S. A. Christianson, (Ed.)
The Handbook of Emotion and Memory
pp. 359-387, Hillsdale, N.J. Erlbaum

15

Overcoming Traumatic Memories

Kent D. Harber
Stanford University

James W. Pennebaker
Southern Methodist University

Recovery from traumatic events is typically a painful and lengthy process. Beyond the insult and injury experienced when the traumatic episode occurs, there are tremendous feelings of uncertainty, anxiety, and self-doubt following in the trauma's wake. Traumas cause victims to question fundamental assumptions about their own merit, and about the orderliness of the world. This upheaval of emotional bedrock leaves victims yearning to regain a sense of stability and meaning about themselves and the world around them.

Despite their wishes for peace of mind, trauma victims frequently experience repeated, unbidden memories of the traumatic event. Variously designated as intrusive thinking, rumination, or compulsive thinking, these spontaneously arising memories are virtually the signature of post-traumatic stress (American Psychiatric Association, 1980). For most people, intrusive thoughts are an ongoing and enduring aspect of loss. The intrusions, which are typically vivid and absorbing, occur with moderate to extreme frequency for most survivors of tragic events (Tait & Silver, 1989).

The role these memories play in traumatic recovery is a complicated one. On the one hand, they can inflame post-traumatic scars by causing victims to mentally relive traumatic events (see Horowitz, this volume), by dousing victims with negative emotions such as sorrow and anguish (Tait & Silver, 1989), and by coaxing victims into sometimes futile searches for meaning in tragedy (Silver, Boon, &

Stones, 1983). Additionally, many traumas can be a source of social ostracism when shared with others (Coates, Wortman, & Abbey, 1979). For these reasons, it is understandable that trauma victims would try to suppress thinking or speaking about trauma-related memories, as well as the feelings associated with these recollections.

Rather than alleviating post-traumatic distress, active inhibition of traumatic memories may compound victims' difficulties by inducing physical illness. As is discussed in greater detail later, inhibitory or suppressive responses to traumatic thoughts and feelings elevate levels of autonomic activity, deplete immune functioning, and increase incidence of physical illness (see Pennebaker, 1989, Pennebaker, Colder and Sharp, 1990, for reviews). Traumatic ruminations, then, can corner recovering victims into a cruel paradox; although visitations of these unbidden reminders are psychologically disrupting, chronic suppression of them is physically debilitating.

The intrusions of traumatic thoughts and memories are best understood within a general context of emotional assimilation. In this perspective, traumatic events represent significant challenges to fundamental beliefs. As long as basic beliefs and traumatic realities are at odds, the psyche will be compelled to work toward their accommodation (cf. Epstein, in press; Horowitz, 1986). As is seen later, in order to achieve the task of traumatic assimilation, and the insight fostering such assimilation, victims must consciously confront the memories and emotions associated with their traumatic ordeals. This confrontation is best accomplished by translating the chaotic swirl of traumatic ideation and feelings into coherent language.

In this chapter, we explore the psychological and social factors associated with the unwanted thoughts and memories of traumatic experiences. In particular, we point to the problems inherent in attempts to inhibit the expression of thoughts and emotions of significant personal experiences. Based on findings that reveal the benefits of translating traumatic memories into language, we argue that language brings about the organization and assimilation of traumatic memories and emotions.

THE EXPRESSION OF EMOTIONS AND BELIEFS WITHIN A SOCIAL CONTEXT

Victims face two distinct dilemmas in their efforts to overcome recurring thoughts and emotions surrounding upsetting experiences. One of these involves an intrapsychic conflict between basic beliefs and traumatic realities that challenge them (Epstein, in press; Horowitz, 1986). The other dilemma, which is interpersonal, surrounds victims' natural urge to talk about traumas and listeners' disinclination to hear about the victims' experiences. Both of these dilemmas suspend victims between countervaling tendencies to reveal their private thoughts and feelings, and to inhibit emotional expression that may lead to personally disturbing, and socially costly, disclosures. It is in this ambivalent middle ground that thought intrusions flourish and that the health-debilitating stress of inhibition is most intense.

The Emotional Correlates of Traumatic Memories

Asked his opinion of a nimble-footed opponent, the boxer Joe Louis made the now famous comment that "he can run, but he can't hide." Louis's quip describes the relationship between trauma victims and their intrusive memories. Whereas unwanted thoughts can be avoided temporarily, they relentlessly return (Martin & Tesser, 1989). Why can't trauma victims simply banish distressing memories to some gulag in long-term storage and thereby be rid of them? Wegner's work on thought suppression supplies some answers to this question (Wegner, 1989; Wegner, Shortt, Blake, & Page, 1990). In his research on intentional efforts to control unwanted thoughts, Wegner found that subjects told to not think of a white bear were subsequently inundated with white bear thoughts. Indeed, they had more frequent intrusive thoughts than did subjects instructed *to try to think* of a white bear. Wegner's explanation for this phenomenon is that people try to avoid unwanted thoughts by haphazardly employing proximal stimuli as distractors. Over time, these objects (e.g., ceiling tiles, carpeting) become associated with the unwanted thought, so that eventually the would-be suppressor is surrounded by reminders of it. The abundance of cues for the unwanted thought make it that much more difficult to suppress, and as a result suppressors attend more to "forbidden" material than do nonsuppressors.

Of particular importance is that the boomerang of suppressed thoughts back into consciousness occurs with much more force for emotionally tagged thoughts. Wegner et al. (1990) demonstrated the greater intrusive potency of emotional content in an experiment where subjects were told to suppress either exciting thoughts (e.g., about sex) or unexciting thoughts (e.g., the dean of students). Results showed that, for the emotionally charged topic only, suppression led to more frequent unbidden thoughts of the topic, longer fixation

upon the topic, and elevated bodily arousal (as measured by skin conductance) when intrusions occurred. The conclusion Wegner et al. drew from these results is that intrusive thoughts get much of their propulsive force from unexpressed emotions. This, in turn, suggests that the problems of post-traumatic thought intrusions lie not so much with the memories themselves, as with the unassimilated emotions that drive these memories to the surface of consciousness (see Leventhal, 1980, for a similar argument).

Reviewing the cognitive functions that emotions serve may help clarify their role in post-traumatic rumination. There is a fairly established theoretical tradition that views emotions as a sensitive mental radar, alerting people to the occurrence, significance, and nature of subjectively significant events (Easterbrook, 1959; Plutchik, 1980; Simon, 1967). Advances in the development of schema theory (e.g., Neisser, 1976; Rumelhart & Ortony, 1977) have allowed emotion theorists to refine our understanding of emotion's attentional advantages. As used here, schemas are implicit theories people maintain to understand, and operate in, their environments. Schemas include goals, beliefs, and expectations (Fiske & Taylor, 1984). By providing a context against which they can evaluate the concordance between new information and past learning, schemas help people recognize and make sense of novel events.

A number of theorists contend that emotions arise when schemas are disrupted and/or when current conditions conflict with established expectations or beliefs (Higgins, 1987; Mandler, 1964). According to these discrepancy theorists, when we encounter something inconsistent with pre-existing schemas, an emotional impulse is generated that draws our attention to the source of this disparity, permitting schemas to update themselves by accommodating this new information. Once schemas and situations have been realigned (e.g., by taking action that conforms situations to schemas, or by amending schemas to better fit situations), the emotion is deactivated (Horowitz, 1986). The adaptive value of this affect–schema correspondence is fairly clear: it directs our attention to novel or unanticipated features of our surroundings and permits continual correction of our schema-based navigation system.

Once activated by significant disparities between expectations and events, emotions tend to be quite dogged about completing their cognitive agendas. According to Horowitz (1986), emotions remain active as long as the disparities that evoked them go unresolved. This insistence of emotions to meet their schema-directed agendas has been likened to the Zeigarnik effect. Classic demonstrations of the

Zeigarnik phenomenon show that when subjectively valued goals are interrupted, they remain active in memory (Martin & Tesser, 1989). Tension surrounding these uncompleted goals motivate their resolution, which—when achieved—deactivates the goal-related memories. According to Mandler (1964) the tension created and sustained by disrupted plans is distressing and serves as impetus to goal completion. Summarizing this perspective, Horowitz (1986) noted that "the organism thus favors completion to end distress." (p. 93).

Martin and Tesser (1989) supplied a theory of ruminative thought that fits closely with this model. According to these authors, ruminative thoughts arise when valued goals are blocked. The ruminations serve to direct attention toward uncompleted goals that can then spur problem solving. Although Martin and Tesser do not directly relate their theory to post-traumatic ruminations, their key points are consistent with hypotheses presented by trauma researchers (i.e., that disparities between expectations and events require resolution, and that intrusive thoughts keep these disparities under the limelight of consciousness). Further, the characterization of emotions as goal directed (e.g., Baumeister & Tice, 1987) links goal-compeltion models of rumination with Horowitz's emotional completion-tendency explanation.

We should point out that in some cases ruminative cycles can be broken without addressing underlying emotions. Morrow and Nolen-Hoeksema (1990), for example, show that moderately sad people can circumvent bothersome ruminations by engaging in activities that evoke positive emotions. Apparently, the positive associations created by pleasant distractors override the negative thinking sadness promotes. It is not clear, however, that emotions of traumatic magnitude are as amenable to distraction as are the much less intense negative states evoked in laboratory settings. Martin and Tesser, speaking in the language of goals rather than emotions, per se, address this point. In concordance with Morrow and Nolen-Hoeksema, Martin and Tesser observe that intrusive thoughts can be terminated by identifying a substitute goal of equal or greater value. However, Martin and Tesser also point out that a major problem with these substitution solutions is that some cardinal goals defy replacement. The completion goals evoked by traumatic events—entailing reformation of fundamental beliefs—seem to be unlikely candidates for easy substitution. In fact, experimental studies and clinical reports suggest that neither emotional distraction nor goal substitution are effective antidotes for unresolved traumatic distress (Silver et al., 1983; Tait & Silver, 1989).

The Intransigence of Trauma-Implicated Beliefs

One of the reasons that traumatic emotions remain unresolved is that the goals they seek to accomplish are, in themselves, psychologically threatening. Consider some of the experiences that cause trauma: deaths of loved ones, sexual assaults, disabling accidents, torture, and natural disasters. Beyond injury and loss, upheavals such as these shake fundamental beliefs about the orderliness of the world, and challenge one's own credentials as an efficacious participant in society (Horowitz, 1986; Pennebaker, 1989; Wortman & Silver, 1987). According to both Epstein (in press) and Janoff-Bulman (1989), psychological health rests on three implicit beliefs about the world: that it is basically benevolent, meaningful, and that the self is worthy. According to Epstein, traumas challenge one or more of these basic assumptions so severely that the entire triadic scaffolding of psychological functioning is destabilized. Consequently, traumas can undermine victims' confidence in the world or in their ability to participate in it satisfactorily.

Because disruption of basic beliefs is so destabilizing, people are—by nature—averse to information that contradicts fundamental assumptions. Marris (1986) has termed this inherent scepticism a "conservative impulse" and considers it most energetic in the defense of constructs that have demonstrated validity in the past. There is considerable evidence that the beliefs that traumas challenge (i.e., in one's own worthiness, and in the meaningfulness of the world) are those most resistant to change. For example, researchers have found that once a self-relevant belief has been instantiated, it will persevere even in the face of incontestable countervailing evidence (Lord, Lepper, & Preston, 1984; Ross, Lepper, & Hubbard, 1975). In fact, only by engaging in the cognitively energetic task of "considering the opposite" can people discard personal beliefs based on performance feedback that they knew was false (Lord et al., 1984). The robustness of self-aggrandizing memory biases (Greenwald, 1980) and of ego-protective attributional biases (Snyder, Stephan, & Rosenfield, 1978) further indicate the resilience of belief in one's own worthiness.

Persistence of beliefs in a just, well-ordered world are also well documented. Lerner (1980), for example, has found that people will derogate innocent victims in order to sustain beliefs in a just world. Similarly, recent research in "Terror Management Theory" shows that people become highly punitive to those who even indirectly challenge their feelings of personal invulnerability, moral correctness, or spiritual certainty (Greenberg, Pyszczynski, Solomon, Rosenblatt, Veeder, Kirkland, & Lyon, 1990; Rosenblatt, Greenberg, Solomon, Pyszczynski, & Lyon, 1989).

Traumatic amnesias, and dissociative episodes, supply some of the more striking examples of how the psyche can defend self-concept from traumatic insult (Christianson & Nilsson, 1984, 1989; Horowitz, 1986; Spiegel, 1988). In traumatic amnesias, victims temporarily forget not only the traumatic event but their own identities as well. Christianson and Nilsson (1989) suggested that this self-forgetting is a victim's refuge of last resort, a psychic trap door through which his or her sense of self can avoid the pain of catastrophic insult. Commenting on the traumatic amnesia suffered by a rape victim, these researchers (Christianson & Nilsson, 1989) wrote: "The rape implied such an unbearable insult to her identity and assault upon her self image that a temporary loss of identity perhaps became necessary in order to handle the immediate post-traumatic distress" (p. 305).

A less extreme, although still dramatic, form of traumatic defense of one's self-image is found in profound emotional dissociation. Spiegel (1988) reported that trauma victims can undergo such complete emotional detachment during the time of their ordeals that they experience themselves as impassive observers of their own assaults. Like Christianson and Nilsson, Spiegel interprets this defense as an adaptive isolation of an overwhelmingly threatened sense of self.

Horowitz describes self-protective defenses against traumatic insult as "controls" and says that the intrusive cycling most trauma victims experience is a display of these protective devices. According to Horowitz, control processes staunch the flow of post-traumatic ideation when they threaten to flood the victims' already shaken self-beliefs. However, as fear recedes the controls relax, releasing the memories anew until feelings of distress cause controls to again isolate sense of self from traumatic memories. Especially relevant to our thesis is Horowitz's contention that this cycling ceases when accord is achieved between the traumatic events and the basic beliefs that they threaten.

Social Obstacles to Trauma Assimilation

Despite the apprehension associated with confronting traumas, many victims do, in fact, seek to confide in others. In some cases, desires to disclose are thwarted by an absence of confidants. However, it is not only the socially stranded who may lack adequate disclosure opportunities. To a surprising degree, victims find that

their urge to confide is not matched by confidants' willingness to listen. Coates et al. (1979) explored the receptivity of victims' supporters to victims' disclosure needs. These researchers reported that, as bearers of disturbing thoughts and negative emotions, victims themselves become the objects of suppression. Would-be listeners disrupt victims' disclosure attempts by switching the topic of conversation away from the trauma, by attempting to press their own perspective of the trauma upon the victim, or by simply avoiding contact with trauma victims altogether.

In situations of widespread catastrophe, where many people find themselves in both the victim and listener roles, the opposing disclosure goals of victims and listeners can create interesting social dilemmas. For example, we found that in the months following the 1989 Loma Prieta earthquake many people reported a desire to share their personal experiences with others (Pennebaker & Harber, 1990). However, a significantly smaller percentage of the people we surveyed reported wanting to hear about other people's earthquake stories. The attitude of many Bay Area residents may have been reflected in printed T-shirts appearing in the area that said "Thank you for not sharing your earthquake experience."

Indeed, listening to traumatic stories can be stressful in and of itself. In a recent study, for example, college students viewed one of several 1–2-hour videotaped interviews of Holocaust survivors recounting their often tragic and horrifying experiences in Europe during World War II. Autonomic nervous system activity such as skin conductance level (SCL) of the survivors had been continuously monitored during the videotape session (Pennebaker, Barger, & Tiebout, 1989). Similarly, continuous SCL readings were collected from the students who viewed the videotapes. A comparison of the SCL of the Holocaust survivors and the student listeners indicated a negative relationship; that is, when the survivors disinhibited and talked about particularly horrible events (as rated by independent judges), the SCL levels of the listeners increased. Talking about horrible experiences may be healthy for speakers but unhealthy for listeners (Shortt & Pennebaker, 1990). [1]

[1] An intriguing question stemming from the Shortt and Pennebaker (1990) study is whether listeners risk intrusive thoughts as a result of hearing victims' traumatic disclosures. We know of no research on the contagion of ruminative reactions, though under certain conditions this spread of unwanted thought seems likely to occur. For example, people are less willing to sympathetically listen to victims' stories when they, the listeners, see themselves as incapable of positively altering the victim's situation (Smith, under review). This finding makes us suspect that the more helpless listeners feel as audience to traumatic disclosures, the more subject they themselves may be to intrusive thoughts regarding victims' travails.

As might be expected, listeners' reluctance to hear victims' disclosures is motivated by the same defenses that inhibit victims' trauma assimilation efforts. Hearing about victims' suffering can threaten listeners' assumptive worlds, creating in listeners levels of distress antagonistic to empathic attention. According to Coates et al., listeners' just-world beliefs are frequently threatened by the random hazard and wanton cruelty that characterize victims' travails. To bolster their own world views, listeners often impose upon victims interpretations of the trauma that exaggerate victims' personal responsibility.

Interactions with victims can also challenge listeners' beliefs about their own self-worth. For example, listeners may feel inadequately skilled, or insufficiently caring, to help victims recover. These feelings of social gracelessness are often compounded by the tenacity and depth of victims' distress (see also Locke & Horowitz, 1990, for an experimental demonstration of the social friction arising between distressed and nondistressed acquaintances).

And finally, the feelings victims can display, in their seemingly relentless intensity and negativity, can disturb even the most empathic listeners' repose. Victims are typically well aware of the social censure they risk by freely disclosing their traumatic memories and emotions. In fact, the more urgent are victims' needs to confide, the more apparent to victims are others' resistances to hearing (Silver, Worton, & Crofton, 1990). Wishing to avoid social isolation and stigma, victims will respond to inhibitory social cues by suppressing their own pressing expressive needs. Their situation is concisely summarized by Coates et al., (1979) who wrote: "Victims may be trapped in a complicated dilemma, in which they can maximize their social acceptance only at the expense of their personal adjustment" (p. 28).

To recap, then, trauma victims face two major obstacles in their efforts to express their trauma-related emotions: their own reluctances to revise fundamental world assumptions, and other peoples' resistance to hearing about traumatic events. Yet completion tendencies of traumatic emotions continue unabated and generate intrusive memories that continue drawing victims back to the traumatic experience. Consequently, trauma victims can be caught between incessant demands to amend challenged schemas, and resistances—internal and external—to the modification of fundamental beliefs. It is within this standoff between implacable emotions and resistant beliefs that victims become subject to the suppressive cycle, and its associated health risks.

THE EFFECTS OF INHIBITING VERSUS CONFRONTING TRAUMATIC MEMORIES

Researchers have long recognized a connection between the inhibition or constraint of emotional expression and health risks. Studies of individual differences in the tendency to avoid the disclosure of emotion are associated with cancer (Cox & McCay, 1982; Jensen, 1987; Kissen, 1966), coronary ailments (Davies, 1970; Friedman, Hall, & Harris, 1985; Weinberger, Schwartz, & Davidson, 1979), and other types of illness (Blackburn, 1965; Pelletier, 1985). It has also been shown that the proclivity to disclose potent emotions improves the prognosis for sufferers of serious illness. For example, breast cancer patients who most freely expressed anger and depression regarding their conditions lived longest, following diagnosis (Derogatis, Abeloff, & Melisaratos 1979). Particularly impressive is a recent study by Spiegel, Bloom, Kraemer, and Gottheil (1989), wherein half of 86 patients with advanced breast cancer were randomly assigned to weekly therapy sessions where the expression of emotion was encouraged. Overall, those in the therapy condition lived, on average, 1½ years longer than controls.

Links have also been reported between personal disclosure and recovery from traumatic events. Pennebaker and O'Heeron (1984), for example, identified such a correspondence in a survey of recently-bereaved widows and widowers. The study found that these individuals were significantly healthier if they talked with others about the deaths than if they did not talk. In addition, the more frequently survivors talked about their spouses' demise, the less they ruminated about it in the year following the death. These findings square with those in a large national sample in Germany (Stroebe & Stroebe, 1988).

Inhibition and Confrontation of Traumatic Memories

There is little doubt that traumatic experiences can result in a variety of physical and psychological health problems in the months or years following their occurrence (e.g., Holmes & Rahe, 1967). Less clear, however, are the long-term mechanisms mediating trauma and disease. One important candidate to explain the long-term trauma/illness relationship concerns inhibition. Over the last several years, the second author has been developing and testing a general theory of psychosomatics based on the following premises:

1. Inhibiting ongoing thoughts, feelings, or behaviors is associated with physiological work.

a. Short-term inhibition is manifested by increased autonomic nervous system activity, such as electrodermal activity (Fowles, 1980), and selective central nervous system action traditionally associated with behavioral inhibition, such as the hippocampus (Gray, 1975) and frontal lobes (Luria, 1981).

b. Long-term inhibition serves as a low-level cumulative and general biological stressor (e.g., Selye, 1976). The long-term stress of inhibition can cause or exacerbate a variety of health problems ranging from minor difficulties (e.g., colds, flu) to major ones (cardiovascular problems, cancer; Pennebaker & Susman, 1988).

2. Active inhibition is also associated with potentially deleterious changes in information processing. In holding back significant thoughts and feelings associated with an event, individuals typically do not process the event fully. By not talking about an inhibited event, for example, people usually do not translate the experience into language that aids in the understanding and assimilation of the event (Pennebaker, 1989). Consequently, traumas that are inhibited are likely to surface in the forms of ruminations, dreams, and associated cognitive symptoms.

3. The opposite pole of inhibition is confrontation, which refers to individuals actively thinking and/or talking about a trauma as well as acknowledging relevant emotions. Confronting traumatic memories can help negate the effects of inhibition both physiologically and cognitively (Pennebaker, 1989).

a. The act of confronting the memories of a trauma reduces the physiological work of inhibition in both the short run (e.g., as measured by drops in electrodermal activity) and long term (e.g., improvements in health).

b. Actively confronting traumatic memories helps individuals to understand and ultimately assimilate the event.

The core of the inhibition and health program has been built around studies that use autonomic nervous system changes or actual illness rates as outcome measures. Although we have typically not focused on memory per se, many of our findings are relevant to an understanding of traditional memory-related topics, such as retrieval, storage, reconstruction, etc. Before discussing our approach to memory, it is important to briefly summarize the major results from our research. (For a more detailed discussion of this research program, see Pennebaker 1989, Pennebaker, Colder, & Sharp, 1990).

Correlational Studies. Consistent with research discussed earlier, several surveys that we have conducted indicate that not talking about significant personal upheavals with others is correlated with a variety of health problems. Across studies, self-reports of the failure to disclose traumatic experiences surrounding sexuality, death, divorce, and so forth, has consistently been associated with both self-reported and actual physician visits for illness, major and minor health complaints, in both retrospective (e.g., Pennebaker & Susman, 1988) and prospective (Pennebaker, 1989) studies. These effects have emerged with a variety of samples including individuals who have suffered the sudden death of their spouses (Pennebaker & O'Heeron, 1984), corporate employees (Pennebaker & Susman, 1988), a large national sample of magazine readers (Pennebaker, 1985), and, of course, college students (Pennebaker, 1989). These effects hold when statistically controlling for the effects of social class, sex, nature of trauma, education, and social support indicators (e.g., Pennebaker & Susman, 1988).

Trauma Confession Studies. A more persuasive test of the inhibition model has surrounded a series of experiments wherein subjects have been brought to the laboratory and have been randomly assigned to write (or talk) about either deeply traumatic experiences or superficial topics. Depending on the study, subjects write for 15 or 20 minutes each day for 3 to 4 consecutive days. Other studies that examine the psychophysiology of ongoing disclosure require students to talk about both traumatic and superficial topics for 3 to 7 minutes each on the same day.

In the standard writing experiments, the experimental manipulation consists of having subjects write, extemporaneously, without regard for spelling, grammar, or punctuation. Experimental subjects are requested to write, with as much candor as possible, about their deepest thoughts and feelings surrounding a past trauma. An example of the writing instructions given experimental subjects indicates how disclosures were invited (from Pennebaker, Kiecolt-Glaser, & Glaser, 1988):

> During each of the four writing days, I want you to write about the most traumatic and upsetting experience of your entire life. You can write on different topics each day, or on the same topic for all four days. The important thing is that you write about your deepest thoughts and feelings. Ideally, whatever you write should deal with an event or experience that you have not talked with others about in detail.

Control subjects are requested to write in a nonemotional way about mundane and trivial topics, such as detailed descriptions of their shoes, or a microscopic outline of their daily schedule. All subjects write (or speak) in private rooms or in cubicles. The writing settings are dimly lit in order to increase subjects' feelings of privacy, and to create novel situations free of inhibiting associations to subjects' daily lives.

From all our studies, it is clear that the disclosure process is remarkably powerful. In the experiments wherein subjects talk about traumas for only a few minutes, a quarter cry. In the writing studies, subjects in the experimental conditions routinely report feeling extremely distraught after writing. Indeed, their writing samples portray horror and tragedy. In each study that we have conducted, one or more students have written about incidents of sexual assault or incest, family violence, suicide attempts, divorce, etc. Although participants report that writing about upsetting experiences is painful, follow-up questionnaires 6 weeks to 6 months after the study indicate that they are as happy or happier than controls.

Most impressive about all the writing studies are the improvements in health among the experimental subjects. In our own studies, health center visits for illness (gleaned from health center records) are significantly lower after writing traumatic thoughts and feelings. Averaging across our three recent writing studies, the mean illness visits per month for experimental and control subjects are as follows: Experimental before writing = 0.19; experimental after writing = 0.12; Control before writing = 0.14; Control after writing = 0.24.[2] These numbers are based on over 200 subjects who have participated in the writing studies (Pennebaker & Beall, 1986; Pennebaker, Colder, & Sharp, 1990; Pennebaker, Kiecolt-Glaser, & Glaser, 1988). It should be pointed out that the health improvements are not permanent. Close inspection of our recent studies suggest that the health gains from writing about traumatic experiences appear to last from 2 to 4 months after writing.

Finally, similar studies in other labs have replicated the same basic patterns of effects. Murray, Lamnin, and Carver (1989), using self-reported physician visits, found a marginally significant effect that indicated that subjects who wrote about traumas on two occasions separated a week apart remained healthier than controls. In a

[2]The drop in controls' health reflects the general pattern of increased illness among college students as the Fall term—when most of these studies were conducted—progresses.

reanalysis of an apparent failure to replicate (Greenberg & Stone, 1990a), researchers at SUNY at Stony Brook reported that individuals who wrote about deeply traumatic experiences showed health improvements compared to trauma subjects who wrote about relatively minor traumas and to control subjects (Greenberg & Stone, 1990b).

THE BENEFITS OF WRITING

Clearly one of the most robust findings of the inhibition and health research program is that confronting traumas reverses inhibitory stresses. Yet the basic paradigm for demonstrating the value of trauma confrontation involves a very simple manipulation—translating traumatic experiences into prose. Why should language, and perhaps writing in particular, provide such a potent antidote to traumatic inhibition? In this section we discuss both the behavioral and intrapsychic benefits that come from putting traumas into language. First we describe the self-perceptual and morale-enhancing benefits that the *act* of writing supplies. We then consider how narrative renderings of traumas make these events more comprehensible and review attributes of subjects' writing that support this analysis. Finally, we speculate on structural changes in the coding of traumas that occur as a result of writing, and how through these changes traumatic distress is dissipated.

Writing as Active Coping

To some degree, writing may advance recovery by recasting victims' relations to their traumas. According to Moos, when people face crises directly, they gain confidence in their coping strengths, feel greater personal coherence, enjoy heightened self-esteem, and experience increased optimism (Holahan & Moos, 1990). In a similar vein, Folkman and Lazarus (1988) reported that people feel better when they turn to the sources of their distress, and that planful responses to fearful emotions make these emotions less distressing. By allowing victims to intentionally confront traumatic memories, rather than being ambushed by them, writing may promote the "active coping" that Moos and Lazarus advocate. Additionally, writing can also supply self-perceptual benefits. Because it is a constructive, energetic activity that yields tangible products (i.e., completed essays), writing can help victims see themselves as problem solvers, and their traumatic recoveries as tractable tasks, rather than as ordeals to be passively borne.

Clearly, the environment subjects encounter in the writing studies is conducive to approaching previously avoided trauma. The writing occurs under psychologically safe conditions, in which experimenters emphasize that essays will not be judged, and that confidentiality has been protected. Also, the time constraint placed on writing (i.e., 20 minutes) sets a tolerable limit on subjects' outlay of cognitive effort and duration of emotional exposure. Perhaps most importantly, writing permits subjects to engage their traumas to a degree, and at a rate, at which they feel comfortable. By governing the flow and direction of traumatic memories, writers can experience a heightened sense of control over events that have so fundamentally dominated them.

We see these allied benefits of active coping—the heightened confidence, subjective safety, greater perceived control—as advancing people to the arena of traumatic assimilation. However, it is important not to confuse benefits that promote the process of traumatic assimilation with assimilation itself. If recovery were just facing the facts of past trauma, or of braving troubling emotions, then subjects in Pennebaker's "facts-only" or "emotions-only" writing conditions should have realized the same benefits as did subjects who wrote emotionally about their trauma-related thoughts and feelings. Yet in most cases, subjects relating only facts or only emotions appeared no healthier, and in some cases marginally less healthy, than did the trivia-writing controls. Thus, we believe that the self-perceptual and morale-boosting properties of active coping facilitate, but do not constitute, the essential benefit of writing. Instead, we see writing, and language generally, as uniquely suited to the essential task of traumatic recovery—assimilating the traumatic event into the network of beliefs that traumas challenge. It is to these particular mental benefits of language that we now turn.

Writing as the Construction of Narrative

Social psychologists have become increasingly interested in the ways that people use narrative structures to make sense of their lives (Sarbin, 1986; Vitz, 1990). Paul Vitz (1990) provided a helpful overview of this perspective. He explained that by engaging in narrative thought, people translate their lives into coherent stories. Turning their lives into literature helps people frame events within

the goals, social relationships, and other themes that organize experience.

Trauma victims, who struggle so tenaciously to find meaning in their ordeals, might be particularly well served by the organizing benefits of narrative expression. Indeed, translating life experiences into biographical sketches can have therapeutic advantages. According to psychoanalytic theorist Donald Spence (in Vitz, 1990), psychoanalysis's chief benefit lies in giving patients the opportunity to construct stories and to thereby make narrative sense of their lives.

The notion that the formal characteristics of narrative prose can advance coping is supported by Pennebaker's trauma and writing studies. Analyses of subjects' essays reveal that the more their writing succeeds as narrative—by being organized, emotionally compelling, vivid, and fluid—the more subjects benefitted from the writing task. We review the narrative features of subjects' writing, and the relation of these to disinhibition, next.

The Topics That People Choose to Write About. In the writing studies, people disclose remarkably intimate aspects of their lives. They freely admit embarrassing experiences and deeply felt emotions. Averaging across four experiments wherein students wrote or talked about traumas, a breakdown of the percentage of the primary topics within the essays or tapes were as follows: death of family member or friend (18.0%), interpersonal conflicts with lovers or friends (17.9%), family conflict including divorce (15.7%), academic issues such as coming to college (14.8%), illness or injury experiences (13.6%), psychological or behavioral problems (7.6%), sexual traumas (5.3%), and other issues (5.0%). See Pennebaker (1989) for a more detailed breakdown of topics.

In carefully debriefing hundreds of people who have undergone this paradigm, we have suspected that a person was fabricating a traumatic experience only once. The profound changes in facial expression, posture, and overall affect convince us that the disclosures are real and deeply felt. These impressions have been corroborated by researchers in all other laboratories that have used the paradigm.

Writing Speed. In disclosing traumatic experiences, participants write and talk at a much higher rate than individuals asked to describe what they have done since arising in the morning or other control topics. Averaging across the writing trauma studies, for example, subjects in the trauma conditions wrote 27% more words than those in the control conditions (Pennebaker & Beall, 1986; Pennebaker, Kiecolt-Glaser, & Glaser, 1988). In the talking study

wherein subjects talked about both traumatic and trivial topics for 3.3 minutes each in a counterbalanced order, participants spoke 7% faster when conveying traumatic topics. All the preceding effects were highly significant.

Subjects had, by and large, not discussed their traumatic events with others nor had they rehearsed them prior to coming to the experiment. Additionally, in those studies wherein subjects wrote on traumas day after day, their actual speed was as fast or faster on the first day. The retrievability of traumatic material, therefore, seems to reflect emotional salience, rather than intentional priming.[3]

Vividness and Fluidity. As a university teacher who routinely assigns research papers and essay exams, the second author has been struck by the quality of writing that the students exhibit when disclosing traumas. Grammar, sentence structure, and general writing style are remarkably good. Indeed, participants are far better writers when conveying traumatic experiences for the first time than when expounding on reinforcement theory on their first or even third draft.

Structure. In writing, the majority of people who tell about a trauma convey it in a story format—with a clear beginning, middle, and end. There are clearly some large situational and individual differences. Based on a recent analysis of the Pennebaker, Kiecolt-Glaser, and Glaser (1988) essays by seven independent judges, the story structure is typically better on the last day of writing than on the first. Of particular importance is that improvement in immune function from before to 6 weeks after writing (as measured by heightened blastogenic responses using PHA as the mitogen; i.e., t-lymphocyte response) among trauma subjects was marginally related to both overall good story structure ($r = .35$, $p = .13$) and improvement in story structure from the first to the fourth day of writing ($r = .35$, $p = .13$).

The Centrality of Emotion in Describing Trauma. Across several studies, we have directly and indirectly examined the value of expressing emotion during the disclosure process. In the Pennebaker

[3]These results fit with Horowitz's contention that, until assimilated, traumatic material hovers near consciousness in an "active memory" state. Active memory is much the same as short-term storage, differing only in the assimilative pressure that active-memory material possesses. According to Horowitz, when defensive controls over active memory relax, the traumatic content automatically flows from it into the attentional spotlight.

and Beall (1986) writing study, for example, students were randomly assigned to one of four conditions. In addition to controls who wrote about superficial topics for the four days, some subjects were asked to write about their emotions and thoughts surrounding traumas (trauma-combination group). Two additional trauma groups were told to restrict their writing to either the facts without reference to their emotions (trauma-fact condition) or their emotions without reference to the facts (trauma-emotion group) surrounding the trauma. On all major health and self-report dependent measures, the trauma fact and controls were identical. Although the trauma-emotion subjects were as physically ill as controls, their self-reports of health and well-being were more similar to those in the trauma-combination condition. Writing only about the cold facts of a traumatic experience, then, does not appear to be psychologically or physically beneficial.

More recent studies have examined the emotionality of speakers who are disclosing personal traumas. Those who convey the greatest emotion in their voices (as rated by judges), exhibit the greatest skin conductance reductions during their disclosure (Pennebaker, Hughes, & O'Heeron, 1987). Similarly, Holocaust survivors who exhibit the greatest skin conductance drops during the times that they are talking about particularly traumatic experiences are significantly healthier a year after the interview (Pennebaker, Barger, & Tiebout, 1989).

Subjects' Comments on the Efficacy of Writing. When asked what effect writing had on them, the vast majority of subjects reported that it had helped them put their traumatic experiences into manageable perspective. As one subject reported at the end of his participation (Pennebaker, Colder, & Sharp, 1990): "(The writing) helped me to look at myself from the outside" (p. 534). This is particularly significant in light of Spiegel's contention that placing traumas in perspective is the most appropriate goal for PTSD treatment (Spiegel, 1988). By giving their traumas clear beginnings, middles, and ends, writers may circumscribe the boundaries of bad events and thereby get past them. As a result, the traumas no longer intrude upon consciousness, terminating the stress and attendant health deficits of inhibition.

General Applicability of Writing. Prose writing is certainly a skill, and the variability in its mastery ranges from the crudest graffiti to Shakespeare. Does this mean that only the most literate can use narrative as a coping device? We think not. Whereas few of us achieve

poetry, we are nearly all trained narrativists. Exposure to stories, and to the storytelling form, is something we generally receive in early childhood (see Nell, 1988). By age 10, most American children can compose narratives with plots recognizable throughout the western world (Sutton-Smith, 1986). Eventually narrative thinking becomes so fundamental to our ordering of experience that it operates as a basic causal heuristic (Robinson & Hawpe, 1986). In sum, nearly all people are able to organize and express their experience through narrative channels. What we intend to show in the remainder of this chapter is that the constraints of narrative supply cognitive tools particularly well suited to the emotional work of traumatic assimilation.

Writing and the Mechanisms of Trauma Assimilation

Recall that trauma assimilation involves accommodating particular experiences into extant schematic structures. Tulving's distinction between episodic and semantic memory sheds light on what this accommodation may entail, and how the assimilative process may be advanced by writing. According to Tulving's (1983) model, episodic memory consists of "the recording and subsequent retrieval of memories of personal happenings and doings" (p. 9). Episodic memory is chronologically organized and self-focused—it contains stories that feature the self. Semantic memory, on the other hand, is concerned with abstract knowledge about the world, independent of the person's memory or past. It is conceptually organized and contains facts and propositions. Further, only episodic memory is believed to have emotional content; semantic memory is seen as affectless. Because traumas so centrally involve the self, exist as life events, and are saturated with emotion, we reason that they are encoded in episodic memory. We further suppose that fundamental beliefs, built on propositions and organized conceptually, reside in semantic memory.

Tulving's model suggests that traumatic assimilation involves accommodating key features of the semantic code (i.e., beliefs) to massive changes in episodic representation (i.e., trauma); that is, it involves extracting from the trauma facts that amend premises upon which semantically maintained world assumptions are constructed.[4] However, properties of traumas may hinder this tranference between an event "that happened" to principles "one knows." As episodic memories, traumas are temporally organized around the

[4]See McClelland and Rumelhart (1985, pp. 184–185) regarding the contribution of episodic material to semantic structures.

chain of events that constitute them. Thus, all the emotions, images, and thoughts attending a trauma are held together solely by the traumatic incident itself. This integrated structure may complicate the winnowing of assumptive morals from traumatic dramas. At the same time, the distress that traumas evoke when encountered in toto discourages efforts at making this translation.

The act of writing may help dismantle the phenomenal wholes that traumas constitute, and in a way that moderates traumatic distress. The grammatical constraints of language are such that only a restricted number of details can be fit into any sentence. Sentences, in turn, must be organized into meaningful sequences in order to convey more sophisticated concepts. In sum, we cannot "say" the traumatic experience all at once, but only over time, and in conceptual bits. Suppose I were to describe the experience of being in a major earthquake. If I were to make the event understood, I would need to supply a setting ("I was in the psychology department, conducting a discussion section") and a time ("It was in the early evening"). A description of my mental states before, during, and after the jolt hit, the sequence of events preceding the quake, as well as the students' reactions—all these components, and more, I would need to reveal to my listener. By spinning out my tale into a coherent narrative string, I begin to unravel the traumatic knot. And, the more detailed I get in describing any facet of my experience, the more completely I extract it as a conceptual entity separate from the trauma as a whole. As a result, I will break the event down into smaller conceptual bits, each of which should be subjectively less threatening, and at the same time much more easily parsed than the memory as a whole.

However, as evidenced by Pennebaker's "facts only" subjects, the health debilitating stress of inhibition is not alleviated solely by objectively recounting a traumatic event. Writers must allow themselves to emotionally re-engage the trauma, in order for writing to promote assimilation. Research on mood and memory (Bower, 1981) indicates why emotionally involved writing is so necessary to the process of assimilation. According to Bower, emotional states can serve as potent organizers of experience. Additionally, by reviving a particular affective state, one is better able to recall the circumstances (under which that state was generated). Writing *emotionally* about one's deepest thoughts and feelings should produce these state-dependent memory effects. Because emotionally charged writing more fully activates traumatic memory, more of the trauma is arrayed in consciousness, where its verbal rendering can occur.

Indeed, in the trauma-writing studies, experimental instructions were designed to engage subjects with their trauma-induced emotions. Subjects were told "let go and dig down to your very deepest emotions and thoughts, and explore them in your writing" (Pennebaker et al., 1990). Together, "letting go" and "exploring" may be the keys to post-traumatic recovery. By entering the emotional depths of a past trauma, disclosers gain vastly greater access to the facts and details associated with their ordeals. By searching the traumatic landscape that their emotions reveal, and preserving it in language, disclosers are better able to map out the dimensions and facets of their experiences and thereby make traumas more comprehensible.

Writing Creates Bonds Between Traumas and Other Experiences

Emotional writing can also promote assimilation by associating traumatic recollections to nontraumatic memories. When writers re-engage traumatic emotions, memories that are not directly related to the trauma—but that are associated with the traumatic emotion—should be activated. This collateral activation of nontraumatic memories may help writers articulate their traumatic experiences by supplying a vocabulary of related images, events, and concepts. Describing the trauma in terms of these emotionally related concepts and events should, in turn, strengthen ties between the trauma and other experiences. As a result, the trauma becomes more fully integrated within the person's network of memories and beliefs.

The emotional intensity of trauma should be moderated by the bridges that language constructs between traumatic and non-traumatic memories. Before this integration occurs, the activation of traumatic memory is likely to evoke only traumatic emotions. However, the exclusive arousal of traumatic distress is less likely to occur when traumas are richly related to memories that are themselves linked to less aversive emotions. Consequently, the collateral activation of these nontraumatic memories should buffer the impact of traumatic recall. For example, if remembering my earthquake experience was also to evoke memories of hazards I have averted or mastered, or if it reminded me of other people who had suffered experiences similar to my own, then feelings of competence and solidarity supplied by these other associations should mute the traumatic memory's emotional impact.

Recent research on the emotional architecture of repression (Hansen & Hansen, 1988) corresponds to this formulation. Hansen and Hansen found that for repressors fearful memories have relatively few associative links to other memories. This isolation of fearful material reduces repressors' experience of fear as supplemental to other negative emotions. Because repressors have fewer afferent links joining fearful material to sad or angry memories (for example), the excitation of these other emotions is less likely to subsequently trigger fear. However, there is a cost to this emotional segregation; on those occasions where fear is the primary emotion evoked, there are few efferent channels by which this distress can be dissipated. Hansen and Hansen (1988) suggested that "Because repressors' fearful memories are associated with fear, anxiety, and little else, a . . . (fearful memory) . . . is more likely to elicit escape or behavioral paralysis from a repressor than from a non-repressor" (p. 817).

Individual differences in cognitive architectures may predict how well people respond to traumas. If coping involves the cognitive integration of traumas, then people with relatively rich stories of memories, and more flexible beliefs and attitudes should be those most resilient to negative events. The hardiness of these more "cognitively complex" (cf. Tetlock, 1983) individuals would, according to our perspective, derive in part from their having a more plentiful array of mental constructs over which a trauma could be dispersed. Linville's self-complexity theory and related research is consistent with this line of reasoning (Linville, 1987). According to Linville, people who possess more complex self-images—self-images comprised of various attributes and proclivities—have more options for organizing negative experience and are therefore better able to cope with adversity.

EVIDENCE THAT LANGUAGE PROMOTES TRAUMATIC RECOVERY

If language plays such a central role in trauma assimilation, then victims' abilities to articulate their experiences should predict beneficial outcomes of disclosure. In this final section, we briefly summarize results from the inhibition research indicating that emotional lucidity corresponds to post-traumatic coping. We also review work on "Referential Activity," an allied area of investigation that explores the links between expressivity and psychological adjustment.

Evidence from Inhibition Research

Earlier, we identified two attributes of language characterizing disclosures that promote assimilation. Effective disclosures should be *organized* in order to promote the semantic parsing of episodically coded, private experience. Disclosures should also be *emotional* in order to activate traumatic memories, and to facilitate the integration of these memories into pre-existing networks. Analyses of subjects' writings and writing-related behavior confirm the importance of both these conditions. As we have mentioned, there is a moderate correspondence between essays' degree of organization and improved immune functioning. Subjects whose essays showed more coherent narrative structures tended to be those showing heightened blastogenic responses. There was a more robust association between emotional expressiveness and improved health. Again recapping previously detailed findings, subjects who realized the greatest health benefits were those who physiologically and behaviorally displayed the most intense emotional disclosure, and whose essays contained the greatest number of emotional words.

Referential Activity

A particularly intriguing explanation for the role of language in distress coping comes from recent research on Referential Activity (Bucci, in press; Ellenhorn, 1989). Referential Activity (RA) explores stylistics of language that permit people to put their feelings into words, and to make their private experiences understood by others.

RA theorists draw heavily on Paivio's (1971, 1986) dual code mode of mental representations. This model identifies three modalities by which knowledge is represented: verbal, visual, and referential. The verbal mode is much like Tulving's semantic memory. It is comprised of words, connected according to the sequencing rules of grammar, and organized in terms of hierarchical category systems. Visual representations, like Tulving's episodic memory, are experientially-based. The visual modality stores imagery in all its forms, and is organized around emotions.

Referential links are the medium through which the analogic—and often private and ideosyncratic—contents of the nonverbal mode are connected with the logically ordered, shared communicative code that is the verbal mode. It is through these referential links that personal experiences, and emotional reactions, get articulated.

RA researchers focus on the nature of these referential links, and on how their employment shapes the course of psychotherapy.

According to Bucci (in press), referential links enlist linguistic elements and structures for the communication of emotions and other subjective experience. These links are most successful at giving public voice to private experience when they possess sensory concreteness (e.g., "hot", "rough"), specificity (degree of detail), clarity (sharpness of linguistic focus), and imagery (ability to sympathetically evoke pictures and sensations in listeners).

RA is not a variant of verbal intelligence. For example, highly abstract and complicated discourse can represent low RA. However, RA is an attribute upon which people systematically differ. Bucci has developed and validated a system for scoring RA and uses it to measure personality difference and to monitor the course of psychotherapy sessions. In studies using this scale, she has found that RA scores rise as people reveal more private and emotionally arousing facts about their lives. Additionally, RA measures taken when a person enters psychotherapy indicates how much he or she will benefit from this treatment. For example, RA measures were employed in a recent study designed to identify individuals most likely to be helped by brief dynamic psychotherapy (Horowitz, Rosenberg, & Kalehzan, under review). RA dimensions of clarity and specificity proved to be effective at discriminating between patients whose problems were more interpersonally oriented (and therefore better suited for dynamic treatment) from patients with less interpersonally based difficulties.[5]

There are some interesting conceptual and empirical parallels between investigations of the RA model and trauma-writing paradigm. Both RA and the inhibition research predict that psychologically beneficial insights occur when private, emotionally distressing memories are clearly articulated in language. Additionally, both perspectives contend that emotional release is required in order to bring undisclosed material to consciousness, and to thereby promote the mental reorganization that constitutes insight.

Empirical support for these models also overlap. For example, two of the dimensions on which RA is determined—specificity and

[5]According to Bucci, a measure of successful disclosure is how powerfully listeners are affected by it. If lucidity and compellingness are criteria for successful disclosure, then perhaps interchanges between victims and listeners are mutually beneficial. The victim serves as newscaster, whose compulsion to disclose harrowing events serves as forewarning to his or her community. For example, if I relay my earthquake story with clarity and feeling, my listeners will have the knowledge and motive to prepare for similar events. Additionally, if I need to relate my story repeatedly, the number of people who can profit from my experience will be multiplied. One can easily imagine how such a social psychodynamic would be of adaptive value.

clarity of speech—are comparable to the dimension of "organization" that Pennebaker relates to positive outcomes in his research (Pennebaker et al., 1988). Additionally, RA levels increase when individuals emotionally "let go." Bucci cites sample cases where referentially rich speech is accompanied by crying, and other displays of emotional distress, whereas referentially pallid speech corresponds to signs of emotional detachment. The concordances between RA research, and Pennebaker's inhibition studies, suggests that direct links between these lines of investigation be tested.

CONCLUSION

The British novelist E.M. Forster wrote that it is by the forming of connections—between past and present, ideals and reality, self and others—that people achieve serenity in a difficult and disruptive world (Forster, 1910). For trauma victims, the business of connection seems to be of vital importance. As we have seen in this chapter, traumas are, by nature, events that sever ties between personal experience and basic assumptions. They threaten the matrix of beliefs through which daily experience is made meaningful, by contradicting the premises that hold this network together. Other dislocations follow this basic rift. One is the effortful segregation of traumatic memory, leading to health-debilitating physiological stress; another is the social isolation brought on by victims' negative moods and morbid preoccupations.

However, by putting their experiences into language, trauma victims can begin the reconstructive process of trauma assimilation. The capacity of speech and writing to represent emotion—through metaphor, inflection, imagery, and other devices—permits articulation of traumas' private and seemingly ineffable qualities. At the same time, the linear structure of language restricts emotional flow to channels banked by the organizational rules of grammar. By evoking memories that carry emotional content, yet in a controlled and structured way, language gives victims stewardship over the course of traumatic assimilation. As a result, victims can experience themselves as authors, rather than as objects, of past traumas.

ACKNOWLEDGMENTS

The preparation of this chapter was made possible by National Science Foundation grant BNS 9001615. We thank Sven-Åke Christianson, Steve Cole, Albert Hastorf, Mardi Horowitz, Stephen

Reidbord, and Roxane Cohen Silver for their helpful advice and comments on an earlier draft of this chapter.

REFERENCES

American Psychriatric Association (1980). *Diagnostic and statistical manual of mental disorders* (3rd. ed.). Washington, DC: American Psychological Society.

Baumeister, R., & Tice, C. (1987). Emotion and self presentation. In R. Hogan & W. H. Jones (Eds.), *Perspectives in personality*. Greenwich, CT: JAI Press.

Blackburn, R. (1965). Emotionality, repressive sensitivity and maladjustment. *British Journal of Psychology, III*, 399–400.

Bower, G. (1981). Mood and memory. *American Psychologist, 36*, 129–148.

Bucci, W. (in press). Referential Activity measures and the Dual Code Model. In N. Miller, L. Luborsky, & J. Docherty (Eds.), *Dynamic psychotherapies: A clinicians' guide to doing treatment research*.

Christianson, S.-Å., & Nilsson, L.-G. (1984). Functional amnesia as induced by a psychological trauma. *Memory and Cognition, 12*, 142–155.

Christianson, S.-Å., & Nilsson, L.-G. (1989). Hysterical amnesia: A case of aversively motivated isolation in memory. In T. Archer & L.-G. Nilsson (Eds.), *Aversion, avoidance and anxiety* (pp. 289–310). Hillsdale, NJ: Lawrence Erlbaum Associates.

Coates, D., Wortman, C. B., & Abbey, A. (1979). Reactions to victims. In I. H. Frieze, D. Bar-Tal, & J. S. Carroll (Eds.), *New approaches to social problems*. San Francisco: Jossey-Bass.

Cox, T., & McCay, C. (1982). Psychosocial factors and psychophysiological mechanisms in the aetiology and development of cancers. *Social Science and Medicine, 16*, 381–396.

Davies, M. (1970). Blood pressure and personality. *Journal of Psychosomatic Research, 14*, 89–104.

Derogatis, L. R., Abeloff, M. D., & Melisaratos, N. (1979). Psychological coping mechanisms and survival time in metastatic breast cancer. *Journal of the American Medical Association, 242*, 1504–1508.

Easterbrook, J. A. (1959). The effect of emotion on cue utilization and the organization of behavior. *Psychological Review, 66*, 183–201.

Ellenhorn, T. (1989). *The symbolic transformation of subjective experience in discourse*. Unpublished doctoral dissertation. Adelphi University, Garden City, NY.

Epstein, S. (in press). The self-concept, the traumatic neurosis, and the structure of personality. In D. Ozer, J. M. Healy, Jr., & A. J. Steward (Eds.), *Perspectives in personality* (Vol. 3). Greenwich, CT: JAI Press.

Fiske, S., & Taylor, S. (1984). *Social cognition*. New York: Random House.

Folkman, S., & Lazarus, R. (1988). Coping as a mediator of emotion. *Journal of Personality and Social Psychology, 54*, 466–475.

Forster, E. M. (1910). *Howards end*. Cambridge: The Provost and Scholars of King's College.

Fowles, D. (1980). The three-arousal model: Implications of Gray's Two-Factor Theory for heart rate, electrodermal activity and psychotherapy. *Psychophysiology, 17*, 87–104.

Friedman, H. S., Hall, J. A., & Harris, M. J. (1985). Type A behavior, non-verbal expressive style and health. *Journal of Personality and Social Psychology, 48*, 1299–1315.

Gray, J. (1975). *Elements of a two-factor theory in learning*. New York: Academic Press.

Greenberg, J., Pyszczynski, T., Solomon, S., Rosenblatt, A., Veeder, M., Kirkland, S., & Lyon, D. (1990). Evidence for Terror Management Theory II: The effects of mortality salience on reactions to those who threaten or bolster cultural worldview. *Journal of Personality and Social Psychology, 58*, 308–318.

Greenberg, M. A., & Stone, D. A. (1990a). Writing about disclosed versus undisclosed trauma: Health and mood effects [Abstract]. *Health Psychology, 9*, 114–115.

Greenberg, M. A., & Stone, D. A. (1990b). *Writing about disclosed versus undisclosed trauma II*. Unpublished manuscript.

Greenwald, A. G. (1980). The totalitarian ego: Fabrication and revision of personal history. *The American Psychologist, 35*, 603–618.

Hansen, R., & Hansen, C. (1988). Repression of emotionally tagged memories: The architecture of less complex emotions. *Journal of Personality and Social Psychology, 55*, 811–818.

Hastie, R. (1981). Schematic priniciples in human memory. In E. T. Higgins, C. P. Herman, & M. P. Zanna (Eds.), *Social Cognition: The Ontario Symposium Vol. 1* (pp. 39–88). Hillsdale, NJ: Lawrence Erlbaum Associates.

Higgins, E. T. (1987). Self-discrepancy theory: A theory relating self and affect. *Psychological Review, 94*, 319–340.

Holahan, C., & Moos, R. (1990). Life stressors, resistance factors and improved psychological functioning: An extension of the stress resistance paradigm. *Journal of Personality and Social Psychology, 58*, 909–917.

Holmes, T. H., & Rahe, R. H. (1967). The Social Readjustment Rating Scale. *Journal of Psychosomatic Research, 52*, 946–955.

Horowitz, L. M., Rosenberg, S. E., & Kalehzan, B. M. (1990). *The capacity to describe other people clearly: A predictor of interpersonal problems and outcome in brief dynamic psychotherapy*. Submitted for review, Stanford University, Stanford, CA.

Horowitz, M. J. (1986). In *Stress response syndromes* (2nd Ed.). Northvale, NJ: Jason Aronson.

Janoff-Bulman, R. (1989). Assumptive worlds and the stress of traumatic events: Applications of the schema construct. *Social Cognition, 7*, 113–136.

Jensen, M. R. (1987). Psychobiological factors predicting the course of breast cancer. *Journal of Personality, 55*, 317–342.

Kissen, D. M. (1966). The significance of personality in lung cancer among men. *Annals of the New York Academy of Science, 125*, 820–826.

Lerner, M. J. (1980). *The belief in a just world*. New York: Plenum Press.

Leventhal, H. (1980). Toward a comprehensive theory of emotion. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (pp. 139–207). New York: Academic Press.

Linville, P. (1987). Self complexity as a buffer against stress-related illness and depression. *Journal of Personality and Social Psychology, 52*, 663–676.

Locke, K., & Horowitz, L. (1990). Satisfaction in interpersonal interactions as a function of similarity in level of dysphoria. *Journal of Personality and Social Psychology, 58*, 823–831.

Lord, C. G., Lepper, M. R., & Preston, E. (1984). Considering the opposite: A corrective strategy for social judgment. *Journal of Personality and Social Psychology, 47*, 1231–1243.

Luria, A. R. (1981). *Language and cognition*. New York: Wiley.

Mandler, G. (1964). The interruption of behavior. *Nebraska symposium on motivation* (pp. 163–220).

Marris, P. (1986). *Loss and change* (rev. ed.). London: Routledge & Kegan Paul.

Martin, L., & Tesser, A. (1989). Toward a motivational and structural theory of ruminative thought. In J. S. Uleman & J. A. Bargh (Eds.), *Unintended thought* (pp. 306–326). New York: Guilford.

McClelland, J., & Rumelhart, D. (1985). Distributed memory and the representation of general and specific information. *Journal of Experimental Psychology: General, 114*, 159–188.

Morrow, J., & Nolen-Hoeksema, S. (1990). Effect of responses to depression on the remediation of depressive affect. *Journal of Personality and Social Psychology, 58*, 519–527.

Murray, E., Lamnin, A., & Carver, C. (in press). Psychotherapy versus written confession: A study of cathartic phenomenon. *Journal of Social Issues*.

Neisser, U. (1976). *Cognition and reality*. San Francisco: W. H. Freeman.

Nell, V. (1988). In *Lost in a book: The psychology of reading for pleasure*. New Haven, CT: Yale University Press.

Paivio, A. (1971). *Imagery and verbal processes*. New York: Holt, Rinehart, & Winston.

Paivio, A. (1986). *Mental representations: A dual coding approach*. New York: Oxford University Press.

Pelletier, K. R., (1985). *Mind as healer, mind as slayer*. New York: Delacorte Press.

Pennebaker, J. W. (1985). Traumatic experience and psychosomatic disease: Exploring the roles of behavioral inhibition, obsession, and confiding. *Canadian Psychology, 26*, 82–95.

Pennebaker, J. W. (1989). Confession, inhibition and disease. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 22, pp. 211–244). New York: Academic Press.

Pennebaker, J. W., Barger, S., & Tiebout, J. (1989). Disclosure of traumas and health among Holocaust survivors. *Psychosomatic Medicine, 51*, 577–589.

Pennebaker, J. W., & Beall, S. K. (1986). Confronting a traumatic event: Toward an understanding of inhibition and disease. *Journal of Abnormal Psychology, 95*, 274–281.

Pennebaker, J. W., & Harber, K. D. (1990). *The psychological and health effects of the Loma Prieta earthquake*. Unpublished manuscript.

Pennebaker, J. W., Hughes, C., & O'Heeron, R. (1987). The psychophysiology of confession: Linking inhibitory and psychosomatic processes. *Journal of Personality and Social Psychology, 52*, 781–793.

Pennebaker, J. W., & Susman, J. (1988). Disclosure of trauma and psychosomatic processes. *Social Science and Medicine, 26*, 327–332.

Pennebaker, J. W., Colder, M., & Sharp, L. (1990). Accelerating the coping process. *Journal of Personality and Social Psychology, 58*, 528–537.

Pennebaker, J. W., Kiecolt-Glaser, J., & Glaser, R. (1988). Disclosure of traumas and immune function: Health implications for psychotherapy. *Journal of Consulting and Clinical Psychology, 56*, 239–245.

Pennebaker, J. W., & O'Heeron, R. (1984). Confiding in others and illness rate among spouses of suicide and accidental-death victims. *Journal of Abnormal Psychology, 93*, 473–476.

Plutchik, R. (1980). *Emotions: A psychoevolutionary synthesis*. New York: Harper & Row.

Robinson, J. A., & Hawpe, L. (1986). Narrative thinking as a heuristic process. In T. Sarbin (Ed.), *Narrative psychology: The storied nature of human conduct* (pp. 67-90). New York: Praeger.

Rosenblatt, A., Greenberg, J., Solomon, S., Pyszczynski, T., & Lyon, D. (1989). Evidence for Terror Management Theory I: The effects of mortality salience on reactions to those who violate or uphold cultural values. *Journal of Personality and Social Psychology, 57*, 681–690.

Ross, L., Lepper, M. R., & Hubbard, M. (1975). Perseverance in self-perception and social perception: Biased attributional processes in the debriefing paradigm. *Journal of Personality and Social Psychology, 32*, 880–892.

Rumelhart, D. A., & Ortony, A. (1977). The representation of knowledge in memory. In R. C. Anderson, R. J. Spiro, & W. E. Montague (Eds.), *Schooling and the acquisition of knowledge*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Sarbin, T. R. (1986). The narrative as root metaphore for psychology. In T. R. Sarbin (Ed.), *Narrative psychology: The storied nature of human conduct* (pp. 3–21). New York: Praeger.

Selye, H. (1976). *The stress of life*. New York: McGraw-Hill.

Shortt, J., & Pennebaker, J. W. (1990). *Talking versus hearing about the Holocaust experiences*. Unpublished manuscript.

Silver, R., Boon, C., & Stones, M. (1983). Searching for meaning in misfortune: Making sense of incest. *Journal of Social Issues, 39*, 81–102.

Silver, R. K., Wortman, C. B., & Crofton, C. V. (1990). Social support: An international view. In B. R. Sarason, & G. Pierce (Eds.), (p. 52). New York: Wiley & Sons.

Simon, H. (1967). Motivational and emotional controls of cognition. *Psychological Review, 74*, 29–39.

Smith, K. D. (under review). *Do the dispositionally sympathetic seek out or avoid sympathy-arousing situations?* University of Washington.

Snyder, M. L., Stephan, W., & Rosenfield,. D. (1978). Attributional egotism. In J. H. Harvey, W. Ickes, & R. Kidd (Eds.), *New directions in attribution research (Vol. 2)* pp. 91–117. Hillsdale, NJ: Lawrence Erlbaum Associates.

Spiegel, D. (1988). Dissociation and hypnosis in post-traumatic stress disorders. *Journal of Traumatic Stress, 1*, 17–33.

Spiegel, D., Bloom, J. H., Kraemer, H. C., & Gottheil, E. (1989). Effects of psychosocial treatment of patients with metastatic breast cancer. *Lancet, 2*, 888–891.

Stroebe, W., & Stroebe, M. S. (1988). *Bereavement and health: The psychological and physical consequences of partner loss*. New York: Cambridge University Press.

Sutton-Smith, B. (1986). Children's fiction making. In T. Sarbin (Ed.), *Narrative psychology: The storied nature of human conduct* (pp. 67–90). New York: Praeger.

Tait, R., & Silver, R. C. (1989). Coming to terms with major negative life events. In J. S. Uleman & J. A. Bargh (Eds.), *Unintended thought* (pp. 351–382). New York: Guilford.

Tetlock, P. (1983). Cognitive style and political ideology. *Journal of Personality and Social Psychology, 45*, 118–126.

Tulving, E. (1983). *Elements of episodic memory*. New York: Oxford University Pres.

Vitz, P. (1990). The use of stories in moral development: New psychological reasons for an old educational method. *American Psychologist, 45*, 709–720.

Wegner, D. M. (1989). *White bears and other unwanted thoughts*. New York: Viking Press.

Wegner, D., Shortt, J. W., Blake, A. W., & Page, M. S. (1990). The suppression of exciting thoughts. *Journal of Personality and Social Psychology, 58*, 409–418.

Weinberger, D. A., Schwartz, G. E., & Davidson, R. J. (1979). Low anxious, high anxious and repressive coping styles: Psychometric patterns and behavioral and physiological responses to stress. *Journal of Abnormal Psychology, 88*, 369–380.

Wortman, C. B., & Silver, R. C. (1987). Coping with irrevocable loss. In G. R. VandenBos & B. K. Bryant (Eds.), *Cataclysms, crises and catastrophes: Psychology in action (Master Lecture Series)*, (Vol. 6, pp. 189-235). Washington, DC: American Psychological Association.