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Understanding Post-trauma Cognitions and Beliefs

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Ashley¹ is a 23 year old African-American woman. When she was in her junior year of college, Ashley began dating Rodney, a handsome and charming man who was employed in the school's information technologies (IT) department. Rodney was kind and generous to Ashley when they first met, frequently walking her from one class to the other and making sure that she got to her car safely when she was on campus at night. As the relationship proceeded, Rodney became controlling, needing to know where Ashley was at all times, accusing her of infidelity, and wanting to limit her time with friends and family. Just as Ashley was considering breaking up with Rodney, she learned that she was pregnant. Raised with traditional values, Ashley felt that it was her duty to marry Rodney to provide a stable home for the baby. Within the first year of marriage, Rodney became verbally abusive, telling Ashley that she was fat and stupid and that no one else could love her. By the baby's first birthday, Rodney's abuse had spiraled into hitting, kicking, and threatening Ashley with a gun. At this point, Ashley packed herself and the baby and fled to her mother's home, three states away.

When Ashley sought mental health assistance, her primary complaint was PTSD symptoms, including intrusive thoughts about the abuse, flashbacks, avoidance of abuse-related cues, emotional numbing, difficulty concentrating, and a heightened startle response. In describing the intimate partner violence (IPV) that she had endured, her description was peppered with statements such as "I should have known better than to take up with him" and "Maybe the abuse occurred because of the way I acted." Moreover, Ashley noted "Men are not what they seem. I don't think I will ever trust again." Ashley understood that the PTSD symptoms were a result of IPV exposure but felt that they signified weakness and indicated that her life was destroyed.

Ashley's case exemplifies many of the cognitions and beliefs that characterize posttraumatic stress disorder (PTSD) following the experience of a trauma. Trauma can change people in many ways, including an impact on thoughts and beliefs that pervade the survivor's consciousness. In this chapter, we will begin with a brief review of current theoretical models of trauma and PTSD, with an eye towards examining how specific types of cognitions and beliefs may be associated with post-trauma recovery and its converse, the development of PTSD. Recognizing the key role that thoughts and beliefs play in the aftermath of a trauma, this chapter will discuss different forms of cognitions about the self and the world, with particular attention to how these thoughts influence emotion and behavior. Importantly, cognitions can be targeted with our current psychosocial treatments, as will be

1. This case represents a mixture of various clients whom the authors have seen in their clinical work with women who have experienced intimate partner violence. Any resemblance to a specific individual is purely coincidental.

discussed. As we will illustrate in this chapter, the field has made considerable progress in understanding the significant role that cognitions and beliefs play in the aftermath of trauma and progress in this domain has been facilitated by well-crafted theories. As noted in the next section, these theories arrive at a surprising degree of consensus regarding post-trauma thoughts and beliefs.

Theoretical Perspectives on Trauma-Related Cognitions and Beliefs

Even before the introduction of PTSD into the Diagnostic and Statistical Manual (DSM-III, American Psychiatric Association, 1980), negative thoughts and beliefs had been discussed in theoretical models of trauma response. As noted in this section, the negative cognitions and beliefs associated with trauma center around a handful of themes, representing an element of commonality across theories. In this section, a collection of influential trauma models are briefly reviewed, highlighting shared cognitive processes in these accounts.

Schema-based theories. Early stress response models focused primarily on changes in schematic knowledge or belief structures. Within this literature, schemas pertain to cognitive structures whose purpose is to organize knowledge and beliefs regarding some aspect of the self or the world. Information consistent with pre-existing schema is easily incorporated; processing of information that is incongruent with part of existing schemata is believed to be more effortful.

Horowitz' (1986) stress response model is a prototype for schema models of trauma. He proposed that exposure to stressful events is marked by an initial emotional response, followed by a period of active processing in which the individual attempts to resolve discrepancies between the trauma experience and pre-existing beliefs. Horowitz proposes that active processing of traumatic events is marked by alternating phases of intrusion and denial. Intrusions are characterized by unproductive rumination about the event and generalization of the consequences of the experience to more broad life domains. Ashley's perception that her PTSD symptoms signaled weakness is an example of this generalization. In response to intrusive symptoms, the stress response model proposes a corresponding denial phase, characterized by emotional

numbing, withdrawal, and behavioral constriction. Horowitz' (1986) stress-response model predicts that alternating intrusion and denial phases will continue until the realities of the trauma experience and schematic structures are congruent. Resolution of these discrepancies is believed to be gradual, as it requires incorporation of new information with pre-existing beliefs and thoughts. Individuals with particularly rigid pre-trauma beliefs are postulated to need more time for this incorporation process. Horowitz acknowledges that traumatic experiences may not necessarily be incongruent with pre-existing schema for some people. In particular, individuals may report pre-existing negative thoughts that map onto those that typically follow a traumatic experience; in this instance, Horowitz suggests that these pre-existing thoughts serve as a resiliency factor. More often, however, negative pre-existing schemas are expected to impede adaptive completion and set the stage for the development of PTSD.

Other schema-based models have expanded stress-response theory by specifying specific belief structures impacted by trauma and elaborating on processes involved in the reconciliation of traumatic experiences and these pre-existing beliefs (Epstein, 1991; Janoff-Bulman, 1992; McCann & Pearlman, 1990). One of the more influential authors in this literature, Janoff-Bulman (1992) proposes that trauma violates fundamental beliefs about the benevolence and just-ness of the world, the meaningfulness of life, and the worthiness of one's self. An example of this might include a rape victim who states, "I thought that my college campus was safe" or a victim of a traumatic crime who asks, "Why me? What have I done to deserve this?". Survivors are forced to assimilate trauma-related information with previous held just-world beliefs and may arrive at a dysfunctional conclusion such as, "I was to blame for this event." Ashley's sense that she was somehow responsible for Rodney's abuse exemplifies this type of conclusion. Alternatively, the previously held schema can be modified to incorporate new experiences in a more adaptive fashion (e.g., "Sometimes bad things happen to good people"). McCann and Pearlman (1990) elaborated on this theory by extending the scope of themes that are affected by a trauma to include disruptions in beliefs about trust, power, safety, esteem, and intimacy. Elaborating on outcomes specified by these other schema

models, Resick and Schnicke (1992) postulate that some individuals may experience overaccommodation following trauma exposure. Overaccommodation is unique to trauma survivors in that it involves a radical change in belief structures. In particular, beliefs stemming from the trauma are generalized from specific events (e.g., "Rodney can't be trusted") to broad situations (e.g., "Nobody can be trusted").

Emotional Processing Theory. Emotional processing theory (Foa, Steketee, & Rothbaum, 1989) attributes post-trauma symptoms to pervasive fear structures that develop following trauma. For PTSD, this network is composed of information about the feared stimuli, information about the verbal, physiological, and behavioral responses to these stimuli, and interpretive information regarding the meaning of these stimuli and responses. The magnitude of trauma exposure is related to the intensity of responding and the accessibility of this fear structure. Meaning elements within the fear structure may pertain to beliefs involving the probability of future danger ("It could happen again") and negative expectations regarding the consequences of encountering the feared stimuli ("Returning to the location will be awful" or "My anxiety will become overwhelming").

Consistent with schema-based theories, Foa and colleagues (Foa & Riggs, 1993; Foa & Rothbaum, 1998) propose that violations of basic assumptions of safety contribute to the pervasiveness of the fear structure. Schematic representations of the self as entirely incompetent and the world as completely dangerous are proposed to maintain associations within the fear network and perpetuate PTSD symptomatology. For example, Ashley felt that men in general were untrustworthy and she must protect herself against ever being hurt again by an intimate partner. Like Horowitz's model, emotional processing theory suggests that individuals with more rigid pre-trauma beliefs (e.g., "Bad things only happen to bad people.") may be at increased risk for developing PTSD when these beliefs are violated. Additionally, interpretation of post-trauma symptoms as evidence of weakness may contribute to or reinforce representations of the self as incompetent. Perceptions of others as blaming or unhelpful also are proposed to contribute to global beliefs of the world as dangerous and hostile within emotional processing theory.

Dual Representation Theory. Using cognitive and neuroscience models, Brewin, Dalgleish, and Joseph (1996) proposed the Dual Representation Theory (DRT), which postulates that memories of the traumatic event are represented in two neurocognitive systems. The first representation involves the conscious experience of the trauma (termed verbally accessible memory (VAM)), which contains autobiographical information about sensory features of the situation, the individual's emotional and physiological reactions, and their interpretations of the event. Information contained within the VAM is readily accessible and can be deliberately accessed and edited. The situationally accessible memory (SAM) system, by contrast, contains information restricted to sensory, physiological, and motor aspects of the trauma, which are triggered automatically when an individual encounters a situation with sensory elements consistent with the traumatic event.

Much like schema-based theories, DRT proposes that trauma violates basic assumptions resulting in perceptions of the world as uncontrollable and unpredictable. Memories of the event as well as attributions regarding the cause and meaning of the traumatic experience are represented within the VAM. By contrast, conditioned emotional reactions and associated stimulus-response elements proposed by emotional processing theory are believed to be represented in the SAM. DRT proposes that successful resolution of trauma exposure requires modification of elements contained in both the VAM and the SAM. Much like other theories, DRT postulates that this cognitive processing can be prolonged for some people, particularly in cases where there is a large discrepancy between the pre-existing beliefs and the trauma experience. DRT also proposes that avoidance, a hallmark symptom of PTSD, can result in premature inhibition of processing. This theory postulates that premature inhibition is characterized by impaired memory for the trauma, anxious avoidance of trauma cues, and somatization.

Cognitive Theory. Within cognitive theory, negative cognitions play a central role in the development and maintenance of posttrauma symptomatology. For example, Ehlers and Clark (2000) speculate that individuals who develop PTSD experience a pervasive sense of current threat relative to

those who experience a successful resolution of trauma. Similar to previous models, the locus of threat can be external (e.g., "the world is full of dangerous people") or internal (e.g., "I am not good at taking care of myself"). Negative appraisals of the traumatic event and its aftermath are one mechanism proposed to contribute to ongoing perceptions of threat.

Specific cognitive appraisals occurring throughout the course of the traumatic experience and recovery are specified as potential contributors to PTSD symptoms. Negative appraisals of the traumatic event may be overgeneralized, contributing to inflated perceptions of danger across a range of life domains, as previously exemplified by Ashley's perceptions of men. Similar to previous work by Foa and colleagues (1989), negative appraisals also are believed to reinforce beliefs that the world is a dangerous place, that the probability of future victimization is high, and that the individual is incapable of handling the implications of the event. Ehlers and Clark (2000) also emphasize that negative appraisals regarding how one felt or responded during the event may result in generalized negative beliefs about the self (e.g., "I didn't try to escape, which means I wanted it to happen").

Like other models reviewed in this section, cognitive models posit that negative appraisals of the consequences of trauma may contribute to the maintenance of psychopathology. Normative reactions to trauma (e.g., nightmares, intrusive memories, exaggerated startle) may be interpreted as evidence that one is going crazy or permanently damaged, perpetuating symptomatology by producing negative emotions and promoting dysfunctional coping strategies. Additionally, appraisals of others as unresponsive or rejecting reinforce beliefs of the world as hostile. Withdrawal from support networks as a consequence of these appraisals may prevent the individual from utilizing others to assist in processing of the event. Finally, appraisal of functional consequences of the trauma (e.g., changes in health, finances, employment) as evidence of permanent change or ruin, contributes directly to distress and pathology. Ashley's belief that her life had been destroyed by the IPV is an example of this type of thinking.

Ehlers and Clark (2000) also postulate that specific appraisals are associated with specific emotion states: perceptions of danger contribute to fear, perceptions of responsibility contribute to guilt, and perceptions of loss contribute to sadness. The negative emotions that these appraisals produce perpetuate additional negative appraisals by biasing memory and interpretation of events. In this way, maladaptive beliefs and emotions form a self-sustaining, feed-forward cycle that perpetuates perceptions of threat, negative emotion, and PTSD symptomatology.

Ehlers and Clark's (2000) model also introduces a novel construct hypothesized to contribute to negative beliefs. Mental defeat refers to the perceived loss of autonomy and control during the traumatic experience and has been associated with chronic PTSD and poor treatment response. Ehlers and Clark propose that individuals who experience mental defeat are more likely to experience negative beliefs about the self and to view themselves as permanently damaged, as exemplified by the case of Ashley.

Summary: As noted in this brief review, although each type of theory highlights distinct psychological processes in its account of the etiology and maintenance of PTSD, there are commonalities across these accounts. In particular, theoretical models of PTSD identify the following thoughts and beliefs as relevant:

1. Negative thoughts about the self, which can include perceptions of incompetence or self-blame,
2. Negative thoughts about the world, which can include perceptions that danger lurks everywhere and that situations previously believed to be benign are unjust and threatening,
3. Negative beliefs about the meaning of posttrauma symptoms, including perceptions that one has "gone crazy" or been permanently changed, and
4. Perceptions of loss of control and autonomy during the trauma can set the stage for more generalized perceptions of helplessness.

As will be reviewed in the next section, these thoughts can take a variety of forms, which has important implications for understanding and treating individuals with PTSD.

Understanding the nature of negative thoughts and beliefs

Although general categories of negative thoughts and beliefs have been highlighted by various theories of PTSD, it is notable that these have been specified further as the field has developed. In this section, we will examine the specific nature of negative thoughts and beliefs, anchored by specific assessment devices. Discussion of instruments for the measurement of dysfunctional cognitions and beliefs is intended to facilitate empirically-supported clinical practice. As well, we will also examine the links between negative thoughts, negative emotions, and behaviors, as illustrated by the case of Ashley.

When working with a trauma survivor, it is important to get a detailed sense of their negative thoughts about themselves. This information can help you as a therapist to understand the daily presence of trauma symptoms in your patient's life, as well as individualize intervention. As well, some forms of cognitive therapy, such as Cognitive Processing Therapy (e.g., Resick & Schnicke, 1992) require a careful understanding of the patient's dysfunctional cognitions, so a thorough pre-treatment assessment is necessary. However, it is important to recognize that trauma survivors typically may be hesitant to articulate these thoughts. In Ashley's case, she was reluctant to acknowledge that she felt weak and useless, particularly as this message echoed Rodney's verbal abuse. Somehow, by articulating these negative thoughts, Ashley felt that it meant that Rodney's assessment of her was true. The use of self-report scales can ease the discomfort that some trauma patients experience when asked directly about their negative thoughts about themselves.

Negative thoughts about the self: Incompetence and lack of control. Negative cognitions about one's incompetency and lack of self-control have played a salient role in examination of post-trauma functioning. Items reflecting negative thoughts about the self have been included in several self-report scales, including the Posttraumatic Cognitions Inventory (PTCI; Foa, Ehlers, Clark, Tolin, & Orsillo, 1999) and the World Assumption Scale (WAS; Janoff-Bulman, 1996). Items on the PTCI that assess negative thoughts about the self include "I am a weak person" and "If I think about the trauma, I will not be able to

handle it." These thoughts are correlated with PTSD, anxiety, and depression, suggesting that this particular type of negative cognition is associated with a range of negative emotions (Beck, Coffey, Palyo, Gudmundsdottir, Miller, & Colder, 2004). The WAS also assesses negative thoughts about the self, focusing on low self-worth, including items such as "I have a low opinion of myself" and "I have reason to be ashamed of my personal character" (Janoff-Bulman, 1996). Although not utilized as heavily in research, the content of these items seem to overlap with measures of low self-esteem and may be particularly useful to include during therapy with trauma patients who are struggling with generalized perceptions of incompetence.

A related aspect of negative cognitions involves mental defeat, which Ehlers and Clark (2000) suggest is a significant predictor of poor post-trauma functioning. Assessment efforts in this domain are not quite as developed, although this research team has developed a 29 item questionnaire that captures mental defeat (e.g., Dunmore, Clark, & Ehlers, 2001) and includes items such as "I mentally gave up". Clinically, this arena seems more difficult to assess than specific cognitive content (e.g., specific negative thoughts about one's incompetence), particularly in patients who lack insight or psychological sophistication. Given the potentially salient role of mental defeat (see section titled "Links with PTSD"), it would be helpful to have clinically-informed assessment instruments of this cognitive process.

When considering thoughts of incompetence and lack of control, it is notable that in our clinical experience, these thoughts can contribute in other ways to the radiating impact of trauma, as the survivor may not feel capable of accomplishing the many tasks involved in recovering from a traumatic experience. In Ashley's case, these tasks included locating adequate housing, securing a restraining order against Rodney, deciding whether to begin divorce proceedings, negotiating child custody, gaining employment, and re-establishing herself socially within her new environment. Thoughts about incompetence and lack of control were a clear impediment to Ashley when she considered these tasks. Therapeutically, these thoughts stood in the way of formulating concrete plans for each task, as well as implementing these plans.

Irrespective of the intervention selected to use with a given patient, addressing the motivational consequences of a steady stream of negative thoughts of incompetence and lack of control is a primary clinical task.

Negative thoughts about the self: Self-blame. Negative thoughts about the self can extend to perceptions of responsibility and self-blame. Importantly, this cognitive content is assessed by many scales in this domain. The PTCI for example has a self-blame scale, which includes items such as, "The event happened because of the way I acted." A related scale which assesses self-blame is the Personal Beliefs and Reactions Scale (PBRS; Resick, Schnicke, & Markway, 1991) which was developed to examine distorted perceptions of responsibility among women who have experienced sexual assault. The PBRS correlates significantly and in the anticipated direction with coping measures (e.g., Mechanic & Resick, 1993). As expected, the self-blame subscale of the PRBS correlates significantly with PTSD severity (e.g., Owens & Chard, 2001) and the scale is able to differentiate women with PTSD from those without (Mechanic & Resick, 1993).

Working definitions of self-blame are conceptually somewhat murky in the larger domain of psychological assessment (e.g., Tangney & Dearing, 2002). Within the trauma arena however, self-blame and guilt have been conceptualized as sharing overlapping features, as discussed cogently by Kubany et al. (1996). For example, the Trauma-related Guilt Inventory (TRGI; Kubany et al., 1996) includes a guilt cognitions subscale. This assesses hindsight bias (the belief that one should have known what would happen, as exemplified by Ashley's belief that "I should have known better than to take up with him"), wrongdoing (a violation of personal standards), and lack of justification for actions taken or not taken. Within Kubany's conceptualization, guilt is clearly associated with perceptions of responsibility and self-blame, as indexed by items such as "I was responsible for causing what happened." Clinically, these cognitions often echo a distorted sense of responsibility. For example, Ashley felt that by not separating

from Rodney when he first became controlling and domineering, she was responsible for the abuse. While this belief is not rational, it clearly illustrates self-blame within an individual with PTSD.

Distorted perceptions of responsibility could seemingly drive different emotions and behaviors, relative to other types of negative cognitions and beliefs. In addition to feelings of guilt, one could speculate that self-blame would be associated with depression, reduced self-esteem, social anxiety, and perhaps feelings of shame. Data from Vietnam-era combat veterans and women who had experienced IPV supports these associations (Kubany et al., 1996). It is important to note that conceptualization and assessment of some of the 'moral' emotions (shame, guilt, pride) has been critiqued for construct overlap (e.g., Rizvi, 2010). From a clinical perspective, it remains to be determined if these emotions show differential associations with specific dysfunctional cognitions in trauma survivors. Given work on other types of negative thoughts reviewed above, it seems wise to not expect a tight one-to-one correspondence between dysfunctional thoughts and specific emotions, contrary to predictions from cognitive theory.

In considering thoughts of self-blame, Ashley clearly believed that she was responsible for the abuse and violence. In particular, she believed that the abuse happened because of something that she had done or said. Paradoxically, these cognitions may have influenced her perceptions of the nature and severity of the spousal abuse and kept her romantically involved with Rodney. As with thoughts about incompetence and lack of control, specific forms of cognitive therapy can be helpful in addressing this type of cognitive distortion.

Negative thoughts about the world: Danger. As noted in the review of theoretical perspectives, post-trauma thoughts and beliefs can be focused externally and include perceptions and beliefs about the dangerousness of the world. These thoughts can be evaluated using the PTCI which contains a subscale assessing negative thoughts about the world (e.g., "The world is a dangerous place" and "You can never know who will harm you."). These thoughts also have been shown to correlate with PTSD, anxiety, and depression (Beck et al., 2004) which suggests that they are not unique to any specific negative emotion.

Clinically, it seems intuitive that a generalized sense of threat and danger could be associated with a number of negative emotions (e.g., fear, anger, depression) and negative coping behaviors (e.g., social withdrawal, insistence on carrying a weapon when one leaves home). Ashley carried negative beliefs about the dangerousness of the world, particularly focused on men. She believed that all men were inherently untrustworthy and capable of violence. These beliefs had generalized to some extent and extended to most strangers (irrespective of sex). Guided by these beliefs, Ashley avoided contact with people she did not know. Our clinical conceptualization of this case suggested that negative beliefs about danger and threat motivated Ashley's avoidance behavior, which then functioned as a maintaining factor for PTSD symptomatology.

Another facet of negative thoughts about dangerousness can be found on the WAS. One dimension of this scale focuses on the benevolence of the world and contains items such as, "People are basically kind and helpful." Within the WAS, endorsement of beliefs about benevolence of the world is negatively associated with endorsement of beliefs about poor self control in the prevention of bad events. This suggests an important link between negative thoughts about the world and negative thoughts about the self, as those individuals who acknowledge that the world is potentially harmful are more likely to also acknowledge that they have little or no control over whether harmful things happen. Our clinical experience suggests that when these two types of cognitive distortions occur together, patients with PTSD may be characterized by helplessness, another issue which would appear to be a primary clinical task.

Negative thoughts about the world: Unjust world. Following trauma exposure, negative thoughts about the world can extend beyond thoughts of threat and danger and include thoughts about unjustness. The WAS is the measure that most directly assesses perceptions of justness. Items in this domain include "Generally, people deserve what they get in this world" and "People will experience good fortune if they themselves are good." Some authors have discussed how expressions of hostility and antagonism may serve as basic survival skills for individuals who view the world as unjust (Chemtob,

Novaco, Hamada, Gross, & Smith, 1997). In particular, when faced with a world that seems unfair and somewhat random, Chemtob and colleagues (1997) examined how hostility and anger are justified by individuals with PTSD as appropriate forms of self-protection. Clinically, it is notable that excessive irritability can be the most notable emotion expressed by an individual with PTSD; if this occurs, it would be worthwhile to explore the patient's perceptions of whether the world is just. Importantly, perceptions of unjustness do not always show significant associations with post-trauma symptomatology (e.g., Owens & Chard, 2001), suggesting that they may not be a unique signifier of the disorder.

In considering the clinical presentation of these types of negative thoughts, Ashley endorsed beliefs in a just world which had been violated by her experience with Rodney. She vacillated between feeling that she had experienced IPV because she was not a good person and feeling angry about what Rodney had done to her, stating "He was so unfair to me." From a clinical perspective, Ashley's feelings of being wronged by Rodney seemed to motivate adaptive coping. As an example, these thoughts appear to help her take specific positive actions, such as obtaining a restraining order and deciding to file for divorce. In contrast, her thoughts about being a bad person were associated with depression, inactivity, and related negative thoughts about her own incompetence and responsibility for the abuse.

In sum, negative thoughts and beliefs can take many forms following the experience of trauma. As noted in this review, these thoughts and beliefs do not necessarily map onto specific negative emotions in a one-to-one fashion. Contrary to theoretical predictions, these cognitions seem to be associated with a variety of negative emotions (anxiety, depression, anger, shame, guilt). Importantly, dysfunctional cognitions seemingly can motivate both adaptive and maladaptive behaviors, such as behavioral activation or social withdrawal. As clinicians, we should seek to understand the functional relationship between thoughts, emotions, and behaviors. For example, Ashley felt like she had somehow caused the abuse. This belief was associated with feelings of both shame and guilt, which contributed to her social withdrawal. Related literature has documented that social withdrawal is associated with increased depressed mood,

which further compounded Ashley's sense of responsibility for the abuse. Assessment of dysfunctional cognitions can be difficult and fortunately, the field has developed sound measures which allow us clinically to capture post-trauma cognitions and beliefs in a more systematic and standard fashion. In addition to their clinical assets, these measures have greatly facilitated research on risk and resiliency following trauma, as reviewed in the next section of this chapter.

How do negative beliefs and cognitions influence risk and resiliency after trauma?

Although negative beliefs and cognitions have been well-documented among individuals with PTSD, we are beginning to understand more clearly how these thought processes influence risk and resiliency following trauma. This section will examine the predictive power of negative cognitions in longitudinal studies and explore factors that influence this trajectory, with discussion of clinical implications for prevention and intervention. Because cognitions are modifiable, this domain represents a prime target for our efforts, in an effort to reduce risk or heighten resiliency in the immediate aftermath of trauma.

Links with PTSD. Recognition of the importance of negative thoughts has motivated a collection of prospective longitudinal studies. In these studies, survivors are assessed in the initial days or weeks following trauma and then re-assessed six to twelve months later, to determine which variables predict the development of PTSD. As summarized by Ehlers and Clark (2006), negative beliefs about the self and the world shortly after the trauma have been shown to correlate significantly with PTSD severity often assessed six to twelve months later, such that higher levels of negative beliefs at time 1 are associated with higher levels of PTSD symptomatology at time 2. Importantly, these associations remain significant when controlling statistically for other risk factors (Dunmore, Clark, & Ehlers, 2001). These studies strongly suggest that negative thoughts and beliefs play an important role in maintaining PTSD and exert their influence separately from other risk factors. As noted in Ashley's case, negative thoughts and beliefs do not fade in their influence over time and may seem clinically interwoven with PTSD symptoms.

Moreover, other aspects of negative cognitions have been examined within this literature. For example, negative interpretations of immediate post-trauma PTSD symptoms at time 1 (e.g., "These intrusions mean that I really am losing my mind") showed large and significant correlations with PTSD status at time 2 (Ehlers & Clark, 2006). As well, negative interpretations of others' responses after trauma and perceptions that one has been permanently changed by trauma have both been shown to be significantly associated with PTSD severity. These studies have involved adult survivors of assault and serious motor vehicle accidents (MVA's), demonstrating that these findings are not unique to any one type of extreme event. Ashley's negative cognitions illustrate the long-lasting nature of these thoughts, as she had been separated from Rodney for approximately six months at the time she sought help. Clinically, it is somewhat baffling to understand how a patient can maintain irrational beliefs (e.g., "maybe the abuse occurred because of the way I acted") after they are removed from a traumatic relationship. The reader is reminded that trauma also shapes a person's attention and memory (e.g., Ehlers, Ehling, & Kleim, in press), such that they may process information in a fashion that maintains negative thoughts and beliefs.

In considering risk and resiliency, risk factors for the development of PTSD appear to differ somewhat from risk factors for the maintenance of PTSD (Vogt, King, & King, 2007). This also holds true for cognitions and beliefs. Early efforts to differentiate etiological versus maintaining factors tended to compare variables that predict PTSD symptomatology in the immediate aftermath of the trauma with those that predict symptoms months later. For example, Dunmore, Clark, and Ehlers (2001) reported that specific cognitions during trauma exposure (e.g., "I am completely overwhelmed" [mental defeat]) appear to predict PTSD symptoms in the immediate aftermath of a trauma. In contrast, negative appraisals of initial symptoms and negative perceptions of others' reactions contributed to the maintenance of PTSD symptoms at 9 months in this sample of assault victims. This pattern is reflected in the case of Ashley, who continued to focus on distorted perceptions of responsibility and self-blame in the months after she fled from Rodney. This is an important finding, as it suggests that interventions that are designed to be used

immediately after a trauma need to target mental defeat while treatments for individuals with diagnosed PTSD need to consider a broader spectrum of negative thoughts about the self and the world, in order to address cognitive factors that maintain the disorder.

Links with anxiety and quality of life. The focus on negative beliefs and thoughts in the trauma literature has included study of their role in anxiety and reduced quality of life. For example, Grills-Taquechel, Littleton, and Axsom (2011) examined women who had been exposed to the Virginia Tech campus shootings. High self-worth beliefs measured pre-trauma (using the WAS) served as a protective factor against anxiety and reductions in quality of life following the trauma. In contrast, pre-trauma beliefs that one had no control over outcomes and that life events are random appeared to be risk factors in that high self-controllability scores (pre-trauma) interacted with high levels of trauma exposure to predict anxiety. Likewise, strong beliefs in the randomness of events (pre-trauma) interacted with high levels of trauma exposure to predict anxiety. Taken together, these data indicate that negative thoughts, especially thoughts about one's lack of control and the randomness of life, are risk factors for anxiety and reductions in life quality following trauma.

Links with co-morbidity. Because co-morbid disorders are normative among individuals with PTSD (e.g., Brady, Killeen, Brewerton, & Lucerini, 2000), it is important to determine if negative beliefs and cognitions are specific to PTSD. Moreover, because the preceding section suggests that negative thoughts can influence the development of anxiety after trauma, it is important to examine how specific these thoughts are with respect to their emotional consequences. For example, dysfunctional cognitions could be reflective of general distress and predict many different psychiatric conditions (e.g., depression, PTSD). Ehrling, Ehlers, and Glucksman (2008) examined this question in a study of motor vehicle accident (MVA) survivors, who were assessed in the emergency room following their accident, as well as four times in the six months afterward. These authors were interested in whether specific negative cognitions predicted PTSD, depression, and travel phobia or instead, whether negative cognitions were not disorder-

specific. Analyses indicated that specific cognitive variables predicted the severity of subsequent PTSD, in particular negative thoughts about the self, rumination about the trauma, and efforts to suppress thoughts about the trauma. Specific cognitive variables also predicted depression, particularly self-devaluation and depressive ruminations. Cognitive variables were less unique in the prediction of travel phobia. It is important to note that most predictors were disorder-specific, as this suggests that specific kinds of negative thoughts and beliefs predict two different forms of psychopathology that are common in the aftermath of a trauma (PTSD and depression). Clearly, if we are to design early intervention programs to be delivered in the immediate aftermath of a trauma, it seems important to target the specific negative thoughts that set the stage for PTSD and depression.

Links with coping strategies. Although understanding the predictive role of negative beliefs and cognitions following trauma is important, it is equally important to consider how these processes effect coping strategies. Ehlers and Steil (1995) and Steil and Ehlers (2000) have hypothesized several propositions linking negative cognitions with dysfunctional coping strategies, each of which can heighten the risk for developing chronic PTSD. Ehlers and Steil (1995) proposed that negative idiosyncratic interpretations of intrusion symptoms maintained PTSD through two pathways. First, these dysfunctional interpretations are distressing and this contributes to heightened physiological arousal. Second, these interpretations motivate both cognitive and behavioral avoidance, which block efforts to emotionally process the traumatic event and prevent reduction in distress to trauma-related cues. Steil and Ehlers (2000) subsequently elaborated this model, highlighting how thought suppression, rumination, and distraction are likely to serve as cognitive avoidance strategies and act in concert with behavioral avoidance. In two cross-sectional studies with MVA survivors, these authors examined this model, particularly the dysfunctional meaning that participants ascribed to their intrusions, the amount of distress produced by the intrusions, the degree of avoidance to reminders of the accident that was reported, and how often rumination, thought suppression, and distraction were used to manage post-trauma intrusions. Consistent with prediction, if

intrusions were interpreted to indicate mental illness, incompetence, a permanent negative personality change, or a sign of impending threat, greater distress was reported. These types of negative beliefs and thoughts were associated with dysfunctional coping strategies, in particular thought suppression, rumination, distraction, and behavioral avoidance of trauma cues. Ironically, at least one of these coping strategies (thought suppression) can increase the actual occurrence of intrusive thoughts (e.g., Shipherd & Beck, 1999). Not surprisingly, increased use of avoidance strategies was associated with increased PTSD severity. These studies document that negative thoughts act in concert with negative coping strategies, in determining an individual's psychological state following trauma. Although intuitive, the functional link between negative thoughts and dysfunctional coping is important, particularly in considering interventions for trauma survivors.

Of equal importance are coping strategies that buffer an individual from symptomatology. Bennett, Beck, and Clapp (2009) explored a range of thought control strategies, including distraction, worry, self-punishment, social control (e.g., talking to a friend about one's intrusive thoughts), and reappraisal (e.g., re-evaluating the meaning of the thought). This study examined whether thought control strategies intermediated the relationship between PTSD and dysfunctional cognitions in MVA survivors. Increased levels of PTSD were associated with greater use of worry and self-punishment as a means to control negative thoughts. In turn, higher levels of worry and self-punishment were associated with greater severity of dysfunctional thoughts. Distraction and social control emerged as positive cognitive coping strategies; higher levels of these thought control strategies were associated with lower levels of PTSD and lower levels of dysfunctional thoughts. Reappraisal failed to show a significant intermediary association between PTSD and dysfunctional cognitions. In considering these findings, it is notable that distraction has been reported by other authors to be a negative approach to coping (e.g., Steil & Ehlers, 2000). Collectively, these studies suggest that thought suppression, rumination, worry, avoidance, and self-punishment serve as dysfunctional methods for coping with negative thoughts. In contrast, positive social contact appears to

serve as a positive method, much as discussed in Chapter 13 (this volume). As noted, many preventative interventions incorporate psychoeducation about the potential effects of these coping strategies, in an effort to reduce the likelihood of on-going distress and the development of PTSD in the early days following a trauma. Clinicians working with individuals diagnosed with PTSD can assess the presence of negative thoughts and how individuals are currently coping with these cognitions. Prior to beginning exposure or other forms of therapy, it may be useful to ask the patient to seek greater social support and to try to cease active thought suppression, rumination, worry, and self-punishment.

Links with interpersonal functioning. In considering other possible influences to trauma outcomes, social support typically emerges as an important predictor (e.g., Brewin, Andrews, & Valentine, 2000; Ozer, Best, Lipsey, & Weiss, 2003). Ashley's case illustrates how the lack of social support can contribute to increased risk following trauma. Because Rodney isolated her from friends and family, Ashley was left without support from others. As noted in the previous section, positive social support appears to play an adaptive role in reducing negative thoughts about the self and the world. Likewise, negative support easily can be postulated to strengthen negative beliefs about oneself and the world. To date, one investigation has focused on the role of dysfunctional cognitions in understanding the association between functioning within one's romantic relationship and the maintenance of PTSD symptoms (Robinaugh et al., in press). The sample included individuals who had experienced a serious MVA that involved physical injury. Dysfunctional cognitions (about the self, the world, and self-blame) significantly accounted for the association between perceived support from a romantic partner four weeks following the MVA and the persistence of PTSD symptoms three months later. Although actual observation of the partner's behavior was missing from this study, it is salient to note that negative thoughts appear to influence a person's perception of the extent and quality of support offered by their significant other.

Summary: Risk and resilience. In general, the studies in this section illustrate the radiating impact that dysfunctional cognitions exert in the aftermath of trauma exposure. In particular, negative

thoughts and beliefs are associated with the development of PTSD symptoms, anxiety, and co-morbid disorders, reductions in perceived quality of life, and influence perceptions of one's romantic partner. Importantly, how people cope with negative thoughts and beliefs can alter the effect of these thoughts. Although we are not yet able to determine empirically if negative thoughts are cause or corollary to these outcomes, it is salient to note that negative thoughts represent a potential target for psychoeducation in the early days following a trauma, in an effort to target individuals who are at-risk for negative mental health outcomes.

One might also ask how negative cognitions interact with other risk factors that have been empirically identified, particularly pre-trauma variables (e.g., Brewin, et al., 2000; Ozer, et al. 2003). Although we, as a field, have considerable evidence to support the role of factors such as female gender, minority race, low socioeconomic status, and previous exposure to trauma or adversity as risk factors for the development of PTSD, we have yet to examine how these more static factors interact with negative thoughts to enhance risk for PTSD. One could speculate, for example, that exposure to previous traumatic events could prime the belief "The world is a dangerous place" or "I am not able to take care of myself." Subsequent trauma conceivably could confirm and strengthen these beliefs. To date, these kinds of speculations have not been examined, although empirical work of this sort would be very useful in developing interventions for at-risk individuals. It is only when we have a deeper understanding of the operative processes behind pre-trauma variables that prevention and early intervention efforts can advance efficiently (Kazdin & Blase, 2011). In this context, it would seem useful to consider outcomes other than PTSD, including posttraumatic growth (Calhoun & Tedeschi, 2006) and resilience (Bonanno, 2004).

Implications for change efforts

Negative cognitions and beliefs have been clearly linked with poor mental health outcomes following a trauma, in particular PTSD. At present, research suggests that these thoughts can serve as a target for change efforts, in particular within prevention efforts for individuals who have been recently

exposed to a trauma and within treatment for individuals with diagnosed PTSD. This section will briefly discuss the implications of our current knowledge about negative thoughts and beliefs for these change efforts.

Prevention and early intervention. As reviewed by Au, Silva, Delaney, and Litz (in press), a number of prevention and early intervention programs have been designed and evaluated, including various approaches to psychological debriefing (PD), psychological first aid, psychoeducation, and various applications of cognitive behavioral therapy (CBT). Although a detailed review of these programs is beyond the scope of the current chapter, it is important to recognize that many of these programs, with the exception of some forms of PD, include provision of information on psychological and physiological stress reactions, healthy ways of coping, and maladaptive coping responses to avoid or monitor. Discussion of negative thoughts and beliefs are a core component of this information, which is particularly important in light of research concerning the saliency of mental defeat in the etiology of PTSD and the more pernicious role of negative thoughts about the self and the world in the maintenance of the disorder.

To date, one report has examined the role of negative cognitions in response to early intervention programs (Zoellner, Feeny, Eftekhari, & Foa, 2011). This study examined if negative thoughts responded to early intervention programs. Women who had recently experienced sexual assault were given four weeks of either brief CBT, supportive counseling, or assessment only, with measurement of dysfunctional thoughts before and afterwards (using the WAS and the PBRs). Negative beliefs about the self and the world improved across all interventions, with somewhat less positive change noted following supportive counseling. Because PTSD symptoms and negative post-trauma thoughts and beliefs show a natural recovery trajectory following a trauma for most individuals (e.g., Gilboa-Schechtman & Foa, 2001), it is important for future work to strive to develop early intervention programs that can change negative cognitions and PTSD symptoms above and beyond the passage of time. Additionally, future work is needed to explore if individual characteristics that appear to heighten the risk for PTSD (such as notable

endorsement of mental defeat) might predict a particularly good response to early interventions following trauma.

Treatment. Considerably greater effort has been devoted to developing and testing treatments for individuals with PTSD. At present, there are several empirically-supported treatments for PTSD, including Cognitive Processing Therapy (CPT, Resick & Schnicke, 1992). CPT is postulated to work directly to correct distorted thinking by helping patients with PTSD learn to question the factual basis of their dysfunctional thoughts. Moreover, patients are taught to replace their faulty assumptions with more balanced statements that will be associated with healthier emotional responses. Owens, Pike, and Chard (2001) reported that improvements were noted on the PBRS and the WAS following CPT. Importantly, these cognitive changes were maintained at one-year follow-up, suggesting that CPT produces lasting changes in how individuals with PTSD think about themselves and the world. Other forms of treatment, such as prolonged exposure therapy, have also been shown to produce reductions in dysfunctional guilt-related cognitions in patients with PTSD, although the reduction noted in this study was smaller than that noted in CPT (Resick, Nishith, Weaver, Astin, & Feuer, 2002). Interestingly, although the addition of cognitive restructuring did not enhance prolonged exposure, Foa and Rauch (2004) noted that reductions in negative thoughts as indexed by the PTCI were significantly associated with reductions in PTSD for both exposure alone and exposure plus cognitive restructuring. Greater understanding of how various treatments for PTSD impact negative thoughts and beliefs would be useful for clinical practice, particularly for patients with high levels of dysfunctional thoughts.

Summary and general clinical recommendations

Pulling this chapter together, it is fitting to spell out specific clinical recommendations, particularly given the role that negative thoughts play in post-trauma adaptation. As has been reviewed in this chapter, negative thoughts and beliefs can exert a powerful influence following a trauma. In particular, mental defeat, as well as negative thoughts about the self and the world, have been shown to be salient in the

etiology and maintenance of PTSD. Research has shown that negative thoughts are associated with reduced quality of life, diagnostic co-morbidity, and they affect one's perception of their romantic partner. Current efforts at prevention address negative thoughts via the provision of information, although it is unknown if this is effective at reducing dysfunctional cognitions and beliefs per se. Among the established treatments, CPT has been shown to reduce negative thoughts and these gains appear to last after treatment is over. Other treatments that do not explicitly target negative thoughts, such as exposure therapy, also produce reductions in negative thoughts, although these reductions may be smaller than those obtained with CPT.

From a clinical standpoint, some specific recommendations emerge from this literature:

- 1.) When working with people shortly after a trauma, provide accurate information about anticipated trauma-related symptoms, including specific forms of negative thoughts that may become pervasive. Remembering that most people emerge from a trauma without PTSD, it is salient to help the survivor understand that negative thoughts and beliefs are a natural sequelae of the trauma experience and not reflective of "reality". This is particularly important when addressing perceptions of mental defeat in the early aftermath of a trauma.
- 2.) Help the trauma survivor to anticipate negative thoughts about the self and the world. In our clinical experience, it is particularly important to be aware of distortions in perceptions of responsibility, generalization of negative beliefs stemming from the trauma, and perceptions of the self as incompetent, as these attributions may be particularly difficult for the trauma survivor to objectively assess.
- 3.) The use of standardized measures can assist in assessing the patient with PTSD, especially given individual sensitivities in discussing negative thoughts. These measures can be helpful in assuring both thorough and objective appraisals of the nature and severity of these beliefs.
- 4.) Strive to understand the functional connection between negative thoughts and specific coping strategies. Although the literature has focused on thought suppression, worry, rumination, avoidance, and

seeking social support, there are a number of other strategies to consider (e.g., excessive alcohol use, excessive sleeping). Like Ashley, there may be times when negative thoughts serve to keep a trauma survivor exposed to negative events (in this case, abuse from Rodney). Because avoidance is a cardinal component of PTSD, be certain to assess efforts to cognitively avoid negative thoughts.

5.) Encourage the patient with PTSD to learn to be their own scientist, when addressing dysfunctional thoughts in therapy. Although CPT explicitly incorporates training patients in the observation of their own thoughts and behavior, this approach can be incorporated within most other approaches to the treatment of PTSD. Gaining dispassionate awareness of dysfunctional thoughts can assist the patient with PTSD in learning to step away from these cognitions, which can increase motivation for treatment as well as help the patient be able to observe their own positive change.

In sum, the field has made considerable progress in understanding the salient role that negative thoughts play in poor mental health following a trauma. It would seem fitting that we begin to explore thoughts and beliefs that are associated with positive outcomes, particularly since these have not been examined empirically to the same extent. Negative thoughts can color post-trauma adaptation, through influencing emotions and behaviors. As noted, we have learned a considerable amount about these cognitive processes. Additional work in this arena will certainly continue to enhance our prevention and treatment efforts for survivors of trauma.

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