



CHAPTER 6

Social Support: Learning the Tap Code

In order to thrive in this world, we need other people. We all benefit by knowing that someone cares about our welfare and will catch us if we fall. Even better is having an entire network of family and close friends who will come to our aid at a moment's notice. It is also important for us to give of ourselves to help others. Forming relationships may not seem important when things are going well; we tend to take our friends and family for granted. However, close relationships built during good times protect us when we must endure stress or face danger. Far from signifying weakness, interdependence with others can provide a foundation for resilience.

Former POW Admiral Robert Shumaker appreciates the importance of social networks. Like nearly all of the resilient people we interviewed, both military and civilian, he knew how to capitalize on a basic biological reality: humans are designed to bond with one another. During his eight years in North Vietnamese prisons, Shumaker used creativity to help develop an ingenious method of communication known as the Tap Code. That code provided a critical lifeline that allowed scores of prisoners to connect with one another.

Alone in his dark, sweltering, rat-infested cell at Hoa Lo, Shumaker wondered whether he would ever again see another American. Each day, he spent hours lying on the soggy floor so he could peer through a crack at the bottom of his cell door, hoping and praying to see a fellow prisoner. Three months into solitary, a tall, white, emaciated American, escorted by a North Vietnamese guard, walked past Shumaker's cell on his way to the latrine. Shumaker was elated. But how would he make contact with this prisoner? Bob spent the next several days devising a scheme. The latrine seemed the only possible place to communicate. The guards rarely entered it themselves; the putrid smell of human and rat urine and feces was overwhelming.

Once a day the guards would let me out of my cell and take me to this “shower area” where I emptied my [human] waste bucket. I noticed the other American was getting the same treatment. I’d see him come out of this “shower area,” which was maybe 100 feet away – I had good eyesight then – and I took a chance. There was a spot of ink on this wooden table in my area and I put water on it and it turned back into ink. On toilet paper I wrote, “Welcome to the Hanoi Hilton.” And I told him to “scratch his balls when he walked out [of the shower area].” And he walks out scratching away. So it was a happy day for me when I made contact. And the name “Hanoi Hilton” stuck.

Soon, other Americans began to arrive. When three new prisoners were added to Shumaker’s cell, the four talked nonstop for several days, acutely aware that the North Vietnamese would probably soon separate them to prevent an organized resistance.

We started talking about how we could organize to fight to keep our sanity and maximize survival; and I said, “What we need is some method by which we can communicate.”

As the group was brainstorming, one of the cellmates, Air Force Captain Smitty Harris, recalled a conversation that he had overheard years earlier during Jungle Survival School. A former POW in Korea had described how American prisoners communicated by tapping on water pipes and then placing their ears on the pipe to listen for tapping responses coming from another building. It consisted of five rows and five columns of letters from the alphabet; the prisoners in Korea called it the AFLQV Code (from reading down the first column).

Shumaker immediately recognized the importance of Harris’s story. Shumaker, who would earn the name “Martini Mixer” for his crucial role in enabling communication among prisoners, had been valedictorian of his high-school class, stood eighth in his class of 686 midshipmen at the Naval Academy, held a master’s degree in aeronautical engineering, and had been chosen for the NASA astronaut program. Right away, he understood that what he later called the “Tap Code” could prove to be a life-saver for hundreds of American POWs. This is what it looked like:

	1	2	3	4	5
1	A	B	C	D	E
2	F	G	H	I	J
3	L	M	N	O	P
4	Q	R	S	T	U
5	V	W	X	Y	Z

(To understand how the code works, readers will find it helpful to know that the sender taps to indicate the row first, then the column. For example, to send the letter “H,” which is in the second row and third column, one would tap

twice, pause slightly, and then tap three times. In order to form a symmetrical grid, the letter “K” is omitted from the matrix; “K” is represented by “CC.”)

When the four cellmates were separated, each one spread the code to their new cellmates. Then, whenever one of them was transferred from the Hanoi Hilton to a different prison, he would teach the code to a whole new group of prisoners. By tapping with their knuckles and listening with their water cups against the wall, POWs relayed messages to each other. Within months of its adoption, the Tap Code formed the backbone of the prisoners’ communication network and resistance efforts at Hoa Lo and beyond.

Here’s how Captain Steve Long learned about the Tap Code.

On one side of me, I had two Navy pilots, and on the other side was an Air Force back seater, a navigator. The first night I was there, the Air Force navigator spoke toward the ceiling so that I could hear over in the next cell.

He said, “Do you know the Tap Code?” I said no. He says, “It’s a 25-square matrix, the left side is A F L Q V. We’ll tap in the morning.” So I had the rest of the night to figure that out. Of course, brevity was a necessity because we needed to speed up communication, so we went by initials. I was S.L. And the S is the fourth row down, third column over and the L is in the third row down, first column. So I tapped that on the wall, and everybody would know that S.L. was in camp. That worked real good until Svede Larsen showed up.

Sometimes, instead of tapping on the wall, prisoners used other noises to send messages. If someone was in solitary and did not share a common wall with another prisoner, he would use coughs or sweeps of a broom to signal numbers. All the prisoners knew that a sniff was 1, a cough 2, clearing the throat 3, a hack 4, and a spit 5.

Coughing, sweeping with a broom, one, two, three... The one we used that was probably the most ingenious – and we held it as closely as possible so the Vietnamese didn’t learn about it – was the voice tap where a sniff and a cough would be a one and a two. Like B is in the first row of the second column and we’d go (sniff, cough) and that’s a 1–2 which is a B. A throat clear would be a three and a hack would be a four and a spit would be a five. We shortened everything, like “interrogation” was shortened to “quiz” which was shortened to “Q.” When they came to my room and told me that I was going to an interrogation, I wanted to tell the others, so I’d go hack, throat clear (S), throat clear, sniff (L), hack, sniff (Q), and that’s SLQ, or “Steve Long Quiz.”

Captain Charlie Plumb describes his first exposure to the Tap Code shortly after being tortured and imprisoned by the North Vietnamese. Pacing back and forth, Plumb heard a chirping noise coming from the corner of his cell and at first thought it was a cricket. But when he listened carefully, he noticed a distinct rhythm. And then he spotted a piece of wire moving back and forth through a hole at the base of his prison cell wall. A scrap of toilet paper clung to the end of the wire. On the other end of the wire was Shumaker. Schumaker recalls:

We were in adjoining cells that were separated by about six feet. Charlie was by himself, and he had a lot of boils. I had stolen some wire – and it was kind of stiff wire, but it wasn't as stiff as a coat hanger – I would hide this wire in the cement wall of my cell. But there was the problem of getting the wire into Charlie's cell, which was about six feet away. Each cell had concrete walls but they also had little drain holes.

He was afraid to pick it up for awhile. And then he finally got the courage up, and he took the note and the wire disappeared, and he read the note and it said, "Memorize this code and eat this note." And he gulps it down. And then every day, I'd slip the wire in. Now, the tap code calls for tapping on the wall. Well, we couldn't do that with a wire, so he would put tension on his end and I would put tension on mine. And then I would go: tug – tug, tug, tug, so this became an extension of the tap code.

Plumb (1992) would later describe his feelings when he realized that the chirping cricket was actually a communiqué:

Can you imagine what might be going through your mind in an experience like this? Wow! What an opportunity. Somebody wants to network. Somebody wants to team up with me. Somebody wants to communicate!

Other ingenious forms of "tapping" emerged, depending on the demands of the particular situation. For example, Jerry Denton, who later served as a US senator from Alabama, blinked the word t-o-r-t-u-r-e while being video-taped by a Japanese film crew.

Shumaker understood that the Tap Code was an essential tool not only for passing on information and organizing resistance but also for preserving sanity. In times of stress and trauma, few things are more painful or more destructive to a person's mental and physical well-being than isolation. Prisoners used the Tap Code to create a vital social network. Supportive communication was especially important whenever a prisoner returned from being interrogated and tortured. Using the Tap Code allowed the prisoner to unburden himself when beset by worry, guilt, or despair about having "given in" and divulged information, and it provided a way for prisoners to sympathize and reassure one another. Telling his comrades what he had revealed during the interrogation also helped other prisoners keep their stories straight.

Steve Long believes that the Tap Code saved his life. During the Vietnam War, both American and North Vietnamese combat and supply missions spilled over into Laos, even though Laos was not officially involved in the war. Because neither the United States nor Vietnam publicly acknowledged these missions into Laos, when soldiers were killed or captured there, both sides kept the information secret. Prisoners captured in Laos were kept separated from other prisoners, held incognito and always listed as missing in action (MIA). For Steve Long and the others caught in Laos, this was a living nightmare. How could he reassure anyone back home, especially his family, that he was still alive?

We were treated differently. We weren't given privileges. There was no media, there were no letters home, there was nothing for us. We realized that we needed to communicate with them [the "regular" prisoners] so that if one of them got released, they could get our names out. We took it upon ourselves, as our self-appointed mission, to get our names as widely spread out as possible. So we communicated extensively, probably more than a lot of the other prisoners, because we felt the need for our own safety, for our own lives.

Long's hunch proved to be correct. When the Vietnam War ended in 1975, the Paris Peace Talks called for an exchange of prisoners between the United States and North Vietnam. Waves of relief and joy spread throughout the prisons of North Vietnam, but for Steve Long the exhilaration was short-lived.

When a North Vietnamese soldier came to our cell, he asked, "What do you think?" We thought, "This is great. We're going home." He said, "No. The Vietnam War is over. The Vietnam prisoners go home. When the Laotian War is over, the Laotian prisoners go home." And that was depressing. It took the wind right out of your sails. We would not be released.

One week after the peace accords were signed, the first cohort of American prisoners was released. They immediately met with intelligence de-briefers, who asked for the names of all known American POWs.

And, of course, our names, at least the four of us who had been up there for a long time and who had communicated extensively, were some of the first names that they mentioned. Well, the intelligence community gave that to the State Department, and the State Department went back to Paris and said, "Hey, look, Vietnamese, we know that Long, Stischer, Bedinger and Brace are in North Vietnam and if you do not release them, then we will resume bombing North Vietnam with B-52s." The Vietnamese had had enough of that. That's why they decided to end the war anyway, because the B-52s were bombing them. So the Vietnamese came up with not only our four names but six more as well. So it did pay off that we communicated as much as we did.

Strong Ties Save Lives

It is not surprising that Vietnam POWs found ways to bond with each other despite solitary confinement, because the military strongly emphasizes fostering and sustaining strong personal relationships. Soldiers belong to units: squads, platoons, companies, battalions, and divisions. No one operates in isolation. Groups, not individuals, solve most problems. This esprit de corps is conveyed symbolically from the first day of training, when men's heads are shaved, and men and women are issued military fatigues. The preferences of the individual give way to the needs of the group.

As we saw in Chapter 4 on moral compass, the POWs in the Hanoi Hilton looked up to Admiral James Stockdale as the senior officer among them, and he developed the “BACK US” principle of resistance to their North Vietnamese captors. Stockdale insisted that after a torture session, prisoners never be left alone to ruminate about their perceived fragility and failure. As soon as a prisoner returned from being interrogated, he was to be greeted with supportive messages that fellow prisoners whispered or tapped on the walls of his cell.

Stockdale recognized that humans, like other animals, are biologically “wired” for survival. When confronted with stressful and dangerous situations, a person naturally focuses on his or her own welfare. It is normal to protect oneself and to fight for resources. However, like so many of the literary and philosophical writers Stockdale admired, he believed that resilience, courage, and hardiness involved far more than personal strength, acquisition, and the instinct for survival. True resilience and courage were measured by acts of generosity, compassion, and altruism. As he wrote in *A Vietnam Experience*:

When you are alone and afraid and feel that your culture is slipping away, even though you are hanging onto your memories. . . hanging on with your fingernails as best you can, and in spite of your efforts, still see the bottom of the barrel coming up to meet you, and realize how thin and fragmented our veneer of culture is, you suddenly know the truth that we all can become animals when cast adrift and tormented for a mere matter of months. It is then that you start having some very warm thoughts about the only life-preserver within reach – that human mind, that human heart next door. . . [When people ask] “What kept you going? What was your highest value?” my answer is: “The man next door.” (1984, p. 110)

“You are in short, your brother’s keeper.” This was the “US” in “BACK US”: unity before self. This was Stockdale’s “life preserver.”

Strong connections among soldiers motivate military men and women more powerfully than do abstractions such as patriotism, says General Hugh Shelton. Shelton commanded US Special Operations before becoming chairman of the Joint Chiefs of Staff:

When you find a high-speed unit in today’s Armed Forces, you find that its members are more concerned about the individual on the left and right than they are about themselves. Everybody is there to accomplish the mission of the team. The organizational and social structure recognizes team performance, not what one individual carries out. We know that’s why people fight – we like to say people fight for the flag or they fight for the nation, but they really fight for the one on the left and right – their buddies.

The Special Forces provides a strong example of how units foster close ties. For the 12-man team of soldiers, the label “band of brothers” has real meaning.

Optimal unit cohesion and functioning depend on several factors: trust, healthy competition, reciprocal support, and altruism.

After his retirement from the military, when General Shelton gave a talk to corporate managers at Anheuser Busch, he suggested fostering team spirit similar to the kind he had learned and practiced as Commander-In-Chief of the Armed Forces. “This is one team, one fight,” he told them. “If we are going to get better, it’s all about working together. A rising tide lifts all boats.”

Most of the Special Forces instructors we interviewed told us they know they can count on former team members for the rest of their lives. Even members who have never met one another, total strangers, will wholeheartedly welcome fellow SF members into their homes. Gordon Smith feels that he has a “family” of team members scattered all over the world who will be there to help him, his wife, and children at any time, no matter what.

Social Networks Are a Key Element of Being Human

One need not be a Special Forces soldier or a POW to experience mutual support and helpfulness. Much of our behavior, whether we know it or not, is driven by the need to connect with others and to be understood. Social connectedness and cooperation activate the reward centers in our brains and bolster our mental and physical health (Eisenberger, 2013b; Morelli, Torre & Eisenberger, 2014). Conversely, the threat of rejection activates some of the same brain areas that process physical pain; it is easy to see how this relates to the evolutionary drive to survive (Apicella *et al.*, 2012; Eisenberger, 2013b; Meyer, Eisenberger & Williams, 2015).

Social psychologists Nicholas Christakis and James Fowler (2011) have documented the pervasiveness of social connections, including those that are often unconscious. We may think of ourselves as individualists, but chances are that, consciously or not, we are strongly influenced by other people. For example:

- Each happy friend a person has increases the person’s probability of being happy by 9 percent and each unhappy friend decreases the person’s probability of happiness by 7 percent.
- Restaurant diners who sit next to heavy eaters eat more.
- Restaurant servers who smile receive better tips.
- College students who have studious roommates study more.
- College students who have depressed roommates become more depressed.
- If a friend becomes obese, you are three times more likely to become obese.
- If a friend of your friend gains weight, you will also be likely to gain weight.
- If a friend’s friend stops smoking, you will be more likely to stop smoking.

The point is that these forces are influencing us, whether we know it or not. People not only copy friends, they copy friends' friends and their friends; we imitate others much more than we think. Emotions are contagious; how you feel depends on the feelings of those around you.

We give and receive social support in countless ways throughout our lives. Most of us have “built-in” social connections in the form of family members, classmates, co-workers, and the like. Some of these associates are people we see every day, while others may be more distant, dwelling mostly in the back of our minds as we go about our activities; still, the knowledge that they are “there for us” is valuable. Technology has also given us new opportunities to connect through electronic social networks. Many of us have Facebook friends, Twitter followers, fellow gamers or other online associates, some living nearby and others thousands of miles away. Of course, for generations it has been possible for people to speak by telephone from anywhere on earth, but technologies such as Skype and Facetime have enriched phone conversations by adding the visual dimension. With today's technologies, even people with disabilities who have difficulty leaving their homes can have richly rewarding social lives by participating in online communities.

There are also voluntary organizations of all kinds that provide, among other benefits, the opportunity for social support. For example, the Boy and Girl Scout organizations, although primarily designed for youth, value and encourage service and helping others. And many, if not most, religious denominations view providing help and social support as part of their mission. These are just a few examples of groups that foster a sense of common cause and community.

Reach Out for Support

Elizabeth Ebaugh, the social worker who was kidnapped, raped, and thrown off a bridge, believes that genuine support from friends and professionals was essential during her arduous recovery. For the first few months after her ordeal, helpers were everywhere.

One reason I did so well, from that moment throughout my entire healing process, was that I had the best of the best. The police officers were incredibly sensitive, incredibly careful about every word, everything they did. They were so beautifully heartfelt. Plus the UPS driver who drove me to the hospital was like an angel. He couldn't do enough for me. When I got to the hospital, the doctors and nurses were totally on my side.

I really think that [the days and weeks after a trauma] is a crucial time in terms of being able to come through it. To know that you're back into your world and your world is going to rally around you is a huge healing force. At that time, this was the worst crime to happen in this area. I had people calling me 24 hours a day, all my friends, this

whole community – coming to see me; getting letters from people I didn't know; people were praying for me. I had to turn the phone off. There was no way I could feel like I was alone and isolated and not cared for. My story was on the front page of the newspaper for at least two weeks.

A colleague of ours, Alice, described similar feelings shortly after her husband died:

I feel terribly sad and hurt over the loss of my husband, but I don't feel depressed. I feel so much support from people all around me, family and friends, neighbors, and even strangers who have no particular reason to be kind to me. Like the woman at the credit card company when I had to call and tell them to close my husband's account, she was very caring. People at church are praying for me. People where I work who hardly know me have sent cards. My mother and sister are calling me all the time. I just feel very lifted up.

After a trauma, it is not uncommon for the survivor to be showered with an outpouring of help and kindness. But once the initial flurry of attention dies down, the real tests of love and friendship begin. Well-wishers typically return to their normal daily routine shortly after a trauma, and sometimes survivors, themselves, may react to even the best intended approaches with coldness or even hostility. For example, Ebaugh remembers feeling distrustful, angry, and filled with rage; feelings that are commonly seen in posttraumatic stress reactions. She no longer felt that she could fully trust anyone. When she met the man who eventually became her husband, forging a relationship was not easy.

He got the brunt of a lot of my rage. I needed to be in control, and he comes from a background where he wasn't very trusted, so here I was not trusting him. But it wasn't him I didn't trust, it was the world. He hung in there and really was the solidity in my life. . . My husband and I complement each other. We are both healers. At times when other couples would have broken apart, we meditated together and asked for help in those really dark moments.

Without caring professionals, steadfast friends, and a loving husband and family, Ebaugh believes that she would still be drowning in the psychological aftermath of her horrific ordeal, trapped in the haunting memory of her attack. "We can't do anything without support. . . The act of leaning in for support opens you," she says. However, she also observes that "supporters need to know not to coddle – there's a difference between supporting and enabling. At some point, we all need somebody to say, 'It's time to get on with it.'"

Our friend Victor Daniels found the same was true after he lost his wife of 42 years to cancer. Victor was a cardiac patient with two stents in his heart when his wife was diagnosed with incurable sinus cancer which was rooted too deeply in her brain to be operable. After three years of treatment, she was admitted to

a hospice, where she died a few weeks later. Victor and his wife had no children, and his family members were too busy with their own lives to spend much time with him. Several of his friends and neighbors had also lost their spouses, and most seemed to be trapped in grief for years after being widowed. He did not want to follow their example.

On a visit to his primary care doctor, Victor described feeling listless and having trouble getting out of bed in the morning. She recommended that he attend a weekly bereavement support group sponsored by the cancer center at the local hospital. Victor took her advice and began attending the group, where he met a number of other people who were working toward finding a “new normal” and establishing positive directions for their lives after losing a loved one. With their encouragement, Victor began to look ahead, to reconsider how he wanted to spend the rest of his life, rather than dwelling on what he had lost. He made a list of goals he wanted to accomplish in his “new life.” Step one was to resume working part-time at a local golf course, which he did. This gave structure to his days and provided social contact with people who were actively enjoying life. Victor’s energy and outlook gradually improved, and with the support of friends and co-workers he continued to achieve his goals. Before long, social networking really paid off: Victor fell in love and remarried. His new wife was a widow whom he had met in the support group.

Finding support requires taking the initiative to seek assistance. It does not mean passively waiting and hoping for someone to rescue us.

Social Support Protects Against Physical and Mental Illness

Researchers who study health psychology and social epidemiology have consistently found that strong social ties are associated with reduced incidence of mental and physical health problems and death (Eisenberger, 2013b). Strong social support has been linked to a decreased chance of developing depression, an increased likelihood of recovering from depression, improved psychological outcomes after severe traumas such as childhood sexual abuse, and reduced rates of combat-related PTSD (King, 1998, Tsai *et al.*, 2012). Similarly, when patients with cancer (Manne *et al.*, 1999), cardiac illness (Holahan *et al.*, 1995), rheumatoid arthritis (Revenson *et al.*, 1991) or multiple sclerosis (Mohr, Classen & Barrera, 2004) have high levels of social support, they are significantly less likely to be clinically depressed.

Strong social support has also been associated with fewer negative effects of various medical disorders. For example, in recent published studies, adolescents with type 1 diabetes had improved self-care and glycemic control when they

received global peer support (as opposed to diabetes-specific support, which tended to be perceived as nagging) (Doe, 2016); adult children of obese mothers were less likely to be obese or overweight if they had strong social support networks (Serlachius *et al.*, 2016); and high level of perceived social support, particularly from friendships, was associated with reduced risk of death among patients experiencing their first heart attack (Netanela Weiss-Faratci and colleagues, 2016).

In contrast, a large body of research supports the finding that social isolation and low levels of social support are associated with high levels of stress, depression and PTSD. For example, in a study of 2,490 Vietnam veterans, researchers found that those with low social support were more than two and a half times more likely to suffer from PTSD than were veterans with high social support (King *et al.*, 1998). Isolation can also affect our physical health and how long we live. For example, well-designed studies have shown that a small social network or inadequate emotional support is associated with a threefold increase in subsequent cardiac events among patients who have already had a heart attack, and a two- to threefold increase in future coronary artery disease among healthy patients (Rozanski, Blumenthal & Kaplan, 1999).

Epidemiologist Teresa Seeman and colleagues (1987) studied mortality over a 17-year period in northern California and found, after controlling for other factors such as age, sex, race, and baseline health status, that social ties were significant predictors of a lower risk of death. While being married lowered the risk of death in younger adults, ties with close friends or relatives were especially significant in reducing mortality among those aged 60 or older. A meta-analysis of 70 independent prospective studies involving over 3 million participants followed for an average of seven years (Holt-Lunstad *et al.*, 2015) found that the likelihood of death increased by 26 percent in those who were lonely, 29 percent in those who felt socially isolated, and 32 percent in those living alone.

There are a number of psychological and behavioral mechanisms that may help to explain why having a strong and supportive social network is associated with resilience, as well as better mental and physical health. When people feel supported by their family and friends, they tend to feel more confident and in better control; more motivated to adopt healthier and less risky behaviors, such as smoking and drinking alcohol; more inclined to use active coping strategies; and less likely to see negative or stressful events as being insurmountable (Holahan, 1995; Rozanski, Blumenthal & Kaplan, 1999).

Overall, high-quality positive social support is associated with resilience to stress, and positive physical and mental health. It may even help you to live longer.

Is It Better to Give Than to Receive?

Up to this point in the chapter, we have focused on the value of receiving social support from others. However, giving social support is also valuable; perhaps equally so. Dale Carnegie gave good advice in his classic 1936 self-help book *How to Win Friends and Influence People*: “You can make more friends in two months by becoming interested in other people than you can in two years by trying to get other people interested in you” (2009 [1937], p. 56). To make a friend, be a friend.

Befriending people and providing social support both depend on our ability to be “fully present” for the friend. In a world rife with distractions, truly paying attention to someone, even for a few minutes, is easier said than done. A Gallup Panel survey (Newport, 2015) found that most Americans check their smartphones at least a few times per hour – and that doesn’t include actually using the phone for answering calls, texting, tweeting, and other functions. To engage in the practice of giving social support, it is crucial to turn off distractions and turn on focus. By doing so you may help not only your friend, but also yourself.

Stephanie Brown and colleagues (2009) conducted a study of more than 3,000 elderly married individuals whose spouse was in poor health, and they found that those who engaged in caregiving at least 14 hours per week had a lower mortality risk than those who did not provide care for their spouses. In another study of older adults (Brown *et al.*, 2003), after filling out a questionnaire that asked about how much social support they received and how much they gave, subjects were followed for five years. At the end of five years, there was no relationship between mortality and receiving social support from others. However, death rates were significantly reduced for individuals who reported *giving* emotional support to a spouse, and for individuals who provided instrumental support (such as material goods, services, or financial support) to friends, neighbors and relatives. In another study called Project MATCH, researchers at Brown University’s Alpert Medical School (Pagano *et al.*, 2004) looked at treatment options for recovering alcoholics. They found that helping other alcoholics avoid drinking made a significant difference in reducing the chance that the helper would relapse. In Chapter 4 on moral compass and altruism, we discuss other studies about the benefits of being a helper.

In E.B. White’s novel *Charlotte’s Web*, the beloved spider at the heart of the story tells the pig whose life she saved: “By helping you, perhaps I was trying to lift up my life a trifle. Heaven knows anyone’s life can stand a little of that” (1952, p. 164).

Social Neuroscience Provides Clues to the Biology of Relationships

The field of social neuroscience investigates how during times of need, various brain regions, neurotransmitters, and hormones help to bind people together – parents with their children, husbands with their wives, friends with friends.

In a review of the literature related to the neural circuitry of rewards, Jamil Bhanji and Mauricio Delgado (2014) noted that social support can come from interactions as small as a smile from a colleague or a word of praise from a teacher; it is also experienced through cooperation, as in sharing a prize won in a game. The researchers found that such socially supportive interactions activate the same brain responses as do nonsocial rewards like food or money.

Naomi Eisenberger (2013a, 2013b; Meyer, Eisenberger & Williams, 2015) finds that when we experience social rejection or loneliness, our brains respond in ways similar to those associated with fear and physical threats: the amygdala, dorsal anterior cingulate, dorsal medial prefrontal cortex, sympathetic nervous system, and HPA axis become activated. Conversely, when we experience positive social support, our fear responses decrease; this is evident in reduced activity of our ventromedial prefrontal cortex, ventral anterior cingulate cortex, right dorsolateral prefrontal cortex, and caudate. Positive social support reinforces our feelings of being safe and secure, and enhances our ability to cope with stress.

Another important component of social support is the feeling of being understood. In a brain imaging experiment in which subjects were artificially induced to feel either understood or not understood, feeling understood activated neural regions related to reward (ventral striatum), while feeling not understood activated neural regions related to negative affect (insula, dorsomedial prefrontal cortex) (Morelli, Torre & Eisenberger, 2014). Similarly, in a study of returning Iraq and Afghanistan veterans, our colleague Robb Pietrzak found that the feeling of being understood was more important than other types of social support (e.g. emotional support; advice) in predicting lower PTSD symptoms (Pietrzak, Harpaz-Rotem & Southwick, 2011).

Social neuroscientists have also found that the hormone oxytocin plays an important role in our relationships with others. Oxytocin improves a person's ability to recognize a familiar face, to correctly classify a facial expression as either positive or negative, and to accurately infer the mental state of another person (Shahrestani, Kemp & Guastella, 2013; Heinrichs, von Dawans & Domes, 2009; Lee *et al.*, 2009; Sippel, Allington & Pietrzak, 2017). Scientists believe that these actions of oxytocin may enhance prosocial behavior by promoting social recognition, trust, and social approach (Heinrichs, von

Dawans & Domes, 2009; Striepens *et al.*, 2011; Sippel, Allington & Pietrzak, 2017). It is also known that during states of fear or stress, oxytocin reduces anxiety by dampening the cortisol system (HPA axis) and inhibiting the amygdala and related sympathetic nervous system activation (Shahrestani, Kemp & Guastella, 2013; Koch *et al.*, 2016).

Some of the most interesting research on oxytocin and vasopressin has investigated how these hormones affect the social behavior of two species of rodents, the prairie vole and the montane vole. Prairie voles tend to be monogamous and form attachments with their mates for life. This is unusual; it has been estimated that only 3 percent of mammals are monogamous. (Humans, obviously, are not on this list.) Montane voles, on the other hand, typically mate with many partners.

Oxytocin and vasopressin bind to specific chemical receptors, and in so doing, set off a cascade of chemical reactions. Thomas Insel and colleagues at the National Institute of Mental Health have found that the pattern and distribution of oxytocin and vasopressin receptors differ in the brains of the two species of voles (Insel & Shapiro, 1992). Prairie vole brains have more oxytocin and vasopressin receptors in several areas of the brain, including the nucleus accumbens and the amygdala. As we noted in Chapter 1, these brain regions are involved in social, emotional, survival, and sexual behaviors. Remarkably, when researchers elevated the number of vasopressin receptors in these brain regions, the previously nonmonogamous montane voles created pair bonds. (Imagine the possibilities for keeping a mate from straying with a simple additive to his or her morning coffee!)

To further understand the effects of oxytocin on behavior, scientists have employed “knockout” techniques in which they bred mice to be identical except for oxytocin genes (Hammock & Young, 2006; Winslow & Insel, 2002). Mice with and without the oxytocin gene were then run through a host of learning and memory tests. They found no differences in learning and memory between normal mice and the knockout mice except for social memory. Oxytocin knockout mice showed deficits in social memory, including failure to recognize mice with whom they had shared a cage. On the other hand, injection of oxytocin appears to facilitate affiliative behaviors such as increased touching and grooming. Similar deficits in social memory occur in knockout rats and mice lacking vasopressin receptors (Bielsky & Young, 2004).

This research may have implications for human behavior because human relationships rely heavily on social interactions, including the ability to recognize other individuals, remember their personal qualities, develop trust, and form friendships. In studies with human subjects, oxytocin has been shown to increase trust (Kosfeld *et al.*, 2005) and to decrease stress.

Oxytocin not only fosters trust but may also protect against potentially harmful chemicals (e.g., cortisol) that are released during stress. For example, researchers led by Markus Heinrichs of the University of Zürich (Heinrichs *et al.*, 2003) studied healthy young men in an experiment that focused on how they handled stress. Some of the men were told to come to the experiment alone, while others were asked to bring a close friend. The subjects were randomized into two groups: one group received a dose of oxytocin (via nasal spray) and the other a dose of placebo. The subjects then participated in two stress tests. Those who had brought a friend were allowed to ask the friend for support before and during the stress tests. The first test involved a mock job interview before a panel of strangers, which most people find highly stressful. In the second stress test, participants were asked to solve an arithmetic problem in their heads. During this test, subjects were constantly pushed by the panel to think faster. Salivary cortisol, a hormone marker of stress, was measured at several points during the experiment.

The lowest levels of cortisol were found in men who brought a friend to the test and received oxytocin. The next lowest levels were observed in those who brought a friend but received a placebo instead of oxytocin. Men who came to the experiment alone and who received placebo had the highest levels of cortisol. The researchers concluded, “The combination of oxytocin and social support exhibited the lowest cortisol concentrations as well as increased calmness and decreased anxiety during stress” (Heinrichs *et al.*, 2003, p. 1389).

More recently, some studies have found that the effects of oxytocin administration may depend on social context. It may be that oxytocin enhances sensitivity to environmental cues and has stress-reducing and prosocial effects in positive social environments, but negative social effects in negative contexts (Shamay-Tsoory & Abu-Akel, 2016). For example, oxytocin administration to individuals who are characteristically aggressive has been shown to increase their inclination toward aggression, not only in general but specifically toward intimate partner violence (DeWall *et al.*, 2014; Ne’eman *et al.*, 2016).

In summary, research has found that oxytocin is released during social situations where it appears to facilitate interpretation of social signals, enhance recognition, increase feelings of affiliation, and promote social approach. Oxytocin’s actions in reducing amygdala activation and arousal may help to explain why positive support from others can reduce stress (Heinrichs, von Dawans & Domes, 2009; Lee *et al.*, 2009, Sippel, Allington & Pietrzak, 2017).

Researchers have just begun to examine what happens to oxytocin and vasopressin when people do not have the benefit of a strong social network or a “Tap Code” – when they are isolated, separated from others, or friendless. A study by University of Wisconsin researcher Alison Wismer Fries and colleagues (2005) found lower baseline levels of vasopressin and oxytocin in

four-year-old children raised in deprived social settings with deficient caregiving (orphanages in Russia and Romania) compared to levels of children who had received more nurturing. This was true even though the orphans had been adopted by US families, in some cases up to three years before the experiment took place.

Building Ties That Bind

Clinicians and researchers, including the authors of this book, have not always fully appreciated the importance of social support. In the past, we focused most of our attention on trying to improve one-on-one psychotherapy techniques and searching for medications to reduce painful symptoms. We did not spend much time thinking about the social networks of our patients. But that has changed. Our recent work with patients, our interviews with highly resilient individuals, our reading of the scientific literature, and our discussions with expert social scientists have convinced us that supportive social networks have the power to protect us and strengthen us.

So, how can you assess your own social network, and how can you strengthen that network? Social scientists have developed a number of ways to measure social networks. These methods assess the extent of and/or the quality of a person's network; they typically include questions like "Whom could you count on to help you if you had just been fired from your job or expelled from school?" and "Who do you feel would help you if a family member very close to you died?" (Sarason *et al.*, 1983). They may also ask the extent to which you agree with various statements such as: "I am carefully listened to and understood by family members or friends," "Among my friends or relatives, there is someone who makes me feel better when I am feeling down," "I have problems that I can't discuss with family or friends," and "Among my friends or relatives, there is someone I go to when I need good advice" (D. W. King, L. A. King & Vogt, 2003; L. A. King *et al.*, 2006). We recommend that you ask similar questions and test similar statements to evaluate your own social networks.

The resilient people we interviewed invest effort in giving and receiving social support. Ron and Barb Garrett, the parents of a son with Down syndrome whom we described in Chapter 5, go out of their way to help neighbors with everyday needs; former Vietnam POWs stay in touch with one another through an active website as well as local and annual meetings. In this way, they remain connected and take care of one another. For instance, Tim Cooper calls upon his extensive national network of fellow Special Forces members for help with problems no matter how large or small. Many groups have formed in recent years to provide social support for veterans of the Iraq and Afghanistan wars.

For example, women veterans established the Service Women's Action Network (SWAN), whose mission is not only to connect female veterans with each other but also to press the Pentagon to improve its treatment of women in the military.

As General Hugh Shelton noted, the resilience-enhancing effects of a strong, supportive and trustworthy social network are by no means restricted to the military. We all can find strength by reaching out and connecting with friends, colleagues, mentors, and family. This is particularly true during times of high stress, fear, and loss.

There are myriad ways to broaden and strengthen the extent and strength of your relationships. Gaining and giving social support is a process, not an event; it does not happen overnight. Nevertheless, even if you feel friendless or isolated, it is important to start somewhere. No matter how small or weak your current network may be, you can take steps to increase its size and strength. For example, you might make a habit of smiling and saying hello to the neighbor at the elevator or the co-worker who sits near you. You might pick up the phone and call a family member who is lonely, send a Facebook message to a distant friend who has suffered a loss, or take the time to have coffee with a classmate who has just done poorly on a test.

For some of us who are shy or lacking in self-confidence, striking up a one-on-one conversation may seem difficult. In that case, try to attend social gatherings of any kind – join a hiking group or a book club, or enroll in a continuing education class; take part in religious services or help out at a community event. Another step might involve joining a committee within an organization. As a committee member, you may be assigned specific tasks and goals, which will allow you to interact in a productive way with other group members.

A third way to build one's social network is to join a support group. Support groups of many kinds – including online support groups where the participants never meet in person, and perhaps do not even know each other's identities – can provide the crucial social support that helps us recover after a trauma, or to endure an ongoing ordeal such as living with cancer or HIV/AIDS, or raising a child with special needs. Members of support groups are likely to understand the challenges that others in the group are facing, and they can learn how other members are coping with problems similar to their own. The range of support groups available is almost limitless, and we encourage readers to seek a group that meets their specific needs. If you can't find one that works for you, start one!

Effective social support typically involves genuine communication that reaches beyond the superficial. In a study of the conversations between college undergraduates, Matthias Mehl and colleagues (2010) at the University of Arizona found that conversations of a substantive nature, as opposed to trivial or "small talk" conversations, were correlated with greater happiness. As the authors note, the findings are purely correlational – they do not show whether

in-depth conversations cause happiness, or whether being a happy person might cause one to have more in-depth conversations. Further research on this topic may explore such cause–effect relationships.

In summary, those who know how to build strong positive social networks reap many benefits. Strong positive relationships are associated with better physical health, protection against depression and stress disorders such as PTSD, enhanced emotional well-being, and longer life. In our experience, most resilient individuals take advantage of the profound strengthening effects of positive social networks. In fact, Special Forces soldiers often deny having exceptional personal strength, sturdiness, or resilience. Instead, they believe that they acquire their strength and courage from their squad, from their buddies, from their “family” of fellow soldiers. The same is true for civilians. Elizabeth Ebaugh believes that family, friends, and caring professionals provided a “container” for her healing, and in that container she found strength and courage to endure, and eventually to flourish. But, for most of us, our support network, even if it is extensive and strong, will not automatically reach out to embrace us when we are most in need. Rather, we would be wise to follow the example of the resilient individuals in this book by taking action, reaching out and “leaning into” those who care about us most. Very few resilient individuals go it alone – and neither should you.

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