

# 6 keys to resilience for PTSD and everyday stress

## Teach patients protective attitudes and behaviors

**M**s. M, age 24, works as a magazine editor in New York City. On a December evening, she walks out of the subway and heads to her boyfriend's apartment, looking forward to unloading her heavy bag and checking her e-mail. Out of nowhere, a man runs up behind her and smashes a huge rock into her head.

She feels momentarily disconnected from her body and surroundings but manages to scream. As the assailant runs away, 2 girls rush to her aid.

Ms. M hurts everywhere. Her glasses have been knocked off, and her orbit is fractured; her eye will require multiple surgeries. She reaches for her cell phone, but it's slippery with blood. A bystander dials 911, and paramedics arrive within minutes.

**Most persons experience trauma** during their lives,<sup>1</sup> but not usually an attack as severe as Ms. M's. Post-traumatic stress disorder (PTSD) and other psychopathologies are not inevitable or even common, however, developing in 8% to 12% of trauma survivors.<sup>2</sup> Why are some individuals more resilient to trauma than others?

Resilience to stress is associated consistently with at least 6 psychosocial factors: active coping styles, regular physical exercise, a positive outlook, a moral compass, social support, and cognitive flexibility (*Table 1, page 24*). This article describes how motivated persons can enhance these "resilience factors" to become more resistant to everyday stressors and unexpected traumas.

continued



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### **Margaret Haglund, BA**

Mount Sinai School of Medicine  
New York, NY

### **Nicole Cooper, PhD**

Assistant professor of psychiatry  
Mount Sinai School of Medicine

### **Steven Southwick, MD**

Professor of psychiatry  
Yale University School of Medicine  
West Haven, CT

### **Dennis Charney, MD**

Anne and Joel Ehrenkranz Professor  
Departments of Psychiatry,  
neuroscience, and pharmacology &  
Biological chemistry  
Mount Sinai School of Medicine



## Resilience

### Clinical Point

Undertaking and mastering difficult tasks appears to be effective in increasing resilience

Table 1

## 6 psychosocial factors that protect against and aid recovery from posttraumatic stress

Factor	Definition
Active coping style	Problem-solving and managing emotions that accompany stress; learning to face fears
Physical exercise	Engaging in physical activity to improve mood and health
Positive outlook	Using cognitive-behavioral strategies to enhance optimism and decrease pessimism; embracing humor
Moral compass	Developing and living by meaningful principles; putting them into action through altruism
Social support	Developing and nurturing friendships; seeking resilient role models and learning from them
Cognitive flexibility	Finding good in adverse situations; remaining flexible in one's approach to solving problems

### 1 Active coping style

Resilience is the process of adapting well to stress or trauma (*Box 1, page 27*).<sup>3-5</sup> Learning to manage stressful situations requires active coping, which can be conceptualized as 2 types:

- “problem-focused” (working to solve the problem)
- “emotion-focused” (accepting and dealing with emotions caused by the stressor).

Many studies have correlated active coping with emotional well-being. A 2003 study of first-year medical students found that using problem-focused or emotion-focused coping techniques helped preserve physical and mental health during 1 year of medical school.<sup>6</sup> In contrast, depressed persons tend to use passive coping styles, including denial and avoiding problems, substance abuse, and resignation.<sup>7</sup>

Undertaking and mastering difficult tasks appears to be effective in increasing resilience to stress. The “stress inoculation” hypothesis (*Box 2, page 28*)<sup>8-11</sup> provides a plausible explanation for the observation that children who learn to cope with stress tend to become hardy adults. Successfully overcoming challenges improves self-confidence and also may alter the neurobiology of the stress response.

**Prolonged-exposure therapy.** PTSD development and maintenance depend in part on fear conditioning. By avoiding ex-

posure to reminders of their trauma, survivors unwittingly solidify associations between traumatic triggers (people, places, or things that are reminders) and fear. Actively facing fears is necessary to break these associations.

Prolonged-exposure therapy was designed to help patients face their fears.<sup>12</sup> As part of therapy, participants retell their trauma stories and engage in avoided activities in a safe environment. This treatment has been found to be highly effective in reducing PTSD symptoms, and its benefits often last longer than those conferred by pharmacologic interventions.<sup>13</sup>

### CASE CONTINUED

#### Feeling ‘out of sync’

Ms. M remains frightened and angry after 2 months and is referred for psychological evaluation. She is diagnosed with PTSD based on her debilitating symptoms, including flashbacks, frightening nightmares, avoiding the subway, and feeling emotionally numb (which she describes as “being out of sync” with loved ones). Ms. M also complains of difficulty sleeping and irritability.

The therapist initiates prolonged-exposure treatment, including imaginal and in vivo exposure. In imaginal exposure, Ms. M tells and retells her trauma story in the safety of the therapist’s office. To desensitize herself to the memory, she listens to her recorded voice recounting her trauma. In vivo exposure involves homework, such as visiting the

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attack site during the day with a companion and talking with loved ones about the event. These assignments allow Ms. M to reclaim the life she lost because of severe anxiety and fear associated with anything related to the attack.

Within 3 months, Ms. M's symptoms have improved and no longer meet DSM-IV-TR criteria for PTSD. She continues to struggle with insomnia, affective constriction, and a sense of social isolation—symptoms that often remit slowly, if at all, in trauma victims despite good treatment. She stays in therapy to work on confronting her fears and finding meaning in her experience.

## 2 Physical exercise

Exercise is a type of active coping that diminishes negative emotions caused by stress. Regular exercisers report less-frequent depression,<sup>14</sup> and exercise has been shown to improve clinical depression in adults.<sup>15</sup> Exercise builds physical and emotional hardiness, lifts mood, and improves memory. It produces these health benefits by:

- releasing endorphins and serotonin precursors
- attenuating basal hypothalamic-pituitary-adrenal axis activity
- promoting expression of neurotrophic and neuroprotective factors.<sup>16</sup>

Exercise-induced neurotrophic factors include nerve growth factor, galanin (a neuropeptide released under stress that has anxiolytic effects), and brain-derived neurotrophic factor (BDNF). BDNF is important because it stimulates neurogenesis in the hippocampus and appears to improve learning and memorization.<sup>17</sup> Thus, exercise appears to increase brain plasticity and enhance ability to learn from and adapt to stressful situations.

### CASE CONTINUED

## Learning to self-soothe

Ms. M learns to read children's stories to help her fall asleep at night and stave off nightmares. She takes up yoga to combat residual anxiety. She also resumes singing in her local chorus, which includes riding the subway home from rehearsals at 10 PM.

### Box 1

## Resilience: Preventive medicine for posttraumatic stress?

**R**esilience is the ability to maintain normal functioning despite adversity. It can be viewed as the successful operation of “basic human adaptational systems.” Conversely, depression and posttraumatic stress disorder (PTSD) may be understood, in part, as failure to adapt to stress.

**Risk factors for PTSD.** Traumas with the highest risk for psychopathology are severe, unpredictable, or uncontrollable and those that involve loss of property or (especially) a loved one, danger to self, or physical injury. PTSD risk also is increased by the cumulative effect of multiple, severe, uncontrollable traumas and personal factors such as:

- history of childhood abuse
- personal or family history of psychiatric illness
- limited social support
- passive coping mechanisms
- neurotic or introverted personality style.

Source: References 3-5

## 3 Positive outlook

Depressed individuals tend to view their problems as permanent and pervasive, whereas those who are resilient see adversity as temporary and limited in scope.

Positive emotions decrease autonomic activity and symptoms of stress, broaden one's focus, and allow negative events to be put into perspective.<sup>18</sup> Like exercise, humor decreases tension and makes it possible to see the lighter side of difficult situations.<sup>19</sup> Humor can also draw social support.

**Role of dopamine.** Humor and positive emotions have been linked to the dopaminergic reward mechanism in the mesolimbic circuitry. Dopaminergic neurons in the ventral tegmental area fire when a reward is received (*Table 2, page 29*); firing increases when a reward is unexpected or greater than expected. These same neurons release less dopamine when rewards are smaller than expected or not received at all.

Optimists are thought to have a robust dopaminergic response to reward, which

## Clinical Point

**Humor decreases tension, draws social support, and can make it possible to see the lighter side of difficult situations**



## Resilience

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**Altruism—putting one's moral compass into action—benefits the person who practices it and the person who receives it**

#### Box 2

### Mastering childhood adversity may 'inoculate' against future stress

Undertaking and mastering difficult tasks appears to be an effective way to increase resilience to stress. The "stress inoculation" hypothesis provides a plausible explanation for the observation that children who learn to cope with stress become hardy adults.

Men and women who successfully managed stressful situations in childhood—including death or illness of a parent or sibling, family relocation, and loss of friendship—are more resistant to adulthood stressors, such as divorce, death or major illness of a loved one, and job loss.<sup>8</sup> Conversely, individuals who experienced extreme childhood stress that they could not control or master—such as physical and/or sexual abuse—may be more vulnerable to future stressors.

**Like vaccination?** Organisms develop immunity after exposure to a pathogen's attenuated form; similarly, they may develop resistance to stress

after being exposed to and overcoming mild stressors.<sup>9</sup> Immunity to stress is not specific to the type of stressor first encountered; early exposure to manageable stress appears to enhance resilience to many adverse experiences.

**Neurobiology of resilience.** In a series of studies, Special Forces soldiers had higher blood levels of 2 stress-protective hormones—neuropeptide Y (NPY) and dehydroepiandrosterone (DHEA)—immediately after high-stress interrogations than did soldiers who received less-intensive training.<sup>10</sup> These hormones also correlated with better performance under stress.

NPY and DHEA help keep the stress response in check by inhibiting release of norepinephrine, cortisol, and other stress-related hormones under high-stress conditions.<sup>11</sup> To what degree genetics, development, and/or training enhance NPY and DHEA release is not clear.

is either hypersensitive to rewards and/or resistant to dysregulation under stressful (unrewarding) conditions.<sup>20</sup>

#### CASE CONTINUED

#### 'I'm not bitter'

Ms. M can make an occasional joke about her attack and the massive stacks of paperwork she must sort through to pay medical bills and get reimbursed by insurance. She says, "I'm not bitter. I don't want to carry that anger around for the rest of my life, so I won't."

#### 4 A moral compass

Religious faith is associated with lower rates of depression in many populations, including college students, bereaved adults, and elderly hospitalized patients.<sup>21</sup> Religious faith is not essential to a strong moral compass, however.

Morality appears to have a neural basis—a hypothesis supported by the observation that brain injury can damage one's moral sense. "Acquired sociopathy" can result from trauma to certain brain areas,

including the anterior prefrontal cortex and anterior temporal lobes.

**'Required helpfulness.'** Altruism—putting one's moral compass into action—benefits the person who practices it and the person who receives it. Persons who help others perceive themselves as necessary and derive fulfillment. This phenomenon known as "required helpfulness" was first described during World War II, when those who cared for others after bombardments suffered less posttraumatic psychopathology than those who did not.<sup>22</sup>

Some individuals find healing in a "survivor mission" after personal tragedy, helping others cope with the same problem they faced. Mothers Against Drunk Driving—founded by mothers who lost children in car accidents—is one example.<sup>23</sup>

#### CASE CONTINUED

#### Altruism in action

Ms. M hopes to prevent attacks on other women. She participates in an organization

Table 2

## Neurobiology of resilience: Factors that influence physiologic stress response

Selected  
neurobiological  
factors

Effect on stress response

Up-regulators	
Norepinephrine	Neurohormone and neurotransmitter released by the locus ceruleus in response to stress; sympathetic nervous system mediator; increases autonomic arousal (elevates blood pressure, heart rate); facilitates fear memory formation
Cortisol	Glucocorticoid released by adrenals in response to HPA axis activation by locus ceruleus; increases arousal, attention, and fear memory formation; initially adaptive, but prolonged/excess release has harmful systemic effects (hypertension, osteoporosis, immune suppression)
Down-regulators	
DHEA	Steroid released by adrenal cortex under stress; down-regulates stress response; has antiglucocorticoid activity; may protect against PTSD
NPY	Neuropeptide that counters locus ceruleus activity; blocks release of cortisol; anxiolytic
Galanin	Neuropeptide that counters locus ceruleus activity; anxiolytic
Other neurotransmitters	
Dopamine	Optimal levels enable reward system functioning; excess or deficit linked to learned helplessness and stress
Serotonin	Mixed effects, but high activity at 5HT1A receptors is linked to resilience
DHEA: dehydroepiandrosterone; HPA: hypothalamic-pituitary-adrenal; NPY: neuropeptide Y; PTSD: posttraumatic stress disorder	

that teaches women self-defense. She also speaks publicly for women's safety and works with a local board to help defray crime survivors' medical costs.

### 5 Social support

Individuals with strong social support tend to be more resilient than those without.<sup>24</sup> Social support can reduce risk-taking behavior, encourage active coping, decrease loneliness, increase feelings of self-worth, and help a person put problems into perspective. A lack of social support correlates with depression, stress, and increased morbidity and mortality during medical illness.

**Role models.** People can learn to manage stress by mimicking the behavior of someone they respect. Many resilient adults credit a parent, grandparent, or other role model for teaching them to act honestly and inspiring them to be strong. In a study

of 770 teenagers, those who had a strong nonparental mentor (such as a neighbor, teacher, or coach) reported less drug use and delinquency and a greater belief in the importance of school than those without such a mentor.<sup>25</sup>

#### CASE CONTINUED

### Dad's her role model

When she has bad days, Ms. M draws strength by thinking about her father, who has suffered much and whom she respects.

### 6 Cognitive flexibility

Being able to positively reframe negative events ("cognitive reappraisal") is crucial to resilience. Individuals who successfully overcome adverse events usually manage to find some meaning in their tragedy.

Psychiatrist and Holocaust survivor Viktor Frankl<sup>26</sup> wrote of the importance of "meaning making." Despite suffering for years in Nazi concentration camps, Frankl

### Clinical Point

Individuals who successfully overcome adverse events usually manage to find meaning in their tragedy





## Resilience

# Bottom Line

Resilience helps protect against psychological distress in response to traumatic situations. Although some individuals are more resilient than others, resilience can be developed and strengthened. Psychotherapy can help patients learn and use attitudes and behaviors of resilient individuals.

wrote that he gained the opportunity to exercise inner strength and be “brave, dignified and unselfish.” He struggled to survive because he came to believe that his suffering had a purpose: to live to teach others about his experiences.

Neuroimaging studies indicate that individuals who use cognitive reappraisal to deal with adversity have strong “top-down control” of emotions. They can modify their reaction to stress or trauma by activating the prefrontal cortex, which then modulates amygdalar response to the situation.<sup>27</sup>

### CASE CONTINUED

### Reappraisal

Although Ms. M wishes she had never been attacked and can find no rational explanation for it, she is weaving the event into the fabric of her life. She insists she has become stronger, wiser, and safer and wants to share her story with others.

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## Related Resources

- National Center for Posttraumatic Stress Disorder. U.S. Department of Veterans Affairs. [www.ncptsd.va.gov](http://www.ncptsd.va.gov).
- The road to resilience. American Psychological Association Help Center. [www.apahelpcenter.org/featuredtopics/feature.php?id=6](http://www.apahelpcenter.org/featuredtopics/feature.php?id=6).
- Positive Psychology Center. University of Pennsylvania. [www.ppc.sas.upenn.edu](http://www.ppc.sas.upenn.edu).

### Disclosure

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