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"To keep the body in good health is a duty, for otherwise we shall not be able to trim the lamp of wisdom, and keep our mind strong and clear..."

~Buddha~

How Frustration and Fear May Lead to Anger and Aggression

By Kristy Acevedo '18, Nicole Barron '18, & Carlos Donou '19

On February 14, 2018, a former student roamed the halls of Marjory Stoneman Douglas High (Parkland, Florida), opening fire on terrified students and teachers, resulting in one of the deadliest school shootings in modern American History and 17 fatalities (Turkewitz, Mazzei, & Burch, 2018). In the days since, individuals have tried to understand the reasoning behind this act of violence. Violence is not just born one day, there is a dysfunction where fear and frustration are left to fester and can, eventually and tragically, develop into aggression and violence (Devshi, 2016). The progression from frustration to anger, and anger to aggression can be quite menacing when looking at the actions associated with the original frustration. Schools, social services and law enforcement systems need to do a better job in identifying at risk and ultimately dangerous people. It's paramount that individuals initially realize they are facing and moving into a frustration-aggression experience and be prepared to activate coping mechanisms and possibly seek help to manage the stressful situations in their lives.

Understanding the path of emotions from frustration to aggression is crucial in being able to prevent acts of violence. The frustration-aggression theory, published in the mid 1900s by researchers at Yale University, proposes that all acts of aggression are a product of feeling frustrated (Berkowitz, 1989). This theory explains the concept of goal disruption with a myriad of ways that disruption can lead to aggression. The theory highlights that when an individual feels that the obstacle preventing them from achieving their goal is unjustified, that individual is more likely to display acts of aggression (Devshi, 2016). The theory also highlights that people are more likely to be aggressive if they feel their acts of aggression will erase the barrier that is preventing them from reaching their goal (Devshi). The frustration-aggression theory is not the only attempt at trying to understand why frustration can turn into violence. Marco Iacoboni, Professor of Psychiatry and Biobehavioral Studies at the University of California, explains that mirror neurons and lack of cognitive control may provide some explanation as to why anger turns into acts of violence (Greenemeier, 2011). Iacoboni states that mirror neurons make individuals vulnerable to influences; for example, when a person watches someone else's actions closely, it can influence their decision-making and in turn make them more likely to act violently if in fact they are observing violence (Greenemeier). Iacoboni explains that constant exposure to violence in the media may lead to an inability to control cognitive capacities, which increases the likelihood of engaging in acts of violence (Greenemeier). Understanding the plethora of ways frustration may lead to aggression is a fundamental first step towards the creation of interventions and the development of coping skills to promote emotion management and in turn, prevent acts of violence.

Understanding the physiological responses to frustration may serve as an additional deterrent when attempting to manage emotional responses. If a person is angry, heart rate and blood pressure rise and the brain chemistry changes in a way that inhibits clear thinking (Roszler & Brail, 2017). The physiological stress-related responses to fear and frustration can affect both the mind and body, which in turn can interfere with the ability to become less reactive under stress. The concept of "pause and notice" is a brain training activity that can result in improvements in mindfulness, increasing self-awareness. Mindfulness training can reduce anxiety, depression, and stress; it has been used with success in populations as diverse as cardiac patients, prison inmates, police officers, veterans and children (Hayes, 2014). Other methods to manage frustration and anger include: deep breathing, yoga, meditation, Tai Chi, Pilates, and exercising in general (Roszler & Brail). These frustration-management-techniques allow the body a chance to deal with stress while simultaneously accepting and reacting less to the internal discomfort (Hayes). In doing so, individuals are able to observe their own thoughts without judging or acting on them. Adopting these management techniques in an individual's life can help in reducing physiological reactions, enhance coping skills, and reduce overall stress-related anxiety (Roszler & Brail).

The World Health Organization supports the concept that frustration can indeed lead to anger and that community health support is necessary to better enable the public to manage frustration, fear, anger, and aggression. The frustration-aggression theory works to explain that although not all frustration leads to aggression, all aggression is a product of frustration. Understanding these emotions is the first step in solving a problem that so many face worldwide. Individuals that face a frustration dilemma should not turn to aggression to assuage their pain; there are many stress-reducing mind/body approaches that are efficacious. Participating in daily exercise, including yoga and Tai Chi, are techniques that are helpful in reducing both frustration and aggression. Incorporating these management techniques into daily life can be instrumental when coping with frustration and stress overall.

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The Science of Compassion

By Kayla Giacumbo '18, Doris Guadalupe '19, & Rachel Japay '19

Expressing compassion is so powerful that it can literally impact whether one lives or dies. A recent research study found that 81% of patients and 71% of healthcare workers agree that compassionate care greatly impacts mortality rates (Gu, Cavanagh, Baer, & Strauss, 2017). Compassionate behavior includes empathizing with others in pain and approaching oneself and others with an overarching understanding that failure and suffering are a part of the human experience. Research has shown that compassion is positively associated with stress reduction, brain activation, and overcoming illnesses; all of these contribute to better mental health and overall life satisfaction.

Studies demonstrate that self-compassion, the acceptance of one's own flaws and failures has been linked to stress reduction and overall psychological well-being (Keng, Smoski, Robins, Ekblad, & Brantley, 2012). Stress reduction has not only been found to decrease an individual's maladaptive cognitive tendencies, like irrational thoughts, but can also reduce negative emotional behavior, like fearfulness or worrying. Research shows that an increase or decrease in self-compassion rates directly correspond with the emotion of worrying- a primary cognitive component to overall stress. An important component of stress reduction is an individual's emotional regulation, which is the ability to control emotions during stressful situations. Studies have shown that individuals who have trouble controlling their emotions do not understand and accept their emotional circumstances, which leads to difficulty in developing appropriate coping mechanisms. A high level of stress caused by difficulty in managing emotions predisposes the individual to a higher risk of mental illness. Evidence suggests that self-compassion diminishes negative emotional behavior by responding to stressful events in a way that coincides and supports one's own emotions (Finlay-Jones, Rees & Kane, 2015).

The benefits of self-compassion are a decrease in fear, anger, aggression, worry, anxiety, and depression. Individuals who are self-compassionate tend to view stress as a part of the human experience and have reduced negative feelings of isolation when experiencing failure. The vast majority of Americans experience stress on a regular basis. Some populations, such as healthcare professionals, cancer patients, mixed illness populations and college students, all experience heightened levels of stress. (Birnie, Speca, & Carlson, 2010). In these populations and many others, empathy and self-compassion affect mood, stress level and positive health outcomes (Birnie et al.). Empathy and compassion are interrelated and can result in stress reduction. Empathy is a complex, psychological idea that is characterized by a sense of knowing, and even sharing, the experience of another person (Loggia, Mogil, & Bushnell, 2008).

Studies investigating the neural basis of empathy and pain with MRI demonstrate that personal pain and experiencing another's pain through empathy, activate the same areas of the brain (Loggia et al., 2008). Multiple studies involving functional MRI showed that exposure to someone else's pain increases brain activity in the medial frontal lobe, which is an integral part of the limbic system involved in emotion formation, processing, learning and memory (Loggia et al.). Experiencing our own pain is also highlighted in these same areas of the brain. In fact, another study showed that neurons in the human anterior cingulate cortex also fired during perception and observation of pain. (Lamm, Decety, & Singer, 2011).

Increasing amounts of literature indicate that empathy is associated with activation of pain areas of the brain. An empathetic person clearly experiences other's pain in their own pain centers in the brain. When individuals practice a compassion meditation session, brain imaging has shown increased activation within the brain's cerebral cortex, which means that practicing compassion meditation can result in a positive emotional response (Lutz, Brefczynski-Lewis, Johnstone, & Davidson, 2008). Compassion, along with empathy and sympathy, are traits

that can evolve as individuals age. When children become cognizant that they experience things separately from others, their empathic tendencies are then transformed into compassion for the other individual (Bengtsson, Söderström, & Terjestam, 2015). Compassion is a trait that can be learned; ideally, individual's need to want to be compassionate towards others for the best outcome (Lutz et al., 2008).

Being a compassionate doctor has many benefits towards best patient outcomes. In one study, researchers demonstrated that compassionate care addresses the patient's innate need for connection and relationship and is based on attentive listening and a desire to understand the patient's context and perspective (Lown, Rosen & Marttila, 2011). The results demonstrated that compassionate care reduced worry and improved outcomes for patients and resilience among physicians. Clearly, having compassion for oneself and others has a positive effect on overall well-being. For best patient outcomes, compassion in medicine is imperative. Practicing compassion meditation may be one way to employ the many benefits of compassion.

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Gratitude is Great for your HEALTH!

By Danielle Correia '18 & Alexis Sharp '19

Gratitude is a foundational tenet of both well-being and mental health and can be practiced throughout life. Gratitude has been shown to contribute to not only increased positive affect and favorable life outcomes, but also to a decrease in negative affect and problematic functioning (Emmons et al., 2012). Many spiritual traditions acknowledge the value of gratefulness (Tutu & Lama, 2016). In the text, *The Book of Joy*, the Dalai Lama and Archbishop Desmond Tutu express the importance of gratitude and how it allows us to change our perspective towards everything we have and all that has been given. Research suggests that gratitude is an integral component of optimal physical and emotional health throughout the lifespan. It is an especially important facet of raising children well.

Grateful individuals experience a wide variety of social and psychological health benefits (Hill, Allemand, & Roberts, 2013). Dispositional gratitude can be defined as “part of a wider life-orientation towards noticing and appreciating the positive in the world” (Wood, Froh, & Geraghty, 2010). Grateful people are able to appreciate their blessings, they are likely to see their lives and experiences as “gifts” about which to be thankful (Hill et al., 2013). Furthermore, dispositional gratitude improves aspects of physical health (McCullough, Emmons, & Tsang, 2002); for example, a study with participants who were recording weekly gratitude lists had fewer physical ailments (Emmons & McCullough, 2003). This study demonstrated that grateful individuals experienced better physical health, in part, because of their greater psychological health, propensity for healthy activities, and willingness to seek help for health concerns. Further research demonstrated that the traits of conscientiousness, emotional stability, and optimism were associated with gratitude and all contributed to better physical health (Hill et al., 2013).

Parents who model gratitude as part of their parenting style can positively impact the ability of their own children to develop the ability to be grateful. In addition, the grateful behaviors exhibited by a child's parents can positively impact the parent-child bond, family closeness, and family problem-solving-behaviors (Muller, 2014). Parents are the primary role model for their children; they play a significant role in the development of emotional and social competence. The research surrounding how to support the development of a grateful child is in its infancy. It is estimated that between the ages of 10-14, children start to recognize and appreciate acts of kindness from others. “Psychologists have discovered that the experience of being thankful or appreciative of someone or something is one of the best ways to increase happiness” (Hawn, Holden, & Siegel, 2011). Effective parenting should include endeavoring to introduce gratitude and appreciation into daily life, which can bolster a child's happiness-enhancing emotional skills. While expressing gratitude, optimistic kids have a sense of appreciation for what they have rather than complain about what they don't have. Children imitate their parents, so modeling the more sustainable behavior of gratitude over instant gratification may have long lasting positive effects on a child's well-being (Ramey, 2018).

Practicing gratitude may include activities like counting our blessings aloud or in writing, or it can be as simple as pausing and noticing the beauty or peace around us. According to Jon Kabat-Zinn, the seminal researcher behind mindfulness, “Mindfully counting your blessings is like watering seeds in your heart” (Hawn, 2011, p133).

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HAPPY BRAIN: Theory

By Caitlin Escudero '18 & Ahmad Miller '18

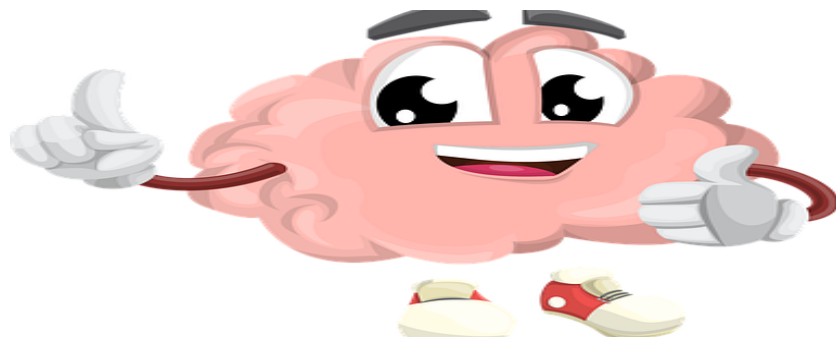
The emotion of happiness is one that is frequently associated with smiling, laughing, jumping for joy etc. For some people, they view happiness as impossible to obtain while others are more optimistic that it can be achieved and sustained. According to Dr. Richard Davidson, founder and director of the Center for Healthy Minds at the University of Wisconsin, we can change our brain pathways in order to promote and achieve happiness within ourselves (Davidson, 2016). Dr. Davidson emphasizes that a healthy happy brain can be achieved by strengthening four elements of well being; those four elements are resilience, outlook, generosity, and attention .

The first element is resilience. Davidson (2016) describes it as our ability to recover from adversity throughout the course of our life. Life is constantly filled with unknown challenges and setbacks which are often met with negative emotions (Davidson, 2016). A study conducted by Ed Diener and his team elaborated on Dr. Davidson's theory, stating that life's setbacks, trauma, and challenges are known as negative affect (Diener, Oishi, & Lucas, 2003). Negative affect makes way for emotions such as stress, anxiety, sadness, anger etc; all of which can result in increased skepticism and a more pessimistic outlook (Ortony & Turner, 1990). Davidson's research confirms that while some people might have a slower recovery response to setbacks, there's a way to increase the process of recovery such that it can happen more readily. Through a process known as mindfulness meditation, we can alter our brain circuits with regular practice. The research suggests that there is a strong association between the practice of mindfulness meditation and overall resilience along with an improved ability to be mindful, which can result in a healthier, happier outlook.

The second element of well being is outlook; this is defined as the perspective one has not only about life but also towards others (Davidson, 2016). We must learn to engage our capacity to see others as valuable human beings in order to more readily savor positive experiences (Davidson). Countless times we fail to see the good in others, as Dr. Davidson suggests, but we can bypass that through practicing loving kindness; showing more empathy. Expressing empathy broadens our perspectives, teaching us to acknowledge others and their way of life. Having empathy can contribute to the development of the next key element in Davidson's theory; that of generosity. Research suggests that those who participate in charities and community events, activate new circuits in their brains. These new circuits help engage that "happy feeling" similar to that of earning accolades, but the happy feelings are more much permanent than temporary pleasure (Davidson).

The final element is attention which is loosely defined as our observations in life. The concept of paying attention can also be thought of as awareness. Dr. Davidson presents that the average American adult spends about 47% of their life without paying attention to what they're doing (Davidson, 2012). He elaborates that we have to be in the moment to truly understand ourselves and figure out our wants and needs. According to William James in 1890, the father of American psychology, "Attention is something that can be educated and learned". The more educated we are on attention, the more we may be able to appreciate the present moment and all of the blessings therein.

In Dr. Davidson's book, *The Emotional Life of Your Brain*, he describes how the mind, brain, and body connection can influence an individual's happiness and overall well-being. Davidson goes on to explain that according to present-day neuroscience, emotions infuse not only the mind but the body; meaning for example, having feelings of anxiety increases blood pressure and can make an individual's pulse race. The good news is that the opposite is also true, positive emotions as well so feelings of peace or happiness, can strengthen and enhance the immune system. (Davidson, 2012). (continued on page 5)



Various studies connect happiness to increasing health and longevity. Dr. Davidson and colleagues conducted a study over a two-year period investigating the relationship between emotions and longevity among Mexican Americans between the ages of 65 and 99. The results demonstrated that individuals with higher levels of positive feelings at the beginning were only half as likely to die over the following two years than those with lower levels of positive feelings (Davidson). The researchers highlighted that even among the research participants who were suffering from various diseases such as stroke, cancer, heart problems, and obesity, their positive emotions kept them healthier and reduced their risk of dying soon (Davidson).

Positive emotions play a very important role in an individual's overall well-being. According to Davidson, one's emotional style can influence their behavior resulting in living a healthy life; for example, experiencing joy and feeling happy is associated with eating healthier, exercising consistently, and sleeping better. These three elements have the ability to improve health and fight off disease and decline, both physically and mentally (Davidson, 2012).

Positive feelings and emotions also have the ability to directly influence our physiological state. This can be linked to the sympathetic nervous system that controls the fight or flight response to danger. When the parasympathetic nervous system is activated, it results in reductions in heart rate and blood pressure, while this can in turn reduce the risk for cardiovascular disease (Davidson, 2012).

Positive emotions also have a powerful impact on health through the bolstering of our immune systems. According to Davidson, positive emotions are associated with increased levels of growth hormone and the hormones prolactin and oxytocin. These hormones can bind to white blood cell receptors to strengthen the defenses of an individual's immune system making it more effective (Davidson, 2012).

One thing is for certain, life will be challenging at times. Dr. Davidson and colleagues present to us a set of skills that we can hone in order to increase happiness and overall well-being. They suggest that well-being is not a static phenomenon, but can be cultivated with time and effort. Focusing on opportunities to extend empathy and kindness can create new circuits in the brain leading to a healthier, happier outlook on life. A happy brain can drive an individual towards adopting healthy behaviors, allowing us to literally shape our human experience. Based on the understanding of this theory, your mind is a powerful tool, it needs to be filled with positive thoughts and your life will flourish (Carmichael, 2017).

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The Mind Wanders 47% of the Time!

By Tierra Boyd '18 & Xia Estaris '18

Mind-wandering is the ability of the human mind to contemplate events that have happened in the past, events that may happen in the future, or even events that may never happen. Studies have shown that mind-wandering can have detrimental effects on our emotional state; research suggests that the mind wanders 47% of the time (Killingsworth & Gilbert 2010). Mindfulness is a skill that runs counter to the detrimental effects of mind-wandering.

Important research surrounding the emotional effects of mind-wandering evaluated the frequency of mind-wandering and the topics upon which participants focused their mind during the wandering stages (Killingsworth & Gilbert, 2010). Through an iPhone application the researchers were able to create a large database of real-time reports of thoughts, feelings, and actions from a broad range of people who were participating in their normal daily activities (Killingsworth & Gilbert). Among the 2,250 adults from whom they collected data, they found that mind-wandering happened 47% of the time regardless of what was happening throughout their day (Killingsworth & Gilbert). In addition, their data showed that people were less happy when their minds were wandering than when they were not, however, they were more likely to mind-wander on more pleasant topics than unpleasant or neutral topics (Killingsworth & Gilbert, 2010). The researchers concluded that a wandering mind is indeed an unhappy mind (Killingsworth & Gilbert, 2010).

There may be one positive reason that the mind wanders and it is considered an evolutionary adaptation (Killingsworth & Gilbert, 2010). Mind-wandering can enhance creative thinking and this was tested by Baird and colleagues (2012) from University of California. The researchers measured creativity through an unusual uses task (UUT) method through which the participants were asked to list as many unusual uses possible for each stimulus over a period of two minutes. The results demonstrated that the group that had the least demanding task had an improvement in the UUT creative problems solving. This improvement on how many unusual tasks they were able to list for each stimulus showed that the research supports the notion that undemanding tasks maximize mind-wandering can also spur creative thinking.

One effective way to control the deleterious effects of mind-wandering is through mindfulness training. Mindfulness is described as a psychological and mental awareness of one's surroundings, feelings, emotions, thoughts and sensations in the present moment, sans judgement. Research suggests that the ability to be mindful may have a positive effect on well-being and quality of life (Tang, Hölzel, & Posner, 2015). Meditation has been considered a form of a brain training that can improve the structural and functional aspects of the brain and in turn improve attention and emotional regulation. Neuroscience research found that mindfulness and attention correlated with the ability to regulate one's attention among new meditators (Tang et al.).

In a study conducted by Tang and colleagues (Tang et al, 2015), the concept of attention was subdivided into three components; alertness, orientation, and conflict of monitoring. These components of attention were measured through an exam called ANT. Through the study results showed that 20 minutes of mind-body training through meditation led to improvements in conflict monitoring; however, this only occurred when meditation took place on five consecutive days (Tang et al). The researchers also measured attentional blink, which is a measure of distractibility and associated with mind-wandering in the literature. Through the span of three months the mindfulness meditation intervention resulted in a reduction in attentional blink (Tang et al).

There are other techniques to improve mindfulness, the first of which is mindful walking. Mindful walking involves moving the body through space in any environment and noticing thoughts, emotions, scenery, and sensation without judgement (Anonymous, 2017). Practicing the skill of being in the moment and open and available to what exists in that moment without judging it can improve the overall ability of being mindful. When we are mindful, we can become aware of how the diverse internal and external stimuli we experience can provoke automatic, immediate, unthinking responses in our thoughts, emotions, and actions (Talbot-Zorn & Edgette, 2016). Moving the body through space through moderate walking engages the musculoskeletal system and the cardiovascular system and can serve as a mechanism through which one can create a physiological steady state. The physiological steady state can make space for the moment to moment awareness in the mind and emotional self. The choice between impulse and action creates awareness for which one can help develop coping skills and positive behavioral change (Anonymous, 2017). Another technique that helps improve the ability to be mindful is mindfulness meditation. Meditation increases mental strength and focus (Dienstmann, 2016). Mindfulness meditation segments are widely available on YouTube and can be as short as five minutes for the beginner.

Mind-wandering is an evolutionary achievement for humanity, it is through mind-wandering that we are able to create a distinction between what was, what is, and what can be. When the mind-wanders, it affects our emotional state and can diminish our happiness. Increases in mindfulness can counter the effects of mind-wandering, while also improving our ability to self-regulate.

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Community Service Enhances Well-Being

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To most people, community service is just a way to give back to society and to help people in need; however, it can also have a tremendous positive effect on the health of the giver. Science suggests that there are psychological benefits to service and that giving to others is one important contributor to having a long life as uncovered by the Blue Zones research (Buettner, 2017). Volunteering is defined as being non-obligatory in nature and having no implied demands (Smith, Holmes, Haski-Leventhal, Cnaan, Handy, & Brudney, 2010). "Today, scientific research provides compelling data to support the notion that giving of one's time, talents and treasures is a powerful pathway to finding purpose, transcending difficulties, and finding fulfillment and meaning in life" (Santi, 2015, p. 1). In a research article entitled, Volunteer Work and Well-being by Lyndi Hewitt and Thoits (2001), she examines and explains the positive relationship between volunteer work in the community and six aspects of personal well-being; happiness, life satisfaction, self esteem, sense of control over life, physical health, and depression.

In general, people involved in community service have a heightened state of well-being and may likely have better overall health. Although people with good mental health may be somewhat more inclined to volunteer, Hewitt suggests that people who are physically unstable, or may suffer from mental health issues, could benefit tremendously from giving their time towards the betterment of others (Hewitt & Thoits, 2001). Volunteer work is likely to contribute to feelings of self-worth, self-efficacy, happiness, and satisfaction; all important aspects of good mental health (Jahoda, 1958).

Researchers have found that volunteering can result in improvements in self reported health parameters (Piliavin & Siegl, 2007). There is also a strong correlation between the number of hours spent volunteering, the consistency of volunteering over time, and the social integration of the volunteer into the community environment (Piliavin & Siegl).

The enjoyment derived from volunteering may come from both a personal sense of satisfaction and the pleasant response to the activity itself. Research suggests that "mattering" is the meditation piece between volunteering and increased psychological health and wellbeing. When a person perceives that they "matter", it contributes to their sense of purpose and informs their sense of self-value (Piliavin & Siegl, 2007). Volunteering also predicts greater life satisfaction and better perceived health regardless of the type of service provided (Piliavin & Siegl, 2007). Another mechanism that is associated with volunteering and mental and physical well-being is the social integration that occurs during volunteering, which in turn can reduce social isolation and alienation (Piliavin & Siegl, 2007). The social integration effects of volunteering may be a product of feelings generated that suggest one has an important role in society and that their existence counts.

Service can also have a life-enhancing effect on teens and adolescents. During a young person's adolescent years they develop both socially and physically. Youth who volunteer for just one or more hours a week are 50% less likely to use alcohol or cigarettes, become pregnant or engage in reckless behavior (Latham, n.d.). For these and many other reasons community service is a commonly prescribed civic practice for adolescents (Gotham et al., 2014).

Performing community service has a potentially positive impact on both the server and the community. A life of inconvenience, not convenience, is associated with a longer life. In the Blue Zones research, the 100 year old grandfather, who walked to town every day to collect the food for the evening meal, suggested that this purpose and service to his family sustained him (Buettner, 2017).

"If you want happiness for an hour, take a nap. If you want happiness for a day, go fishing. If you want happiness for a year, inherit a fortune. If you want happiness for a lifetime, help somebody" (Chinese proverb).

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