reported more anger prior to treatment displayed less fear during reliving of the trauma and benefited less from treatment. These results correspond with the finding that intense anger shortly after an assault predicts PTSD severity 1 month later in female victims (Riggs et al., 1992). If, as we suggested, PTSD reflects a failure to emotionally process the traumatic event, then anger appears to impede the mechanisms underlying both the "natural" emotional processing and emotional processing during treatment. The negative association between anger and facial fear expression implies that anger impedes processing of the trauma by inhibiting the activation of fear. It is possible that anger, like effortful avoidance and dissociation, is a means by which victims with PTSD regulate their arousal and emotional distress.

FURTHER CONSIDERATIONS

In this chapter we have adopted the view that dissociation or numbing may represent a strategy for reducing or avoiding trauma-related emotional distress. We have proposed that excessive use of dissociation prevents the activation of the traumatic memory, and that repeated activation is a necessary condition for emotional processing to occur. It follows that dissociation is one factor underlying the persistence of posttrauma disturbances, and thus, it is implicated in the development of chronic PTSD and related psychopathology.

The conceptualization of dissociation that we have offered here carries implications for the treatment of trauma-related psychopathology. If recovery from a trauma requires emotional engagement with the traumatic memory, then treatment of chronic PTSD should involve the promotion of such engagement. Indeed, successful treatments for PTSD consist of the reliving of the trauma in imagination (Boudewyns & Wilson, 1972; Boudewyns, 1975; Foa, Rothbaum, Riggs, & Murdock, 1991; Keane, Fairbank, Caddell, & Zimering, 1989; Keane & Kaloupek, 1985).

The use of exposure therapy to promote emotional processing assumes that the tendency to dissociate will be conquered by therapeutic instructions to engage in the emotional reliving of the trauma. The results of treatment studies that employed exposure support this presumption.

For the most part, successful reduction of trauma-related distress via treatment should eliminate the function of dissociation, and thus reduce dissociative responses. However, clinical observations reveal that some traumatized individuals continue to dissociate during the reliving of the trauma, rendering exposure therapy ineffective. For such individuals, therapeutic techniques directly aimed at reducing dissociation must be implemented. Such interventions are reported in the

literature (for a summary of treatment for multiple personality disorder, see Putnam, 1989), but studies of their efficacy are awaiting controlled investigation.

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