A CONCEPTUAL FRAMEWORK FOR THE IMPACT OF TRAUMATIC EXPERIENCES

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This conceptual framework for the effects of traumatic experiences addresses what makes an experience traumatic, what psychological responses are expected following such events, and why symptoms persist after the traumatic experience is over. Three elements are considered necessary for an event to be traumatizing: The event must be experienced as extremely negative, uncontrollable, and sudden. The initial core responses to trauma include reexperiencing and avoidance symptoms that occur across four modes of experience. Explanations of how each response is theoretically linked to traumatic events are offered to clarify how the responses reflect the natural human response to uncontrollable, negative, and sudden events. The framework delineates the behavioral learning and cognitive processes that elucidate the persistence of the initial response to trauma. Five factors are proposed that influence the response to trauma, including biological factors, developmental level at the time of trauma, severity of the stressor, social context, and prior and subsequent life events. Finally, secondary and associated responses to trauma are discussed that are common across many types of traumatic experience. These include depression, aggression, substance abuse, physical illnesses, low self-esteem, identity confusion, difficulties in interpersonal relationships, and guilt and shame.

Key words: *theory, trauma, posttraumatic stress*

A SOUND THEORETICAL FRAMEWORK should be the basis for clinical assessment, intervention, and research. This conceptual framework for the impact of traumatic events is a work in progress. An earlier version of it is described in detail in Carlson (1997). Like most theories, it was constructed using some original concepts, but relies heavily on ideas and observations described previously by others. In developing these ideas, we have attempted to expand on previous trauma theories by addressing a very wide variety of traumatic events and by explaining the causal connections between traumatic experiences and later symptoms. In this article, we will describe the basic elements of the theory and illustrate its clinical application using some examples.

We begin by identifying three defining features of traumatic events, including negative valence, lack of controllability, and suddenness.

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We then propose that cognitive, affective, behavioral, and physiological manifestations of reexperiencing and avoidance are the core or primary responses to trauma. We briefly review theories that explain the persistence of traumatic responses after the event is over. Next, we propose that symptoms of depression, aggression, substance abuse, physical illnesses, low self-esteem, identity confusion, difficulties in interpersonal relationships, and guilt and shame can be secondary or associated responses to trauma. Finally, we discuss five prominent factors that influence responses to trauma, including individual biological factors, developmental level at the time of the trauma, severity of the trauma, the social context before and after the trauma, and life events prior and subsequent to the trauma.

This framework was developed drawing from the theoretical ideas of a variety of clinicians and researchers representing different theoretical orientations. In this article, we will provide some citations for sources of previous discussions of concepts. These citations are meant to serve as examples of the foundations of concepts, but not to be an exhaustive listing of sources. Because most of the ideas discussed have evolved gradually over time and are described in numerous articles and book chapters, it is not always practical or possible to pinpoint the origin of an idea or to cite every source where an idea was discussed. Consequently, readers should not assume that the authors cited in relation to a particular idea are the originators of the concept, the only authors to propose the concept, or the only influences on the development of the framework.

KEY POINTS OF THE CONCEPTUAL FRAMEWORK

- The three elements necessary for an event to be traumatizing are suddenness, lack of controllability, and an extremely negative valence.
- The initial core responses to trauma include reexperiencing and avoidance symptoms across cognitive, affective, behavioral, and physiological modes of experience.
- Classical and operant learning models and cognitive theories explain the persistence of reexperiencing and avoidance symptoms following traumatic events.
- Responses to trauma are influenced by biological factors, developmental level at the time of trauma, severity of the stressor, social context, and prior and subsequent life events.
- Common secondary and associated responses to trauma include depression, aggression, substance abuse, physical illnesses, low self-esteem, identity confusion, difficulties in interpersonal relationships, and guilt and shame.

WHAT MAKES AN EXPERIENCE TRAUMATIC?

A useful conceptual framework for the effects of traumatic experiences must begin with the question of what makes an experience traumatic. Although some events may be so powerful that they would traumatize anyone, most potentially traumatic events are not so powerful. A recent epidemiological study found that, with rates averaged across trauma types, only about 9% of those exposed to traumatic stressors develop post-traumatic stress disorder (PTSD) (Breslau et al., 1998). The most useful framework would also explain why a potentially traumatic event evokes a traumatic response in some people but not others.

We begin by identifying three defining features of traumatic events, including negative valence, lack of controllability, and suddenness.

The *DSM-IV* diagnostic criterion A for PTSD defines a traumatic event as one that involves "actual or threatened death or serious injury or a threat to the physical integrity of self or others" and a response of "intense fear, helplessness, or horror" (American Psychiatric Association, 1994, pp. 427-428). Though the *DSM-IV* definition of trauma does delineate a very wide range of events that cause PTSD—such as natural disasters, physical assaults, accidents, sudden deaths, and witnessing of death or violence—it is limited because it excludes events that do not involve injury or death and events that do involve experiencing intense fear, helplessness, or horror.

Defining traumatic events as only those involving injury or death erroneously excludes some events that are potentially traumatic.

Defining traumatic events as only those involving injury or death erroneously excludes some events that are potentially traumatic. For example, a person who loses his home in a flood might not feel threatened with injury or death, but might still be overwhelmed with fear, helplessness, or horror at his loss and develop PTSD. The requirement that a person must fear injury or death to be traumatized assumes that imminent injury or death are the only experiences that would cause emotional pain or arousal severe enough to precipitate PTSD. This is an assumption that has not been supported empirically or by any theoretical formulation that explains why events that do not involve injury or death are necessarily excluded from the definition of trauma. In fact, evidence that events that do not involve injury or death can be traumatic stressors is beginning to emerge. A recent study of flood victims found that losing one's home was a strong predictor of PTSD symptoms 1 year following the flood (Waelde, Koopman, & Spiegel, 1999).

Defining traumatic events as only those involving fear, helplessness, or horror has the advantage of taking into account the interaction between the event and the individual that, as Wilson (1994) has noted, is critical to include in theories of trauma. But this criterion seems too restrictive, as it does not define an event as traumatic if a person dissociates at the time of trauma and does not report feeling fearful, helpless, or horrified (Briere, 1996). Clinical reports of dissociative experiences at the time of trauma—such as derealization, depersonalization, and gaps in awareness—have been labeled peritraumatic dissociation. The term *peritraumatic* is used to denote "around the time of the trauma." Derealization includes experiences of distortions in perceptions of the environment or objects, whereas depersonalization includes distortions in perceptions of oneself or parts of oneself. Gaps in awareness would be experienced as a lack of recall of important aspects of the traumatic event.

Reports of peritraumatic dissociation have recently been found to be positively related to the development of PTSD in earthquake and flood victims (Marmar, Weiss, Metzler, Ronfeldt, & Foreman, 1996; Waelde et al., 1999), indicating that the experience of peritraumatic dissociation may be a proximal indicator of traumatization. Although many (if not most) people experiencing a high-magnitude stressor have feelings of fear, helplessness, horror, and some dissociation, for some people, a severe stressor may evoke peritraumatic dissociation that is intense enough to exclude other emotional responses.

In previous publications, it has been proposed that there are three defining features of traumatic events (Carlson, 1997; Carlson, Furby, Armstrong, & Shlaes, 1997): a lack of control over what is happening, the perception that the event is a highly negative experience, and the suddenness of the experience. We consider all three elements to be necessary for traumatization to occur, though an event may not be traumatic even if all three are present. Later, we will discuss factors that influence responses to trauma that can explain why some events are not traumatic for some people despite the fact that they are uncontrollable, have an extremely negative valence, and are sudden.

Lack of Controllability

Humans and other animals generally try to control their environments to protect themselves from harm and ensure their survival. Animal and human research has shown that people and animals become distressed when they cannot control what is happening to them, particularly when what is happening is painful (Abramson, Seligman, & Teasdale, 1978; Foa, Steketee, & Rothbaum, 1989; Mineka & Kilhstrom, 1978). Building on this research, a perceived lack of controllability of events has been identified as a defining element of trauma (Foa, Zinbarg, & Rothbaum, 1992). When a person experiences a high-magnitude stressor, his or her perceptions about controllability can

determine whether the experience is traumatizing. For example, the second author once worked with a group of rafters who had been caught in unexpected rapids in which equipment had been lost and young children had nearly fallen overboard. For the four experienced adult rafters, all of whom could swim well and believed that the team's joint skills were adequate to master the rapids, the experience was negative and arousing, but none showed PTSD symptoms afterward. Of the three inexperienced rafters, who trusted neither the capacity of the team nor their own capacity if thrown in the water, two had severe and one mild traumatic symptoms.

Very often, people who have been traumatized by an event are particularly troubled by the fact that during the event, they could not exert control over what was happening. Trauma victims often report being bothered by frequent "if only" and "what if" thoughts following traumatic events. A truck driver involved in a fatal accident might have intrusive thoughts about control issues relating to the event. He might think, "If only I would have swerved in the other direction," "If only I hadn't had that beer at the truck stop," or "If only I hadn't been driving so fast, maybe this wouldn't have happened." Furthermore, trauma survivors who believe that they will have control over future similar events often have fewer and lesser psychological symptoms (Dalenberg & Jacobs, 1994). These types of clinical and empirical findings seem to support the notion that the controllability of an event is an important causal factor in the response to trauma.

It is important to note that the uncontrollability of an event must reach a certain threshold to cause traumatization. This threshold undoubtedly varies across individuals, as it is shaped by a person's life experiences and expectations about controllability. For instance, individuals apparently differ in the degree to which they can comfortably cede control to a trusted other in a dangerous situation. The threshold for uncontrollability also no doubt varies across events with different degrees of negative valence. A person may be able to tolerate having relatively little control over an event if the negative valence of that event is not too great.

Perception of the Event as Negative

The second element that makes an experience traumatic is that it is perceived as having a severely negative valence. A traumatic event might have a severely negative valence because it is physically painful or injurious, because it is emotionally painful, or because it is perceived as likely to cause physical pain or injury, emotional pain, or death. The valence of an event for any individual is somewhat subjective, though physically painful events or events involving threat of injury or death are almost universally experienced as negative.

From an evolutionary point of view, it makes sense that physically painful events or events that threaten pain, injury, or death would be potentially traumatic. Humans and other animals are innately fearful of physical pain, which serves to help us avoid damaging our bodies and being killed. In addition, humans are almost universally fearful of dying, so that the threat of death, even absent physical pain, can produce feelings of overwhelming fear or helplessness. Fear seems to be an emotion that has evolved to facilitate the avoidance of pain, injury, or death. It motivates us to act to control these negative outcomes. The more an individual perceives that he or she has no control over an imminent experience of pain, injury, or death, the more fearful he or she will be, and extreme fear and feelings of helplessness are the emotional basis for the trauma response.

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Because humans have a unique capacity to experience emotional pain, experiences can be traumatic to humans because they are emotionally painful or because they involve the threat of emotional pain. In other words, emotional as well as physical pain could produce over-

whelming fear. In such cases, the negative valence is related to the psychological meaning of the event to the individual. An example of an event that might be traumatic because it is emotionally painful is sudden abandonment by a loved one. For example, if a woman comes home one day and finds that her spouse has left her without warning, the overwhelming feelings of helplessness and fear about surviving emotionally would give a strong negative valence to the event.

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In some cases, the psychological pain of a traumatic event involves damage or threat of damage to an individual's psychic integrity or sense of self. An example of this type of negative event would be an experience of sexual assault in which the victim did not expect to experience physical injury or pain. A woman might be raped by a man on a date and be traumatized by the experience, even if she believed that she was not in physical danger during the experience. Such an experience might damage her sense of self because of the shame of being raped, guilt over any responsibility she feels for what happened, or anguish over her inability to protect herself from a very negative and unwanted experience. The essential emotional experience in events involving threat to psychic integrity or sense of self is the feeling of not being able to internally protect one's self-image. In these types of events, it is the meaning of the event that gives it a negative valence.

Evidence of the importance of the individual's perception of an event as negative to the process of traumatization can be seen by considering responses to negative events that were not recognized or were not perceived as negative.

Similarly, just as psychologically painful events can have such severe negative valences as to be traumatizing, the threat of severe and uncontrollable psychological pain may also be experienced as traumatic. The perception that an extremely painful emotional experience is very likely may be traumatizing because the belief that you are unable to control the anticipated event renders it negative, even if the psychological pain does not occur. An example of such a traumatic experience might be finding out that your child was in a fatal traffic accident and being fearful that he or she had been killed. Even if he or she survived unharmed, the threat of psychological pain in this experience would produce a high negative valence that, combined with suddenness and uncontrollability, would make traumatization possible.

The benefit of including emotional pain as a potential causal agent in traumatization is that the traumatic potential of events that do not involve threat of physical injury or death can also be understood. This is important because it is evident from research findings and clinical observations that sudden and uncontrollable, emotionally painful events can also cause severe posttraumatic responses. A conceptual framework that can account for a wider variety of traumatizing events may be more useful than a less inclusive theory. One recent theoretical work that provides a detailed discussion of psychological pain as a traumatizing element is Freyd (1996).

Evidence of the importance of the individual's perception of an event as negative to the process of traumatization can be seen by considering responses to negative events that were not recognized or were not perceived as negative. For example, suppose you were in a car accident, but were knocked unconscious and did not remember anything about the accident. According to the theory proposed here, if you did not perceive the threat of injury or death, then you would not experience the fear that precipitates a traumatic response. Results of a study of traffic accidents in Great Britain support this point. Mayou and colleagues (Mayou, Bryant, & Duthie, 1993) found that none of their subjects who could not remember their accident experience suffered from horrific intrusive memories about the accident.

It also seems clear that the perception of the event is more important than the actual danger associated with the event. For example, one client presented to a clinician with classic PTSD

symptoms after walking in on her 4-year-old son pointing a loaded gun at her 7-year-old daughter. The children, however, who did not recognize the magnitude of the danger, were disturbed only by their mother's angry reaction.

As with uncontrollability, it is important to note that the negative valence of an event must reach a certain threshold to cause traumatization. That threshold no doubt differs across individuals and across types of trauma. Clearly, some events would not be negative enough to traumatize anyone, whereas others would be so negative that almost anyone would be traumatized by them. Studies of refugees who all suffered multiple high-magnitude stressors indicate that those types of experiences resulted in almost every individual being traumatized (Carlson & Rosser-Hogan, 1994). Empirical studies are needed to clarify what level of negative valence is sufficient to cause traumatization and what factors influence that level. Unfortunately, this is a very difficult question to study because of the important role of the meaning of an event in determining valence and because individuals' perceptions about events are likely to be highly idiosyncratic.

Suddenness

The third element that makes an experience traumatic is the suddenness of an event. Events that involve imminent threat of harm are more likely to cause overwhelming fear than experiences involving danger that is not imminent. When the amount of a time between persons' awareness of a negative, uncontrollable event and the event itself is very brief, there is not enough time for them to act to either physically protect themselves from harm or to psychologically prepare for a negative outcome. Janoff-Bulman (1992) has pointed out that some experiences are not traumatizing even if they are negative and frightening because they occur gradually and incrementally. These gradual changes can be adapted to cognitively and emotionally by gradual changes in one's schemas about oneself and the world. For example, if you became ill with a fatal disease over a period of years and only gradually realized that you were going to die, you would have time to accept the idea of your own death. Even though you might be very fearful and depressed, it is not likely that you would be suddenly overwhelmed with fear to the degree that you would develop PTSD. On the other hand, if you were trapped in a burning building, you would have no time to cognitively or emotionally process the event and you might well become overwhelmed with fear and traumatized.

Similarly, actual or threatened psychological pain would not be traumatizing if it occurred gradually rather than suddenly. Consider the example above of the woman who arrived home one day and found that her spouse had left her without warning. Because of the suddenness of that event, it is possible that she would experience overwhelming feelings of helplessness and fear about surviving emotionally and would be traumatized. If, on the other hand, the woman gradually began to suspect that her husband might leave, if they had talked about his leaving, if the knowledge that he was going came gradually instead of suddenly, there would be time to cognitively and emotionally process the emotional loss so that she would not be suddenly overwhelmed with emotions and traumatized.

How much time is needed to process an event that makes one feel frightened and helpless is likely to be variable, depending on the nature of the event and the individual. Certainly minutes, hours, or days would not be enough time to cognitively and emotionally process actual or threatened physical or psychological pain that had an extremely negative valence. Escaping a traumatic response is more likely if one has weeks, months, or years to adjust to a negative event.

To summarize, the key defining features of a traumatic event are a lack of controllability, a negative valence, and suddenness. All of these characteristics are necessary for an event to be traumatic and all three are mediated by the individual's perceptions and subjective understanding of the event. Although these features are all necessary for an event to be traumatic, they are not always sufficient to cause a post-traumatic disorder. Though an experience must be sufficiently uncontrollable, negative, and sudden to be potentially traumatizing, even

extremely uncontrollable, negative, and sudden events may not cause traumatization if the effects are moderated by favorable individual and situational pretraumatic, peritraumatic, and posttraumatic factors.

RESPONSE AT THE TIME OF TRAUMA AND PERSISTENCE

In the face of sudden danger, humans and other animals exhibit an innate "fight or flight" response that aids them in coping with or fleeing from danger (Cannon, 1929; Lorenz, 1966). The fight or flight response is characterized by high levels of physiological and affective arousal that are typically experienced as fear or anger. The phenomenon of high arousal in the face of danger seems to be an unlearned, preparatory response of the body and the mind to danger. In other words, when you experience loss of control over your safety, your body and mind automatically go on red alert in an attempt to regain control. The red alert status might involve being hyperalert or hypervigilant to one's surroundings and having an increase in physiological arousal to allow for flight or defense. Aggressive behaviors are also a natural response to danger (Lorenz, 1966). Such behaviors can be understood as an attempt to gain control over an unpredictable environment. This response to danger would seem to be an unlearned survival instinct.

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In addition, a "freezing" response in response to imminent danger has also been observed in animals (Nijenhuis, Vanderlinden, & Spinhoven, 1998). Such a response might be a way to increase the chances for survival when fleeing or fighting are not viable options. In contrast to the high arousal of the fight or flight response, a freeze response would be characterized by a parasympathetic physiological response and a numbing of emotions.

During fight or flight or freezing responses at the time of trauma, cognitive distortions frequently occur that also seem to facilitate coping. Dissociative experiences such as depersonalization and derealization may help the individual continue to function by narrowing or distorting her experience of herself or the world around her. An example of dissociation during a fight or flight response is the client who reported carrying her unconscious child from the wreckage of her car after an accident. She only later began to feel the pain of her own injuries. An example of dissociation during a freeze response might be the experience of depersonalization during a rape: A woman might have the perception that she is floating on the ceiling watching the events, but not experiencing them. Detaching herself cognitively and emotionally from the event might allow the woman to remain passive and avoid further injury that might result from antagonizing an angry assailant. Peritraumatic dissociation may also function to mitigate feelings of fear and helplessness when a person is unable to avoid or control an extremely negative event.

PERSISTENCE OF SYMPTOMS FOLLOWING TRAUMATIC EVENTS

A complete conceptual framework for the impact of traumatic experiences must explain why peritraumatic responses to traumatic events persist once the event is over and why new symptoms arise. If you are in a dangerous or frightening situation and feel fearful, helpless, horrified, or dissociated, why might you still have these or other symptoms weeks, months, or even years after you are out of danger? Several behavioral and cognitive theories can be applied to traumatic experiences to explain persistence of trauma responses. We will describe these briefly here. More detailed discussions of these theories can be found in Carlson (1997).

Mowrer's two-factor theory has been applied to explain the effects of traumatic experiences by many trauma researchers (Foa et al., 1989; Keane, Zimering, & Caddell, 1985). This behavioral theory proposes that trauma symptoms result from the combined effects of classical and operant conditioning. Through classical conditioning, new, previously neutral stimuli in the person's environment become associated with

the traumatic event so that the new stimuli elicit the same fearful response as the original event. This happens when the traumatic event occurs simultaneously with the presence of the new stimuli. For example, a person who lost his or her home in a fire might become extremely anxious every time he or she smells smoke. The anxiety associated with the smell of smoke is an affective reexperiencing of the emotions felt at the time of the trauma. This conditioned anxiety would normally extinguish or fade away over time when an individual was exposed to conditioned stimuli in the absence of danger.

After the conditioned fear has been established, an operant conditioning process can prevent the normal extinction of the conditioned fear. Normally, a classically conditioned response would extinguish if a negative stimulus no longer occurred in the presence of the conditioned stimulus (CS), because when exposed to a CS in the absence of a negative outcome, a person would learn a new association—the CS did not signal danger. Extinction would not occur if avoidance behaviors were to begin and continue because the person would no longer be exposed to the CS long enough in the absence of the negative stimulus to learn the new association. In other words, when a traumatized individual systematically avoids reminders that are conditioned stimuli, there is no opportunity for extinction of the conditioned fear to occur (Mineka, 1979). Also, avoidance behaviors that are operantly reinforced continue because they are negatively reinforced by the relief from anxiety that they afford. For example, a fire victim may find the smell of smoke so aversive that he or she begins to avoid cooking out or having fires in his or her fireplace at home in the winter. If the individual does not experience exposure to the smell of smoke in the absence of danger, he or she will never learn that the stimulus no longer signals danger.

Various cognitive theories have been useful for further explaining the persistence of trauma responses. Foa and Kozak (1986) have noted that an individual's perceptions and expectations at the time of the trauma have a critical impact on his or her trauma response. They mediate the response at the time of trauma because they determine the valence of the experience and the perceived controllability. Also, perceptions and expectations determine which cues become a CS for the event. For example, if a victim of a mugging particularly notices the race of the assailant and has a prior expectation that people of other races are likely to be dangerous, then race could become a powerful cue for danger following the mugging. These authors and others have also proposed that those who experience multiple traumas develop highly individualized cognitive networks for processing cues for danger that cause them to interpret a wide variety of cues as threatening (Chemtob, Roitblat, Hamada, Carlson, & Twentyman, 1988; Foa & Kozak, 1986). This is because when people experience multiple traumas, their idiosyncratic responses to each trauma combine to create an even more complex response pattern.

CORE RESPONSES TO TRAUMA

The next step in building a conceptual framework for the effects of traumatic experiences is to specify what responses tend to follow traumatic experiences and how those responses are causally related to the traumatizing event. Though there is tremendous individual variation in how people respond to sudden, uncontrollable, and negative events, there are two basic categories of responses that are common following a wide range of traumatic events: reexperiencing and avoidance symptoms (Horowitz, 1993; van der Kolk, 1987). As described above, reexperiencing symptoms occur when a person is cued by a CS that has been associated with the trauma. Avoidance symptoms occur because they afford relief from the anxiety associated with trauma-related stimuli. The distinction between reexperiencing and avoidance symptoms

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can get blurred sometimes because what appears to be avoidance may be reexperiencing of disconnections felt at the time of trauma. Both sets of responses can be manifested cognitively, affectively, behaviorally, and physiologically. Examples of symptoms in each of these modes are shown in Table 1. Compared to the *DSM-IV* system of categorization that specifies three clusters of symptoms (reexperiencing, avoidance, and arousal), this conceptualization has the advantages of being theoretically driven and of being parsimonious while accounting for all of the major core symptoms associated with trauma.

Any particular traumatized individual may not appear to have all of these symptoms at all times. As will be discussed below, several pretraumatic, peritraumatic, and posttraumatic factors that influence trauma responses may be largely responsible for variations in individual symptom patterns soon after a trauma. Furthermore, the developmental level of an individual when a traumatic event occurs, the occurrence of multiple traumatic events, and the passage of time may result in different symptoms or shifts in the initial symptom patterns. In addition, particular symptoms may sometimes be masked or obscured by other behaviors that a person engages in. For example, a traumatized person who is initially anxious may drink heavily and effectively "self-medicate" so that he or she shows relatively few overt symptoms of anxiety (Stine & Kosten, 1995).

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It is also possible that particular symptoms may be present or predominant in a traumatized individual as a result of cultural influences. As with most psychological disorders, culture greatly influences how symptoms are expressed. Though the bulk of research and clinical reports relating to trauma responses has focused on White, middle-, and upper-middle-class Americans, some research on trauma responses of persons from other cultures (and U.S. subcultures) is available that indicates that there may be variation in the symptoms observed following trauma in different cultures (Marsella, Friedman, Gerrity, & Scurfield, 1996). For example, in cultures where open expression of emotional distress is not socially sanctioned, trauma victims may present with largely somatic complaints. At the same time, the first author's research on Cambodian refugees and research of others leads us to believe that whereas the manifestations of symptoms may vary somewhat, the basic underlying responses to trauma are fairly consistent across cultures (Carlson & Rosser-Hogan, 1994). From the present theoretical perspective, such similarities would be expected, given that the reexperiencing/avoidance response is thought to be an innate response to a class of experiences that is moderated in its expression by various factors. Therefore, whereas clients from different cultures are likely to have the same basic response to trauma, you can expect them to express their symptoms somewhat differently from one another.

TABLE 1: Manifestations of Reexperiencing and Avoidance Across Modes of Experience

Mode	*Reexperiencing*	*Avoidance*
Cognitive	Intrusive thoughts, intrusive images	Amnesia for trauma, derealization/ depersonalization
Affective	Anxiety, anger	Emotional numbing, isolation of affect
Behavioral	Increased activity, aggression	Avoidance of trauma-related situations
Physiological	Physiological reactivity to trauma reminders	Sensory numbing
Multiple modes	Flashbacks, nightmares	Simultaneous avoidance in multiple modes

Reexperiencing

After traumatic events, it is common for people to reexperience some aspect of the events cognitively, emotionally, behaviorally, or physiologically. The reexperiencing symptoms in these modes that are listed in Table 1 include all of the reexperiencing and arousal symptoms listed in the *DSM-IV* criteria for PTSD, including such things as intrusive thoughts, anxious

and angry feelings, physiological arousal and reactivity to trauma cues, and hypervigilance. Some reexperiencing responses might be observed in other forms as well, such as sleep problems resulting from chronic autonomic arousal. For example, a robbery victim might report that he has been having insomnia since the crime—when he tries to go to sleep, his thoughts are racing and he cannot relax.

The most common cognitive reexperiencing symptoms are trauma-related intrusive thoughts and images (Horowitz, 1993). An example of this might be a woman who has been beaten, who has images of the experience run through her mind, and who is unable to stop thinking about the event. Other reexperiencing symptoms that involve a cognitive component include nightmares and flashbacks. Nightmares often involve thoughts about the trauma or being in danger, whereas a person having a flashback may believe that he or she is back in the traumatic situation again. Another type of cognitive reexperiencing might include gaps in awareness or distortions in perceptions. These cognitive phenomena might reflect distortions in perceptions that occurred at the time of trauma for people who experienced peritraumatic dissociation.

Affective reexperiencing symptoms that are most prominently associated with traumatic experiences are feelings of anxiety and anger. These emotions mirror those experienced at the time of trauma. In response to the extreme threat of a traumatic stressor, feelings of fear or anxiety may be part of a flight response and feelings of anger or rage may be part of a fight or defensive aggression response. In addition, it is possible that affective numbing, which is commonly understood as an avoidance response, may also be an example of reexperiencing an affective state that occurred at the time of the trauma. That is, if an individual's response at the time of trauma was characterized by a freeze response that involved being cut off from the emotions of fear and anger normally associated with an extreme threat of harm, then posttraumatic reexperiencing might include similar affective numbing.

Behavioral reexperiencing consists of behaviors that are similar to those that occurred at the time of trauma. These might include behaviors reflecting the fight or flight response such as agitation, increased activity, and behavior directed at defending oneself or escaping some danger. One type of behavioral reexperiencing that is common and can be very disruptive in patients' lives is defensive aggression. Such aggression reflects the reexperiencing of aggressive impulses experienced at the time of trauma and could take the form of physical or verbal aggression. A person who has been traumatized might begin to be overreactive, responding to minor threats of danger with great agitation and aggression.

Behavioral reexperiencing in the form of aggression can be explained by the behavioral theories described above, but other viable models have also been proposed. In a theory formulated to explain aggression in abused children, Horowitz (1991) proposed that such children may relieve their anxiety over their vulnerability by reversing roles to become the aggressor in imagination. Victimization of others by children or adults may occur when trauma survivors act out of these fantasies (Davies & Frawley, 1994).

Self-directed aggression may also be a form of behavioral reexperiencing of aggressive urges at the time of trauma. In this case, however, the aggression is directed inwardly instead of outwardly. Why this redirection of defensive aggression occurs is unclear, but it may occur when there is no appropriate outlet for other-directed aggression. For example, women may direct aggression toward themselves because cultural norms proscribe that aggression toward others is unacceptable for females.

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When reexperiencing occurs in the physiological realm, it takes the form of autonomic arousal and physical sensations. Physiological arousal and its effects are involved in many of the PTSD symptoms listed in the *DSM-IV*,

including physiological reactivity to reminders of trauma, sleeplessness, difficulty concentrating, and exaggerated startle (American Psychiatric Association, 1994). Chronic physiological arousal following a trauma can lead to the development of somatic problems such as headaches, musculoskeletal pain, and gastrointestinal illnesses, which have been found to be elevated in many studies of trauma survivors (Green, Epstein, Krupnick, & Rowland, 1997). It may also happen that physiological reexperiencing takes the form of analgesia when a person experienced physical numbing at the time of trauma as part of a freeze response.

Often, trauma victims very consciously try not to think about the event or anything connected with the event.

As indicated in Table 1, some posttraumatic symptoms reflect reexperiencing in more than one mode. For example, hypervigilance involves reexperiencing in both cognitive and affective modes, such as thinking one is in constant danger and feeling on edge. Similarly, nightmares may have cognitive, affective, and physiological components. A person could wake up from a nightmare sweating (the physiological component), be able to remember the details of the dream (the cognitive component), and still feel the emotions of the dream (the affective component). Flashback experiences may involve all four modes of experience. A combat veteran might suddenly feel that he is back in a combat situation, with all the accompanying sights and sounds, feelings, behaviors, and bodily sensations. Most often, during such flashbacks, trauma victims retain some awareness of their current surroundings at the same time that they reexperience the trauma.

Avoidance

The *DSM-IV* lists several types of avoidance as criteria for PTSD, including avoidance of thoughts, feelings, conversations, activities, places, people, or memories associated with the trauma (American Psychiatric Association, 1994). As described above, avoidance symptoms occur because they afford relief from the anxiety associated with trauma-related stimuli, and they may also be a reexperiencing of a freeze response at the time of trauma. Following traumatic experiences, avoidance can be manifested in cognitive, affective, behavioral, and physiological modes. It is worth noting, however, that avoidance in the cognitive, behavioral, and physiological modes is fundamentally in the service of affective avoidance. That is, the purpose of all avoidance is to protect the individual from the feelings of fear associated with the traumatic event.

Cognitive avoidance as a trauma symptom can be voluntary or involuntary. Often, trauma victims very consciously try not to think about the event or anything connected with the event. On the other hand, trauma victims sometimes forget part or all of a traumatic experience (sometimes referred to as amnesia) and sometimes experience distortions in their perception of the environment (also known as derealization) or distortions in perceptions of themselves (also known as depersonalization). All three of these phenomena can be understood as ways of avoiding knowing about an event through cognitive distortion of the experience. Volitionally trying to keep a trauma out of consciousness is one of the *DSM-IV* symptoms for PTSD, as is incomplete recall of the trauma. Derealization and depersonalization are not listed as symptoms of PTSD in the *DSM-IV*, though they are listed as symptoms of Acute Stress Disorder, which is thought to be a clinical precursor to PTSD (American Psychiatric Association, 1994). An example of cognitive avoidance in one client followed her being assaulted by a man whom she worked with. She reported that she typically avoided thoughts of her attacker, whom she was forced to confront daily at work. She also underplayed and misinterpreted threatening behaviors by this man, so that she found herself less frightened of him. Furthermore, she "forgot" appointments that would have required her to have contact with her attacker in smaller work groups.

Avoidance in the affective mode of experience commonly takes the form of emotional numbness. A traumatized individual may feel reminded of the trauma by any strong emotion

because strong emotions are all reminiscent of the extreme anxious arousal felt at the time of trauma. This can be puzzling because clients will avoid getting into emotional states that seem completely unrelated to the fear at the time of trauma. For example, a woman who watched helplessly as her child drowned might report having no feelings of happiness since the event and might avoid going to events that cause strong positive emotions, like weddings. Affective avoidance might also be manifested in the form of isolation of affect. For example, the woman who was forced to work with her assailant reported the details of the event with no accompanying affect.

Like cognitive avoidance, behavioral avoidance may be experienced as voluntary or involuntary. The *DSM-IV* lists efforts to avoid activities, places, or people that remind one of the trauma as a symptom of PTSD. These efforts need not be conscious, however, to constitute behavioral avoidance. It is not uncommon for the purpose of particular avoidance behaviors to be outside a person's awareness. For example, parents and children in the second author's ongoing studies of childhood leukemia (which involves a multiple invasive and often traumatizing experience) reported avoiding the sight of hospitals, medical dramas on television, and friends whose relatives died of cancer.

Avoidance in the physiological mode of experience could be manifested as analgesia or a numbing of sensations. This kind of physical numbing can serve to avoid sensations such as pain associated with the trauma. By avoiding physical sensations, the individual avoids being reminded of the way he or she felt physically at the time of trauma and thus avoids the intense negative emotions associated with the event. For example, one woman who had been in a traumatic auto accident reported catching a taxi to work and working most of the afternoon before noting the symptoms of two broken ribs.

As with reexperiencing, avoidance can occur in multiple modes simultaneously. For example, a woman who suffered major injuries in a car accident may later have an experience when she accidentally cuts her hand while cooking. She might watch herself bleed but feel no pain, have the idea that the hand does not belong to her, and have no emotional response to the injury. This experience of depersonalization has physiological, cognitive, and affective components.

Integrating Dissociation Symptoms Into the Framework

The role of dissociative experiences in the response to trauma has been difficult to understand. Dissociation is a confusing term because it has been used to describe such a wide range of experiences and symptoms. Some mild dissociative experiences are normative and are commonly reported in nonclinical subject samples. Pathological dissociative experiences have been reported to occur both at the time of a trauma (Marmar et al., 1996) and following trauma (Classen, Koopman, & Spiegel, 1993) and are also observed as the predominant symptomatology of dissociative disorders (Allen, 1995).

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Here we are interested particularly in more pathological forms of dissociation—the more severe experiences or symptoms that cause disruption in daily functioning or are experienced as subjectively distressing. Within this realm, it has primarily been avoidance symptoms that have been considered dissociative. Manifestations of cognitive avoidance that are considered dissociative include depersonalization (distortions in perceptions of the self), derealization (distortions in perceptions of objects or the environment), gaps in awareness, or dissociative amnesia (unusually extensive lack of recall of autobiographical information). These forms of cognitive avoidance are thought to be dissociative because they tend to cut the traumatized persons off from aspects of their own experience, effectively distancing them from a traumatic event or from trauma-related stimuli.

In one of our trauma samples (Dalenberg & Epstein, 1999), a number of Holocaust survivors reported a sense of unreality and distance from the memories of their captivity. Survivors often doubted their own memories, reporting discontinuity in memory across traumatic and nontraumatic periods in their lives. By this use of cognitive avoidance, they may keep themselves distant from reminders of the traumatic experience. Experiences involving affective and physiological avoidance have also been referred to as dissociative. For example, both emotional numbing and lack of awareness of pain have been considered dissociative (American Psychiatric Association, 1994; Giolas & Sanders, 1992; van der Kolk, van der Hart, & Marmar, 1996).

In addition, some have described reexperiencing, such as flashback experiences, to be dissociative (van der Kolk et al., 1996). Such reexperiencing phenomena are considered dissociative because they are experienced "out of place" so that the event is disconnected from its original context. One way to reconcile these two seemingly inconsistent examples of dissociation is to define dissociation as a gap in awareness of surroundings that may sometimes be filled with trauma-related material (Allen, 1995). Such gaps in awareness may serve the function of avoidance or may be manifestations of reexperiencing peritraumatic dissociation (as described above).

WHAT FACTORS INFLUENCE THE RESPONSE TO TRAUMA?

The tremendous individual variation in responses to exposure to traumatic stressors raises the question of why some persons develop posttraumatic disorders, whereas some do not, and why some responses predominate over others in a particular traumatized individual. Building on the formulations of van der Kolk (1987) of factors that affect adjustment to trauma, this framework incorporates five basic factors to explain variations in responses to trauma. These five factors include individual biological factors, developmental level at the time of the trauma, severity of the trauma, the social context of the individual both before and after the trauma, and life events that occur prior and subsequent to the trauma. All five factors affect an individual's response to trauma because they affect his or her perceptions of the valence, uncontrollability, and suddenness of the event. In this way, the basic theoretical model for what makes an experience traumatic can be related to factors that mediate the impact of trauma. These factors can either exacerbate or mitigate an individual's response to potentially traumatic experience.

Biological Factors

Three major biological factors can influence responses to trauma. These are a genetic predisposition to vulnerability or resilience to trauma, a nongenetic biological predisposition, and biological alterations in function that occur in response to prior traumatic experiences. Studies have shown that there are individual differences among both children and animals in their reactions to the same stressful event under controlled circumstances (van der Kolk, 1987; van der Kolk, Boyd, Krystal, & Greenberg, 1984). One possible reason for these findings is that genetically based temperamental differences cause some individuals to be more vulnerable to traumatic experiences than others.

Personality researchers have only recently begun to explore the possibility that innate, biological tendencies in brain function are associated with temperament and affective responses to stressful, negative events (Davidson, 1992a, 1992b). Such innate biological tendencies may constitute a predisposition for vulnerability or resilience to negative life experiences. At this time, we know relatively little about the genetic predisposition to PTSD in particular, though at least one study has found that genetic factors accounted for 13% to 34% of the variance in particular PTSD symptoms in a large sample of Vietnam veterans who were twins (True et al., 1993). This finding indicates that at least some proportion of variance in responses to trauma is the result of genetic influences, though the mechanism for the influence is still unknown. One likely possibility is that the threshold for being overwhelmed with fear and helplessness

varies across individuals in part due to genetic differences in physiological and emotional responses to stressors, particularly proneness to anxious responding.

In addition to contributions from genetic predisposition, long-lasting biological abnormalities may result from early environmental factors or experiences in some individuals. A wide range of environmental factors (such as exposure to toxins or hormones in utero or early in development) and a wide range of life experiences (such as traumatic stress exposure and other stressors) can cause relatively permanent biological changes in individuals (Putnam & Trickett, 1997; van der Kolk, 1996). With so many interacting causal agents and mechanisms involved, it is extremely difficult (and may be ultimately impossible) to completely sort out their respective influences. Studies would be most informative on this question if they were prospective and followed children from birth, but the practical aspects of conducting such studies make them extremely difficult to accomplish.

Biological changes that occur as a result of traumatic experiences are likely to affect responses to later traumatic experiences. Some PTSD researchers have developed models that specify neurological changes following traumatic experiences (Lewis, 1992; Southwick et al., 1997; Stein, Hanna, Koverola, Torchia, & McLarty, 1997; van der Kolk, 1996; Yehuda, 1998), but to date, no clear picture of the biological response to trauma has emerged from research.

In general, we expect that those with biological predispositions to anxiety will develop more severe reactions when exposed to trauma. Childhood trauma might also play a role in precipitating mental disorder in a person who is biologically predisposed. In addition, there may be an interaction between the effects of biological predisposition and exposure to trauma such that those who are biologically vulnerable are at a greater risk for exposure to traumatic stressors. This conceptualization is consistent with stress-diathesis models proposed for most mental disorders.

Developmental Level at the Time of Trauma

Responses to trauma will be greatly influenced by the level of emotional, social, and cognitive development of the individual at the time of trauma. This is especially true during childhood, when development is not yet complete. In general, children at earlier stages of development will have more severe responses to traumatic stressors, but at times, lower levels of development may protect a child from experiencing a negative valence and uncontrollability.

In terms of emotional development, both the stage and the nature of the child's development are important. For example, even if a child has progressed past the developmental stage when attachment is completed, a child who has developed a secure attachment or emotional bond with a caretaker would be expected to show a more positive adjustment to trauma than a child who has an insecure attachment. There may also be an interaction between the trauma and the attachment when trauma occurs before or during attachment formation. This can be particularly problematic when the trauma takes the form of abuse inflicted by an attachment figure. Detailed discussions of the relationship between childhood trauma and attachment are available elsewhere (Aber & Allen, 1987; Alexander, 1992; Cicchetti & Barnett, 1991; Coe, Dalenberg, Aransky, & Reto, 1995; Crittenden & Ainsworth, 1989).

In regard to other areas of development, higher levels of cognitive and social skills might enable a child to exert more control over his or her environment following a trauma, thus reducing his or her anxiety and possibly avoiding further stress or traumatic experiences. In addition, a child with more advanced social and cognitive skills might be more able to

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obtain social support after a trauma and benefit from its effects.

Developmental level influences reactions to trauma because it is an important determinant of perceptions of valence, controllability, and suddenness, while also affecting the reality of valence and controllability. Thus, developmental level and traumatic symptomalogy may relate positively or negatively in a given set of circumstances. For instance, when two sons of one patient heard their mother's cancer diagnosis without preparation, through a message left on an answering machine, only the older boy (age 10) experienced an acute traumatic reaction, whereas the younger (age 3) did not. Only the older son could fully understand the negative valence of the news. A year later, when the boys went to wake their mother (home from the hospital awaiting her death) and found her dead, the older boy, though mourning her passing, did not respond traumatically, whereas the younger boy (now 4 years old) did. For the younger boy, the loss of his mother was a perceptually sudden event, whereas the older son had been preparing for the event for some time.

Traumatic experiences that occur earlier in development, particularly those that are more severe and chronic, are more likely to have a pervasive impact on an individual. When a person who has not fully developed emotionally and cognitively is traumatized, his or her primary and secondary symptoms can impede further development and foster dysfunctional interpersonal behaviors. Without intervention, these dysfunctional behaviors can evolve into relatively enduring patterns that can be understood as a part of the individual's personality. For example, an 18-year-old military recruit who is exposed to combat violence when he is not yet emotionally or cognitively mature might begin to have interpersonal difficulties because of social withdrawal and emotional numbing, primary and secondary problems with anger and aggression, and a poorly developed sense of self. Without help, these interpersonal difficulties can become ingrained patterns of behaving that essentially constitute personality and manifest as personality disorders.

More in-depth discussions of the role of developmental level in responses to traumatic stressors can be found in work by Pynoos and colleagues (Pynoos, 1993; Pynoos, Steinberg, & Goenjian, 1996), Ruskin and Talbott (1995), and Perry and Pollard (1998).

Severity of Trauma

The severity of trauma has the greatest influence on the severity of an individual's response to trauma. Objective characteristics of an event such as its intensity, nature, and duration all contribute to its severity because they shape the individual's perceptions of the controllability and negative valence of the event. Conversely, an individual's subjective impressions and perceptions can greatly affect the perceived intensity and nature of a traumatic experience by influencing the valence and perceived controllability of an experience. For example, a man who is threatened with a knife but believes that he can effectively defend himself will experience the event as less intense than a man who is threatened and believes he could be killed.

Traumas that are more intense are more likely to provoke overwhelming fear and helplessness because of their more negative valence. For example, being burned on the leg will tend to result in less severe posttraumatic symptoms than being burned over one's entire body, because the latter has a decidedly more negative valence.

The nature of a traumatic experience can also greatly affect an individual's response. For example, there appear to be differences between typical responses to childhood sexual abuse and childhood physical abuse. Dissociative symptoms have been found to be much more strongly related to experiences of sexual abuse than to experiences of physical abuse (Carlson et al., 1999), whereas levels of violent criminality are higher in those who experienced physical abuse during childhood compared to those who experienced sexual abuse or neglect (e.g., Widom, 1989).

Given a constant level of intensity, traumatic experiences of greater duration tend to cause more severe responses because there is a longer

period when the person feels unable to control the aversive event. This greater feeling of uncontrollability will result in a higher level of anxiety and more intense later symptoms. Traumas of very long duration, such as being a prisoner of war, are likely to have the added effect of producing despair and depression because of the ongoing inability to control aversive events. In turn, despair and depression generated by traumas of longer duration will inhibit recovery following trauma (Horowitz, 1986). For a review of research on the effects of trauma intensity, nature, and duration, see Carlson (1997) and Shalev (1996).

Social Context

An individual's social context exerts an influence on his or her responses to trauma both before and after the event. Before the event, the community and family environment shape the individual's general expectancies about controllability and negative valence. Through this process, an individual's social context can strengthen or weaken his or her ability to cope with a traumatic stressor. Pretraumatic community environment variables that are likely to have an impact on posttraumatic responses include poverty, level of violence, and concern for individual community members. Pretraumatic family environment variables that are likely to have an impact on posttraumatic responses include neglect, psychological maltreatment, substance abuse, caretaker mental disorders or suicidality, disciplinary methods, poverty, and domestic violence.

Posttraumatic community and family social support are also important parts of social context that would influence responses to trauma. Under the rubric of family social support, we include support from individuals who are family members, friends, teachers, or helping professionals. Posttraumatic social support can help restore a person's feelings of controllability and can help reduce the negative valence of an experience. Social support provided by community or societal institutions might include the availability of services for trauma victims, sympathetic media representations of trauma victims, and demonstrations of support for trauma victims. Posttraumatic family social support might include taking care of the trauma victim following the event, being available and willing to hear about the traumatic event, and demonstrations of support through cards, letters, or calls. In the case of childhood traumas, this type of individual social support is even more important because children are so dependent on others to buffer their emotional experiences. There is considerable empirical evidence that pretraumatic social environment and posttraumatic social support are important influences on trauma response. For a review of this literature, see Carlson (1997).

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Prior and Subsequent Life Events

Though it seems intuitively obvious that prior and subsequent life events might exacerbate or mitigate the responses to traumatic events, relatively little is known about the impact of previous or subsequent life events. The literature on stress provides two major perspectives on how stressful life experiences affect a person's ability to cope with later stressful experiences. One viewpoint is that experiencing stressful events may "inoculate" a person so that they are more resistant to subsequent stressful events. Some have proposed that infrequent, relatively low-level stressors might produce a toughening effect that desensitizes the individual to the effects of later stressors (Dienstbier, 1989; Eysenck, 1983). This concept has been supported empirically by a study that found that flood victims who had prior experience with flooding were less symptomatic than were those with no prior flood experience (Norris & Murrell, 1988).

On the other hand, prior stressful events may impair a person's ability to cope with trauma. This formulation is supported by studies of higher PTSD rates in populations of people living in more stressful circumstances (Neal &

Turner, 1991) and of an association between previous exposure to traumatic events and increased risk of PTSD after a trauma (Breslau, Chilcoat, Kessler, & Davis, 1999). The conceptual framework presented here could explain both moderating and sensitizing effects of prior events. Prior events that make a trauma seem more controllable and less negative would have a moderating effect, whereas prior events that make a trauma seem less controllable and more negative would have a sensitizing effect.

Stressful or negative events occurring after a trauma, however, seem certain to exacerbate a trauma response because, in order to cope with the later events, an individual would have to draw further on his or her already depleted emotional and cognitive resources. Furthermore, the experience of stressful events following trauma would tend to add to feelings of lack of controllability. For these reasons, having to cope with negative life experiences such as living in poverty, marital discord, a stressful work life, and difficulties raising children would be expected to impair the individual's recovery from trauma.

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Conversely, positive life experiences that occur following a trauma might well mitigate its effects by increasing perceptions of controllability. Successes at work, for example, might increase perceptions of control and decrease the perceived importance of earlier negative experiences. The picture is complicated, though, because traumatized persons are probably less likely to have positive life experiences that require initiative because their impairments prevent their optimal efforts. Apart from research on social support, we know of no research on the effects of positive life events in persons with trauma histories.

SECONDARY AND ASSOCIATED RESPONSES TO TRAUMA

In addition to the core or primary trauma symptoms of reexperiencing and avoidance, there are at least eight major types of response to trauma that are either secondary to or closely associated with traumatic experiences. Secondary responses are not directly caused by the traumatic experience, but occur later as a result of problems with reexperiencing and avoidance. They can be considered the "second wave" of symptoms following trauma. Associated responses are those that result from exposure to concomitant elements of the traumatic environment. These responses are also not directly related to being overwhelmed with fear—they are caused or shaped by the social environment or other circumstances accompanying or following the trauma.

The use of core, secondary, and associated categories to classify symptoms reflects their causal and temporal progression, but not necessarily the clinical significance of the various responses. Depending on how much time has elapsed since the trauma, secondary or associated responses to trauma may well be the most prominent clinical problems. This is particularly the case when a great deal of time has elapsed since the traumatic experience and for those who experienced trauma earlier in development or who experienced severe and/or chronic trauma. For further discussion of the course of trauma responses, see Carlson (1997).

Understanding some responses as secondary to trauma symptoms or associated with the trauma situation can be helpful clinically, because it gives mental health professionals a clearer picture of causality as they address particular symptoms. For example, defensive aggression symptoms that were core responses to violent sexual abuse as a child would be addressed in treatment differently than would aggression problems that were learned while growing up in a violent household.

The most prominent secondary and associated responses include depression, aggression, substance abuse, physical illnesses, low self-

esteem, identity confusion, difficulties in interpersonal relationships, and guilt or shame.

Depression

Depression that is secondary to trauma or associated with a trauma situation can be manifested cognitively, emotionally, behaviorally, or physiologically. For example, it could take the form of negative thinking, problems with concentrating, depressed mood, feelings of hopelessness or apathy, social withdrawal, inactivity or lethargy, sleep problems, or loss of appetite. Traumatized persons may show depression in several or all of these realms. Depression can occur as a secondary symptom when core symptoms of reexperiencing and avoidance lead to feelings of loss of control and subsequent feelings of despair. Associated depression may be related to similar feelings of loss of control that are engendered by aspects of the trauma situation. Associated depression can also be related to aspects of the trauma situation that involve emotional loss. Losing people or possessions that meet one's emotional needs is likely to lead to feelings of depression.

Two women who experienced trauma in a work setting, for instance, both reported depression as a major symptom to a consulting mental health professional. The depression of Patient A was secondary; she was depressed at her inability to control the intrusive fears and reactivity provoked by her office. As the individual with most authority in the office, she was shamed by her inability to put the trauma aside (and therefore be an example to her employees) and felt that her leadership skills had been proven inadequate. The depression of Patient B was an associated symptom; aside from making her fearful, the trauma directly affected her belief that she could find a safe and protected environment in which to work.

According to the learned helplessness model of depression described by Seligman (1975), the belief that you have no control over what happens to you can lead to despair. When people are exposed to negative and painful events that they cannot control, they learn that their attempts to protect themselves from harm are to no avail, so they stop trying to help themselves. Evidence of a connection between lack of control over negative events and depression has been found in numerous animal studies, in which uncontrollable painful events were found to cause behaviors resembling those associated with depression (Maier, 1984). In addition, the cognitive component of learned helplessness is a critical factor in creating and maintaining depression. Trauma victims may often continue to perceive themselves as powerless long after they might have regained some control. For example, a man who experienced violent physical abuse during childhood might become depressed because he perceives himself as powerless to protect himself from harm. He could remain depressed as he grows into adulthood because he continues to believe that he cannot protect himself, even if he would actually be able to protect himself from such harm as an adult.

Aggression

Aggression can be a secondary symptom that reflects frustration over the experience of core trauma symptoms. For example, a man who is badly beaten in a robbery might be frustrated at his own lack of control over his feelings of anxiety following the event and might lash out in anger at those around him. Aggressive behaviors could also be an associated response to trauma resulting from social learning, classical conditioning, or operant conditioning. Aggression in physically abused children can be both secondary and associated. For example, a patient who had been badly beaten as a child was angry and aggressive at the powerlessness she felt in situations at work that evoked her trauma memories (secondary) and was aware that she used aggression as a problem-solving tool, as her mother had during the abusive period (associated).

Self-directed aggression as a secondary response to trauma might take the form of self-harming behaviors, disordered eating, compulsive sexual behavior, risk-taking, suicidality, or substance abuse. One explanation for such behaviors is that they express frustration secon-

dary to PTSD symptoms that gets directed inwardly instead of outwardly because of social constraints on aggression toward others. Another possible explanation for such aggression is that although such behaviors appear aggressive, they may sometimes be an attempt to interrupt the core symptom of emotional numbing. Herman (1992) has discussed how some abuse survivors engage in self-injurious behaviors to alter and improve their affective states. They report that self-inflicted physical pain is preferable to the trauma-related emotional numbness they typically experience. In a study of self-mutilation, 35% of the sample stated that they used self-harm to "feel alive" and 40% used the behavior to "feel that the body is real" (Briere & Gil, 1998). Either or both of these mechanisms may result in self-directed aggression in trauma victims.

As an associated response to trauma, self-injurious behavior may be related to feelings of self-hatred and disgust in survivors of interpersonal traumas involving degradation of the victim. For example, a girl who is traumatized by violent sexual abuse by her father might also be called names and told that she deserves the abuse. The girl might develop a very negative self-concept and grow up to feel great self-loathing as an adult. Her adult suicidal behaviors may reflect her belief that she is not worthy of living. In the Briere and Gil (1998) study of self-mutilators, 77% of the sample stated that they used self-mutilation to punish themselves.

Substance Abuse

Substance abuse is a frequently observed secondary symptom following trauma. The most likely causal mechanism for this process is that some trauma victims use drugs in an effort to self-medicate or control their reexperiencing symptoms of intrusions and hyperarousal (Chilcoat & Breslau, 1998a; Stewart, Pihl, Conrod, & Dongier, 1998). Empirical support for this causal path has recently been provided by a large-scale study showing that increased risk for substance abuse or dependence was associated with having PTSD following trauma exposure, but not with exposure to traumatic events alone (Chilcoat & Breslau, 1998b).

As an associated symptom, substance abuse may be the result of exposure to a traumatic event in an environment that also promotes drug use. For example, a soldier in Vietnam who was exposed to frequent traumatic stressors in an environment where drugs were readily available and offered temporary relief from stress might well become drug dependent. In this and many other cases, the motivation to use drugs to control reexperiencing symptoms interacts with the individual's environment to foster substance abuse. Whereas substance use following trauma may offer some temporary relief from distressing feelings, continued abuse of substances following trauma clearly undermines recovery from PTSD. Ruzek, Polusny, and Abueg (1998) have noted that ongoing substance abuse limits the abilities of a traumatized person to cope, obtain social support, and engage in treatment.

Physical Illnesses

Considerable empirical evidence indicates that physical illnesses are common secondary to trauma exposure and PTSD (Green et al., 1997). There are many possible causal pathways for the development of physical illnesses secondary to traumatic events, including the physical disease consequences of chronic stress. For example, chronic hyperarousal in a trauma survivor might lead to a gastrointestinal disorder or chronic anxiety, and muscle tension might lead to a musculoskeletal ailment. In addition, traumatized individuals might have an increased risk of exposure to disease or injury, because trauma-related stress impairs their immune function or because their traumatic experiences lead them to behave in more risky ways. Support for the latter mechanism has been found in studies of HIV risk behaviors. Among adolescent and young adult patients in a public health clinic, an association was found between history of physical abuse, sexual abuse, or rape and increased HIV risk behaviors (Cunningham, Stiffman, Dore, & Earls, 1994).

Physical illnesses might also be associated symptoms, in that they could result from exposure to concomitant elements of a trauma situation rather than resulting directly from trauma exposure. There are numerous pathways between trauma environments and physical illness, including physical injury at the time of a traumatic event, ailments secondary to non-trauma-related emotional stresses, or illnesses secondary to poor nutrition and health habits learned in the traumatic environment.

Though mental health professionals may see physical health as outside their expertise, it is important to recognize when physical illnesses may be secondary to or associated with trauma. Because physical illnesses have an impact on mental health and recovery from trauma and because psychological symptoms may have deleterious effects on health, it is incumbent on mental health professionals who treat trauma victims to consider these interactions between mental and physical health and to encourage clients to obtain appropriate health care and engage in health-promoting behaviors.

Self-Esteem

Impaired self-esteem can be a secondary or associated response to trauma, though to date, very little research has investigated this outcome. Low self-esteem could be manifested as a lack of self-confidence, poor self-image, or negative evaluations of oneself and one's accomplishments. It might also be observed indirectly in a trauma survivor's behavior in the form of lack of initiative, a tendency to give up easily, or self-defeating behavior. Problems with self-esteem might be a secondary response to trauma when core responses to trauma lead to negative self-evaluations. For example, a young girl who witnesses her father's death in an accident might be anxious and distracted at school and feel emotionally numb. As her performance at school declines, she may lose hope of succeeding and conclude that she is not smart enough to do well. As a result of emotional numbness and avoidance, she might become socially isolated and fail to develop age-appropriate social skills. She may become discouraged about her ability to succeed socially, concluding that she will never be well liked by her peers.

Similarly, initial aggressive responses to a trauma can lead to rejection by friends, coworkers, and family members, thus contributing to perceptions of inadequacy. The downward spiral of self-esteem secondary to core responses is likely to be even more pronounced for those whose traumas are intentionally and maliciously inflicted, because the meaning of the event contains a negative message about themselves. In contrast to a natural disaster that is indiscriminate about its victims, those who are the victims of intentional interpersonal traumas often attribute their victimization to some fault of their own. For example, a woman who is raped by an acquaintance may believe that she was stupid to let herself be raped.

Impaired self-esteem can also be the result of aspects of a trauma situation that are unrelated to the creation of overwhelming fear. For example, in addition to being traumatized by violent assaults, physically abused children may be criticized and blamed for things that are not their fault and may incorporate such criticism into their self-image. Again, traumas that are interpersonal and intentional in nature often have more potential for harming self-esteem than accidental or haphazard events, because interpersonal traumas frequently occur in contexts that are interpersonally negative in many ways.

Identity

Problems with identity could be a secondary response to trauma symptoms or could result from concomitant aspects of a trauma situation. Disturbance in identity might take the form of identity confusion, feelings of passive influence, or confusion over one's desires or personal goals. Problems with identity are likely to be secondary to core trauma responses when those symptoms interfere with work and social functioning. For example, a male firefighter whose work is an important part of his identity was traumatized when he found the burned corpse of a child. Because he was unable to con-

tinue his work, he began to feel confusion about his identity. Temporarily unable to join his fellow officers when they responded to calls, he began to question his own courage, his loyalty to his friends and his profession, and his general fitness to do the work of a firefighter.

Dissociative symptoms of depersonalization and lack of recall can also lead to identity problems. A person with untreated PTSD might have chronic depersonalization experiences such as feeling unreal, feeling detached from oneself, or feeling a lack of control over one's own behavior. These experiences, combined with a lack of recall for aspects of traumatic experiences, could result in disruptions in perceptions of oneself and of biographical memory and could lead to identity disturbances. This scenario is especially likely when trauma that is severe and chronic occurs early in life, before identity consolidation has occurred.

Identity disturbance could also be associated with the aspects of the trauma situation unrelated to traumatization. For example, aside from the immediately traumatizing effects of traumatic combat situations, a soldier might experience identity confusion because of heinous acts committed in the heat of combat. A man who sees himself as humane may not be able to reconcile having raped or mutilated another person, and this conflict may threaten his sense of self.

Interpersonal Relationships

Difficulties in interpersonal relationships as a secondary or associated symptom are most likely for people whose traumatic experiences were interpersonal in nature. As a secondary symptom, this is because trauma-related fear and anger are associated with a person or people. As an associated symptom, this is because those subjected to interpersonal trauma are more likely to be exposed to other negative interpersonal interactions. Initial trauma responses that are likely to lead to interpersonal problems include fear, anger, aggressive behaviors, emotional numbing, and avoidance of people. For example, a nurse who had been raped found herself more easily angered by male doctors whom she frequently perceived as being arrogant and abusing power. Her core response to trauma of anger that was associated with males interfered with her relationships at work.

Negative interpersonal elements of a trauma situation can also lead to interpersonal problems. For example, a girl who is repeatedly raped by her brother may grow up to have trouble trusting men and to have conflict in her intimate relationships because sexual contact makes her anxious and angry. Children who grow up in families that subject them to trauma and are interpersonally disturbed are particularly susceptible to developing interpersonal problems, because they may have few (if any) good models of healthy relationships.

Guilt and Shame

Guilt and shame are closely related emotions that are often secondary to or associated with trauma. Guilt involves feeling responsible for adverse events, whereas shame involves embarrassment or disgrace, usually in reference to one's behavior. Very often, trauma survivors feel responsible for harm that came to others at the time of the trauma. They may also feel ashamed of their behavior at the time of trauma or feel guilty that they survived when others did not. Like many other secondary symptoms, guilt and shame are greatly influenced by an individual's subjective perceptions about the traumatic event and its surrounding circumstances. Feelings of guilt may or may not be realistically related to any actual behaviors of the traumatized person, but they can be extremely disabling nonetheless.

Guilt and shame can be secondary to core trauma responses that prevent a traumatized person from living up to his or her responsibilities. For example, a police officer might be traumatized in a shooting and later be unable to effectively carry out his duties. Because of trauma-related fear, he might hesitate to back up a fellow officer and then feel guilty and ashamed of endangering his coworkers.

Guilt that develops as an associated response to trauma can be related to distress over behavior at the time of trauma. A man traumatized in a

serious car accident when he was driving might feel guilty that his passengers were injured. He might become preoccupied with whether the accident could have been prevented if he had been paying more attention, been driving slower, or had reacted more quickly.

Associated guilt and shame may develop following traumatic experiences by means of other mechanisms as well. For example, a young boy who is dependent on a parent who beats him when he spills his milk might preserve his attachment to the parent by denying the parent's responsibility and blaming himself (Dalenberg & Jacobs, 1994; Herman, 1992). The child may feel guilty and ashamed of being so clumsy and may think he deserved to be beaten.

CONCLUSION

The clinical usefulness of this framework depends on the extent to which it accurately explains responses to trauma. Though many aspects of the framework have been supported by results of research, there are still many ideas that have not yet been studied and must be considered tentative until sufficient evidence is available to support them. We expect that research over the next decade on responses to trauma will clarify which elements of the framework are accurate and which need modification. In the meantime, we hope that this comprehensive framework will prove to be a helpful basis for research and clinical work. Researchers can draw hypotheses and predictions from the theory, clinicians conducting evaluations can use the framework to identify the most important aspects of traumas and responses to assess, and clinicians treating trauma victims can use the theory to better understand and address relationships between an individual's traumatic experiences and his or her current problems.

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