



# Certificado Introducción a la Psicología Positiva Tecnimilenio

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## **Topic 1**

# Introducción a la Psicología Positiva

# Happiness: The Science of Subjective Well-Being

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N O B A



## Abstract

Subjective well-being (SWB) is the scientific term for happiness and life satisfaction—thinking and feeling that your life is going well, not badly. Scientists rely primarily on self-report surveys to assess the happiness of individuals, but they have validated these scales with other types of measures. People's levels of subjective well-being are influenced by both internal factors, such as personality and outlook, and external factors, such as the society in which they live. Some of the major determinants of subjective well-being are a person's inborn temperament, the quality of their social relationships, the societies they live in, and their ability to meet their basic needs. To some degree people adapt to conditions so that over time our circumstances may not influence our happiness as much as one might predict they would. Importantly, researchers have also studied the outcomes of subjective well-being and have found that "happy" people are more likely to be healthier and live longer, to have better social relationships, and to be more productive at work. In other words, people high in subjective well-being seem to be healthier and function more effectively compared to people who are chronically stressed, depressed, or angry. Thus, happiness does not just feel good, but it is good for people and for those around them.

# Learning Objectives

- Describe three major forms of happiness and a cause of each of them.
- Be able to list two internal causes of subjective well-being and two external causes of subjective well-being.
- Describe the types of societies that experience the most and least happiness, and why they do.
- Describe the typical course of adaptation to events in terms of the time course of SWB.
- Describe several of the beneficial outcomes of being a happy person.
- Describe how happiness is typically measured.

## Introduction

When people describe what they most want out of life, happiness is almost always on the list, and very frequently it is at the top of the list. When people describe what they want in life for their children, they frequently mention health and wealth, occasionally they mention fame or success—but they almost always mention happiness. People will claim that whether their kids are wealthy and work in some prestigious occupation or not, “I just want my kids to be happy.” Happiness appears to be one of the most important goals for people, if not the most important. But what is it, and how do people get it?

In this chapter I describe “**happiness**” or subjective well-being (SWB) as a process—it results from certain **internal** and **external causes**, and in turn it influences the way people behave, as well as their physiological states. Thus, high SWB is not just a pleasant outcome but is an important factor in our future success. Because scientists have developed valid ways of measuring “happiness,” they have come in the past decades to know much about its causes and consequences.

## Types of Happiness

Philosophers debated the nature of happiness for thousands of years, but scientists have recently discovered that happiness means different things. Three major types of happiness are high **life satisfaction**, frequent **positive feelings**, and infrequent **negative feelings** (Diener, 1984). “**Subjective well-being**” is the label given by scientists to the various forms of happiness taken together. Although there are additional forms of SWB, the three in the table below have been studied extensively. The table also shows that the causes of the different types of happiness can be somewhat different.

Three Types of Happiness	Examples	Causes
Life Satisfaction	<ul style="list-style-type: none"> <li>• I think my life is great</li> <li>• I am satisfied with my job</li> </ul>	<ul style="list-style-type: none"> <li>• A good income</li> <li>• Achieving one's goals</li> <li>• High self-esteem</li> </ul>
Positive Feelings	<ul style="list-style-type: none"> <li>• Enjoying life</li> <li>• Loving others</li> </ul>	<ul style="list-style-type: none"> <li>• Supportive friends</li> <li>• Interesting work</li> <li>• Extraverted personality</li> </ul>
Low Negative Feelings	<ul style="list-style-type: none"> <li>• Few chronic worries</li> <li>• Rarely sad or angry</li> </ul>	<ul style="list-style-type: none"> <li>• Low neuroticism</li> <li>• One's goals are in harmony</li> <li>• A positive outlook</li> </ul>

Table 1. Three Types of Subjective Well-Being

You can see in the table that there are different causes of happiness, and that these causes are not identical for the various types of SWB. Therefore, there is no single key, no magic wand—high SWB is achieved by combining several different important elements (Diener & Biswas-Diener, 2008). Thus, people who promise to know the key to happiness are oversimplifying.

Some people experience all three elements of happiness—they are very satisfied, enjoy life, and have only a few worries or other unpleasant emotions. Other unfortunate people are missing all three. Most of us also know individuals who have one type of happiness but not another. For example, imagine an elderly person who is completely satisfied with her life—she has done most everything she ever wanted—but is not currently enjoying life that much because of the infirmities of age. There are others who show a different pattern, for example, who really enjoy life but also experience a lot of stress, anger, and worry. And there are those who are having fun, but who are dissatisfied and believe they are wasting their lives. Because there are several components to happiness, each with somewhat different causes, there is no magic single cure-all that creates all forms of SWB. This means that to be happy, individuals must acquire each of the different elements that cause it.

## Causes of Subjective Well-Being

There are external influences on people's happiness—the circumstances in which they live. It is possible for some to be happy living in poverty with ill health, or with a child who has a serious disease, but this is difficult. In contrast, it is easier to be happy if one has supportive family and friends, ample resources to meet one's needs, and good health. But even here there are exceptions—people who are depressed and unhappy while living in excellent circumstances. Thus, people can be happy or unhappy because of their personalities and the way they think about the world or because of the external circumstances in which they live. People vary in their propensity to happiness—in their personalities and outlook—and this means that knowing their living conditions is not enough to predict happiness.

In the table below are shown internal and external circumstances that influence happiness. There are individual differences in what makes people happy, but the causes in the table are important for most people (Diener, Suh, Lucas, & Smith, 1999; Lyubomirsky, 2013; Myers, 1992).

<b>Internal Causes ("Top-Down influences")</b>	<b>Description</b>
Inborn temperament	Studies of monozygotic ("identical") twins raised apart indicate that our genes influence our happiness. Even when raised apart, identical twins tend to be similar in their levels of subjective well-being.
Personality and temperament	Personality is partly inborn and partly learned, and it influences our happiness. For example: Extraverts tend to have more positive feelings. Neurotics tend to have more negative feelings.
Outlook	People can develop habits of noticing the good things in life and interpreting ambiguous events in positive ways. Other people develop negative mental habits, leading to more unhappiness. One's culture also can influence whether we take an optimistic or pessimistic view of life.
Resilience	Happy individuals tend to bounce back more quickly after losses and negative events.
<b>External Causes ("Bottom-Up Influences")</b>	<b>Description</b>
Sufficient material resources	People have enough money to meet their basic needs and fulfill their major goals.
Sufficient social resources	People differ in their need for social contact, but everyone needs some supportive and trusted others: family, a friend, or a partner, or sometimes all three. We need other people to lead a fulfilled life.
Desirable society	Our own efforts and circumstances influence our happiness, but so does the society in which we live. A society of hunger, war, conflict, and corruption is much less happy than one with material resources, high levels of trust and cooperation, and people who want to help each other.

Table 2. Internal and External Causes of Subjective Well-Being

## Societal Influences on Happiness

When people consider their own happiness, they tend to think of their relationships, successes and failures, and other personal factors. But a very important influence on how happy people are is the society in which they live. It is easy to forget how important societies and neighborhoods are to people's happiness or unhappiness. In Figure 1, I present life satisfaction around the world. You can see that some nations, colored bright green, are high in life

satisfaction. Others, colored red, are very low. The grey areas in the map are places we could not collect happiness data—they were just too dangerous or inaccessible.

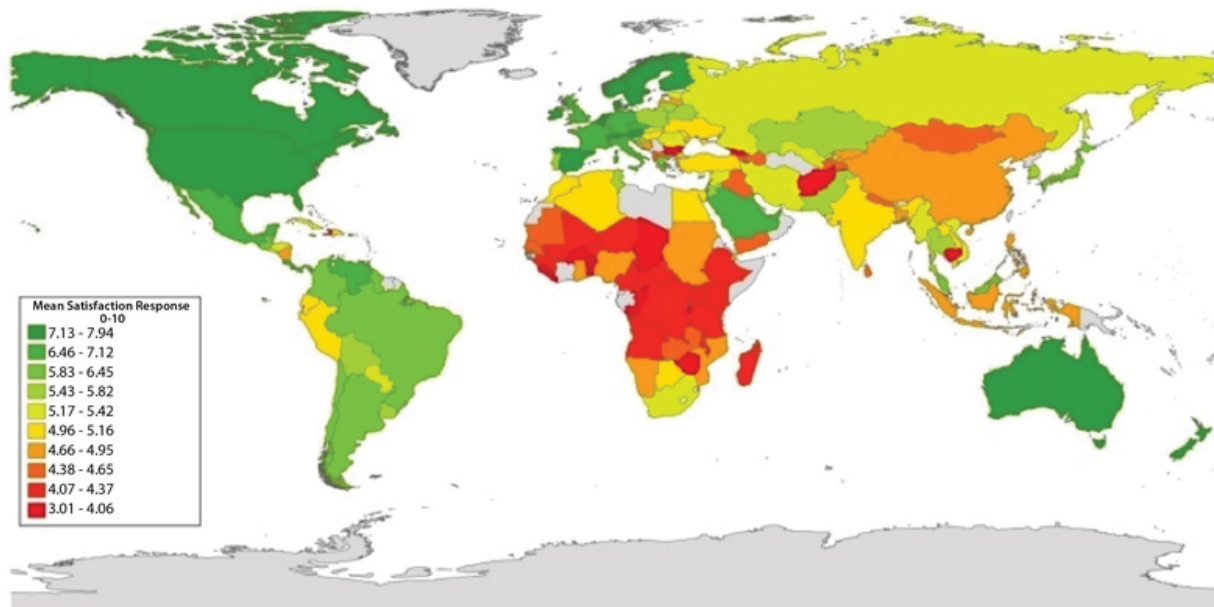


Figure 1

Can you guess what might make some societies happier than others? Much of North America and Europe have relatively high life satisfaction, and much of Africa is low in life satisfaction. For life satisfaction living in an economically developed nation is helpful because when people must struggle to obtain food, shelter, and other basic necessities, they tend to be dissatisfied with lives. However, other factors, such as trusting and being able to count on others, are also crucial to the happiness within nations. Indeed, for enjoying life our relationships with others seem more important than living in a wealthy society. One factor that predicts unhappiness is conflict—individuals in nations with high internal conflict or conflict with neighboring nations tend to experience

low SWB.

## Money and Happiness

Will money make you happy? A certain level of income is needed to meet our needs, and very poor people are frequently dissatisfied with life (Diener & Seligman, 2004). However, having more and more money has diminishing returns—higher and higher incomes make less and less difference to happiness. Wealthy nations tend to have higher average life satisfaction than poor nations, but the United States has not experienced a rise in life satisfaction over the past decades, even as income has doubled. The goal is to find a level of income that you can live with and earn. Don't let your aspirations continue to rise so that you always feel poor, no matter how much money you have. Research shows that materialistic people often tend to be less happy, and putting your emphasis on relationships and other areas of life besides just money is a wise strategy. Money can help life satisfaction, but when too many other valuable things are sacrificed to earn a lot of money—such as relationships or taking a less enjoyable job—the pursuit of money can harm happiness.

There are stories of wealthy people who are unhappy and of janitors who are very happy. For instance, a number of extremely wealthy people in South Korea have committed suicide recently, apparently brought down by stress and other negative feelings. On the other hand, there is the hospital janitor who loved her life because she felt that her work in keeping the hospital clean was so important for the patients and nurses. Some millionaires are dissatisfied because they want to be billionaires. Conversely, some people with ordinary incomes are quite happy because they have learned to live within their means and enjoy the less expensive things in life.



It is important to always keep in mind that high materialism seems to lower life satisfaction—valuing money over other things such as relationships can make us dissatisfied. When people think money is more important than everything else, they seem to have a harder time being happy. And unless they make a great deal of money, they are not on average as happy as others. Perhaps in seeking money they sacrifice other important things too much, such as relationships, spirituality, or following their interests. Or it may be that materialists just can never get enough money to fulfill their dreams—they always want more.

To sum up what makes for a happy life, let's take the example of Monoj, a rickshaw driver in Calcutta. He enjoys life, despite the hardships, and is reasonably satisfied with life. How could he be relatively happy despite his very low income, sometimes even insufficient to buy enough food for his family? The things that make Monoj happy are his family and friends, his religion, and his work, which he finds meaningful. His low income does lower his life satisfaction to some degree, but he finds his children to be very rewarding, and he gets along well with his neighbors. I also suspect that Monoj's positive temperament and his enjoyment of social relationships help to some degree to overcome his poverty and earn him a place among the happy. However, Monoj would also likely be even more satisfied with life if he had a higher income that allowed more food, better housing, and better medical care for his family.



Figure 2. Monoj, a Happy Rickshaw Driver in Calcutta

Besides the internal and external factors that influence happiness, there are psychological influences as well—such as our aspirations, social comparisons, and adaptation. People’s aspirations are what they want in life, including income, occupation, marriage, and so forth. If people’s aspirations are high, they will often strive harder, but there is also a risk of them falling short of their aspirations and being dissatisfied. The goal is to have challenging aspirations but also to be able to adapt to what actually happens in life.

One’s outlook and resilience are also always very important to happiness. Every person will have disappointments in life, fail at times, and have problems. Thus, happiness comes not to people who never have problems—there are no such individuals—but to people who are able to bounce back from failures and adapt to disappointments. This is why happiness is never caused just by what happens to us but always includes our outlook on life.

## Adaptation to Circumstances

The process of **adaptation** is important in understanding happiness. When good and bad events occur, people often react strongly at first, but then their reactions adapt over time and they return to their former levels of happiness. For instance, many people are euphoric when they first marry, but over time they grow accustomed to the marriage and are no longer ecstatic. The marriage becomes commonplace and they return to their former level of happiness. Few of us think this will happen to us, but the truth is that it usually does. Some people will be a bit happier even years after marriage, but nobody carries that initial “high” through the years.

People also adapt over time to bad events. However, people take a long time to adapt to certain negative events such as unemployment. People become unhappy when they lose their work, but over time they recover to some extent. But even after a number of years, unemployed individuals sometimes have lower life satisfaction, indicating that they have not completely habituated to the experience. However, there are strong individual differences in adaptation, too. Some people are resilient and bounce back quickly after a bad event, and others are fragile and do not ever fully adapt to the bad event. Do you adapt quickly to bad events and bounce back, or do you continue to dwell on a bad event and let it keep you down?

An example of adaptation to circumstances is shown in Figure 3, which shows the daily moods of “Harry,” a college student who had Hodgkin’s lymphoma (a form of cancer). As can be seen, over the 6-week period when I studied Harry’s moods, they went up and down. A few times his moods dropped into the negative zone below the horizontal blue line. Most of the time Harry’s moods were in the positive zone above the line. But about halfway through the study Harry was told that his cancer was in remission—effectively cured—and his moods on that day spiked way up. But notice that he quickly adapted—the effects of the good news wore off, and Harry adapted back toward where he

was before. So even the very best news one can imagine—recovering from cancer—was not enough to give Harry a permanent “high.” Notice too, however, that Harry’s moods averaged a bit higher after cancer remission. Thus, the typical pattern is a strong response to the event, and then a dampening of this joy over time. However, even in the long run, the person might be a bit happier or unhappier than before.

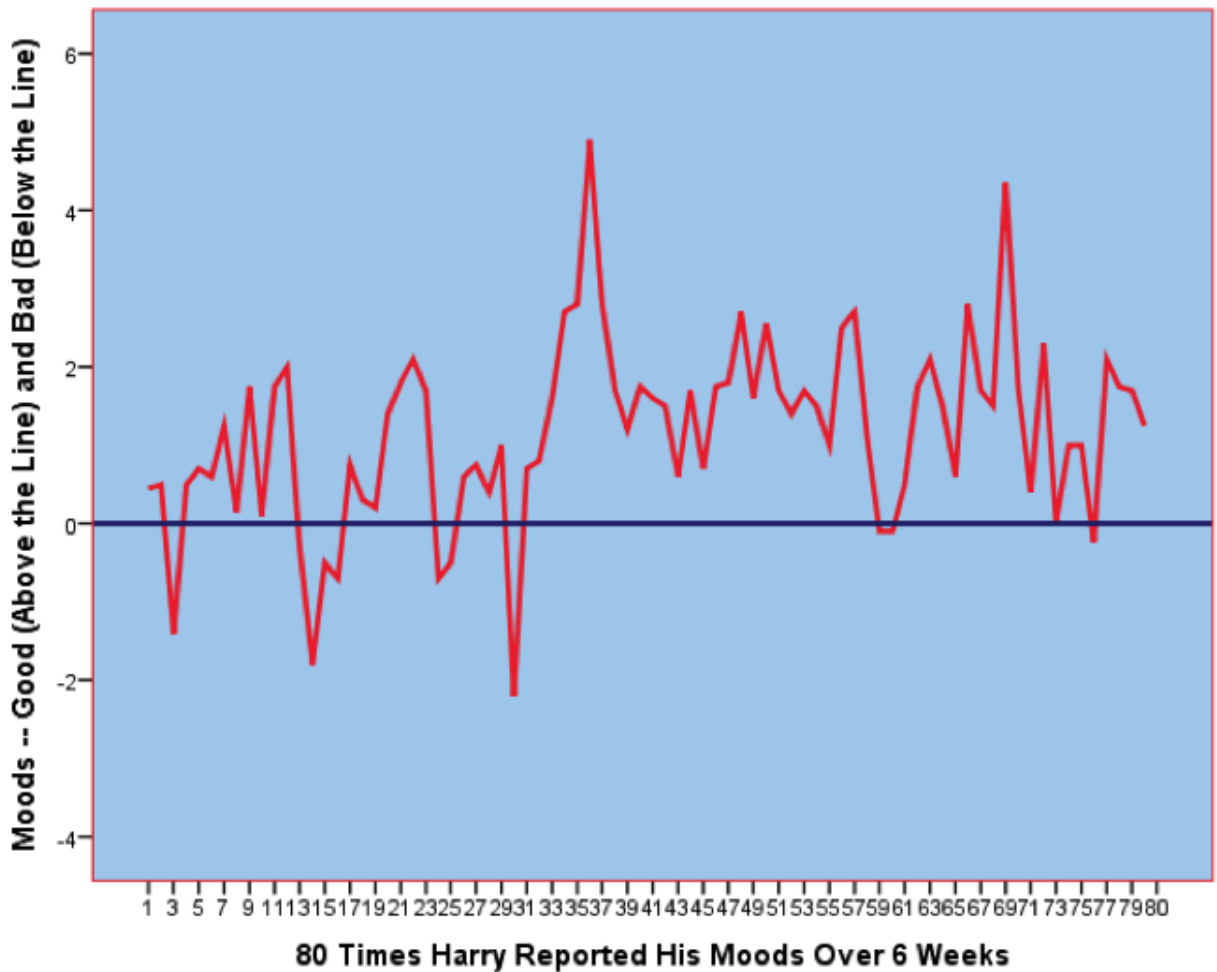


Figure 3. Harry's Daily Moods

## Outcomes of High Subjective Well-Being

Is the state of happiness truly a good thing? Is happiness simply a feel-good state that leaves us unmotivated and ignorant of the world's problems? Should people strive to be happy, or are they better off to be grumpy but "realistic"? Some have argued that happiness is actually a bad thing, leaving us superficial and uncaring. Most of the evidence so far suggests that happy people are healthier, more sociable, more productive, and better citizens (Diener & Tay, 2012; Lyubomirsky, King, & Diener, 2005). Research shows that the happiest individuals are usually very sociable. The table below summarizes some of the major findings.

Although it is beneficial generally to be happy, this does not mean that people should be constantly euphoric. In fact, it is appropriate and helpful sometimes to be sad or to worry. At times a bit of worry mixed with positive feelings makes people more creative. Most successful people in the workplace seem to be those who are mostly positive but sometimes a bit negative. Thus, people need not be a superstar in happiness to be a superstar in life. What is not helpful is to be chronically unhappy. The important question is whether people are satisfied with how happy they are. If you feel mostly positive and satisfied, and yet occasionally worry and feel stressed, this is probably fine as long as you feel comfortable with this level of happiness. If you are a person who is chronically unhappy much of the time, changes are needed, and perhaps professional intervention would help as well.

## Measuring Happiness

SWB researchers have relied primarily on **self-report scales** to assess happiness—how people rate their own happiness levels on self-report surveys. People respond to numbered scales to indicate their levels of satisfaction, positive feelings, and lack of negative feelings. You can see where you stand on these

scales by going to [noba.com](#) or by filling out the Flourishing Scale below. These measures will give you an idea of what popular scales of happiness are like.

Below are eight statements with which you may agree or disagree. Using the 1–7 scale below, indicate your agreement with each item by picking the appropriate response for each statement.

- 7 – Strongly agree
- 6 – Agree
- 5 – Slightly agree
- 4 – Neither agree nor disagree
- 3 – Slightly disagree
- 2 – Disagree
- 1 – Strongly disagree

\_\_ I lead a purposeful and meaningful life

\_\_ My social relationships are supportive and rewarding

\_\_ I am engaged and interested in my daily activities

\_\_ I actively contribute to the happiness and well-being of others

\_\_ I am competent and capable in the activities that are important to me

\_\_ I am a good person and live a good life

\_\_ I am optimistic about my future

\_\_ People respect me

**Scoring:**

Add the responses, varying from 1 to 7, for all eight items. The possible range of scores is from 8 (lowest possible) to 56 (highest PWB possible). A high score represents a person with many psychological resources and strengths.

The self-report scales have proved to be relatively valid (Diener, Inglehart, & Tay, 2012), although people can lie, or fool themselves, or be influenced by their current moods or situational factors. Because the scales are imperfect, well-being scientists also sometimes use biological measures of happiness (e.g., the strength of a person's immune system, or measuring various brain areas that are associated with greater happiness). Scientists also use reports by family, coworkers, and friends—these people reporting how happy they believe the target person is. Other measures are used as well to help overcome some of the shortcomings of the self-report scales, but most of the field is based on people telling us how happy they are using numbered scales.

There are scales to measure life satisfaction (Pavot & Diener, 2008), positive and negative feelings, and whether a person is psychologically flourishing (Diener et al., 2009). Flourishing has to do with whether a person feels meaning in life, has close relationships, and feels a sense of mastery over important life activities. You can take the well-being scales created in the Diener laboratory, and let others take them too, because they are free and open for use.

## Some Ways to Be Happier

Most people are fairly happy, but many of them also wish they could be a bit more satisfied and enjoy life more. Prescriptions about how to achieve more happiness are often oversimplified because happiness has different components and prescriptions need to be aimed at where each individual needs improvement—one size does not fit all. A person might be strong in one area and deficient in other areas. People with prolonged serious unhappiness might need help from a professional. Thus, recommendations for how to achieve happiness are often appropriate for one person but not for others. With this in mind, I list in Table 4 below some general recommendations for you to be



happier (see also Lyubomirsky, 2013):

<b>Self-Questions for Becoming Happier</b>
Are there controllable things in your life that could be changed to make your life more meaningful and happy? What are the obstacles to change and why haven't you taken them?
Do you generally see the bright side of things—the part of the glass that is half full, or do you always see the dark side of things? Can you change this outlook on life by working to break the empty-glass view of life? Can you develop more positive mental habits, such as being grateful to others for all of the things they do for you?
Are there people around you who make you feel good about yourself and who make your life more enjoyable? How can you reduce the number of “downers” who might surround you?
In your relationships, seek to make others happy and help others, not just receive support from others. The happiest and healthiest people are often those who help others and the world. Beyond actually helping others, express gratefulness to them and be a person who gives lots of compliments.
Find work that you will love and be good at, while being realistic about your chances of finding certain jobs. Don't overweight the importance of money or status in selecting an occupation. Find a job that interests you and plays to your strengths. If you find a job you love, this can be a big boost to happiness.

Table 4

# Outside Resources

**Video: Recipes for Happiness - Interview with Ed Diener**

<http://tinyurl.com/qao7vs6>

**Video: Recipes for Happiness - Interview with Ruut Veenhoven**

<http://tinyurl.com/osmeu3b>

**Web: Barbara Fredrickson's website on positive emotions**

<http://www.unc.edu/peplab/news.html>

**Web: Ed Diener's website**

<http://internal.psychology.illinois.edu/~ediener/>

**Web: International Positive Psychology Association**

<http://www.ippanetwork.org/>

**Web: Positive Acorn Positive Psychology website**

<http://positiveacorn.com/>

**Web: Sonja Lyubomirsky's website on happiness**

<http://sonjalyubomirsky.com/>

**Web: University of Pennsylvania Positive Psychology Center website**

<http://www.ppc.sas.upenn.edu/>

**Web: World Database on Happiness**

<http://www1.eur.nl/fsw/happiness/>

## Discussion Questions

1. Which do you think is more important, the “top-down” personality influences on happiness or the “bottom-up” situational circumstances that influence it? In other words, discuss whether internal sources such as personality and outlook or external factors such situations, circumstances, and events are more important to happiness. Can you make an argument that both are very important?
2. Do you know people who are happy in one way but not in others? People who are high in life satisfaction, for example, but low in enjoying life or high in negative feelings? What should they do to increase their happiness across all three types of subjective well-being?
3. Certain sources of happiness have been emphasized in this book, but there are others. Can you think of other important sources of happiness and unhappiness? Do you think religion, for example, is a positive source of happiness for most people? What about age or ethnicity? What about health and physical handicaps? If you were a researcher, what question might you tackle on the influences on happiness?
4. Are you satisfied with your level of happiness? If not, are there things you might do to change it? Would you function better if you were happier?
5. How much happiness is helpful to make a society thrive? Do people need some worry and sadness in life to help us avoid bad things? When is satisfaction a good thing, and when is some dissatisfaction a good thing?
6. How do you think money can help happiness? Interfere with happiness? What level of income will you need to be satisfied?



# Vocabulary

## **Adaptation**

The fact that after people first react to good or bad events, sometimes in a strong way, their feelings and reactions tend to dampen down over time and they return toward their original level of subjective well-being.

## **“Bottom-up” or external causes of happiness**

Situational factors outside the person that influence his or her subjective well-being, such as good and bad events and circumstances such as health and wealth.

## **Happiness**

The popular word for subjective well-being. Scientists sometimes avoid using this term because it can refer to different things, such as feeling good, being satisfied, or even the causes of high subjective well-being.

## **Life satisfaction**

A person reflects on their life and judges to what degree it is going well, by whatever standards that person thinks are most important for a good life.

## **Negative feelings**

Undesirable and unpleasant feelings that people tend to avoid if they can. Moods and emotions such as depression, anger, and worry are examples.

## **Positive feelings**

Desirable and pleasant feelings. Moods and emotions such as enjoyment and love are examples.

### **Subjective well-being**

The name that scientists give to happiness—thinking and feeling that our lives are going very well.

### **Subjective well-being scales**

Self-report surveys or questionnaires in which participants indicate their levels of subjective well-being, by responding to items with a number that indicates how well off they feel.

### **“Top-down” or internal causes of happiness**

The person’s outlook and habitual response tendencies that influence their happiness—for example, their temperament or optimistic outlook on life.

## Reference List

Diener, E. (1984). Subjective well-being. *Psychological Bulletin*, 95, 542–575.

Diener, E., Inglehart, R., & Tay, L. (2012). Theory and validity of life satisfaction scales. *Social Indicators Research*, in press.

Diener, E., Suh, E. M., Lucas, R. E., & Smith, H. L. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin*, 125, 276–302.

Diener, E., Wirtz, D., Tov, W., Kim-Prieto, C., Choi, D., Oishi, S., & Biswas-Diener, R. (2009). New measures of well-being: Flourishing and positive and negative feelings. *Social Indicators Research*, 39, 247–266.

Diener, E., & Biswas-Diener, R. (2008). *Happiness: Unlocking the mysteries of psychological wealth*. Malden, MA: Wiley/Blackwell.

Diener, E., & Seligman, M. E. P. (2004). Beyond money: Toward an economy of well-being. *Psychological Science in the Public Interest*, 5, 1–31.

Diener, E., & Tay, L. (2012). The remarkable benefits of happiness for successful and healthy living. Report of the Well-Being Working Group, Royal Government of Bhutan. Report to the United Nations General Assembly: Well-Being and Happiness: A New Development Paradigm.

Lyubomirsky, S. (2013). *The myths of happiness: What should make you happy, but doesn't, what shouldn't make you happy, but does*. New York, NY: Penguin.

Lyubomirsky, S., King, L., & Diener, E. (2005). The benefits of frequent positive

affect: Does happiness lead to success? *Psychological Bulletin*, 131, 803–855.

Myers, D. G. (1992). *The pursuit of happiness: Discovering pathways to fulfillment, well-being, and enduring personal joy*. New York, NY: Avon.

Pavot, W., & Diener, E. (2008). The Satisfaction with life scale and the emerging construct of life satisfaction. *The Journal of Positive Psychology*, 3, 137–152.





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# Optimal Levels of Happiness

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N O B A

## Abstract

This chapter asks two questions: “Is happiness good?” and “Is happier better?” (i.e., is there any benefit to be happier, even if one is already moderately happy?) The answer to the first question is by and large “yes.” The answer to the second question is, “it depends.” That is, the optimal level of happiness differs, depending on specific life domains. In terms of romantic relationships and volunteer activities, happier is indeed better. In contrast, in terms of income, education, and political participation, the moderate level of happiness is the best; beyond the moderate level of happiness, happier is not better.

# Learning Objectives

- Learn about the research on the relationship between happiness and important life outcomes.
- Learn about the levels of happiness that are associated with the highest levels of outcomes.

## Introduction

Are you happy? If someone asked this question, how would you answer it? Some of you will surely say yes immediately, while others will hesitate to say yes. As scientific research on **happiness** over the past 30 years has repeatedly shown, there are huge individual variations among levels of happiness (Diener, Suh, Lucas, & Smith, 1999). Not surprisingly, some people are very happy, while others are not so happy, and still others are very unhappy. What about the next question: Do you want to be happy? If someone asked this question, I would bet the vast majority of college students (in particular, Americans) would immediately say yes. Although there are large individual differences in the actual levels of happiness, nearly everyone wants to be happy, and most of us want to be happier, even if we are already fairly happy (Oishi, Diener, & Lucas, 2007). The next important questions then are “Is happiness good?” and “Is happier better?” (i.e., is there any benefit to being happier, even if one is already moderately happy?) This chapter will tackle these two questions.

Is happiness good? The ancient philosopher Aristotle thought so. He argued that happiness is the ultimate goal of human beings, because everything else, ranging from being respected by others, to being with a wonderful partner, to living in a fabulous house, is all instrumental, namely, to achieve some other goals (Thomson, 1953). In contrast, all other aspirations (e.g., money, health, reputation, friendship) are instrumental goals pursued in order to meet higher goals, including happiness. Thus, according to Aristotle, it is only rational that happiness is the ultimate objective in life. There are of course plenty of thinkers who disagree with Aristotle and see happiness as a frivolous pursuit. For instance, the famous French novelist Gustav Flaubert is believed to have said: “To be stupid, selfish, and have good health are three requirements for happiness, though if stupidity is lacking, all is lost” (Diener & Biswas-Diener, 2008, p. 19). Flaubert clearly associated happiness with selfishness and thoughtlessness. So what does the science of happiness tell us about the utility

of happiness?

There are two major reviews on this topic so far (Lyubomirsky, King, & Diener, 2005; Veenhoven, 1989). Both reviews found that happiness is good; happy people tend to be more likely to be successful at work (Cropanzano & Wright, 1999; Roberts, Caspi, & Moffitt, 2003), tend to be more likely to find romantic partners (Lucas, Clark, Georgellis, & Diener, 2003), tend to be better citizens, engage in more prosocial behaviors (Carlson, Charlin, & Miller, 1988), and tend to be healthier and live longer than unhappy people (Pressman & Cohen, 2012).

The correlation between happiness and various life outcomes is almost never negative. That is, harmful effects of happiness are rare. However, the effect size is modest at best ( $r = .20-.30$ ), with a great deal of heterogeneity, suggesting that important moderators (particularly individual differences) remain to be discovered. Thus, although happiness is generally associated with positive life outcomes, the next important question is whether it is wise to seek greater happiness when one is already reasonably happy.

A major review on the question of “Is happier better?” revealed that the answer depends on **life domains** (Oishi, Diener, & Lucas, 2007). In achievement-related domains such as income and education, once one is moderately happy, greater levels of happiness were not associated with better outcomes. In contrast, in relationship-related life domains, even if one is moderately happy, greater levels of happiness were indeed positively associated with better outcomes. I will describe specific findings below.

In one study, researchers (Diener, Nickerson, Lucas, & Sandvik, 2002) followed college students from their freshman year until middle adulthood (when they were in their late 30s). When participants were incoming college freshman, they reported their cheerfulness. Nineteen years later, at about age 37, the same participants also reported their annual income. There was a positive association between cheerfulness in the freshman year and income 19 years later; specifically, the participants who were in the highest 10% of cheerfulness in 1976 earned an average of \$62,681 in 1995. In contrast, the

participants in the lowest 10% of cheerfulness in 1976 earned an average of \$54,318. So, in general, cheerful college students later made more money than depressed ones. Interestingly, however, this association was not linear. Those who were moderately cheerful (“above average” on cheerfulness) in college earned the most, \$66,144. That is, the moderately cheerful college students were later making nearly \$3,500 more than the most cheerful college students. Thus, if we use income as a criterion, the optimal level of “cheerfulness” was not the highest level, but a more moderate level.

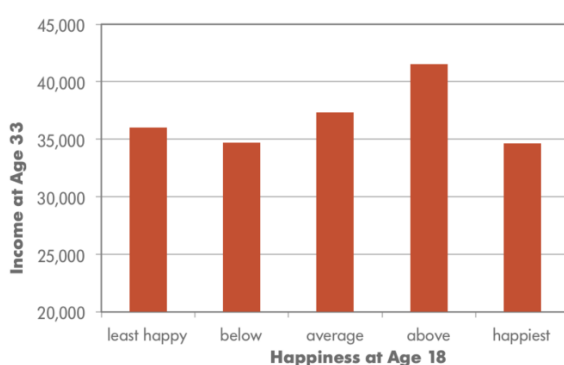


Figure 1. Happiness at age 18 and income at age 33 (from Oishi & Koo, 2008). Income is in Australian dollars.

Diener et al.’s (2002) finding has been replicated in other large longitudinal studies. For instance, Oishi et al. (2007) analyzed the Australian Youth in Transition study, a longitudinal study of nationally representative cohorts of young people in Australia and found the non-linear effect of happiness on later income. Participants in the Australian study indicated their **life satisfaction** (“satisfaction with life as a whole”) when they were 18 years old. They also reported their gross income when they were 33 years old. Like American data, Australian data also showed that teenagers satisfied with their lives were later earning more money than those unsatisfied. However, Australians who were moderately satisfied when they were 18 years old were making the most in their 30s rather than those who were very satisfied with their lives. Respondents

from the Australian Youth in Transition Study also reported the number of years of schooling they completed beyond primary education when they were 26 years old. Similar to the income findings, the highest levels of education were reported by those individuals who had moderate levels of satisfaction when they were 18 years old. The “very satisfied” teenagers did not pursue as much education later as teenagers who were moderately satisfied. One reason why moderately satisfied individuals later made the most money could be due to the years of education that people pursued: Very satisfied teenagers do not seem to pursue more education and, therefore, somewhat limiting their earning in their 30s.

Oishi et al. (2007) also analyzed two other longitudinal data sets: the German Socio-Economic Panel Study (GSOEP) and the British Household Panel Study (BHPS). Both studies used nationally representative samples whose participants were followed longitudinally. These two data sets again showed that people who were satisfied with their lives early on were making more money years later than those who were not satisfied with their lives. However, again, the relationship between earlier life satisfaction and later income was not linear. That is, as in Australian data depicted in Figure 1, those who were most satisfied early on were not making as much money as those who were moderately satisfied.

In short, four large, longitudinal studies conducted in the United States, United Kingdom, Australia, and Germany all converged to indicate that happiness is good up to a certain point; however, higher levels of happiness beyond a moderate level are not associated with higher incomes or more education.

What about other life domains? Is the moderate level of happiness also associated with the best outcome in terms of, say, romantic relationships? The respondents in the Australian Youth in Transition Study also reported the length of their current intimate relationship later. In contrast to the income and education findings, individuals from the “very satisfied” teenagers were involved



in longer intimate relationships later than were individuals from the second and third most-satisfied teenagers.

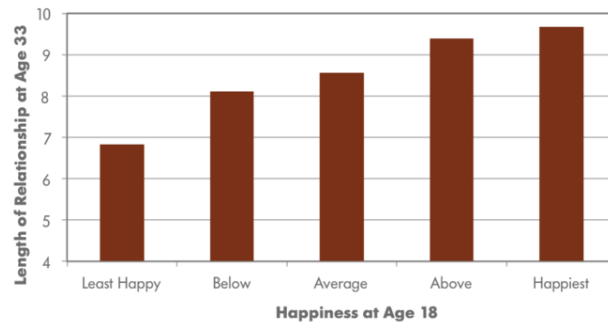


Figure 1. Happiness at age 18 and length of romantic relationships at age 33 (from Oishi & Koo, 2008)

There are now many other data sets available to test the issues of the **optimal levels** of happiness. For instance, the World Values Survey, which was administered in 1981, 1990, 1995, and 2000, includes 118,519 respondents from 96 countries and regions around the world (see [www.worldvaluessurvey.org](http://www.worldvaluessurvey.org) for more information about the survey questions and samples). Respondents rated their overall life satisfaction on a 10-point scale (“All things considered, how satisfied are you with your life as a whole these days?”). They also indicated their income (in deciles from the lowest 10% in the nation to the highest 10% of the nation), highest education completed, their relationship status (i.e., whether they were currently in a stable long-term relationship), volunteer work they participated in (respondents indicated which, if any, of the 15 types of volunteer work they were involved in), and political actions they had taken (e.g., signing a petition, joining in boycotts). These questions were embedded in more than 200 questions about values and beliefs. Here, we consider income, highest education completed, relationship status, volunteer work, and political participation.

The World Values Survey data also showed that the highest levels of income and education were reported by moderately satisfied individuals (8 or 9 on the 10-point scale) rather than very satisfied (10 on the 10-point scale). Similarly, the greatest level of political participation was reported by moderately satisfied individuals rather than by the most satisfied individuals. In contrast, the highest proportion of respondents in a stable intimate relationship was observed among the “very satisfied” rather than moderately satisfied individuals. Similarly, the highest level of volunteer activities was observed among the “very satisfied” individuals.

So far, the research shows that the optimal level of happiness differs, depending on specific life domains. In terms of romantic relationships and volunteer activities, happier is indeed better. In contrast, in terms of income, education, and political participation, the moderate level of happiness is the best; beyond the moderate level of happiness, happier is not better. Why is it best to be happiest possible in terms of romantic relationships and volunteer activities, whereas best to be moderately happy in terms of achievement?

At this point, this mechanism has not been empirically demonstrated. Thus, the following is just a speculation, or educated guess. First, with regard to the nonlinear association between happiness and achievement, the main reason why the very high level of happiness might not be associated with the highest level of achievement is that complete satisfaction with current conditions might prevent individuals from energetically pursuing challenge in achievement domains such as education and income. After all, the defining characteristics of need for achievement are high standards of excellence and constant striving for perfection (McClelland, 1961). Similarly, if individuals are completely satisfied with the current political situation, they might be less likely to actively participate in the political process. Achievement domains also have very clear objective criteria, in the form of either monetary value, degree, or skill levels. Improvement motivation (e.g., self-criticism, self-improvement) serves well in the achievement domains because this mindset makes clear what needs to be

done to improve one's skills and performance. In contrast, self-complacency and positive illusions prevent one from clearly seeing one's weaknesses and working on these weaknesses. The diametric opposite of self-complacency, Tiger Woods spent long hours practicing to improve his already-amazing shot after winning his first Masters. Similarly, Kobe Bryant is known to show up at practice three hours early, so that he can improve some aspects of his game, even though he already was one of the best players in the NBA.

This type of self-improvement motivation is often rewarded handsomely in terms of performance, income, status, and fame. The same type of motivation applied to an intimate relationship, however, does not work as well. This motivation might lead to a realization that the current partner is less than ideal and that a better partner is somewhere out there. Indeed, in a romantic relationship, idealization of the partner is known to be associated with higher relationship satisfaction and stable relationship (e.g., Murray, Holmes, & Griffin, 2003). In other words, positive illusion serves well in romantic relationships, in which one might not want to pay too much attention to his or her partner's weaknesses. In the 1959 film *Some Like It Hot*, the millionaire Osgood Fielding III (played by Joe E. Brown) fell in love with Daphne (played by Jack Lemmon). In the memorable ending, Daphne confessed that she was actually a man and Osgood famously responded: "Well, nobody's perfect!" In short, we argue that the highest possible level of happiness is associated with idealization of the partner and positive illusion about the relationship itself, which, in turn, results in relationship stability. In an area in which nobody can be perfect, improvement motives can be a poison.

What about the optimal level of happiness for volunteer work? Why is the highest level of happiness better than moderate happiness? Many of us often idealize volunteer work the way we idealize relationships. Many of us volunteer, with an idealistic view of the world, to contribute to humanity. However, like a romantic partner, no volunteer organization or volunteer work is perfect. It is also time-consuming and requires serious commitment. Just like romantic

relationships, then, it might be best to have a mindset with positive illusion, that one's efforts are making a difference to the world. It might be that moderately happy people, or at least some of them, might become more likely to be disillusioned with the volunteer work than very happy people are, because moderately happy people are more realistic than very happy people. In short, volunteer work might be more similar to close relationships than to achievement domains in terms of its motivational mechanism.

## Conclusion

In summary, the optimal levels of happiness differ, depending on life domains. In terms of income and education, the optimal levels of happiness seem to be moderate levels. That is, individuals who are moderately happy are likely to attain the higher levels of education and earn the most in the future. In contrast, in terms of romantic relationships and volunteer activities, the optimal levels of happiness seem to be the highest levels. Individuals who are very happy are likely to stay in a good romantic relationship or volunteer. The divergent optimal levels of happiness for relationship and achievement domains suggest that it is generally difficult to have an extremely high level of overall happiness, good romantic relationships, and high achievements. To this end, it is not surprising that icons of improvement motivation—Tom Cruise, Kobe Bryant, Donald Trump, and Martha Stewart—all had marital problems, while achieving unprecedented success in their respective fields. It should be noted, however, that the successes of Warren Buffet, Bill Gates, and Barack and Michele Obama, among others at work and love, give us some hope that it is possible to have it all, if you have talent in your chosen field, are passionate about it, and can switch your motivational strategies between work and love.

## Discussion Questions

1. Why do you think that the optimal level of happiness is the moderate level of happiness for future income, and the highest education achieved? Can you think of any other reasons than the ones described in this chapter why this is the case?
2. Do you think that the optimal level of happiness differs, not only across life domains, but across cultures? If so, how? In which culture, might the optimal level of happiness be lower? Higher? Why?
3. What might be the optimal level of happiness for health and longevity? Highest possible level of happiness or moderate level? Why do you think so?

# Vocabulary

## **Happiness**

A state of well-being characterized by relative permanence, by dominantly agreeable emotion ranging in value from mere contentment to deep and intense joy in living, and by a natural desire for its continuation.

## **Life domains**

Various domains of life, such as finances and job.

## **Life satisfaction**

The degree to which one is satisfied with one's life overall.

## **Optimal level**

The level that is the most favorable for an outcome.

## Reference List

- Carlson, M., Charlin, V., & Miller, N. (1988). Positive mood and helping behavior: A test of six hypotheses. *Journal of Personality and Social Psychology*, 55, 211–229.
- Cropanzano, R., & Wright, T. A. (1999). A 5-year study of change in the relationship between well-being and job performance. *Consulting Psychology Journal: Practice and Research*, 51, 252–265.
- Diener, E., Nickerson, C., Lucas, R. E., & Sandvik, E. (2002). Dispositional affect and job outcomes. *Social Indicators Research*, 59, 229–259
- Diener, E., Suh, E. M., Lucas, R. E., & Smith, H. L. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin*, 125, 276–302.
- Diener, E., & Biswas-Diener, R. (2008). *Happiness: Unlocking the mysteries of psychological wealth*. Malden, MA: Blackwell.
- Lucas, R. E., Clark, A. E., Georgellis, Y., & Diener, E. (2003). Reexamining adaptation and the set point model of happiness: Reactions to changes in marital status. *Journal of Personality and Social Psychology*, 84, 527–539.
- Lyubomirsky, S., King, L., & Diener, E. (2005). The benefits of frequent positive affect: Does happiness lead to success? *Psychological Bulletin*, 131, 803–855.
- McClelland, D. C. (1961). *The achieving society*. New York, NY: D. Van Nostrand Co.

Murray, S. L., Holmes, J. G., & Griffin, D. W. (2003). Reflections on the self-fulfilling effects of positive illusions. *Psychological Inquiry*, 14, 289–295.

Oishi, S., Diener, E., & Lucas, R. E. (2007). The optimal level of well-being: Can we be too happy? *Perspectives on Psychological Science*, 2, 346–360.

Oishi, S., & Koo, M. (2008). Two new questions about happiness: “Is happiness good?” and “Is happier better?” In M. Eid & R. J. Larsen. (Eds.), *Handbook of subjective well-being* (pp. 290–306). New York: Oxford University Press.

Pressman, S. D., & Cohen, S. (2012). Positive emotion use and longevity in famous deceased psychologists. *Health Psychology*, 31, 297–305.

Roberts, B. W., Caspi, A., & Moffitt, T. E. (2003). Work experiences and personality development in young adulthood. *Journal of Personality and Social Psychology*, 84, 582–593.

Thomson, J. A. K. (1953). *The ethics of Aristotle: The Nicomachean ethics*. London, U.K.: Penguin Books.

Veenhoven, R. (1989). *How harmful is happiness? Consequences of enjoying life or not*. Rotterdam: University Pers Rotterdam.





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# Positive Psychology

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N O B A

## **Abstract**

A brief history of the positive psychology movement is presented, and key themes within positive psychology are identified. Three important positive psychology topics are gratitude, forgiveness, and humility. Ten key findings within the field of positive psychology are put forth, and the most important empirical findings regarding gratitude, forgiveness, and humility are discussed. Assessment techniques for these three strengths are described, and interventions for increasing gratitude, developing forgiveness, and becoming more humble are briefly considered.

# Learning Objectives

- Describe what positive psychology is, who started it, and why it came into existence.
- Identify some of the most important findings from the science of positive psychology with respect to forgiveness, gratitude, and humility.
- Explore how positive psychology might make a difference in how you think about your own life, the nature of human nature, and what is really important to you.

## Introduction

**Positive psychology** is a popular movement that began in the late 1990's. It is the branch of psychology that has as its primary focus the on the strengths, virtues, and talents that contribute to successful functioning and enable individuals and communities to **flourish**. Core topics include happiness, resiliency, well-being, and states of flow and engagement. It was spearheaded by a former president of the American Psychological Association, Martin Seligman.

Throughout most of its history, psychology was concerned with identifying and remedying human ills. It has largely focused on decreasing maladaptive emotions and behaviors, while generally ignoring positive and optimal functioning. In contrast, the goal of positive psychology is to identify and enhance the human strengths and virtues that make life worth living. Unlike the positive thinking or new thought movements that are associated with people like Norman Vincent Peale or Rhonda Byrne (*The Secret*), positive psychology pursues scientifically informed perspectives on what makes life worth living. It is empirically based. It focuses on measuring aspects of the human condition that lead to happiness, fulfillment, and flourishing. The science of happiness is covered in other chapters within this section of this book. Therefore, aside from key findings summarized in Table 1, the emphasis in this chapter will be on other topics within positive psychology.

Moving from an exclusive focus on distress, disorder, and dysfunction, positive psychology shifts the scientific lens to a concentration on well-being, health, and optimal functioning. Positive psychology provides a different vantage point through which to understand human experience. Recent developments have produced a common framework and that locates the study of positive states, strengths and virtues in relation to each other and links them to important life outcomes. Recent developments suggest that problems in psychological functioning may be more profitably dealt with as the absence,

excess, or opposite of these strengths rather than traditional diagnostic categories of mental illness. The principal claim of positive psychology is that the study of health, fulfillment and well-being is as deserving of study as illness, dysfunction, and distress, has resonated well with both the academic community and the general public.

As a relatively new field of research, positive psychology lacked a common vocabulary for discussing measurable positive traits before 2004. Traditional psychology benefited from the creation of Diagnostic and Statistical Manual of Mental Disorders (DSM), which provided researchers and clinicians with the same set of language from which they could talk about the negative. As a first step in remedying this disparity between traditional and positive psychology, Chris Peterson and Martin Seligman set out to identify, organize and measure character. The Values in Action (VIA) classification of strengths was an important initial step toward specifying important positive traits (Peterson & Seligman, 2004). Peterson and Seligman examined ancient cultures (including their religions, politics, education and philosophies) for information about how people in the past construed human virtue. The researchers looked for virtues that were present across cultures and time. Six core virtues emerged from their analysis: courage, justice, humanity, temperance, transcendence and wisdom. The VIA is the positive psychology counterpart to the DSM used in traditional psychology and psychiatry. Unlike the DSM, which scientifically categorizes human deficits and disorders, the VIA classifies positive human strengths. This approach vastly departs from the medical model of traditional psychology, which focuses on fixing deficits. In contrast, positive psychologists emphasize that people should focus and build upon on what they are doing well.

The VIA is a tool by which people can identify their own **character strengths** and learn how to capitalize on them. It consists of 240 questions that ask respondents to report the degree to which statements reflecting each of the strengths apply to themselves. For example, the character strength of hope is measured with items that include "I know that I will succeed with the goals I set

for myself.” The strength of **gratitude** is measured with such items as “At least once a day, I stop and count my blessings.”

Within the United States, the most commonly endorsed strengths are kindness, fairness, honesty, gratitude and judgment (Park, Peterson & Seligman, 2006). Worldwide, the following strengths were most associated with positive life satisfaction: hope, zest, gratitude and love. The researchers called these strengths of the heart. Moreover, strengths associated with knowledge, such as love of learning and curiosity, were least correlated with life satisfaction (Park, Peterson & Seligman, 2005).

## Ten Key Findings from the Science of Positive Psychology

- 1. Most people are happy.**
- 2. Happiness is a cause of good things in life and not simply a result of success or good outcomes. Happy people make good things happen.**
- 3. Political conservatives are happier than political liberals.**
- 4. Most people are resilient. They bounce back from adversity, large and small.**
- 5. Happiness, strengths of character, and good social relationships are buffers against the damaging effects of disappointments and setbacks.**
- 6. Religious faith matters. People for whom religion is important are happier and cope better with stress compared to non-believers.**
- 7. Money makes an ever-diminishing contribution to well-being, but money can buy happiness if it is spent on other people.**
- 8. As a route to a satisfying life, eudaimonia (a life of meaning) trumps hedonism (a life of pleasure).**
- 9. Good days have common features: feeling autonomous, competent, and connected to others.**
- 10. The good life can be taught.**

Table 1: Ten Key Findings from the Science of Positive Psychology

## Three Key Strengths



Forgiveness, gratitude, and humility are three key strengths that have been the focus of sustained research programs within positive psychology. What have we learned about each of these and why do these matter for human flourishing?

## Forgiveness

**Forgiveness** is essential to harmonious long-term relationships between individuals, whether between spouses or nations, dyads or collectives. At the level of the individual, forgiveness of self can help one achieve an inner peace as well as peace with others and with God. Wrongdoing against others can result in guilt, and self-loathing. Resentment can give away to hate and intolerance. Both perpetrator and victim suffer. Conversely, forgiveness can be an avenue to healing. It is the basic building block of loving relationships with others. When one person or nation does something to hurt another, the relationship between the two can be irrevocably damaged. Because the potential for conflict is seemingly built into human nature, the prospects for long-term peace may seem faint. Forgiveness offers another way. If the victim can forgive the perpetrator, the relationship may be restored and possibly even saved from termination. The essence of forgiveness is that it creates a possibility for a relationship to recover from the damage caused by the offending party's offense. Forgiveness is thus a powerful **pro-social** process. It can benefit human social life by helping relationships to heal. , on the social level, forgiveness may be the critical element needed for world peace. Culligan (2002) wrote "Forgiveness may ultimately be the most powerful weapon for breaking the dreadful cycle of violence."

Research is answering fundamental questions about what forgiveness is and isn't, how it develops, what are its physiological correlates and physical effects, whether it is always beneficial, and how people—if they are so motivated—might be helped to forgive. Forgiveness is not excusing, condoning, tolerating, or forgetting that one has been hurt because of the actions of another.

Forgiveness is letting go of negative thoughts (e.g. wishing the offender harm), negative behaviors (e.g. a desire to retaliate, and negative feelings (e.g. resentment) toward the offender (McCullough, Root, & Cohen, 2006).

There have been numerous studies looking at forgiveness interventions. The interventions involved counseling and exercises which were used to help people move from anger and resentment towards forgiveness. In one study, incest survivors who experienced the forgiveness intervention had at the end of the intervention increased abilities to forgive others, increased hopefulness and decreased levels of anxiety and depression. In another study, college students were randomized to a group that received a forgiveness education program and another group who studied human relations. The group that received the forgiveness education program showed higher levels of hope and an increased willingness to forgive others. This greater self-forgiveness was associated with increased self-esteem, lower levels of anxiety, lower levels of depression and a more positive view of their patient. In many of these studies, it was shown that people who are able to forgive are more likely to have better interpersonal functioning and therefore social support. The act of forgiveness can result in less anxiety and depression, better health outcomes, increased coping with stress, and increased closeness to God and others (Enright, 2001).

## Gratitude

Gratitude is a feeling of appreciation or thankfulness in response to receiving a benefit. The emerging science of gratitude has produced some important findings. From childhood to old age, accumulating evidence documents the wide array of psychological, physical, and relational benefits associated with gratitude (Wood, Froh, & Geraghty, 2010). Gratitude is important not only because it helps us feel good, but also because it inspires us to do good. Gratitude heals, energizes, and transforms lives in a myriad of ways consistent with the notion that virtue is both its own reward and produces other rewards

(Emmons, 2007).

To give a flavor of these research findings, dispositional gratitude has been found to be positively associated qualities such as empathy, forgiveness, and the willingness to help others. For example, people who rated themselves as having a grateful disposition perceived themselves as having more socially helpful characteristics, expressed by their empathetic behavior, and emotional support for friends within the last month (McCullough, Emmons, & Tsang, 2002). In our research, when people report feeling grateful, thankful, and appreciative in their daily lives, they also feel more loving, forgiving, joyful, and enthusiastic. Notably, the family, friends, partners and others who surround them consistently report that people who practice gratitude are viewed as more helpful, more outgoing, more optimistic, and more trustworthy (Emmons & McCullough, 2003).

Expressing gratitude for life's blessings – that is, a sense of wonder, thankfulness and appreciation– is likely to elevate happiness for a number of reasons. Grateful thinking fosters the savoring of positive life experiences and situations, so that people can extract the maximum possible satisfaction and enjoyment from their circumstances. Counting one's blessings may directly counteract the effects of hedonic adaptation, the process by which our happiness level returns, again and again, to its set range, by preventing people from taking the good things in their lives for granted. If we consciously remind ourselves of our blessings, it should become harder to take them for granted and adapt to them. And the very act of viewing good things as gifts itself is likely to be beneficial for mood. How much does it matter? Consider these eye-popping statistics. People are 25% happier if they keep gratitude journals, sleep 1/2 hour more per evening, and exercise 33% more each week compared to persons who are not keeping journals. They achieve up to a 10% reduction in systolic blood pressure, and decrease their dietary fat intake by up to 20%. Lives marked by frequent positive emotions of joy, love and gratitude are up to 7 years longer than lives bereft of these pleasant feelings.

The science of gratitude has also revealed some surprising findings. For example, students who practice gratitude increase their grade point average. Occasional gratitude journaling boosts well-being more than the regular practice of counting blessings. Remembering one's sorrows, failures, and other painful experiences is more beneficial to happiness than recalling only successes. Becoming aware that a very pleasant experience is about to end enhances feelings of gratitude for it. Thinking about the absence of something positive in your life produces more gratitude and happiness than imagining its presence.

To assess your own level of gratefulness, take the test below.

## How Grateful Are You? Test your Gratitude Quotient *(McCullough, Emmons, & Tsang, 2002)*

- 1 = strongly disagree
- 2 = disagree
- 3 = slightly disagree
- 4 = neutral
- 5 = slightly agree
- 6 = agree
- 7 = strongly agree

### Scoring Instructions:

- A.** Add up your scores for items 1, 2, 4, and 5.
- B.** Reverse your scores for items 3 and 6. That is, if you scored a "7," give yourself a "1," if you scored a "6," give yourself a "2," etc.
- C.** Add the reversed scores for items 3 and 6 to the total from Step 1. This is your total GQ-6 score. This number should be between 6 and 42.

- \_\_\_\_ 1. I have so much in life to be thankful for.
- \_\_\_\_ 2. If I had to list everything that I felt grateful for, it would be a very long list.
- \_\_\_\_ 3. When I look at the world, I don't see much to be grateful for.\*
- \_\_\_\_ 4. I am grateful to a wide variety of people.
- \_\_\_\_ 5. As I get older I find myself more able to appreciate the people, events, and situations that have been part of my life history.
- \_\_\_\_ 6. Long amounts of time can go by before I feel grateful to something or someone.\*

### Interpreting your Score:

**40-42:** Extremely high gratitude. People who score in this range have the ability to see life as a gift. For you, gratitude is a way of life.

**37-39:** Very high gratitude. Your life contains frequent expressions of gratitude and you are able to readily acknowledge how others have helped you.

**34-36:** High gratitude. You are above average in gratitude and find it relatively easy to spend time reflecting on your blessings.

**30-33:** Average gratitude. You may find it easy being grateful when things are going well in your life; but may have difficulties maintaining a grateful outlook in tough times.

**25-29:** Below average gratitude. You find it challenging to find reasons for gratitude in your life. Life is more of a burden than a gift. Maybe you are just going through a difficult period.

## Humility

What is humility and why does it matter? Although the etymological roots of **humility** are in lowliness and self-abasement (from the Latin term *humilis* meaning “lowly, humble,” or literally “on the ground” and from the Latin term *humus* meaning “earth”), the emerging consensus among scholars is that humility is a psychological and intellectual virtue, or a character strength. There is no simple definition but it seems to involve the following elements: A clear and accurate (not underestimated) sense of one’s abilities and achievements; the ability to acknowledge one’s mistakes, imperfections, gaps in knowledge, and limitations (often with reference to a “higher power”); an openness to new ideas, contradictory information, and advice keeping one’s abilities and accomplishments in perspective; relatively low self-focus or an ability to “forget the self”; appreciation of the value of all things, as well as the many different ways that people and things can contribute to our world. In contemporary society, it is easy to overlook the merits of humility. In politics, business and sports, the egoists command our attention. “Show me someone without an ego,” said real estate mogul Donald Trump, “and I’ll show you a loser.” In contrast, the primary message of this book is that the unassuming virtue of humility, rather than representing weakness or inferiority, as is commonly assumed, is a strength of character that produces positive, beneficial results for self and society. Successful people are humble people. They are more likely to flourish in life, in more domains, than are people who are less humble (Exline & Hill,

2012).

Do you think you are you a humble person? For obvious reasons, you cannot rate your own level of humility. It's an elusive concept to get at scientifically. "I am very humble" is self-contradictory. This has not discouraged personality psychologists from developing questionnaires to get at it, albeit indirectly. For example, to what extent do you identify with each of the following statements:

1. I generally have a good idea about the things I do well or do poorly.
2. I have difficulty accepting advice from other people.
3. I try my best in things, but I realize that I have a lot of work to do in many areas.
4. I am keenly aware of what little I know about the world.

Questions such as these tap various facets of the humble personality, including an appreciation and recognition of one's limitations, and an accurate assessment of oneself.

Humble people are more likely to flourish in life, in more domains, than are people who are less humble. Consider a handful of findings from recent research studies and surveys:

- People who say they feel humble when they are praised report that the experience made them want to be nice to people, increase their efforts, and challenge themselves
- Humble people are more admired and the trait of humility is viewed positively by most

- Humble teachers are rated as more effective and humble lawyers as more likeable by jurors
- CEO's who possessed a rare combination of extreme humility and strong professional will were catalysts for transforming a good company into a great one
- Over 80% of adults surveyed indicated that it is important that professionals demonstrate modesty/humility in their work
- Humility is positively associated with academic success in the form of higher grades (Exline & Hill, 2012).

The science of positive psychology has grown remarkably quickly since it first appeared on the scene in the late 1990's. Already, considerable progress has been made in understanding empirically the foundations of a good life. Knowledge from basic research in positive psychology is being applied in a number of settings, from psychotherapy to workplace settings to schools and even to the military (Biswas-Diener, 2011); A proper blend of science and practice will be required in order for positive psychology to fully realize its potential in dealing with the future challenges that we face as humans.



# Outside Resources

**Web: Authentic Happiness.**

<http://www.authentichappiness.sas.upenn.edu>

**Web: The International Positive Psychology Association (IPPA).**

<http://www.ippanetwork.org/>

## Discussion Questions

1. Can you think of people in your life who are very humble? What do they do or say that expresses their humility? To what extent do you think it would be good if you were more humble? To what extent do you think it would be good if you were less humble?
2. How can thinking gratefully about an unpleasant event from your past help you to deal positively with it? As the result of this event, what kinds of things do you now feel thankful or grateful for? How has this event benefited you as a person? How have you grown? Were there personal strengths that grew out of your experience?
3. Mahatma Gandhi once said, "The weak can never forgive. Forgiveness is the attribute of the strong." What do you think he meant by this? Do you agree or disagree? What are some of the obstacles you have faced in your own life when trying to forgive others?

# Vocabulary

## **Character strength**

A positive trait or quality deemed to be morally good and is valued for itself as well as for promoting individual and collective well-being.

## **Flourishing**

To live optimally psychologically, relationally, and spiritually.

## **Forgiveness**

The letting go of negative thoughts, feelings, and behaviors toward an offender.

## **Gratitude**

A feeling of appreciation or thankfulness in response to receiving a benefit.

## **Humility**

Having an accurate view of self—not too high or low—and a realistic appraisal of one's strengths and weaknesses, especially in relation to other people.

## **Positive psychology**

The science of human flourishing. Positive Psychology is an applied science with an emphasis on real world intervention.

## **Pro-social**

Thoughts, actions, and feelings that are directed towards others and which are positive in nature.

## Reference List

- Biswas-Diener, R. (2011). Applied positive psychology: Progress and challenges. *European Health Psychologist, 13*, 24–26.
- Culligan, K. (2002). Prayer and forgiveness: Can psychology help? *Spiritual Life, 89*, 78.
- Emmons, R. A., & McCullough, M. E. (2003). Counting blessings versus burdens: An experimental investigation of gratitude and subjective well-being in daily life. *Journal of Personality and Social Psychology, 84*, 377–389.
- Emmons, R. A. (2007). *Thanks! How the new science of gratitude can make you happier*. Boston, MA: Houghton-Mifflin.
- Emmons, R. A., & McCullough, M. E. (2003). Counting blessings versus burdens: An experimental investigation of gratitude and subjective well-being in daily life. *Journal of Personality and Social Psychology, 84*, 377–389.
- Enright, R. D. (2001). *Forgiveness is a choice*. Washington, DC: American Psychological Association.
- Exline, J. J., & Hill, P. C. (2012). Humility: A consistent and robust predictor of generosity. *Journal of Positive Psychology, 7*, 208–218.
- McCullough, M. E., Emmons, R. A., & Tsang, J. (2002). The grateful disposition: A conceptual and empirical topography. *Journal of Personality and Social Psychology, 82*, 112–127.

McCullough, M. E., Root, L. M., & Cohen A. D. (2006). Writing about the benefits of an interpersonal transgression facilitates forgiveness. *Journal of Consulting and Clinical Psychology, 74*, 887–897.

Park, N., Peterson, C., & Seligman, M. E. P. (2006). Character strengths in fifty-four nations and the fifty U.S. states. *The Journal of Positive Psychology, 3*, 118–129.

Park, N., Peterson, C., & Seligman, M. E. P. (2004). Strengths of character and well-being: A closer look at hope and modesty. *Journal of Social and Clinical Psychology, 23*, 603–619.

Peterson, C., & Seligman, M. E. P. (2004). *Character strengths and virtues: A handbook and classification*. New York, NY: Oxford University Press. Washington, DC: American Psychological Association.

Wood, A. M., Froh, J. J., & Geraghty, A. W. (2010). Gratitude and well-being: A review and theoretical integration. *Clinical Psychology Review, 30*, 890–905.



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## **Topic 2**

# Emociones Positivas

# Affective Neuroscience

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N O B A



## **Abstract**

This chapter provides a brief overview of the neuroscience of emotion. It integrates findings from human and animal research to describe the brain networks and associated neurotransmitters involved in basic affective systems.

# Learning Objectives

- Define affective neuroscience.
- Describe neuroscience techniques used to study emotions in humans and animals.
- Name five emotional systems and their associated neural structures and neurotransmitters.
- Give examples of exogenous chemicals (e.g., drugs) that influence affective systems, and discuss their effects.
- Discuss multiple affective functions of the amygdala and the nucleus accumbens.
- Name several specific human emotions, and discuss their relationship to the affective systems of nonhuman animals.

## Affective Neuroscience: What is it?

**Affective** neuroscience examines how the brain creates emotional responses. Emotions are psychological phenomena that involve changes to the body (e.g., facial expression), changes in autonomic nervous system activity, feeling states (subjective responses), and urges to act in specific ways (motivations; Izard, 2010). Affective **neuroscience** aims to understand how matter (brain structures and chemicals) creates one of the most fascinating aspects of mind, the emotions. Affective neuroscience uses unbiased, observable measures that provide credible evidence to other sciences and laypersons on the importance of emotions. It also leads to biologically based treatments for affective disorders (e.g., depression).

The human brain and its responses, including emotions, are complex and flexible. In comparison, nonhuman animals possess simpler nervous systems and more basic emotional responses. Invasive neuroscience techniques, such as electrode implantation, lesioning, and hormone administration, can be more easily used in animals than in humans. Human neuroscience must rely primarily on noninvasive techniques such as electroencephalography (EEG) and functional magnetic resonance imaging (fMRI), and on studies of individuals with brain lesions caused by accident or disease. Thus, animal research provides useful models for understanding affective processes in humans. Affective circuits found in other species, particularly social mammals such as rats, dogs, and monkeys, function similarly to human affective networks, although nonhuman animals' brains are more basic.

In humans, emotions and their associated neural systems have additional layers of complexity and flexibility. Compared to animals, humans experience a vast variety of nuanced and sometimes conflicting emotions. Humans also respond to these emotions in complex ways, such that conscious goals, values, and other cognitions influence behavior in addition to emotional responses. However, in this chapter we focus on the similarities between organisms, rather

than the differences. We often use the term “organism” to refer to the individual who is experiencing an emotion or showing evidence of particular neural activations. An organism could be a rat, a monkey, or a human.

Across species, emotional responses are organized around the organism’s survival and reproductive needs. Emotions influence perception, cognition, and behavior to help organisms survive and thrive (Farb, Chapman, & Anderson, 2013). Networks of structures in the brain respond to different needs, with some overlap between different emotions. Specific emotions are not located in a single structure of the brain. Instead, emotional responses involve networks of activation, with many parts of the brain activated during any emotional process. In fact, the brain circuits involved in emotional reactions include nearly the entire brain (Berridge & Kringelbach, 2013). Brain circuits located deep within the brain below the cerebral cortex are primarily responsible for generating basic emotions (Berridge & Kringelbach, 2013; Panksepp & Biven, 2012). In the past, research attention was focused on specific brain structures that will be reviewed here, but future research may find that additional areas of the brain are also important in these processes.

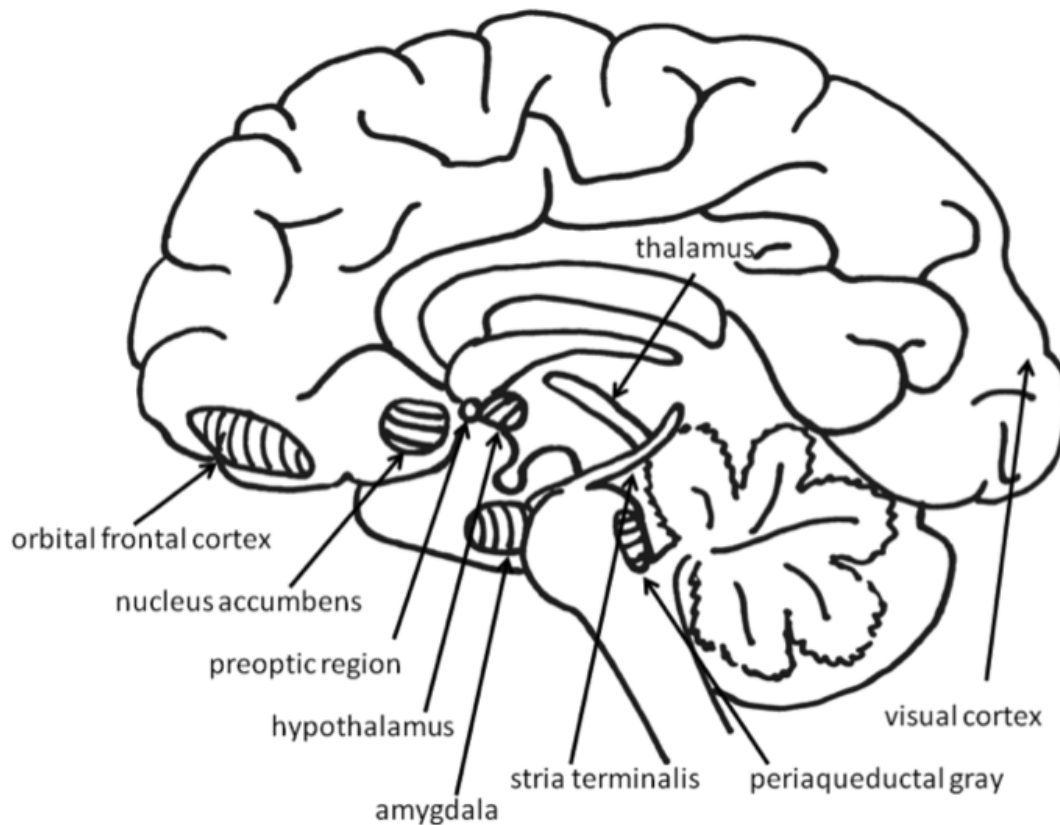


Figure 1: Structures in the brain

## Basic Emotions

### Desire: The neural systems of reward seeking

One of the most important affective neuronal systems relates to feelings of desire, or the appetite for rewards. Researchers refer to these appetitive processes using terms such as “wanting” (Berridge & Kringelbach, 2008), “seeking” (Panksepp & Biven, 2012), or “behavioural activation sensitivity” (Gray, 1987). When the appetitive system is aroused, the organism shows enthusiasm,

interest, and curiosity. These neural circuits motivate the animal to move through its environment in search of rewards such as appetizing foods, attractive sex partners, and other pleasurable stimuli. When the appetitive system is underaroused, the organism appears depressed and helpless.

Much evidence for the structures involved in this system comes from animal research using direct brain stimulation. When an electrode is implanted in the lateral **hypothalamus** or in cortical or mesencephalic regions to which the hypothalamus is connected, animals will press a lever to deliver electrical stimulation, suggesting that they find the stimulation pleasurable. The regions in the desire system also include the amygdala, nucleus accumbens, and **frontal cortex** (Panksepp & Biven, 2012). The neurotransmitter dopamine, produced in the mesolimbic and mesocortical dopamine circuits, activates these regions. It creates a sense of excitement, meaningfulness, and anticipation. These structures are also sensitive to drugs such as cocaine and amphetamines, chemicals that have similar effects to dopamine (Panksepp & Biven, 2012).

Research in both humans and nonhuman animals shows that the left frontal cortex (compared to the right frontal cortex) is more active during appetitive emotions such as desire and interest. Researchers first noted that persons who had suffered damage to the left frontal cortex developed depression, whereas those with damage to the right frontal cortex developed mania (Goldstein, 1939). The relationship between left frontal activation and approach-related emotions has been confirmed in healthy individuals using EEG and fMRI (Berkman & Lieberman, 2010). For example, increased left frontal activation occurs in 2- to 3-day-old infants when sucrose is placed on their tongues (Fox & Davidson, 1986), and in hungry adults as they view pictures of desirable desserts (Gable & Harmon-Jones, 2008). In addition, greater left frontal activity in appetitive situations has been found to relate to dopamine (Wacker, Mueller, Pizzagalli, Hennig, & Stemmler, 2013).

## “Liking”: The neural circuits of pleasure and enjoyment

Surprisingly, the amount of desire an individual feels toward a reward need not correspond to how much he or she likes that reward. This is because the neural structures involved in the enjoyment of rewards are different from the structures involved in the desire for the rewards. “Liking” (e.g., enjoyment of a sweet liquid) can be measured in babies and nonhuman animals by measuring licking speed, tongue protrusions, and happy facial expressions, whereas “wanting” (desire) is shown by the willingness to work hard to obtain a reward (Berridge & Kringelbach, 2008). Liking has been distinguished from wanting in research on topics such as drug abuse. For example, drug addicts often desire drugs even when they know that the ones available will not provide pleasure (Stewart, de Wit, & Eikelboom, 1984).

Research on liking has focused on a small area within the **nucleus accumbens** and on the posterior half of the ventral pallidum. These brain regions are sensitive to opioids and endocannabinoids. Stimulation of other regions of the reward system increases wanting, but does not increase liking, and in some cases even decreases liking. The research on the distinction between desire and enjoyment contributes to the understanding of human addiction, particularly why individuals often continue to frantically pursue rewards such as cocaine, opiates, gambling, or sex, even when they no longer experience pleasure from obtaining these rewards due to habituation.

The experience of pleasure also involves the orbitofrontal cortex. Neurons in this region fire when monkeys taste, or merely see pictures of, desirable foods. In humans, this region is activated by pleasant stimuli including money, pleasant smells, and attractive faces (Gottfried, O’Doherty & Dolan, 2002; O’Doherty, Deichmann, Critchley, & Dolan, 2002; O’Doherty, Kringelbach, Rolls, Hornak, & Andrews, 2001; O’Doherty, Winston, Critchley, Perrett, Burt, & Dolan, 2003).

## Fear: The neural system of freezing and fleeing

Fear is an unpleasant emotion that motivates avoidance of potentially harmful situations. Slight stimulation of the fear-related areas in the brain causes animals to freeze, whereas intense stimulation causes them to flee. The fear circuit extends from the central amygdala to the **periaqueductal gray** in the midbrain. These structures are sensitive to glutamate, corticotrophin releasing factor, adreno-cortico-trophic hormone, cholecystokinin, and several different neuropeptides. Benzodiazepines and other tranquilizers inhibit activation in these areas (Panksepp & Biven, 2012).

The role of the **amygdala** in fear responses has been extensively studied. Perhaps because fear is so important to survival, two pathways send signals to the amygdala from the sensory organs. When an individual sees a snake, for example, the sensory information travels from the eye to the **thalamus** and then to the visual cortex. The **visual cortex** sends the information on to the amygdala, provoking a fear response. However, the thalamus also quickly sends the information straight to the amygdala, so that the organism can react before consciously perceiving the snake (LeDoux, Farb, & Ruggiero, 1990). The pathway from the thalamus to the amygdala is fast but less accurate than the slower pathway from the visual cortex. Damage to the amygdala or areas of the ventral hippocampus interferes with fear conditioning in both humans and nonhuman animals (LeDoux, 1996).

## Rage: The circuits of anger and attack

Anger or rage is an arousing, unpleasant emotion that motivates organisms to approach and attack (Harmon-Jones, Harmon-Jones, & Price, 2013). Anger can be evoked through goal frustration, physical pain, or physical restraint. In territorial animals, anger is provoked by a stranger entering the organism's home territory (Blanchard & Blanchard, 2003). The neural networks for anger



and fear are near one another, but separate (Panksepp & Biven, 2012). They extend from the medial amygdala, through specific parts of the hypothalamus, and into the periaqueductal gray of the midbrain. The anger circuits are linked to the appetitive circuits, such that lack of an anticipated reward can provoke rage. In addition, when humans are angered, they show increased left frontal cortical activation, supporting the idea that anger is an approach-related emotion (Harmon-Jones et al., 2013). The neurotransmitters involved in rage are not yet well understood, but Substance P may play an important role (Panksepp & Biven, 2012). Other neurochemicals that may be involved in anger include testosterone (Peterson & Harmon-Jones, 2012) and arginine-vasopressin (Heinrichs, von Dawans, & Domes, 2009). Several chemicals inhibit the rage system, including opioids and high doses of antipsychotics, such as chlorpromazine (Panksepp & Biven, 2012).

## Love: The neural systems of care and attachment

For social animals such as humans, attachment to other members of the same species produces the positive emotions of attachment: love, warm feelings, and affection. The emotions that motivate nurturing behavior (e.g., maternal care) are distinguishable from those that motivate staying close to an attachment figure in order to receive care and protection (e.g., infant attachment). Important regions for maternal nurturing include the dorsal **preoptic area** (Numan & Insel, 2003) and the bed nucleus of the **stria terminalis** (Panksepp, 1998). These regions overlap with the areas involved in sexual desire, and are sensitive to some of the same neurotransmitters, including oxytocin, arginine-vasopressin, and endogenous opioids (endorphins and enkephalins).

## Grief: The neural networks of loneliness and panic

The neural networks involved in infant attachment are also sensitive to separation. These regions produce the painful emotions of grief, panic, and loneliness. When infant humans or other infant mammals are separated from their mothers, they produce distress vocalizations, or crying. The attachment circuits are those that cause organisms to produce distress vocalizations when electrically stimulated.

The attachment system begins in the midbrain periaqueductal gray, very close to the area that produces physical pain responses, suggesting that it may have originated from the pain circuits (Panksepp, 1998). Separation distress can also be evoked by stimulating the dorsomedial thalamus, ventral septum, dorsal preoptic region, and areas in the bed nucleus of stria terminalis (near sexual and maternal circuits; Panksepp, Normansell, Herman, Bishop, & Crepeau, 1988).

These regions are sensitive to endogenous opiates, oxytocin, and prolactin. All of these neurotransmitters prevent separation distress. Opiate drugs such as morphine and heroin, as well as nicotine, artificially produce feelings of pleasure and gratification, similar to those normally produced during positive social interactions. This may explain why these drugs are addictive. Panic attacks appear to be an intense form of separation distress triggered by the attachment system, and panic can be effectively relieved by opiates. Testosterone also reduces separation distress, perhaps by reducing attachment needs. Consistent with this, panic attacks are more common in women than in men.

## Plasticity: Experiences can alter the brain

The responses of specific neural regions may be modified by experience. For example, the front shell of the nucleus accumbens is generally involved in appetitive behaviors, such as eating, and the back shell is generally involved in fearful defensive behaviors (Reynolds & Berridge, 2001, 2002). Research using human neuroimaging has also revealed this front-back distinction in the functions of the nucleus accumbens (Seymour, Daw, Dayan, Singer, & Dolan, 2007). However, when rats are exposed to stressful environments, their fear-generating regions expand toward the front, filling almost 90% of the nucleus accumbens shell. On the other hand, when rats are exposed to preferred home environments, their fear-generating regions shrink and the appetitive regions expand toward the back, filling approximately 90% of the shell (Reynolds & Berridge, 2008).

## Brain structures have multiple functions

Although much affective neuroscience research has emphasized whole structures, such as the amygdala and nucleus accumbens, it is important to note that many of these structures are more accurately referred to as complexes. They include distinct groups of nuclei that perform different tasks. At present, human neuroimaging techniques such as fMRI are unable to examine the activity of individual nuclei in the way that invasive animal neuroscience can. For instance, the amygdala of the nonhuman primate can be divided into 13 nuclei and cortical areas (Freese & Amaral, 2009). These regions of the amygdala perform different functions. The central nucleus sends outputs involving brainstem areas that result in innate emotional expressions and associated physiological responses. The basal nucleus is connected with striatal areas that are involved with actions such as running toward safety. Furthermore, it is not possible to make one-to-one maps of emotions onto brain

regions. For example, extensive research has examined the involvement of the amygdala in fear, but research has also shown that the amygdala is active during uncertainty (Whalen, 1998) as well as positive emotions (Anderson et al., 2003; Schulkin, 1990).

## Conclusion

Research in affective neuroscience has contributed to knowledge regarding emotional, motivational, and behavioral processes. The study of the basic emotional systems of nonhuman animals provides information about the organization and development of more complex human emotions. Although much still remains to be discovered, current findings in affective neuroscience have already influenced our understanding of drug use and abuse, psychological disorders such as panic disorder, and complex human emotions such as desire and enjoyment, grief and love.

## Outside Resources

**Video: A 1-hour interview with Jaak Panksepp, the father of affective neuroscience**

<http://www.youtube.com/watch?v=u4ICY6-7hJo>

**Video: A 15-minute interview with Kent Berridge on pleasure in the brain**

<http://www.youtube.com/watch?v=51rGE1DgIo0>

**Video: A 5-minute interview with Joseph LeDoux on the amygdala and fear**

<http://www.youtube.com/watch?v=fDD5wvFMH6U>

**Web: Brain anatomy interactive 3D model**

<http://www.pbs.org/wnet/brain/3d/index.html>

## Discussion Questions

1. The neural circuits of “liking” are different from the circuits of “wanting.” How might this relate to the problems people encounter when they diet, fight addictions, or try to change other habits?
2. The structures and neurotransmitters that produce pleasure during social contact also produce panic and grief when organisms are deprived of social contact. How does this contribute to an understanding of love?
3. Research shows that stressful environments increase the area of the nucleus accumbens that is sensitive to fear, whereas preferred environments increase the area that is sensitive to rewards. How might these changes be adaptive?

# Vocabulary

## **Affect**

An emotional process; includes moods, subjective feelings, and discrete emotions.

## **Amygdala**

Two almond-shaped structures located in the medial temporal lobes of the brain.

## **Hypothalamus**

A brain structure located below the thalamus and above the brain stem.

## **Neuroscience**

The study of the nervous system.

## **Nucleus accumbens**

A region of the basal forebrain located in front of the preoptic region.

## **Orbital frontal cortex**

A region of the frontal lobes of the brain above the eye sockets.

## **Periaqueductal gray**

The gray matter in the midbrain near the cerebral aqueduct.

**Preoptic region**

A part of the anterior hypothalamus.

**Stria terminalis**

A band of fibers that runs along the top surface of the thalamus.

**Thalamus**

A structure in the midline of the brain located between the midbrain and the cerebral cortex.

**Visual cortex**

The part of the brain that processes visual information, located in the back of the brain.



## Reference List

- Anderson, A. K., Christoff, K., Stappen, I., Panitz, D., Ghahremani, D. G., Glover, G., . . . Sobel, N. (2003). Dissociated neural representations of intensity and valence in human olfaction. *Nature Neuroscience*, 6, 196–202.
- Berkman, E. T., & Lieberman, M. D. (2010). Approaching the bad and avoiding the good: Lateral prefrontal cortical asymmetry distinguishes between action and valence. *Journal of Cognitive Neuroscience*, 22(9), 1970–1979. doi: 10.1162/jocn.2009.21317
- Berridge, K. C., & Kringelbach, M. L. (2013). Neuroscience of affect: brain mechanisms of pleasure and displeasure. *Current Opinion in Neurobiology*, 23, 294–303. doi.org/10.1016/j.conb.2013.01.017
- Berridge, K. C., & Kringelbach, M. L. (2008). Affective neuroscience of pleasure: Reward in humans and animals. *Psychopharmacology*, 199, 457–480. doi: 10.1007/s00213-008-1099-6
- Blanchard, D. C., & Blanchard, R. J. (2003). What can animal aggression research tell us about human aggression? *Hormones and Behavior*, 44, 171–177.
- Farb, N.A.S., Chapman, H. A., & Anderson, A. K. (2013). Emotions: Form follows function. *Current Opinion in Neurobiology*, 23, 393–398. <http://dx.doi.org/10.1016/j.conb.2013.01.015>
- Fox, N. A., & Davidson, R. J. (1986). Taste-elicited changes in facial signs of emotion and the asymmetry of brain electrical activity in human newborns. *Neuropsychologia*, 24, 417–422.

Freese, J. L., & Amaral, D. G. (2009). Neuroanatomy of the primate amygdala. In P. J. Whalen & E. A. Phelps (Eds.), *The human amygdala* (pp. 3–42). New York, NY: Guilford Press.

Gable, P. A., & Harmon-Jones, E. (2008). Relative left frontal activation to appetitive stimuli: Considering the role of individual differences. *Psychophysiology*, 45, 275–278.

Goldstein, K. (1939). *The organism: An holistic approach to biology, derived from pathological data in man*. New York, NY: American Book.

Gottfried, J. A., O'Doherty, J., & Dolan, R. J. (2002). Appetitive and aversive olfactory learning in humans studied using event-related functional magnetic resonance imaging. *Journal of Neuroscience*, 22, 10829–10837.

Gray, J. A. (1987). *The psychology of fear and stress* (2nd ed.). Cambridge, England: Cambridge University Press.

Harmon-Jones, E., Harmon-Jones, C., & Price, T. F. (2013). What is approach motivation? *Emotion Review*, 5, 291–295. doi: 10.1177/1754073913477509

Heinrichs, M., von Dawans, B., & Domes, G. (2009). Oxytocin, vasopressin, and human social behavior. *Frontiers in Neuroendocrinology*, 30, 548–557.

Izard, C. E. (2010). The many meanings/aspects of emotion: Definitions, functions, activation, and regulation. *Emotion Review*, 2, 363–370. doi: 10.1177/1754073910374661

LeDoux, J. E. (1996). *The emotional brain: The mysterious underpinnings of emotional life*. New York, NY: Simon & Schuster.

LeDoux, J. E., Farb, C. F., Ruggiero, D. A. (1990). Topographic organization of neurons in the acoustic thalamus that project to the amygdala. *Journal of Neuroscience*, 10, 1043–1054.

Numan, M., & Insel, T. R. (2003). *The neurobiology of parental behavior*. New York, NY: SpringerVerlag.

O'Doherty J. P., Deichmann, R., Critchley, H. D., & Dolan, R. J. (2002). Neural responses during anticipation of a primary taste reward. *Neuron*, 33, 815–826.

O'Doherty, J., Kringelbach, M. L., Rolls, E. T., Hornak, J., & Andrews, C. (2001). Abstract reward and punishment representations in the human orbitofrontal cortex. *Nature Neuroscience*, 4, 95–102.

O'Doherty, J., Winston, J., Critchley, H., Perrett, D., Burt, D. M., & Dolan, R. J. (2003). Beauty in a smile: The role of medial orbitofrontal cortex in facial attractiveness. *Neuropsychologia*, 41, 147–155.

Panksepp, J. (1998). *Affective neuroscience: The foundations of human and animal emotions*. New York, NY: Oxford University Press.

Panksepp, J., Normansell, L., Herman, B., Bishop, P., & Crepeau, L. (1988). Neural and neurochemical control of the separation distress call. In J. D. Newman (Ed.), *The physiological control of mammalian vocalization* (pp. 263–299). New York, NY: Plenum.

Panksepp, J., & Biven, L. (2012). *The archaeology of mind: Neuroevolutionary origins of human emotions*. New York, NY: Norton.

- Peterson, C. K., & Harmon-Jones, E. (2012). Anger and testosterone: Evidence that situationally-induced anger relates to situationally-induced testosterone. *Emotion*, 12, 899–902. doi: 10.1037/a0025300
- Reynolds, S. M., & Berridge, K. C. (2008). Emotional environments retune the valence of appetitive versus fearful functions in nucleus accumbens. *Nature Neuroscience*, 11, 423–425.
- Reynolds, S. M., & Berridge, K. C. (2002). Positive and negative motivation in nucleus accumbens shell: Bivalent rostrocaudal gradients for GABA-elicited eating, taste “liking”/“disliking” reactions, place preference/avoidance, and fear. *Journal of Neuroscience*, 22, 7308–7320.
- Reynolds, S. M., & Berridge, K. C. (2001). Fear and feeding in the nucleus accumbens shell: Rostrocaudal segregation of GABA-elicited defensive behavior versus eating behavior. *Journal of Neuroscience*, 21, 3261–3270.
- Schulkin, J. (1991). *Sodium hunger: The search for a salty taste*. New York, NY: Cambridge University Press.
- Seymour, B., Daw, N., Dayan, P., Singer, T., & Dolan, R. (2007). Differential encoding of losses and gains in the human striatum. *Journal of Neuroscience*, 27, 4826–4831.
- Stewart, J., De Wit, H., & Eikelboom, R. (1984). Role of unconditioned and conditioned drug effects in the self-administration of opiates and stimulants. *Psychological Review*, 91, 251–268.
- Wacker, J., Mueller, E. M., Pizzagalli, D. A., Hennig, J., & Stemmler, G. (2013). Dopamine-D2-receptor blockade reverses the association between trait

approach motivation and frontal asymmetry in an approach-motivation context. *Psychological Science*, 24(4), 489–497. doi: 10.1177/0956797612458935

Whalen, P. J. (1998). Fear, vigilance, and ambiguity: initial neuroimaging studies of the human amygdala. *Current Directions in Psychological Science*, 7, 177–188.



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# Emotion Experience and Well-Being

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N O B A

## Abstract

Emotions don't just feel good or bad, they also contribute crucially to people's well-being and health. In general, experiencing positive emotions is good for us, whereas experiencing negative emotions is bad for us. However, recent research on emotions and well-being suggests this simple conclusion is incomplete and sometimes even wrong. Taking a closer look at this research, the present chapter provides a more complex relationship between emotion and well-being. At least three aspects of the emotional experience appear to affect how a given emotion is linked with well-being: the intensity of the emotion experienced, the fluctuation of the emotion experienced, and the context in which the emotion is experienced. While it is generally good to experience more positive emotion and less negative emotion, this is not always the guide to the good life.



# Learning Objectives

- Describe the general pattern of associations between emotion experience and well-being.
- Identify at least three aspects of emotion experience beyond positivity and negativity of the emotion that affect the link between emotion experience and well-being.

How we feel adds much of the flavor to life's highest—and lowest—moments. Can you think of an important moment in your life that didn't involve strong feelings? In fact, it might be hard to recall any times when you had no feeling at all. Given how saturated human life is with feelings, and given how profoundly feelings affect us, it is not surprising that much theorizing and research has been devoted to uncovering how we can optimize our feelings, or, "emotion experiences," as they are referred to in psychological research.

## Feelings contribute to well-being

So, which **emotions** are the "best" ones to feel? Take a moment to think about how you might answer this question. At first glance, the answer might seem obvious. Of course, we should experience as much positive emotion and as little negative emotion as possible! Why? Because it is pleasant to experience positive emotions and it is unpleasant to experience negative emotions (Russell & Barrett, 1999). The conclusion that positive feelings are good and negative feelings are bad might seem so obvious as not to even warrant the question, much less bona fide psychological research. In fact, the very labels of "positive" and "negative" imply the answer to this question. However, for the purposes of this chapter, it may be helpful to think of "positive" and "negative" as descriptive terms used to discuss two different types of experiences, rather than a true value judgment. Thus, whether positive or negative emotions are good or bad for us is an empirical question.

As it turns out, this empirical question has been on the minds of theorists and researchers for many years. Such psychologists as Alice Isen, Charles Carver, Michael Scheier, and, more recently, Barbara Fredrickson, Dacher Keltner, Sonja Lyubomirsky, and others began asking whether the effects of feelings could go beyond the obvious momentary pleasure or displeasure. In other words, can emotions do more for us than simply make us feel good or bad? This is not necessarily a new question; variants of it have appeared in the

texts of thinkers such as Charles Darwin (1872) and Aristotle (1999). However, modern psychological research has provided empirical evidence that feelings are not just inconsequential byproducts. Rather, each emotion experience, however fleeting, has effects on cognition, behavior, and the people around us. For example, feeling happy is not only pleasant, but is also useful to feel when in social situations because it helps us be friendly and collaborative, thus promoting our positive relationships. Over time, the argument goes, these effects add up to have tangible effects on people's **well-being** (good mental and physical health).

A variety of research has been inspired by the notion that our emotions are involved in, and maybe even causally contribute to, our well-being. This research has shown that people who experience more frequent positive emotions and less frequent negative emotions have higher well-being (e.g., Fredrickson, 1998; Lyubomirsky, King, & Diener, 2005), including increased life satisfaction (Diener, Sandvik, & Pavot, 1991), increased physical health (Tugade, Fredrickson, & Barrett, 2004; Veenhoven, 2008), greater resilience to stress (Folkman & Moskowitz, 2000; Tugade & Fredrickson, 2004), better social connection with others (Fredrickson, 1998), and even longer lives (Veenhoven, 2008). Notably, the effect of positive emotion on longevity is about as powerful as the effect of smoking! Perhaps most importantly, some research directly supports that emotional experiences cause these various outcomes rather than being just a consequence of them (Fredrickson, Cohn, Coffey, Pek, & Finkel, 2008; Lyubomirsky et al., 2005).

At this point, you might be tempted to conclude that you should always strive to experience as much positive emotion and as little negative emotion as possible. However, recent research suggests that this conclusion may be premature. This is because this conclusion neglects three central aspects of the emotion experience. First, it neglects the intensity of the emotion: Positive and negative emotions might not have the same effect on well-being at all intensities. Second, it neglects how emotions fluctuate over time: Stable

emotion experiences might have quite different effects from experiences that change a lot. Third, it neglects the context in which the emotion is experienced: The context in which we experience an emotion might profoundly affect whether the emotion is good or bad for us. So, to address the question “Which emotions should we feel?” we must answer, “It depends!” We next consider each of the three aspects of feelings, and how they influence the link between feelings and well-being.

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whether the emotion is good or bad for us. So, to address the question “Which emotions should we feel?” we must answer, “It depends!” We next consider each of the three aspects of feelings, and how they influence the link between feelings and well-being.

## The intensity of the emotion matters

Experiencing more frequent positive emotions is generally beneficial. But does this mean that we should strive to feel as intense positive emotion as possible? Recent research suggests that this unqualified conclusion might be wrong.

In fact, experiencing very high levels of positive emotion may be harmful (Gruber, 2011; Oishi, Diener, & Lucas, 2007). For instance, experiencing very high levels of positive emotion makes individuals more likely to engage in risky behaviors, such as binge eating and drug use (Cyders & Smith, 2008; Martin et al., 2002). Furthermore, intense positive emotion is associated with the experience of mania (Gruber et al., 2009; Johnson, 2005). It appears that the experience of positive emotions follows an inverted U-shaped curve in relation to well-being: more positive emotion is linked with increased well-being, but only up to a point, after which even more positive emotion is linked with decreased well-being (Grant & Schwartz, 2011). These empirical findings underscore the sentiment put forth long ago by the philosopher Aristotle: Moderation is key to leading a good life (1999).

Too much positive emotion may pose a problem for well-being. Might too little negative emotion similarly be cause for concern? Although there is limited empirical research on this subject, initial research suggests supports this idea. For example, people who aim not to feel negative emotion are at risk for worse well-being and adaptive functioning, including lower life satisfaction, lower social support, worse college grades, and feelings of worse physical health (Tamir & Ford, 2012a). Similarly, feeling too little embarrassment in response to a social faux pas may damage someone’s social connections if they aren’t

motivated by their embarrassment to make amends (Keltner & Buswell, 1997). Low levels of negative emotion also seem to be involved in some forms of psychopathology. For instance, blunted sadness in response to a sad situation is a characteristic of major depressive disorder (Rottenberg, Gross, & Gotlib, 2005) and feeling too little fear is a hallmark of psychopathy (Marsh et al., 2008; Patrick, 1994).

In sum, this first section suggests that the conclusion “Of course we should experience as much positive emotions and as little negative emotions as possible” is sometimes wrong. As it turns out, there can be too much of a good thing and too little of a bad thing.

## The fluctuation of the emotion matters

Emotions naturally vary—or fluctuate—over time (Davidson, 1998). We probably all know someone whose emotions seem to fly everywhere—one minute they’re ecstatic, the next they’re upset. We might also know a person who is pretty even-keeled, moderately happy, with only modest fluctuations across time. When looking only at average emotion experience, say across a month, both of these people might appear identical: moderately happy. However, underlying these identical averages are two very different patterns of fluctuation across time. Might these **emotion fluctuations** across time—beyond average intensity—have implications for well-being?

Overall, the available research suggests that how much emotions fluctuate does indeed matter. In general, greater fluctuations are associated with worse well-being. For example, higher fluctuation of positive emotions—measured either within a single day or across two weeks—was linked with lower well-being and greater depression (Gruber, Kogan, Quoidbach, & Mauss, 2013). Fluctuation in negative emotions, in turn, has been linked with increased depressive symptoms (Peeters, Berkhof, Delespaul, Rottenberg, & Nicolson, 2003), borderline personality disorder (Trull et al., 2008), and neuroticism (Eid & Diener,

1999). These associations tend to hold even when controlling for average levels of positive or negative emotion, which means that beyond the overall intensity of positive or negative emotion, the fluctuation of one's emotions across time is associated with well-being. While it is not entirely clear why fluctuations are linked to worse well-being, one explanation is that strong fluctuations are indicative of emotional instability (Kuppens, Oravecz, & Tuerlinckx, 2010).

Of course, this should not be taken to mean that we should rigidly feel the exact same way every minute of every day, regardless of context. After all, psychological flexibility—or the ability to adapt to changing situational demands and experience emotions accordingly—has generally demonstrated beneficial links with well-being (Bonanno, Papa, Lalande, Westphal, & Coifman, 2004; Kashdan, & Rottenberg, 2010). The question remains, however: what exact amount of emotional fluctuation constitutes unhealthy instability and what amount of emotional fluctuation constitutes healthy flexibility.

Again, then, we must qualify the conclusion that it is always better to experience more positive emotions and less negative emotions. The degree to which emotions fluctuate across time plays an important role. Overall, relative stability (but not rigidity) in emotion experience appears to be optimal for well-being.

## **The context of the emotion experience matters**

This chapter has already discussed two features of emotion experiences that affect how they relate to well-being: the intensity of the emotion and the fluctuation of the emotion over time. However, neither of these features takes into account the context in which the emotion is experienced. At least three different contexts may critically affect the links between emotion and well-being: (1) the external environment in which the emotion is being experienced, (2) the other emotional responses (e.g., physiology, facial behavior) that are currently activated, and (3) the other emotions that are currently being



experienced.

## The external environment

Emotions don't occur within a vacuum. Instead, they are usually elicited by and experienced within specific situations that come in many shapes and sizes — from birthday parties to funerals, job interviews to mundane movie nights. The situation in which an emotion is experienced has strong implications for whether a given emotion is the “best” emotion to feel. Take happiness, for example. Feeling happiness at a birthday party may be a great idea. However, having the exact same experience of happiness at a funeral would likely not bode well for your well-being.

When considering how the environment influences the link between emotion and well-being, it is important to understand that each emotion has its own function. For example, although fear is a negative emotion, fear helps us notice and avoid threats to our safety (Öhman & Mineka, 2001), and may thus be the “best” emotion to feel in dangerous situations. Happiness can help people cooperate with others, and may thus be the best emotion to feel when we need to collaborate (e.g., Van Kleef, van Dijk, Steinel, & van Beest, 2008). Anger can energize people to compete or fight with others, and may thus be advantageous to experience it in confrontations (e.g., Tamir & Ford, 2012b; Van Kleef et al., 2008). It might be disadvantageous to experience happiness (a positive emotion) when we need to fight with someone; in this situation, it might be better to experience anger (a negative emotion). This suggests that emotions' implications for well-being are not determined only by whether they are positive or negative but also by whether they are well-matched to their context.

In support of this general idea, people who experience emotions that fit the context at hand are more likely to recover from depression and trauma (Bonanno et al., 2004; Rottenberg, Kasch, Gross, & Gotlib, 2002). Research has also found that participants who want to feel emotions that match the context

at hand (e.g., anger when confronting someone)—even if that emotion was negative—are more likely to experience greater well-being (Tamir & Ford, 2012a). Conversely, people who pursue emotions without regard to context—even if those emotions are positive, like happiness—are more likely to experience lower subjective well-being, more depression, greater loneliness, and even worse grades (Ford & Tamir, 2012; Mauss et al., 2012; Mauss, Tamir, Anderson, & Savino; 2011; Tamir & Ford, 2012a).

In sum, this research demonstrates that regardless of whether an emotion is positive or negative, the context in which it is experienced critically influences whether the emotion helps or hinders well-being.

## Other emotional responses

The subjective experience of an emotion—what an emotion feels like—is only one aspect of an emotion. Other aspects include behaviors, facial expressions, and physiological activation (Levenson, 1992). For example, if you feel excited about having made a new friend, you might want to be near that person, you might smile, and your heart might be beating faster as you do so. Often, these different responses travel together, meaning that when we feel an emotion we typically have corresponding behaviors and physiological responses (e.g., Ekman, 1972; Levenson, 1992). The degree to which responses travel together has sometimes been referred to as **emotion coherence** (Mauss, Levenson, McCarter, Wilhelm, & Gross, 2005). However, these different responses do not co-occur in all instances and for all people (Bradley & Lang, 2000; Mauss et al., 2005; for review, see Fridlund, Ekman, & Oster, 1987). For example, some people may choose not to express an emotion they are feeling internally (English & John, 2013), which would result in lower coherence.

Does coherence—above and beyond emotion experience per se—matter for people’s well-being? To examine this question, one study measured participants’ emotion coherence by showing them a funny film clip of stand-up comedy while recording their experience of positive emotion as well as their behavioral displays of positive emotion (Mauss, Shallcross, et al., 2011). As predicted, participants differed quite a bit in their coherence. Some showed almost perfect coherence between their behavior and experience, whereas others’ behavior and experience corresponded not much at all. Interestingly, the more that participants’ behavior and experience cohered in the laboratory session, the lower levels of depressive symptoms and the higher levels of well-being they experienced 6 months later. This effect was found when statistically controlling for overall intensity of positive emotions experienced. In other words, experiencing high levels of positive emotion aided well-being only if it was accompanied by corresponding positive facial expressions.

But why would coherence of different emotional responses predict well-being? One of the key functions of an emotion is social communication (Keltner & Haidt, 1999), and arguably, successful social communication depends on whether an individual’s emotions are being accurately communicated to others. When someone’s emotional behavior doesn’t match their experience it may disrupt communication because it could make the individual appear confusing or inauthentic to others. In support of this theory, the above study found that lower coherence was associated with worse well-being because people with lower coherence felt less socially connected to others (Mauss, Shallcross, et al., 2011). These findings are also consistent with a large body of research examining the extent to which people mask the outward display of an emotional experience, or suppression. This research has demonstrated that people who habitually use suppression not only experience worse well being (Gross & John, 2003), but they also seem to be particularly worse off with regard to their social relationships (Srivastava, Tamir, McGonigal, John, & Gross, 2009).

These findings underscore the importance of examining whether an individual's experience is traveling together with his or her emotional responses, above and beyond overall levels of subjective experience. Thus, to understand how emotion experiences predict well-being, it is important not only to consider the experience of an emotion, but also the other emotional responses currently activated.

## Other emotions

Up until now, we have treated emotional experiences as though people can only experience one emotion at a time. However, it should be kept in mind that positive and negative emotions are not simply the opposite of one another. Instead, they tend to be independent of one another, which means that a person can feel positive and negative emotions at the same time (Larsen, McGraw, Mellers, & Cacioppo, 2004). For example, how does it feel to win a prize when you expected a greater prize? Given "what might have been," situations like this can elicit both happiness and sadness. Or, take "schadenfreude" (a German term for deriving pleasure from someone else's misfortune), or "aviman" (an Indian term for prideful, loving anger), or nostalgia (an English term for affectionate sadness about something from the past): these terms capture the notion that people can feel both positively and negatively within the same emotional experience. And as it turns out, the other emotions that someone feels (e.g., sadness) during the experience of an emotion (e.g., happiness) influence whether that emotion experience has a positive or negative effect on well-being.

Importantly, the extent to which someone experiences different emotions at the same time—or mixed emotions—may be beneficial for their well-being. Early support for this theory was provided by a study of bereaved spouses. In the study, participants were asked to talk about their recently deceased spouse, which undoubtedly elicited strong negative emotions. However, some

participants expressed positive emotions in addition to the negative ones, and it was those participants who recovered more quickly from their loss (Bonanno & Keltner, 1997). A recent study provides additional support for the benefits of mixed emotions, finding that adults who experienced more mixed emotions over a span of 10 years were physically healthier than adults whose experience of mixed emotions did not increase over time (Hershfield, Scheibe, Sims & Carstensen, 2013). Indeed, individuals who can experience positive emotions even in the face of negative emotions are more likely to cope successfully with stressful situations (Larsen, Hemenover, Norris, & Cacioppo, 2003).

Why would mixed emotions be beneficial for well-being? Stressful situations often elicit negative emotions, and recall that negative emotions have some benefits, as we outlined above. However, so do positive emotions, and thus having the ability to “take the good with the bad” might be another key component of well-being. Again, experiencing more positive emotion and less negative emotion may not always be optimal. Sometimes, a combination of both may be best.

## Conclusion

Are emotions just fleeting experiences with no consequence beyond our momentary comfort or discomfort? A variety of research answers a firm “no”—emotions are integral predictors of our well-being. This chapter examined how, exactly, emotion experience might be linked to well-being. The obvious answer to this question is: of course, experiencing as much positive emotions and as little negative emotions as possible is good for us. But although this is true in general, recent research suggests that this obvious answer is incomplete and sometimes even wrong. As philosopher Robert Solomon said, “Living well is not just maximizing the good feelings and minimizing the bad. (...) A happy life is not necessarily filled with happy moments” (2007, p. 86).

## Outside Resources

**Journal:** If you are interested in direct access to research on emotion, take a look at the journal *Emotion*

<http://www.apa.org/pubs/journals/emo/index.aspx>

**Video:** Check out videos of expert emotion researchers discussing their work

[http://www.youtube.com/playlist?list=PLh9mgdi4rNew731mjlZn43G\\_Y5otqKzJA](http://www.youtube.com/playlist?list=PLh9mgdi4rNew731mjlZn43G_Y5otqKzJA)

**Video:** See psychologist Daniel Gilbert and other experts discussing current research on emotion in the PBS series *This Emotional Life*

<http://video.pbs.org/program/this-emotional-life/>

## Discussion Questions

1. Much research confirms the relative benefits of positive emotions and relative costs of negative emotions. Could positive emotions be detrimental, or could negative emotions be beneficial? Why or why not?
2. We described some contexts that influence the effects of emotional experiences on well-being. What other contexts might influence the links between emotions and well-being? Age? Gender? Culture? How so?
3. How could you design an experiment that tests...(A) When and why it is beneficial to feel a negative emotion such as sadness? (B) How is the coherence of emotion behavior and emotion experience linked to well-being? (C) How likely a person is to feel mixed (as compared to simple) emotions?

# Vocabulary

## **Emotion**

An experiential, physiological, and behavioral response to a personally meaningful stimulus.

## **Emotion coherence**

The degree to which emotional responses (subjective experience, behavior, physiology, etc.) converge with one another.

## **Emotion fluctuation**

The degree to which emotions vary or change in intensity over time.

## **Well-being**

The experience of mental and physical health and the absence of disorder.



## Reference List

- Aristotle. (1999). *Nicomachean ethics* (M. Ostwald, Trans.). Upper Saddle River, NJ: Prentice Hall.
- Bonanno, G. A., Papa, A., Lalande, K., Westphal M., & Coifman, K. (2004). The importance of being flexible: The ability to both enhance and suppress emotional expression predicts long-term adjustment. *Psychological Science*, 15, 482–487.
- Bonanno, G. A., & Keltner, D. (1997). Facial expressions of emotion and the course of conjugal bereavement. *Journal of Abnormal Psychology*, 106, 126–137.
- Bradley, M. M., & Lang, O. J. (2000). Measuring emotion: Behavior, feeling, and physiology. In R. D. Lane & L. Nadel (Eds.), *Cognitive neuroscience of emotion* (pp. 242–276). New York, NY: Oxford University Press.
- Cyders, M. A., & Smith, G. T. (2008). Emotion-based dispositions to rash action: Positive and negative urgency. *Psychological Bulletin*, 134, 807–828.
- Darwin, C. (1872). *The expression of emotions in man and animals*. New York, NY: Philosophical Library.
- Davidson, R. J. (1998). Affective style and affective disorders: Perspectives from affective neuroscience. *Cognition & Emotion*, 12, 307–330.
- Diener, E., Sandvik, E., & Pavot, W. (1991). Happiness is the frequency, not the intensity, of positive versus negative affect. *Subjective well-being: An interdisciplinary perspective*, 21, 119–139.

Eid, M., & Diener, E. (1999). Intraindividual variability in affect: Reliability, validity, and personality correlates. *Journal of Personality and Social Psychology*, 76, 662–676.

Ekman, P. (1972). Universals and cultural differences in facial expressions of emotion. In J. Cole (Ed.), *Nebraska symposium on motivation* (pp. 207–282). Lincoln: University of Nebraska Press.

English, T., & John, O. P. (2013). Understanding the social effects of emotion regulation: The mediating role of authenticity for individual differences in suppression. *Emotion*, 13, 314.

Folkman, S., & Moskowitz, J. T. (2000). Positive affect and the other side of coping. *American Psychologist*, 55, 647–654.

Ford, B. Q., & Tamir, M. (2012). When getting angry is smart: Emotional preferences and emotional intelligence. *Emotion*, 12, 685.

Fredrickson, B. L. (1998). What good are positive emotions? *Review of General Psychology*, 2, 300–319.

Fredrickson, B. L., Cohn, M. A., Coffey, K. A., Pek, J., & Finkel, S. M. (2008). Open hearts build lives: Positive emotions, induced through loving-kindness meditation, build consequential personal resources. *Journal of Personality and Social Psychology*, 95, 1045-1062.

Fredrickson, B. L., Cohn, M. A., Coffey, K. A., Pek, J., & Finkel, S. M. (2008). Open hearts build lives: Positive emotions, induced through loving-kindness meditation, build consequential personal resources. *Journal of Personality and Social Psychology*, 95, 1045-1062.

Fridlund, A. J., Ekman, P., & Oster, H. (1987). Facial expressions of emotion. In A. W. Siegman & S. Feldstein (Eds.), *Nonverbal behavior and communication* (2nd ed., pp. 143–223). Hillsdale, NJ: Erlbaum.

Grant, A. M., & Schwartz, B. (2011). Too much of a good thing: The challenge and opportunity of the inverted U. *Perspectives on Psychological Science*, 6, 61–76.

Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: implications for affect, relationships, and well-being. *Journal of personality and social psychology*, 85, 348-362.

Gruber, J. (2011). When feeling good can be bad: Positive emotion persistence (PEP) in bipolar disorder. *Current Directions in Psychological Science*, 20, 217–221.

Gruber, J., Culver, J. L., Johnson, S. L., Nam, J., Keller, K. L., & Ketter, T. K. (2009). Do positive emotions predict symptomatic change in bipolar disorder? *Bipolar Disorders*, 11, 330–336.

Gruber, J., Kogan, A., Quoidbach, J., & Mauss, I. B. (2013). Happiness is best kept stable: Positive emotion variability is associated with poorer psychological health. *Emotion*, 13, 1–6.

Hershfield, H. E., Scheibe, S., Sims, T. L., & Carstensen, L. L. (2013). When feeling bad can be good: Mixed emotions benefit physical health across adulthood. *Social Psychological and Personality Science*, 4, 54–61.

Johnson, S. L. (2005). Mania and dysregulation in goal pursuit. *Clinical Psychology Review*, 25, 241–262.

- Kashdan, T. B., & Rottenberg, J. (2010). Psychological flexibility as a fundamental aspect of health. *Clinical Psychology Review, 30*, 865–878.
- Keltner, D. & Buswell, B. N. (1997). Embarrassment: Its distinct form and appeasement functions. *Psychological Bulletin, 122*, 250–270.
- Keltner, D., & Haidt, J. (1999). Social functions of emotions at four levels of analysis. *Cognition and Emotion, 13*, 505-521.
- Kuppens, P., Oravecz, Z., & Tuerlinckx, F. (2010). Feelings change: Accounting for individual differences in the temporal dynamics of affect. *Journal of Personality and Social Psychology, 99*, 1042–1060.
- Larsen, J. T., Hemenover, S. H., Norris, C. J., & Cacioppo, J. T. (2003). Turning adversity to advantage: On the virtues of the coactivation of positive and negative emotions. In L. G. Aspinwall & U. M. Staudinger (Eds.), *A psychology of human strengths: Fundamental questions and future directions for a positive psychology* (pp. 211–225).
- Larsen, J. T., McGraw, A. P., Mellers, B. A., & Cacioppo, J. T. (2004). The agony of victory and thrill of defeat: Mixed emotional reactions to disappointing wins and relieving losses. *Psychological Science, 15*, 325–330.
- Levenson, R. W. (1992). Autonomic nervous system differences among emotions. *Psychological Science, 3*, 23–27.
- Lyubomirsky, S., King, L. A., & Diener, E. (2005). The benefits of frequent positive affect: Does happiness lead to success? *Psychological Bulletin, 131*, 803–855.

- Marsh, A. A., Finger, E. C., Mitchell, D. G. V., Reid, M. E., Sims, C., Kosson, D. S., ... Blair, R. J. R. (2008). Reduced amygdala response to fearful expressions in children and adolescents with callous-unemotional traits and disruptive behavior disorders. *American Journal of Psychiatry*, 165, 712–720.
- Martin, L. R., Friedman, H. S., Tucker, J. S., Tomlinson-Keasey, C., Criqui, M. H., & Schwartz, J. E. (2002). A life course perspective on childhood cheerfulness and its relation to mortality risk. *Personality and Social Psychology Bulletin*, 28, 1155–1165.
- Mauss, I. B., Levenson, R. W., McCarter, L., Wilhelm, F. H., & Gross, J. J. (2005). The tie that binds? Coherence among emotion experience, behavior, and autonomic physiology. *Emotion*, 5, 175–190.
- Mauss, I. B., Savino, N. S., Anderson, C. L., Weisbuch, M., Tamir, M., & Ludenslager, M. L. (2012a). The pursuit of happiness can be lonely. *Emotion*, 12, 908–912.
- Mauss, I. B., Shallcross, A. J., Troy, A. S., John, O. P., Ferrer, E., Wilhelm, F. H., & Gross, J. J. (2011). Don't hide your happiness! Positive emotion dissociation, social connectedness, and psychological functioning. *Journal of Personality and Social Psychology*, 100, 738–748.
- Mauss, I. B., Tamir, M., Anderson, C. L., & Savino, N. S. (2011). Can seeking happiness make people unhappy? Paradoxical effects of valuing happiness. *Emotion*, 11, 807–815.
- Oishi, S., Diener, E., & Lucas, R.E. (2007). Optimal level of well-being: Can people be too happy? *Perspectives on Psychological Science*, 2, 346–360.

- Patrick, C. J. (1994). Emotion and psychopathy: Startling new insights. *Psychophysiology*, 31, 319–330.
- Peeters, F., Berkhof, J., Delespaul, P., Rottenberg, J., & Nicolson, N. A. (2003). Diurnal mood variation in major depressive disorder. *Emotion*, 6, 383–391.
- Rottenberg, J., Gross, J. J., & Gotlib, I. H. (2005). Emotion context insensitivity in major depressive disorder. *Journal of Abnormal Psychology*, 114, 627–639.
- Rottenberg, J., Kasch, K. L., Gross, J. J., & Gotlib, I. H. (2002). Sadness and amusement reactivity differentially predict concurrent and prospective functioning in major depressive disorder. *Emotion*, 2, 135–146.
- Russell, J. A., & Barrett, L. F. (1999). Core affect, prototypical emotional episodes, and other things called emotion: Dissecting the elephant. *Journal of Personality and Social Psychology*, 76, 805–819.
- Solomon, B. C. (2007). *True to our feelings: What our emotions are really telling us*. New York, NY: Oxford University Press.
- Srivastava, S., Tamir, M., McGonigal, K. M., John, O. P., & Gross, J. J. (2009). The social costs of emotional suppression: A prospective study of the transition to college. *Journal of Personality and Social Psychology*, 96, 883–897.
- Tamir, M., & Ford, B. Q. (2012a). Should people pursue feelings that feel good or feelings that do good? Emotional preferences and well-being. *Emotion*, 12, 1061–1070.
- Tamir, M., & Ford, B. Q. (2012b). When feeling bad is expected to be good: Emotion regulation and outcome expectancies in social conflicts. *Emotion*,

12, 807–816.

Trull, T. J., Solhan, M. B., Tragesser, S. L., Jahng, S., Wood, P. K., Piasecki, T. M., & Watson, D. (2008). Affective instability: Measuring a core feature of borderline personality disorder with ecological momentary assessment. *Journal of Abnormal Psychology, 117*, 647–661.

Tugade, M., Fredrickson, B. L., & Barrett, L. F. (2004). Psychological resilience and positive emotional granularity: Examining the benefits of positive emotions on coping and health. *Journal of Personality, 72*, 1161–1190.

Tugade, M. M., & Fredrickson, L. L. (2004). Resilient individuals use positive emotions to bounce back from negative emotional experiences. *Journal of Personality and Social Psychology, 86*, 320–333.

Veenhoven, R. (2008). Healthy happiness: Effects of happiness on physical consequences for preventive health care. *Journal of Happiness Studies, 9*, 449–469.

van Kleef, E., van Dijk, G., Steinel, W., & van Beest, I. (2008). A social functional approach to emotions in bargaining: When communicating anger pays and when it backfires. *Journal of Personality and Social Psychology, 94*, 600–614.

Öhman, A., & Mineka, S. (2001). Fears, phobias, and preparedness: Toward an evolved module of fear and fear learning. *Psychological Review, 108*, 483–522.



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# Knowledge Emotions: Feelings that Foster Learning, Exploring, and Reflecting

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N O B A

## Abstract

When people think of emotions they usually think of the obvious ones, such as happiness, fear, anger, and sadness. This chapter looks at the knowledge emotions, a family of emotional states that foster learning, exploring, and reflecting. Surprise, interest, confusion, and awe come from events that are unexpected, complicated, and mentally challenging, and they motivate learning in its broadest sense, be it learning over the course of seconds (finding the source of a loud crash, as in surprise) or over a lifetime (engaging with hobbies, pastimes, and intellectual pursuits, as in interest). The chapter reviews research on each emotion, with an emphasis on causes, consequences, and individual differences. As a group, the knowledge emotions motivate people to engage with new and puzzling things rather than avoid them. Over time, engaging with new things, ideas, and people broadens someone's experiences and cultivates expertise. The knowledge emotions thus don't gear up the body like fear, anger, and happiness do, but they do gear up the mind—a critical task for humans, who must learn essentially everything that they know.

# Learning Objectives

- Identify the four knowledge emotions.
- Describe the patterns of appraisals that bring about these emotions.
- Discuss how the knowledge emotions promote learning.
- Apply the knowledge emotions to enhancing learning and education, and to one's own life.

## Introduction

What comes to mind when you think of emotions? It's probably the elation of happiness, the despair of sadness, or the freak-out fright of fear. Emotions such as happiness, anger, sadness, and fear are important emotions, but human emotional experience is vast—people are capable of experiencing a wide range of feelings.

This chapter considers the **knowledge emotions**, a profoundly important family of emotions associated with learning, exploring, and reflecting. The family of knowledge emotions has four main members: surprise, interest, confusion, and awe. These are considered knowledge emotions for two reasons. First, the events that bring them about involve knowledge: These emotions happen when something violates what people expected or believed. Second, these emotions are fundamental to learning: Over time, they build useful knowledge about the world.

## Some Background About Emotions

Before jumping into the knowledge emotions, we should consider what emotions do and when emotions happen. According to **functionalist theories of emotion**, emotions help people manage important tasks (Keltner & Gross, 1999; Parrott, 2001). Fear, for example, mobilizes the body to fight or flee; happiness rewards achieving goals and builds attachments to other people. What do knowledge emotions do? As we'll see in detail later, they motivate learning, viewed in its broadest sense, during times that the environment is puzzling or erratic. Sometimes the learning is on a short time scale. Surprise, for example, makes people stop what they are doing, pay attention to the surprising thing, and evaluate whether it is dangerous (Simons, 1996). After a couple seconds, people have learned what they needed to know and get back to what they were doing. But sometimes the learning takes place over the

lifespan. Interest, for example, motivates people to learn about things over days, weeks, and years. Finding something interesting motivates “for its own sake” learning and is probably the major engine of human competence (Izard, 1977; Silvia, 2006).

What causes emotions to happen in the first place? Although it usually feels like something in the world—a good hug, a snake slithering across the driveway, a hot-air balloon shaped like a question mark—causes an emotion directly, emotion theories contend that emotions come from how we think about what is happening in the world, not what is literally happening. After all, if things in the world directly caused emotions, everyone would always have the same emotion in response to something. **Appraisal theories** (Ellsworth & Scherer, 2003; Lazarus, 1991) propose that each emotion is caused by a group of appraisals, which are evaluations and judgments of what events in the world mean for our goals and well-being: Is this relevant to me? Does it further or hinder my goals? Can I deal with it or do something about it? Did someone do it on purpose? Different emotions come from different answers to these appraisal questions.

With that as a background, in the following sections we’ll consider the nature, causes, and effects of each knowledge emotion. Afterward, we will consider some of their practical implications.

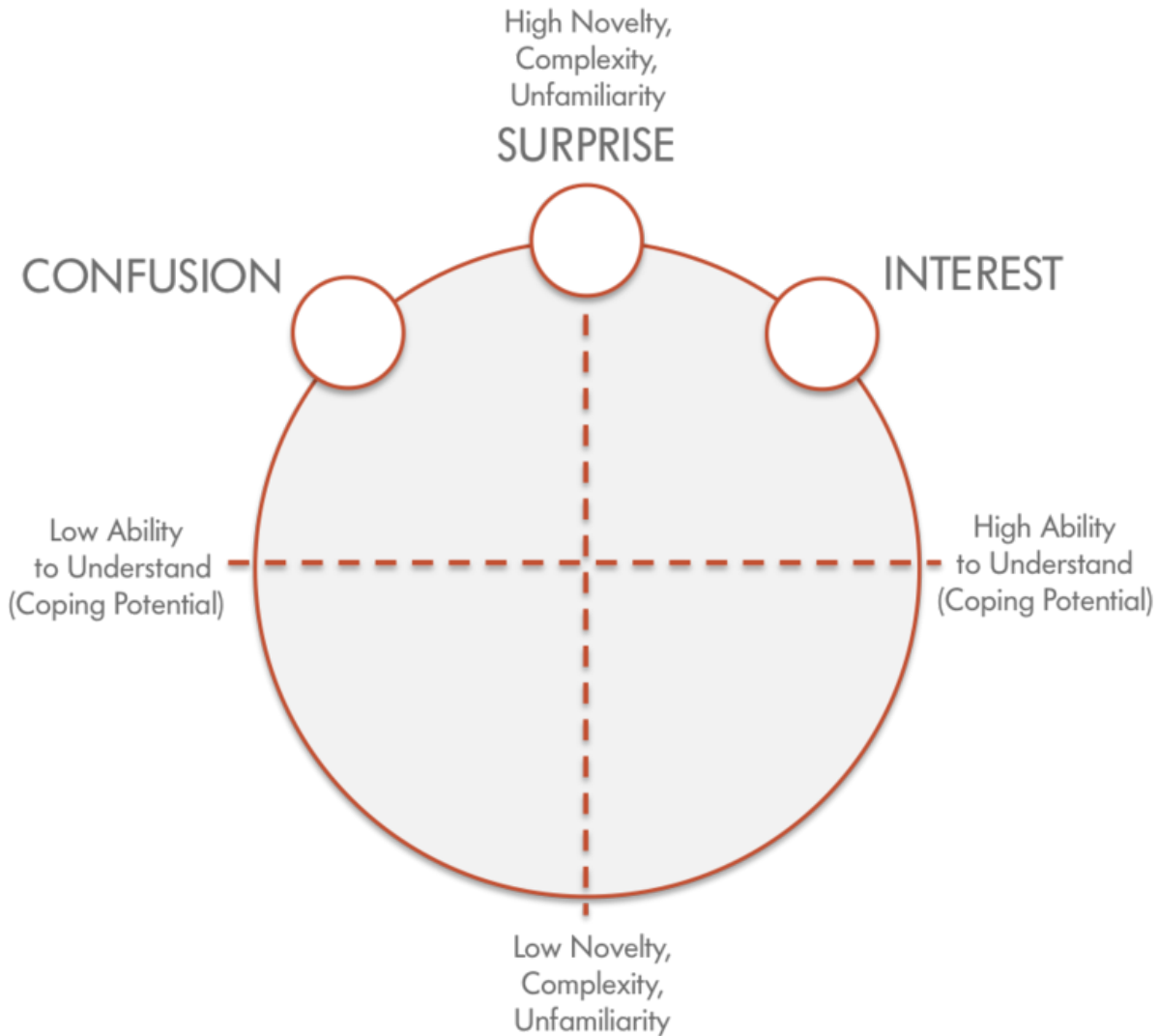


Figure 1. The appraisal space of surprise, interest, and confusion.

## Surprise

Nothing gets people’s attention like something startling. **Surprise**, a simple emotion, hijacks a person’s mind and body and focuses them on a source of possible danger (Simons, 1996). When there’s a loud, unexpected crash, people stop, freeze, and orient to the source of the noise. Their minds are wiped clean —after something startling, people usually can’t remember what they had been

talking about—and attention is focused on what just happened. By focusing all the body's resources on the unexpected event, surprise helps people respond quickly (Simons, 1996).

Surprise has only one appraisal: A single “expectedness check” (Scherer, 2001) seems to be involved. When an event is “high contrast”—it sticks out against the background of what people expected to perceive or experience—people become surprised (Berlyne, 1960; Teigen & Keren, 2003). Figure 1 shows this pattern visually: Surprise is high when unexpectedness is high.

Emotions are momentary states, but people vary in their propensity to experience them. Just as some people experience happiness, anger, and fear more readily, some people are much more easily surprised than others. At one end, some people are hard to surprise; at the other end, people are startled by minor noises, flashes, and changes. Like other individual differences in emotion, extreme levels of surprise propensity can be dysfunctional. When people have extreme surprise responses to mundane things—known as hyperstartling (Simons, 1996) and hyperekplexia (Bakker, van Dijk, van den Maagdenberg, & Tijssen, 2006)—everyday tasks such as driving or swimming become dangerous.

## Interest

People are curious creatures. **Interest**—an emotion that motivates exploration and learning (Silvia, 2012)—is one of the most commonly experienced emotions in everyday life (Izard, 1977). Humans must learn virtually everything they know, from how to cook pasta to how the brain works, and interest is an engine of this massive undertaking of learning across the lifespan.

The function of interest is to engage people with things that are new, odd, or unfamiliar. Unfamiliar things can be scary or unsettling, which makes people avoid them. But if people always avoided new things they would learn and experience nothing. It's hard to imagine what life would be like if people weren't curious to try new things: We would never feel like watching a different movie,

trying a different restaurant, or meeting new people. Interest is thus a counterweight to anxiety—by making unfamiliar things appealing, it motivates people to experience and think about new things. As a result, interest is an **intrinsically motivated** form of learning. When curious, people want to learn something for its own sake, to know it for the simple pleasure of knowing it, not for an external reward, such as learning to get money, impress a peer, or receive the approval of a teacher or parent.

Figure 1 shows the two appraisals that create interest. Like surprise, interest involves appraisals of novelty: Things that are unexpected, unfamiliar, novel, and complex can evoke interest (Berlyne, 1960; Hidi & Renninger, 2006; Silvia, 2008). But unlike surprise, interest involves an additional appraisal of **coping potential**. In appraisal theories, coping potential refers to people's evaluations of their ability to manage what is happening (Lazarus, 1991). When coping potential is high, people feel capable of handling the challenge at hand. For interest, this challenge is mental: Something odd and unexpected happened, and people can either feel able to understand it or not. When people encounter something that they appraise as both novel (high novelty and complexity) and comprehensible (high coping potential), they will find it interesting (Silvia, 2005).

The primary effect of interest is exploration: People will explore and think about the new and intriguing thing, be it an interesting object, person, or idea. By stimulating people to reflect and learn, interest builds knowledge and, in the long run, deep expertise. Consider, for example, the sometimes scary amount of knowledge people have about their hobbies. People who find cars, video games, high fashion, and soccer intrinsically interesting know an amazing amount about their passions—it would be hard to learn so much so quickly if people found it boring.

A huge amount of research shows that interest promotes learning that is faster, deeper, better, and more enjoyable (Hidi, 2001; Silvia, 2006). When people find material more interesting, they engage with it more deeply and learn it more thoroughly. This is true for simple kinds of learning—sentences



and paragraphs are easier to remember when they are interesting (Sadoski, 2001; Schiefele, 1999)—and for broader academic success—people get better grades and feel more intellectually engaged in classes they find interesting (Krapp, 1999, 2002; Schiefele, Krapp, & Winteler, 1992).

Individual differences in interest are captured by **trait curiosity** (Kashdan, 2004; Kashdan et al., 2009). People low in curiosity prefer activities and ideas that are tried and true and familiar; people high in curiosity, in contrast, prefer things that are offbeat and new. Trait curiosity is a facet of **openness to experience**, a broader trait that is one of the five major factors of personality (McCrae, 1996; McCrae & Sutin, 2009). Not surprisingly, being high in openness to experience involves exploring new things and finding quirky things appealing. Research shows that curious, open people ask more questions in class, own and read more books, eat a wider range of food, and—not surprisingly, given their lifetime of engaging with new things—are a bit higher in intelligence (DeYoung, 2011; Kashdan & Silvia, 2009; Peters, 1978; Raine, Reynolds, Venables, & Mednick, 2002).

## Confusion

Sometimes the world is weird. Interest is a wonderful resource when people encounter new and unfamiliar things, but those things aren't always comprehensible. **Confusion** happens when people are learning something that is both unfamiliar and hard to understand. In the appraisal space shown in Figure 1, confusion comes from appraising an event as high in novelty, complexity, and unfamiliarity as well as appraising it as hard to comprehend (Silvia, 2010, 2013).

Confusion, like interest, promotes thinking and learning. This isn't an obvious idea—our intuitions would suggest that confusion makes people frustrated and thus more likely to tune out and quit. But as odd as it sounds, making students confused can help them learn better. In an approach to learning known as

**impasse-driven learning** (VanLehn, Siler, Murray, Yamauchi, & Baggett, 2003), making students confused motivates them to think through a problem instead of passively sitting and listening to what a teacher is saying. By actively thinking through the problem, students are learning actively and thus learning the material more deeply. In one experiment, for example, students learned about scientific research methods from two virtual reality tutors (D’Mello, Lehman, Pekrun, & Graesser, in press). The tutors sometimes contradicted each other, however, which made the students confused. Measures of simple learning (memory for basic concepts) and deep learning (being able to transfer an idea to a new area) showed that students who had to work through confusion learned more deeply—they were better at correctly applying what they learned to new problems.

In a study of **facial expressions**, Rozin and Cohen (2003) demonstrated what all college teachers know: It’s easy to spot confusion on someone’s face. When people are confused, they usually furrow, scrunch, or lower their eyebrows and purse or bite their lips (Craig, D’Mello, Witherspoon, & Graesser, 2008; Durso, Geldbach, & Corballis, 2012). In a clever application of these findings, researchers have developed artificial intelligence (AI) teaching and tutoring systems that can detect expressions of confusion (Craig et al., 2008). When the AI system detects confusion, it can ask questions and give hints that help the student work through the problem.

Not much is known about individual differences related to confusion, but differences in how much people know are important. In one research study, people viewed short film clips from movies submitted to a local film festival (Silvia & Berg, 2011). Some of the people were film experts, such as professors and graduate students in media studies and film theory; others were novices, such as the rest of us who simply watch movies for fun. The experts found the clips much more interesting and much less confusing than the novices did. A similar study discovered that experts in the arts found experimental visual art more interesting and less confusing than novices did (Silvia, 2013).

## Awe

**Awe**—a state of fascination and wonder—is the deepest and probably least common of the knowledge emotions. When people are asked to describe profound experiences, such as the experience of beauty or spiritual transformation, awe is usually mentioned (Cohen, Gruber, & Keltner, 2010). People are likely to report experiencing awe when they are alone, engaged with art and music, or in nature (Shiota, Keltner, & Mossman, 2007).

Awe comes from two appraisals (Keltner & Haidt, 2003). First, people appraise something as vast, as beyond the normal scope of their experience. Thus, like the other knowledge emotions, awe involves appraising an event as inconsistent with one's existing knowledge, but the degree of inconsistency is huge, usually when people have never encountered something like the event before (Bonner & Friedman, 2011). Second, people engage in **accommodation**, which is changing their beliefs—about themselves, other people, or the world in general—to fit in the new experience. When something is massive (in size, scope, sound, creativity, or anything else) and when people change their beliefs to accommodate it, they'll experience awe.

A mild, everyday form of awe is **chills**, sometimes known as shivers or thrills. Chills involve getting goosebumps on the skin, especially the scalp, neck, back, and arms, usually as a wave that starts at the head and moves downward. Chills are part of strong awe experiences, but people often experience them in response to everyday events, such as compelling music and movies (Maruskin, Thrash, & Elliot, 2012; Nusbaum & Silvia, 2011). Music that evokes chills, for example, tends to be loud, have a wide frequency range (such as both low and high frequencies), and major dynamic shifts, such as a shift from quiet to loud or a shift from few to many instruments (Huron & Margulis, 2010).

Like the other knowledge emotions, awe motivates people to engage with something outside the ordinary. Awe is thus a powerful educational tool. In science education, it is common to motivate learning by inspiring wonder. One example comes from a line of research on astronomy education, which seeks to educate the public about astronomy by using awe-inspiring images of deep space (Arcand, Watzke, Smith, & Smith, 2010). When people see beautiful and striking color images of supernovas, black holes, and planetary nebulas, they usually report feelings of awe and wonder. These feelings then motivate them to learn about what they are seeing and their scientific importance (Smith et al., 2011).

Regarding individual differences, some people experience awe much more often than others. One study that developed a brief scale to measure awe—the items included statements such as “I often feel awe” and “I feel wonder almost every day”—found that people who often experience awe are much higher in openness to experience (a trait associated with openness to new things and a wide emotional range) and in extraversion (a trait associated with positive emotionality) (Shiota, Keltner, & John, 2006). Similar findings appear for when people are asked how often they experience awe in response to the arts (Nusbaum & Silvia, in press). For example, people who say that they often “feel a sense of awe and wonder” when listening to music are much higher in openness to experience (Silvia & Nusbaum, 2011).

## Implications of the Knowledge Emotions

Learning about the knowledge emotions expands our ideas about what emotions are and what they do. Emotions clearly play important roles in everyday challenges such as responding to threats and building relationships. But emotions also aid in other, more intellectual challenges for humans. Compared with other animals, we are born with little knowledge but have the potential for enormous intelligence. Emotions such as surprise, interest,

confusion, and awe first signal that something awry has happened that deserves our attention. They then motivate us to engage with the new things that strain our understanding of the world and how it works. Emotions surely aid fighting and fleeing, but for most of the hours of most of our days, they mostly aid in learning, exploring, and reflecting.

## Outside Resources

**Video: A talk with Todd Kashdan, a well-known scholar in the field of curiosity and positive psychology, centered on curiosity**

<http://www.youtube.com/watch?v=IPpVxZRqRc8>

**Video: More from Todd**

<http://www.youtube.com/watch?v=UunaTEpWrME>

**Web: Aesthetics and Astronomy, a project that uses wonder and beauty to foster knowledge about the science of space**

<http://astroart.cfa.harvard.edu/>

**Web: The Emotion Computing Group, an interdisciplinary team that studies how to measure confusion and harness it for deeper learning, among other intriguing things**

<https://sites.google.com/site/memphisemotivecomputing/Home>

## Discussion Questions

1. Research shows that people learn more quickly and deeply when they are interested. Can you think of examples from your own life when you learned from interest versus from extrinsic rewards (e.g., good grades, approval from parents and peers)? Was learning more enjoyable or effective in one case?
2. How would you redesign a psychology lecture to harness the power of the knowledge emotions? How could you use interest, confusion, and awe to grab students' attention and motivate them to reflect and learn?
3. Psychology, like all the sciences, is fueled by wonder. For psychology, the wonder is about human nature and behavior. What, to you, is the most wondrous, amazing, and awe-inspiring idea or finding from the science of psychology? Does reflecting on this amazing fact motivate you to want to know more about it?
4. Many people only want to know something if it is practical—if it helps them get a job, make friends, find a mate, or earn money. But emotions such as interest and awe, by motivating learning for its own sake, often engage people in things that seem frivolous, silly, or impractical. What does this say about learning? Is some knowledge necessarily more valuable than other kinds?

# Vocabulary

## **Accommodation**

Changing one's beliefs about the world and how it works in light of new experience.

## **Appraisal structure**

The set of appraisals that bring about an emotion.

## **Appraisal theories**

Evaluations that relate what is happening in the environment to people's values, goals, and beliefs. Appraisal theories of emotion contend that emotions are caused by patterns of appraisals, such as whether an event furthers or hinders a goal and whether an event can be coped with.

## **Awe**

An emotion associated with profound, moving experiences. Awe comes about when people encounter an event that is vast (far from normal experience) but that can be accommodated in existing knowledge.

## **Chills**

A feeling of goosebumps, usually on the arms, scalp, and neck, that is often experienced during moments of awe.

## **Confusion**

An emotion associated with conflicting and contrary information, such as when people appraise an event as unfamiliar and as hard to understand. Confusion motivates people to work through the perplexing information and thus fosters deeper learning.



**Coping potential**

People's beliefs about their ability to handle challenges.

**Facial expressions**

Part of the expressive component of emotions, facial expressions of emotion communicate inner feelings to others.

**Functionalist theories of emotion**

Theories of emotion that emphasize the adaptive role of an emotion in handling common problems throughout evolutionary history.

**Impasse-driven learning**

An approach to instruction that motivates active learning by having learners work through perplexing barriers.

**Interest**

An emotion associated with curiosity and intrigue, interest motivates engaging with new things and learning more about them. It is one of the earliest emotions to develop and a resource for intrinsically motivated learning across the life span.

**Intrinsically motivated learning**

Learning that is “for its own sake”—such as learning motivated by curiosity and wonder—instead of learning to gain rewards or social approval.

**Knowledge emotions**

A family of emotions associated with learning, reflecting, and exploring. These emotions come about when unexpected and unfamiliar events happen in the environment. Broadly speaking, they motivate people to explore unfamiliar things, which builds knowledge and expertise over the long run.

**Openness to experience**

One of the five major factors of personality, this trait is associated with higher curiosity, creativity, emotional breadth, and open-mindedness. People high in openness to experience are more likely to experience interest and awe.

**Surprise**

An emotion rooted in expectancy violation that orients people toward the unexpected event.

**Trait curiosity**

Stable individual-differences in how easily and how often people become curious.

## Reference List

- Arcand, K. K., Watzke, M., Smith, L. F., & Smith, J. K. (2010). Surveying aesthetics and astronomy: A project exploring the public's perception of astronomical images and the science within. *CAP Journal*, 10, 13–16.
- Bakker, M. J., van Dijk, J. G., van den Maagdenberg, A. M. J. M., & Tijssen, M. A. J. (2006). Startle syndromes. *The Lancet Neurology*, 5, 513–524.
- Berlyne, D. E. (1960). *Conflict, arousal, and curiosity*. New York, NY: McGraw-Hill.
- Bonner, E. T., & Friedman, H. L. (2011). A conceptual clarification of the experience of awe: An interpretative phenomenological analysis. *The Humanistic Psychologist*, 39, 222–235.
- Cohen, A. B., Gruber, J., & Keltner, D. (2010). Comparing spiritual transformations and experiences of profound beauty. *Psychology of Religion and Spirituality*, 2, 127–135
- Craig, S. D., D'Mello, S., Witherspoon, A., & Graesser, A. (2008). Emote aloud during learning with AutoTutor: Applying the facial action coding system to cognitive-affective states during learning. *Cognition and Emotion*, 22, 777–788.
- DeYoung, C. G. (2011). Intelligence and personality. In R. J. Sternberg & S. B. Kaufman (Eds.), *The Cambridge handbook of intelligence* (pp. 711–737). New York, NY: Cambridge University Press.
- Durso, F. T., Geldbach, K. M., & Corballis, P. (2012). Detecting confusion using facial electromyography. *Human Factors*, 54, 60–69.

D'Mello, S., Lehman, B., Pekrun, R., & Graesser, A. (in press). Confusion can be beneficial for learning. *Learning and Instruction*.

Ellsworth, P. C., & Scherer, K. R. (2003). Appraisal processes in emotion. In R. J. Davidson, K. R. Scherer, & H. H. Goldsmith (Eds.), *Handbook of affective sciences* (pp. 572–595). New York, NY: Oxford University Press.

Hidi, S. (2001). Interest, reading, and learning: Theoretical and practical considerations. *Educational Psychology Review*, 13, 191–209.

Hidi, S., & Renninger, K. A. (2006). The four-phase model of interest development. *Educational Psychologist*, 41, 111–127.

Huron, D., & Margulis, E. H. (2010). Musical expectancy and thrills. In P. N. Juslin & J. A. Sloboda (Eds.), *Handbook of music and emotion: Theory, research, applications* (pp. 575–604). New York, NY: Oxford University Press.

Izard, C. E. (1977). *Human emotions*. New York, NY: Plenum.

Kashdan, T. B. (2004). Curiosity. In C. Peterson & M. E. P. Seligman (Eds.), *Character strengths and virtues: A handbook and classification* (pp. 125–141). New York, NY: Oxford University Press.

Kashdan, T. B., & Silvia, P.J. (2009). Curiosity and interest: The benefits of thriving on novelty and challenge. In C. R. Snyder & S. J. Lopez (Eds.), *Handbook of positive psychology* (2nd ed., pp. 367–374). New York, NY: Oxford University Press.

Kashdan, T. B., & Silvia, P.J. (2009). Curiosity and interest: The benefits of thriving on novelty and challenge. In C. R. Snyder & S. J. Lopez (Eds.), *Handbook of*

positive psychology (2nd ed., pp. 367–374). New York, NY: Oxford University Press.

Kashdan, T.B., Gallagher, M. W., Silvia, P.J., Winterstein, B. P., Breen, W. E., Terhar, D., & Steger, M. F. (2009). The curiosity and exploration inventory-II: Development, factor structure, and psychometrics. *Journal of Research in Personality*, 43, 987–998.

Keltner, D., & Gross, J. J. (1999). Functional accounts of emotions. *Cognition and Emotion*, 13, 467–480.

Keltner, D., & Haidt, J. (2003). Approaching awe, a moral, spiritual, and aesthetic emotion. *Cognition and Emotion*, 17, 297–314.

Krapp, A. (2002). An educational-psychological theory of interest and its relation to self-determination theory. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 405–427). Rochester, NY: University of Rochester Press.

Krapp, A. (1999). Interest, motivation and learning: An educational-psychological perspective. *European Journal of Psychology of Education*, 14, 23–40.

Lazarus, R. S. (1991). *Emotion and adaptation*. New York, NY: Oxford University Press.

Maruskin, L. A., Thrash, T. M., & Elliot, A. J. (2012). The chills as a psychological construct: Content universe, factor structure, affective composition, elicitors, trait antecedents, and consequences. *Journal of Personality and Social Psychology*, 103, 135–157.

- McCrae, R. R. (1996). Social consequences of experiential openness. *Psychological Bulletin*, 120, 323–337.
- McCrae, R. R., & Sutin, A. R. (2009). Openness to experience. In M. R. Leary & R. H. Hoyle (Eds.), *Handbook of individual differences in social behavior* (pp. 257–273). New York, NY: Guilford.
- Nusbaum, E. C., & Silvia, P. J. (2011). Shivers and timbres: Personality and the experience of chills from music. *Social Psychological and Personality Science*, 2, 199–204.
- Nusbaum, E. C., & Silvia, P. J. (in press). Unusual aesthetic states. In P. Tinio & J. Smith (Eds.), *Cambridge handbook of the psychology of aesthetics and the arts*. New York, NY: Cambridge University Press.
- Parrott, W. G. (2001). Implications of dysfunctional emotions for understanding how emotions function. *Review of General Psychology*, 5, 180–186.
- Peters, R. A. (1978). Effects of anxiety, curiosity, and perceived instructor threat on student verbal behavior in the college classroom. *Journal of Educational Psychology*, 70, 388–395.
- Raine, A., Reynolds, C., Venables, P. H., & Mednick, S. A. (2002). Stimulation-seeking and intelligence: A prospective longitudinal study. *Journal of Personality and Social Psychology*, 82, 663–674.
- Rozin, P., & Cohen, A. B. (2003). High frequency of facial expressions corresponding to confusion, concentration, and worry in an analysis of naturally occurring facial expressions of Americans. *Emotion*, 3, 68–75.

- Sadoski, M. (2001). Resolving the effects of concreteness on interest, comprehension, and learning important ideas from text. *Educational Psychology Review*, 13, 263–281.
- Scherer, K. R. (2001). Appraisal considered as a process of multilevel sequential checking. In K. R. Scherer, A. Schorr, & T. Johnstone (Eds.), *Appraisal processes in emotion: Theory, methods, research* (pp. 92–120). New York, NY: Oxford University Press.
- Schiefele, U. (1999). Interest and learning from text. *Scientific Studies of Reading*, 3, 257–279.
- Schiefele, U., Krapp, A., & Winteler, A. (1992). Interest as a predictor of academic achievement: A meta-analysis of research. In K. A. Renninger, S. Hidi, & A. Krapp (Eds.), *The role of interest in learning and development* (pp. 183–212). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Shiota, M. N., Keltner, D., & John, O. P. (2006). Positive emotion dispositions differentially associated with Big Five personality and attachment style. *Journal of Positive Psychology*, 1, 61–71.
- Shiota, M. N., Keltner, D., & Mossman, A. (2007). The nature of awe: Elicitors, appraisals, and effects on self-concept. *Cognition and Emotion*, 21, 944–963.
- Silvia, P. J. (2013). Interested experts, confused novices: Art expertise and the knowledge emotions. *Empirical Studies of the Arts*, 31, 107–116.
- Silvia, P. J. (2012). Curiosity and motivation. In R. M. Ryan (Ed.), *The Oxford handbook of human motivation* (pp. 157–166). New York, NY: Oxford University Press.

Silvia, P. J. (2010). Confusion and interest: The role of knowledge emotions in aesthetic experience. *Psychology of Aesthetics, Creativity, and the Arts*, 4, 75–80.

Silvia, P. J. (2008). Interest—The curious emotion. *Current Directions in Psychological Science*, 17, 57–60.

Silvia, P. J. (2006). *Exploring the psychology of interest*. New York, NY: Oxford University Press.

Silvia, P. J. (2005). What is interesting? Exploring the appraisal structure of interest. *Emotion*, 5, 89–102.

Silvia, P. J., & Berg, C. (2011). Finding movies interesting: How expertise and appraisals influence the aesthetic experience of film. *Empirical Studies of the Arts*, 29, 73–88.

Silvia, P. J., & Nusbaum, E. C. (2011). On personality and piloerection: Individual differences in aesthetic chills and other unusual aesthetic experiences. *Psychology of Aesthetics, Creativity, and the Arts*, 5, 208–214.

Simons, R. C. (1996). *Boo! Culture, experience, and the startle reflex*. New York, NY: Oxford University Press.

Smith, L. F., Smith, J. K., Arcand, K. K., Smith, R. K., Bookbinder, J., & Keach, K. (2011). Aesthetics and astronomy: Studying the public's perception and understanding of imagery from space. *Science Communication*, 33, 201–238.

Teigen, K. H., & Keren, G. (2003). Surprises: Low probabilities or high contrasts?



Cognition, 87, 55–71.

VanLehn, K., Siler, S., Murray, C., Yamauchi, T., & Baggett, W. (2003). Why do only some events cause learning during human tutoring? *Cognition and Instruction*, 21, 209–249.



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# Functions of Emotions

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N O B A

## Abstract

Emotions play a crucial role in our lives because they have important functions. This chapter describes those functions, dividing the discussion into three areas: the intrapersonal, the interpersonal, and the social and cultural functions of emotions. The section on the intrapersonal functions of emotion describes the roles that emotions play within each of us individually; the section on the interpersonal functions of emotion describes the meanings of emotions to our relationships with others; and the section on the social and cultural functions of emotion describes the roles and meanings that emotions have to the maintenance and effective functioning of our societies and cultures at large. All in all we will see that emotions are a crucially important aspect of our psychological composition, having meaning and function to each of us individually, to our relationships with others in groups, and to our societies as a whole.

# Learning Objectives

- Gain an appreciation of the importance of emotion in human life.
- Understand the functions and meanings of emotion in three areas of life: the intrapersonal, interpersonal, and social-cultural.
- Give examples of the role and function of emotion in each of the three areas described.

## Introduction

It is impossible to imagine life without emotion. We treasure our feelings—the joy at a ball game, the pleasure of the touch of a loved one, or the fun with friends on a night out. Even negative emotions are important, such as the sadness when a loved one dies, the anger when violated, the fear that overcomes us in a scary or unknown situation, or the guilt or shame toward others when our sins are made public. Emotions color life experiences and give those experiences meaning and flavor.

In fact, emotions play many important roles in people's lives and have been the topic of scientific inquiry in psychology for well over a century (Cannon, 1927; Darwin, 1872; James, 1890). This chapter explores why we have emotions and why they are important. Doing so requires us to understand the function of emotions, and this chapter does so below by dividing the discussion into three sections. The first concerns the **intrapersonal** functions of emotion, which refer to the role that emotions play within each of us individually. The second concerns the **interpersonal** functions of emotion, which refer to the role emotions play between individuals within a group. The third concerns the **social and cultural** functions of emotion, which refer to the role that emotions play in the maintenance of social order within a society. All in all, we will see that emotions inform us of who we are, what our relationships with others are like, and how to behave in social interactions. Emotions give meaning to events; without emotions, those events would be mere facts. Emotions help coordinate interpersonal relationships. And emotions play an important role in the cultural functioning of keeping human societies together.

## Intrapersonal Functions of Emotion

### Emotions Help us Act Quickly with Minimal Conscious Awareness

Emotions are rapid information-processing systems that help us act with minimal thinking (Tooby & Cosmides, 2008). Problems associated with birth, battle, death, and seduction have occurred throughout evolutionary history and emotions evolved to aid humans in adapting to those problems rapidly and with minimal conscious cognitive intervention. If we did not have emotions, we could not make rapid decisions concerning whether to attack, defend, flee, care for others, reject food, or approach something useful, all of which were functionally adaptive in our evolutionary history and helped us to survive. For instance, drinking spoiled milk or eating rotten eggs has negative consequences for our welfare. The emotion of disgust, however, helps us immediately take action by not ingesting them in the first place or by vomiting them out. This response is adaptive because it aids, ultimately, in our survival and allows us to act immediately without much thinking. In some instances, taking the time to sit and rationally think about what to do, calculating cost-benefit ratios in one's mind, is a luxury that might cost one one's life. Emotions evolved so that we can act without that depth of thinking.

### Emotions Prepare the Body for Immediate Action

Emotions prepare us for behavior. When triggered, emotions orchestrate systems such as perception, attention, inference, learning, memory, goal choice, motivational priorities, physiological reactions, motor behaviors, and behavioral decision making (Cosmides & Tooby, 2000; Tooby & Cosmides, 2008). Emotions simultaneously activate certain systems and deactivate others in

order to prevent the chaos of competing systems operating at the same time, allowing for coordinated responses to environmental stimuli (Levenson, 1999). For instance, when we are afraid, our bodies shut down temporarily unneeded digestive processes, resulting in saliva reduction (a dry mouth); blood flows disproportionately to the lower half of the body; the visual field expands; and air is breathed in, all preparing the body to flee. Emotions initiate a system of components that includes subjective experience, expressive behaviors, physiological reactions, action tendencies, and cognition, all for the purposes of specific actions; the term “emotion” is, in reality, a metaphor for these reactions.

One common misunderstanding many people have when thinking about emotions, however, is the belief that emotions must always directly produce action. This is not true. Emotion certainly prepares the body for action; but whether people actually engage in action is dependent on many factors, such as the context within which the emotion has occurred, the target of the emotion, the perceived consequences of one’s actions, previous experiences, and so forth (Baumeister, Vohs, DeWall, & Zhang, 2007; Matsumoto & Wilson, 2008). Thus, emotions are just one of many determinants of behavior, albeit an important one.

## Emotions Influence Thoughts

Emotions are also connected to thoughts and memories. Memories are not just facts that are encoded in our brains; they are colored with the emotions felt at those times the facts occurred (Wang & Ross, 2007). Thus, emotions serve as the neural glue that connects those disparate facts in our minds. That is why it is easier to remember happy thoughts when happy, and angry times when angry. Emotions serve as the affective basis of many attitudes, values, and beliefs that we have about the world and the people around us; without emotions those attitudes, values, and beliefs would be just statements without



meaning, and emotions give those statements meaning. Emotions influence our thinking processes, sometimes in constructive ways, sometimes not. It is difficult to think critically and clearly when we feel intense emotions, but easier when we are not overwhelmed with emotions (Matsumoto, Hirayama, & LeRoux, 2006).

## Emotions Motivate Future Behaviors

Because emotions prepare our bodies for immediate action, influence thoughts, and can be felt, they are important motivators of future behavior. Many of us strive to experience the feelings of satisfaction, joy, pride, or triumph in our accomplishments and achievements. At the same time, we also work very hard to avoid strong negative feelings; for example, once we have felt the emotion of disgust when drinking the spoiled milk, we generally work very hard to avoid having those feelings again (e.g., checking the expiration date on the label before buying the milk, smelling the milk before drinking it, watching if the milk curdles in one's coffee before drinking it). Emotions, therefore, not only influence immediate actions but also serve as an important motivational basis for future behaviors.

## Interpersonal Functions of Emotion

Emotions are expressed both verbally through words and nonverbally through facial expressions, voices, gestures, body postures, and movements. We are constantly expressing emotions when interacting with others, and others can reliably judge those emotional expressions (Elfenbein & Ambady, 2002; Matsumoto, 2001); thus, emotions have signal value to others and influence others and our social interactions. Emotions and their expressions communicate information to others about our feelings, intentions, relationship with the target of the emotions, and the environment. Because emotions have

this communicative signal value, they help solve social problems by evoking responses from others, by signaling the nature of interpersonal relationships, and by providing incentives for desired social behavior (Keltner, 2003).

## Emotional Expressions Facilitate Specific Behaviors in Perceivers

Because facial expressions of emotion are universal social signals, they contain meaning not only about the expressor's psychological state but also about that person's intent and subsequent behavior. This information affects what the perceiver is likely to do. People observing fearful faces, for instance, are more likely to produce approach-related behaviors, whereas people who observe angry faces are more likely to produce avoidance-related behaviors (Marsh, Ambady, & Kleck, 2005). Even subliminal presentation of smiles produces increases in how much beverage people pour and consume and how much they are willing to pay for it; presentation of angry faces decreases these behaviors (Winkielman, Berridge, & Wilbarger, 2005). Also, emotional displays evoke specific, complementary emotional responses from observers; for example, anger evokes fear in others (Dimberg & Ohman, 1996; Esteves, Dimberg, & Ohman, 1994), whereas distress evokes sympathy and aid (Eisenberg et al., 1989).

## Emotional Expressions Signal the Nature of Interpersonal Relationships

Emotional expressions provide information about the nature of the relationships among interactants. Some of the most important and provocative set of findings in this area come from studies involving married couples (Gottman & Levenson, 1992; Gottman, Levenson, & Woodin, 2001). In this

research, married couples visited a laboratory after having not seen each other for 24 hours, and then engaged in intimate conversations about daily events or issues of conflict. Discrete expressions of contempt, especially by the men, and disgust, especially by the women, predicted later marital dissatisfaction and even divorce.

## Emotional Expressions Provide Incentives for Desired Social Behavior

Facial expressions of emotion are important regulators of social interaction. In the developmental literature, this concept has been investigated under the concept of **social referencing** (Klennert, Campos, & Sorce, 1983); that is, the process whereby infants seek out information from others to clarify a situation and then use that information to act. To date, the strongest demonstration of social referencing comes from work on the visual cliff. In the first study to investigate this concept, Campos and colleagues (Sorce, Emde, Campos, & Klennert, 1985) placed mothers on the far end of the “cliff” from the infant. Mothers first smiled to the infants and placed a toy on top the safety glass to attract them; infants invariably began crawling to their mothers. When the infants were in the center of the table, however, the mother then posed an expression of fear, sadness, anger, interest, or joy. The results were clearly different for the different faces; no infant crossed the table when the mother showed fear; only 6% did when the mother posed anger, 33% crossed when the mother posed sadness, and approximately 75% of the infants crossed when the mother posed joy or interest.

Other studies provide similar support for facial expressions as regulators of social interaction. In one study (Bradshaw, 1986), experimenters posed facial expressions of neutral, anger, or fear toward babies as they moved toward an object and measured the amount of inhibition the babies showed in touching the object. The results for 10- and 15-month olds were the same: anger

produced the greatest inhibition, followed by disgust, with neutral the least. This study was later replicated (Hertenstein & Campos, 2004) using joy and disgust expressions, altering the method so that the infants were not allowed to touch the toy (compared with a distractor object) until one hour after exposure to the expression. At 14 months of age, significantly more infants touched the toy when they saw joyful expressions, but fewer touched the toy when the infants saw disgust.

## Social and Cultural Functions of Emotion

If you stop to think about many things we take for granted in our daily lives, we cannot help but come to the conclusion that modern human life is a colorful tapestry of many groups and individual lives woven together in a complex yet functional way. For example, when you're hungry, you might go to the local grocery store and buy some food. Ever stop to think about how you're able to do that? You might buy a banana that was grown in a field in southeast Asia being raised by farmers there, where they planted the tree, cared for it, and picked the fruit. They probably handed that fruit off to a distribution chain that allowed multiple people somewhere to use tools such as cranes, trucks, cargo bins, ships or airplanes (that were also created by multiple people somewhere) to bring that banana to your store. The store had people to care for that banana until you came and got it and to barter with you for it (with your money). You may have gotten to the store riding a vehicle that was produced somewhere else in the world by others, and you were probably wearing clothes produced by some other people somewhere else.

Thus, human social life is complex. Individuals are members of multiple groups, with multiple social roles, norms, and expectations, and people move rapidly in and out of the multiple groups of which they are members. Moreover, much of human social life is unique because it revolves around cities, where many people of disparate backgrounds come together. This creates the

enormous potential for social chaos, which can easily occur if individuals are not coordinated well and relationships not organized systematically.

One of the important functions of culture is to provide this necessary coordination and organization. Doing so allows individuals and groups to negotiate the social complexity of human social life, thereby maintaining social order and preventing social chaos. Culture does this by providing a meaning and information system to its members, which is shared by a group and transmitted across generations, that allows the group to meet basic needs of survival, pursue happiness and well-being, and derive meaning from life (Matsumoto & Juang, 2013). Culture is what allowed the banana from southeast Asia to appear on your table.

## The Role of Emotions in the Function of Culture

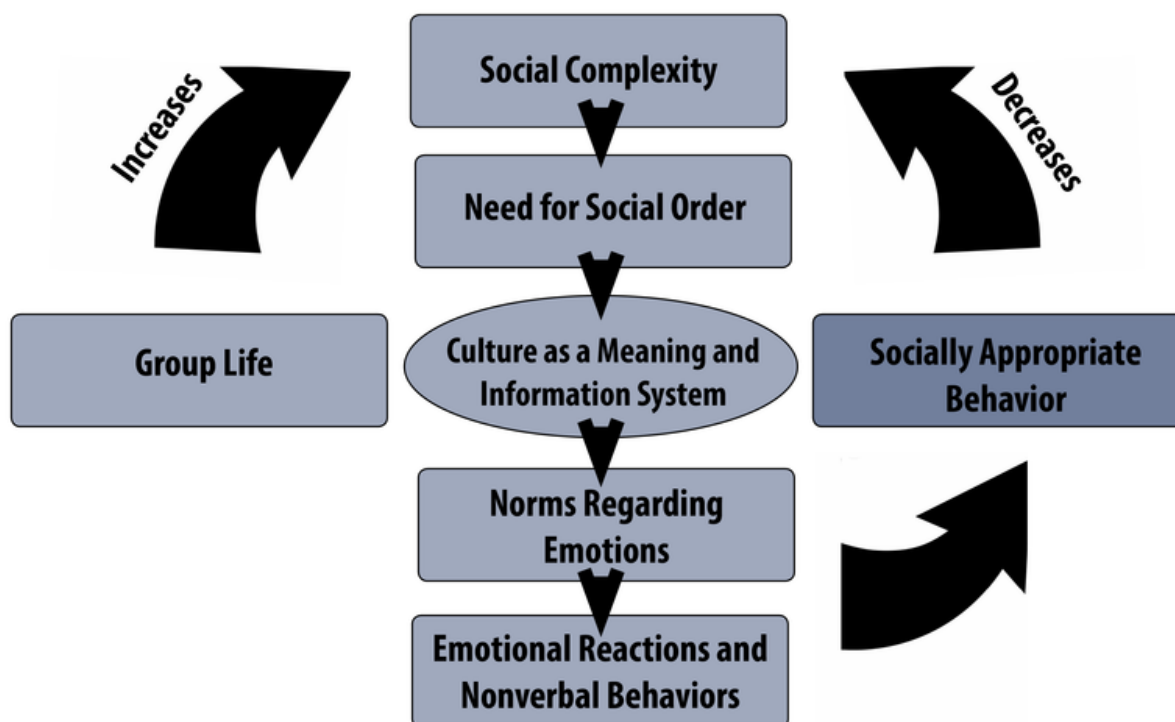


Figure 1: The Role of Emotions in the Function of Culture

Cultural transmission of the meaning and information system to its members is, therefore, a crucial aspect of culture. One of the ways this transmission occurs is through the development of worldviews (including attitudes, values, beliefs, and norms) related to emotions (Matsumoto & Hwang, 2013; Matsumoto et al., 2008). Worldviews related to emotions provide guidelines for desirable emotions that facilitate norms for regulating individual behaviors and interpersonal relationships. Our cultural backgrounds tell us which emotions are ideal to have, and which are not (Tsai, Knutson, & Fung, 2006). The cultural transmission of information related to emotions occurs in many ways, from childrearing to children, as well as from the cultural products available in our world, such as books, movies, ads, and the like (Schönplflug,

2009; Tsai, Louie, Chen, & Uchida, 2007).

Cultures also inform us about what to do with our emotions—that is, how to manage or modify them—when we experience them. One of the ways in which this is done is through the management of our emotional expressions through **cultural display rules** (Friesen, 1972). These are rules that are learned early in life that specify the management and modification of our emotional expressions according to social circumstances. Thus, we learn that “big boys don’t cry” or to laugh at the boss’s jokes even though they’re not funny. By affecting how individuals express their emotions, culture also influences how people experience them as well.

Because one of the major functions of culture is to maintain social order in order to ensure group efficiency and thus survival, cultures create worldviews, rules, guidelines, and norms concerning emotions because emotions have important intra- and interpersonal functions, as described above, and are important motivators of behavior. Norms concerning emotion and its regulation in all cultures serve the purpose of maintaining social order. Cultural worldviews and norms help us manage and modify our emotional reactions (and thus behaviors) by helping us to have certain kinds of emotional experiences in the first place and by managing our reactions and subsequent behaviors once we have them. By doing so, our culturally moderated emotions can help us engage in socially appropriate behaviors, as defined by our cultures, and thus reduce social complexity and increase social order, avoiding social chaos. All of this allows us to live relatively harmonious and constructive lives in groups. If cultural worldviews and norms about emotions did not exist, people would just run amok having all kinds of emotional experiences, expressing their emotions and then behaving in all sorts of unpredictable and potentially harmful ways. If that were the case, it would be very difficult for groups and societies to function effectively, and even for humans to survive as a species, if emotions were not regulated in culturally defined ways for the common, social good. Thus, emotions play a critical role in the successful functioning of any

society and culture.



## Outside Resources

**Web:** See how well you can read other people's facial expressions of emotion

<http://www.humintell.com/free-demos/>

## Discussion Questions

1. When emotions occur, why do they simultaneously activate certain physiological and psychological systems in the body and deactivate others?
2. Why is it difficult for people to act rationally and think happy thoughts when they are angry? Conversely, why is it difficult to remember sad memories or have sad thoughts when people are happy?
3. You're walking down a deserted street when you come across a stranger who looks scared. What would you say? What would you do? Why?
4. You're walking down a deserted street when you come across a stranger who looks angry. What would you say? What would you do? Why?
5. Think about the messages children receive from their environment (such as from parents, mass media, the Internet, Hollywood movies, billboards, and storybooks). In what ways do these messages influence the kinds of emotions that children should and should not feel?

# Vocabulary

## **Cultural display rules**

These are rules that are learned early in life that specify the management and modification of emotional expressions according to social circumstances. Cultural display rules can work in a number of different ways. For example, they can require individuals to express emotions “as is” (i.e., as they feel them), to exaggerate their expressions to show more than what is actually felt, to tone down their expressions to show less than what is actually felt, to conceal their feelings by expressing something else, or to show nothing at all.

## **Interpersonal**

This refers to the relationship or interaction between two or more individuals in a group. Thus, the interpersonal functions of emotion refer to the effects of one’s emotion on others, or to the relationship between oneself and others.

## **Intrapersonal**

This refers to what occurs within oneself. Thus, the intrapersonal functions of emotion refer to the effects of emotion to individuals that occur physically inside their bodies and psychologically inside their minds.

## **Social and cultural**

Society refers to a system of relationships between individuals and groups of individuals; culture refers to the meaning and information afforded to that system that is transmitted across generations. Thus, the social and cultural functions of emotion refer to the effects that emotions have on the functioning and maintenance of societies and cultures.

## **Social referencing**

This refers to the process whereby individuals look for information from others to clarify a situation, and then use that information to act. Thus, individuals will often use the emotional expressions of others as a source of information to make decisions about their own behavior.

## Reference List

- Baumeister, R. F., Vohs, K. D., DeWall, N., & Zhang, L. (2007). How emotion shapes behavior: Feedback, anticipation, and reflection, rather than direct causation. *Personality and Social Psychology Review*, 11(2), 167–203.
- Bradshaw, D. (1986). Immediate and prolonged effectiveness of negative emotion expressions in inhibiting infants' actions (Unpublished doctoral dissertation). Berkeley, CA: University of California, Berkeley.
- Cannon, W. B. (1927). The James–Lange theory of emotions: A critical examination and an alternative theory. *American Journal of Psychology*, 39, 106–124.
- Cosmides, L., & Tooby, J. (2000). Evolutionary psychology and the emotions. In M. Lewis & J. M. Haviland-Jones (Eds.), *Handbook of emotions* (2nd ed., pp. 91–115). New York, NY: Guilford Press.
- Darwin, C. (1872). *The expression of emotion in man and animals*. New York, NY: Oxford University Press.
- Dimberg, U., & Ohman, A. (1996). Behold the wrath: Psychophysiological responses to facial stimuli. *Motivation & Emotion*, 20(2), 149–182.
- Eisenberg, N., Fabes, R. A., Miller, P. A., Fultz, J., Shell, R., Mathy, R. M., & Reno, R. R. (1989). Relation of sympathy and distress to prosocial behavior: A multimethod study. *Journal of Personality and Social Psychology*, 57, 55–66.
- Elfenbein, H. A., & Ambady, N. (2002). On the universality and cultural specificity of emotion recognition: A meta-analysis. *Psychological Bulletin*, 128(2), 205–

235.

Esteves, F., Dimberg, U., & Ohman, A. (1994). Automatically elicited fear: Conditioned skin conductance responses to masked facial expressions. *Cognition and Emotion*, 8(5), 393–413.

Friesen, W. V. (1972). Cultural differences in facial expressions in a social situation: An experimental test of the concept of display rules (Unpublished doctoral dissertation). San Francisco, CA: University of California, San Francisco.

Gottman, J. M., Levenson, R. W., & Woodin, E. (2001). Facial expressions during marital conflict. *Journal of Family Communication*, 1, 37–57.

Gottman, J. M., & Levenson, R. W. (1992). Marital processes predictive of later dissolution: Behavior, physiology, and health. *Journal of Personality and Social Psychology*, 63(2), 221–223.

Hertenstein, M. J., & Campos, J. J. (2004). The retention effects of an adult's emotional displays on infant behavior. *Child Development*, 75(2), 595–613.

James, W. (1890). *The principles of psychology*. New York, NY: Holt.

Keltner, D. (2003). Expression and the course of life: Studies of emotion, personality, and psychopathology from a social-functional perspective. In P. Ekman, J. Campos, R. J. Davidson, & F.B.M. De Waal (Eds.), *Emotions inside out: 130 years after Darwin's "The expression of the emotions in man and animals"* (Vol. 1000, pp. 222–243). New York, NY: New York Academy of Sciences.

- Klinnert, M. D., Campos, J. J., & Sorce, J. F. (1983). Emotions as behavior regulators: Social referencing in infancy. In R. Plutchik & H. Kellerman (Eds.), *Emotion: Theory, research, and experience* (pp. 57–86). New York, NY: Academic Press.
- Levenson, R. W. (1999). The intrapersonal functions of emotion. *Cognition and Emotion*, 13(5), 481–504.
- Marsh, A. A., Ambady, N., & Kleck, R. E. (2005). The effects of fear and anger facial expressions on approach- and avoidance-related behaviors. *Emotion*, 5(1), 119–124.
- Matsumoto, D. (2001). Culture and emotion. In D. Matsumoto (Ed.), *The handbook of culture and psychology* (pp. 171–194). New York, NY: Oxford University Press.
- Matsumoto, D., Hirayama, S., & LeRoux, J. A. (2006). Psychological skills related to adjustment. In P.T.P. Wong & L.C.J. Wong (Eds.), *Handbook of multicultural perspectives on stress and coping* (pp. 387–405). New York, NY: Springer.
- Matsumoto, D., Yoo, S. H., Nakagawa, S., Alexandre, J., Altarriba, J., Anguas-Wong, A. M., et al. (2008). Culture, emotion regulation, and adjustment. *Journal of Personality and Social Psychology*, 94(6), 925–937.
- Matsumoto, D., & Hwang, H. C. (2013). Assessing cross-cultural competence: A review of available tests. *Journal of Cross-Cultural Psychology*, 44(6), 849–873.
- Matsumoto, D., & Juang, L. (2013). *Culture and psychology* (5th ed.). Belmont, CA: Cengage.

- Matsumoto, D., & Wilson, J. (2008). Culture, emotion, and motivation. In R. M. Sorrentino & S. Yamaguchi (Eds.), *Handbook of motivation and cognition across cultures* (pp. 541–563). New York, NY: Elsevier.
- Schönplflug, U. (Ed.). (2009). *Cultural transmission: Developmental, psychological, social and methodological aspects*. New York, NY: Cambridge University Press.
- Sorce, J. F., Emde, J. J., Campos, J. J., & Klinnert, M. D. (1985). Maternal emotional signaling: Its effect on the visual cliff behavior of 1-year-olds. *Developmental Psychology*, 21, 195–200.
- Tooby, J., & Cosmides, L. (2008). The evolutionary psychology of the emotions and their relationship to internal regulatory variables. In M. Lewis, J. M. Haviland-Jones, & L. Feldman Barrett (Eds.), *Handbook of Emotions* (3rd ed., pp. 114–137). New York, NY: The Guilford Press.
- Tsai, J. L., Knutson, B., & Fung, H. H. (2006). Cultural variation in affect valuation. *Journal of Personality and Social Psychology*, 90(2), 288–307.
- Tsai, J. L., Louie, J. Y., Chen, E. E., & Uchida, Y. (2007). Learning what feelings to desire: Socialization of ideal affect through children's storybooks. *Personality and Social Psychology Bulletin*, 33(1), 17–30.
- Wang, Q., & Ross, M. (2007). Culture and memory. In S. Kitayama & D. Cohen (Eds.), *Handbook of cultural psychology* (pp. 645–667). New York, NY: Guilford.
- Winkielman, P., Berridge, K. C., & Wilbarger, J. L. (2005). Unconscious affective reactions to masked happy versus angry faces influence consumption



behavior and judgments of value. *Personality and Social Psychology Bulletin*, 31(1), 121-135.



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# Emotional Intelligence

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N O B A

# Abstract

In this chapter, we review the construct of emotional intelligence by examining its underlying theoretical model, measurement tools, validity, and applications in real-world settings. We use empirical research from the past few decades to support and discuss competing definitions of emotional intelligence and possible future directions for the field.

# Learning Objectives

- Understand the theoretical foundations of emotional intelligence and the relationship between emotion and cognition.
- Distinguish between mixed and ability models of emotional intelligence.
- Understand various methods for measuring emotional intelligence.
- Describe emotional intelligence's evolution as a theoretical, success-oriented, and achievement-based framework.
- Identify and define key concepts of emotional intelligence (including emotion regulation, expression of emotion, understanding emotion, etc.) and the ways they contribute to decision making, relationship building, and overall well-being.

## Introduction

Imagine you are waiting in line to buy tickets to see your favorite band. Knowing tickets are limited and prices will rise quickly, you showed up 4 hours early. Unfortunately, so did everyone else. The line stretches for blocks and hasn't moved since you arrived. It starts to rain. You are now close to Will Call when you notice three people jump ahead of you to join their friends, who appear to have been saving a spot for them. They talk loudly on their cellphones as you inch forward, following the slow procession of others waiting in line. You finally reach the ticket counter only to have the clerk tell you the show is sold out. You notice the loud group off to the side, waving their tickets in the air. At this exact moment, a fiery line of emotion shoots through your whole body. Your heart begins to race, and you feel the urge to either slam your hands on the counter or scream in the face of those you believe have slighted you. What are these feelings, and what will you do with them?

**Emotional intelligence** (EI) involves the idea that cognition and emotion are interrelated. From this notion stems the belief that emotions influence decision making, relationship building, and everyday behavior. After spending hours waiting eagerly in the pouring rain and having nothing to show for it, is it even possible to squelch such intense feelings of anger due to injustice? From an EI perspective, emotions are active mental processes that can be managed, so long as individuals develop the knowledge and skills to do so. But how, exactly, do we reason with our emotions? In other words, how intelligent is our emotion system?

To begin, we'll briefly review the concept of standard, or general, intelligence. The late American psychologist, David Wechsler, claimed that intelligence is the "global capacity of an individual to think rationally, act purposefully, and deal effectively with their environment" (Wechsler, 1944). If we choose to accept this definition, then intelligence is an operational process through which we learn to utilize our internal abilities in order to better navigate our surroundings—a

process that is most certainly similar to, if not impacted by, our emotions. In 1990, Drs. Peter Salovey and John D. Mayer first explored and defined EI. They explained EI as “the ability to monitor one’s own and others’ feelings and emotions, to discriminate among them and use this information to guide one’s thinking and actions” (Salovey & Mayer, 1990). EI, according to these researchers, asserts that all individuals possess the ability to leverage their emotions to enhance thinking, judgment, and behavior. This chapter aims to unpack this theory by exploring the growing empirical research on EI, as well as what can be learned about its impact on our daily lives.

## History of EI

Traditionally, many psychologists and philosophers viewed cognition and emotion as separate domains, with emotion posing a threat to productive and rational thinking. Have you ever been told not to let your emotions get in the way of your decisions? This separation of passion and reason stretches as far back as early ancient Greece (Lyons, 1999). Additionally, mid-20th century scholars explained emotions as mentally destabilizing forces (Young, 1943). Yet, there are traces throughout history where the intersection of emotion and cognition has been theoretically questioned. In 350 B.C.E., the famous Greek philosopher Aristotle wrote, “some men . . . if they have first perceived and seen what is coming and have first roused themselves and their calculative faculty, are not defeated by their emotion, whether it be pleasant or painful”( Aristotle, trans. 2009, Book VII, Chapter 7, Section 8). Still, our social interactions and experiences suggest this belief has undergone centuries of disregard, both in Western and Eastern cultures. These are the same interactions that teach us to “toughen up” and keep our emotions hidden. So, how did we arrive at EI—a scientific theory that claims all individuals have access to a “calculative faculty” through emotion?

In the early 1970s, many scientists began to recognize the limitations of the Intelligence Quotient (IQ)—the standardized assessment of intelligence. In particular, they noticed its inability to explain differences among individuals unrelated to just cognitive ability alone. These frustrations led to the advancement of more inclusive theories of intelligence such as Gardner's multiple intelligences theory (1983/1993) and Sternberg's triarchic theory of intelligence (1985). Researchers also began to explore the influence of moods and emotions on thought processes, including judgment (Isen, Shalcker, Clark, & Karp, 1978) and memory (Bower, 1981). It was through these theoretical explorations and empirical studies that the concept of EI began to take shape.

Today, the field of EI is extensive, encompassing varying perspectives and measurement tools. Some attribute this growth to Daniel Goleman's popularization of the construct in his 1995 book, *Emotional Intelligence: Why It Can Matter More Than IQ*. Generating public appeal, he focused on EI's connection to personal and professional success. Goleman's model of EI includes a blend of emotion-related skills, traditional cognitive intelligence, and distinct personality traits. This embellished conceptualization of EI, followed by an increase in EI literature, contributed, at least in part, to conflicting definitional and measurement models within the field.

## **Models and Measures of EI**

Many researchers would agree that EI theory will only be as successful as its form of measurement. Today, there are three primary models of EI: the ability model (Mayer & Salovey 1997; Salovey & Mayer, 1990), mixed models (Bar-On, 2006; Boyatzis & Sala, 2004), and the trait EI model (Petrides & Furnham, 2003).



**Ability models** approach EI as a standard intelligence that utilizes a distinct set of mental abilities that (1) are intercorrelated, (2) relate to other extant intelligences, and (3) develop with age and experience (Mayer, Caruso, & Salovey, 1999; Mayer, Salovey, Caruso, & Sitarenios, 2003). In contrast, both mixed and trait models define and measure EI as a set of perceived abilities, skills, and personality traits.

## Ability Models: Mayer and Salovey Four-Branch Model of EI

In this section, we describe the EI (**Four-Branch**) model espoused by Mayer and Salovey (1997). This model proposes that four fundamental emotion-related abilities comprise EI: (1) perception/expression of emotion, (2) use of emotion to facilitate thinking, (3) understanding of emotion, and (4) management of emotion in oneself and others.

### 1. Perception of Emotion

Perception of emotion refers to people's capacity to identify emotions in themselves and others using facial expressions, tone of voice, and body language (Brackett et al., 2013). Those skilled in the perception of emotion also are able to express emotion accordingly and communicate emotional needs. For example, let's return to our opening scenario. After being turned away at the ticket booth, you slowly settle into the reality that you cannot attend the concert. A group of your classmates, however, managed to buy tickets and are discussing their plans at your lunch table. When they ask if you are excited for the opening band, you shrug and pick at your food. If your classmates are skilled at perception of emotion, then they will read your facial expression and body language and determine that you might be masking your true feelings of

disappointment, frustration, or disengagement from the conversation. As a result, they might ask you if something is wrong or choose not to talk about the concert in your presence.

## 2. Use of Emotion to Facilitate Thinking

Using emotion to enhance cognitive activities and adapt to various situations is the second component of EI. People who are skilled in this area understand that some emotional states are more optimal for targeted outcomes than others. Feeling frustrated over the concert tickets may be a helpful mindset as you are about to play a football game or begin a wrestling match. The high levels of adrenaline associated with frustration may boost your energy and strength, helping you compete. These same emotions, however, will likely impede your ability to sit at your school desk and solve algebra problems or write an essay.

Individuals who have developed and practiced this area of EI actively generate emotions that support certain tasks or objectives. For example, a teacher skilled in this domain may recognize that her students need to experience positive emotions, like joy or excitement, in order to succeed when doing creative work such as brainstorming or collaborative art projects. She may plan accordingly by scheduling these activities for after recess, knowing students will likely come into the classroom cheerful and happy from playing outside. Making decisions based on the impact that emotional experiences may have on actions and behavior is an essential component of EI.

## 3. Understanding of Emotion

EI also includes the ability to differentiate between emotional states, as well as their specific causes and trajectories. Feelings of sadness or disappointment can result from the loss of a person or object, such as your concert tickets. Standing in the rain, by most standards, is merely a slight annoyance. However,

waiting in the rain for hours in a large crowd will likely result in irritation or frustration. Feeling like you have been treated unfairly when someone cuts in line and takes the tickets you feel you deserved can cause your unpleasantness to escalate into anger and resentment. People skilled in this area are aware of this emotional trajectory and also have a strong sense of how multiple emotions can work together to produce another. For instance, it is possible that you may feel contempt for the people who cut in front of you in line. However, this feeling of contempt does not arise from anger alone. Rather, it is the combination of anger and disgust by the fact that these individuals, unlike you, have disobeyed the rules. Successfully discriminating between negative emotions is an important skill related to understanding of emotion, and it may lead to more effective emotion management (Feldman Barret, Gross, Christensen, & Benvenuto, 2001).

## 4. Management of Emotion

Emotion management includes the ability to remain open to a wide range of emotions, recognize the value of feeling certain emotions in specific situations, and understand which short- and long-term strategies are most efficient for emotion regulation (Gross, 1998). Anger seems an appropriate response to falling short of a goal (concert tickets) that you pursued both fairly and patiently. In fact, you may even find it valuable to allow yourself the experience of this feeling. However, this feeling will certainly need to be managed in order to prevent aggressive, unwanted behavior. Coming up with strategies, such as taking a deep breath and waiting until you feel calm before letting the group ahead of you know they cut in line, will allow you to regulate your anger and prevent the situation from escalating. Using this strategy may even let you gain insight into other perspectives—perhaps you learn they had already purchased their tickets and were merely accompanying their friends.

## B. Measuring EI with Performance Measures

While self-report tests are common in psychology, ability models of EI require a different approach: performance measures. Performance measures require respondents to demonstrate their four emotion skills (Mayer & Salovey, 1997) by solving emotion-related problems. Among these measures, the **Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT)** (Mayer, Salovey, & Caruso, 2002) is the most commonly used. The MSCEIT is a 141-item test comprised of a total of eight tasks, two per each of the four emotion abilities. To measure emotion management, for example, respondents are asked to read through scenarios involving emotionally charged conflicts and then asked to evaluate the effectiveness of different resolutions. For a comprehensive review of the MSCEIT and other performance-assessment tools, please see Rivers, Brackett, Salovey, and Mayer (2007).

## C. Mixed and Trait Models of EI

Unlike ability models, **mixed models** offer a broad definition of EI that combines mental abilities with personality traits such as optimism, motivation, and stress tolerance (see Cherniss, 2010, for a review). The two most widely used mixed models are the Boyatzis-Goleman model (Boyatzis & Sala, 2004) and the Bar-On model of emotional-social intelligence (Bar-On, 2006). The Boyatzis-Goleman model divides EI competencies into four groups: self-awareness, self-management, social awareness, and relationship management. Similarly, the Bar-On model offers five main components of EI: intrapersonal skills, interpersonal skills, adaptability, stress management, and mood. Developers of the trait EI model (Petrides & Furnham, 2003) explain EI as a constellation of self-perceived, emotion-related personality traits.

## D. Mixed and Trait Model Assessment: Self-Report

**Self-report assessments**—surveys that ask respondents to report their own emotional skills—are most often associated with mixed and trait models. Self-report measures are usually quick to administer. However, many researchers argue that their vulnerability to social-desirability biases and faking are problematic (Day & Carroll, 2008). In addition, there is wide speculation concerning the potential for inaccurate judgments of personal ability and skill on behalf of responders (e.g., Paulhus, Lysy, & Yik, 1998). Self-report measures have been shown to lack discriminant validity from existing personality measures and have very low correlations with ability measures of EI (Brackett & Mayer, 2003; Brackett, Rivers, Shiffman, Lerner, & Salovey, 2006). According to Mayer and colleagues (2008), self-report tests may show reliability for individual personalities, but should not be considered EI because performance tests are the gold standard for measuring intelligence.

Although tensions between ability and mixed or trait model approaches appear to divide the field, competing definitions and measurements can only enhance the quality of research devoted to EI and its impact on real-world outcomes.

## E. Room for Debate

While mixed and trait models shed some light on the concept of EI, many researchers feel these approaches undermine the EI construct as a discrete and measurable mental ability. EI, when conceptualized as an ability, most accurately describes the relationship between cognition and emotion by accounting for changes in individual outcomes that are often missed when focusing solely on cognitive intelligence or personality traits (O'Boyle, Humphrey, Pollack, Hawver, & Story, 2010). What's more, among adults, personality traits provide little room for malleability, making development in

these areas difficult even when combined with emotional skills. For example, characteristics such as agreeableness and neuroticism, while contributing to personal and professional success, are seen as innate traits that are likely to remain static over time. Distinguishing EI from personality traits helps us better target the skills that can improve desirable outcomes (Brackett et al., 2013). Approaching EI with language that provides the opportunity for personal growth is crucial to its application. Because the ability model aligns with this approach, the remainder of this chapter will focus on ability EI and the ways in which it can be applied both in professional and academic settings.

## Outcomes

Historically, emotions have been thought to have no place in the classroom or workplace (Sutton & Wheatly, 2003). Yet today, we know empirical research supports the belief that EI has the potential to influence decision making, health, relationships, and performance in both professional and academic settings (e. g., Brackett et al., 2013; Brackett, Rivers, & Salovey, 2011).

### A. Workplace

Research conducted in the workplace supports positive links between EI and enhanced job performance, occupational well-being, and leadership effectiveness. In one study, EI was associated with performance indicators such as company rank, percent merit increase, ratings of interpersonal facilitation, and affect and attitudes at work (Lopes, Grewal, Kadis, Gall, & Salovey, 2006). Similar correlations have been found between EI and a variety of managerial simulations involving problem solving, determining employee layoffs, adjusting claims, and negotiating successfully (Day & Carroll, 2004; Feyerherm & Rice, 2002; Mueller & Curhan, 2006). Emotion management is seen as most likely to affect job performance by influencing social and business interactions across

a diverse range of industries (O'Boyle et al., 2010).

Leaders in the workplace also benefit from high EI. Experts in the field of organizational behavior are beginning to view leadership as a process of social interactions where leaders motivate, influence, guide, and empower followers to achieve organizational goals (Bass & Riggio, 2006). This is known as transformational leadership—where leaders create a vision and then inspire others to work in this direction (Bass, 1985). In a sample of 24 managers, MSCEIT scores correlated positively with a leader's ability to inspire followers to emulate their own actions and attend to the needs and problems of each individual (Leban & Zulauf, 2004).

## B. Schools

When applied in educational settings, theoretical foundations of EI are often integrated into **social and emotional learning (SEL)** programs. SEL is the process of merging thinking, feeling, and behaving. These skills enable individuals to be aware of themselves and of others, make responsible decisions, and manage their own behaviors and those of others (Elias et al., 1997; Elbertson, Brackett, & Weissberg, 2010). SEL programs are designed to enhance the climate of a classroom, school, or district, with the ultimate goal of enhancing children's social and emotional skills and improving their academic outcomes (Greenberg et al., 2003). Adopting curricula that focus on these elements is believed to enable success in academics, relationships, and, ultimately, in life (Becker & Luthar, 2002; Catalino, Berglundh, Ryan, Lonczek, & Hawkins, 2004).

Take a moment to think about the role of a teacher. How might emotions impact the climate of a classroom? If a teacher enters a classroom feeling anxious, disgruntled, or unenthused, these states will most likely be noticed, and felt, by the students. If not managed well, these negative emotions can hurt the classroom dynamic and prevent student learning (Travers, 2001). Research

suggests that the abilities to perceive, use, understand, and manage emotions are imperative for effective teaching (Reyes, Brackett, Rivers, White, & Salovey, 2012; Brackett, Reyes, Rivers, Elbertson, & Salovey, 2011; Hargreaves, 2001). In a study that examined the relationship between emotion regulation and both job satisfaction and burnout among secondary-school teachers, researchers found that emotion regulation among teachers was associated with positive affect, support from principals, job satisfaction, and feelings of personal accomplishment (Brackett, Palomera, Mojsa-Kaja, Reyes, & Salovey, 2010).

EI, when embedded into SEL programs, has been shown to contribute positively to personal and academic success in students (Durlak, Weissberg, Dymnicki, Tayloer, & Schellinger, 2011). Research also shows that strong emotion regulation can help students pay attention in class, adjust to the school environment, and manage academic anxiety (Lopes & Salovey, 2004; Mestre, Guil, Lopes, Salovey, & Gil-Olarte, 2006). A recent randomized control trial of RULER also found that, after one year, schools that used RULER—compared with those that used only the standard curriculum—were rated by independent observers as having higher degrees of warmth and connectedness between teachers and students, more autonomy and leadership, less bullying among students, and teachers who focused more on students' interests and motivations (Rivers, Brackett, Reyes, Elbertson, & Salovey, 2013).

## Limitations and Future Directions

There is a need for further development in EI theory and measurement, as well as more empirical research on its associated outcomes (Mayer, Salovey, & Caruso, 2008). Despite its prominent role as the signature **performance assessment** of EI, the MSCEIT has a number of limitations. For example, it does not allow for the assessment of several abilities. These abilities include the expression of emotion and monitoring or reflecting on one's own emotions. (Brackett et al. 2013). Researchers must also address growing criticisms,



particularly those that stretch beyond the measurement debate and question the validity of the EI construct when defined too broadly (Locke, 2005). In order to advance EI research, there is a great need for investigators to address these issues by reconciling disparate definitions and refining existing measures. Potential considerations for future research in the field should include deeper investigation into the genetic (versus acquired) and fluid (versus crystallized) aspects of EI. The cultural implications and differences of EI also are important to consider. Studies should expand beyond the United States and Europe in order for the theory of EI to be cross-culturally valid and for its applications and outcomes to be achieved more universally. Greater attention should also be paid to developmental trajectories, gender differences, and how EI operates in the workplace and educational settings (Brackett et al., 2013).

Although further explorations and research in the field of EI are needed, current findings indicate a fundamental relationship between emotion and cognition. Returning to our opening question, what will you do when denied concert tickets? One of the more compelling aspects of EI is that it grants us reign over our own emotions—forces once thought to rule the self by denying individual agency. But with this power comes responsibility. If you are enraged about not getting tickets to the show, perhaps you can take a few deep breaths, go for a walk, and wait until your physiological indicators (shaky hands or accelerated heartbeat) subside. Once you've removed yourself, your feeling of rage may lessen to annoyance. Lowering the intensity level of this feeling (a process known as down regulating) will help re-direct your focus on the situation itself, rather than the activated emotion. In this sense, emotion regulation allows you to objectively view the point of conflict without dismissing your true feelings. Merely down regulating the emotional experience facilitates better problem solving. Now that you are less activated, what is the best approach? Should you talk to the ticket clerk? Ask to see the sales manager? Or do you let the group know how you felt when they cut the line? All of these options present better solutions than impulsively acting out rage.

As discussed in this chapter, research shows that the cultivation and development of EI contributes to more productive, supportive, and healthy experiences. Whether we're waiting in a crowded public place, delivering lesson plans, or engaging in conversation with friends, we are the ultimate decision makers when it comes how we want to feel and, in turn, behave. By engaging the right mental processes and strategies, we can better understand, regulate, and manage our emotional states in order to live the lives we desire.

## Outside Resources

Book: Goleman, D. (1995). Emotional intelligence. New York, NY: Bantam.

Book: Goleman, D. (1998). Working with emotional intelligence. New York, NY: Bantam.

## Discussion Questions

1. What are the four emotional abilities that comprise EI, and how do they relate to each other?
2. What are three possible implications for using ability-based and mixed or trait-based models of EI?
3. Discuss the ways in which EI can contribute positively to the workplace and classroom settings.

# Vocabulary

## **Ability model**

An approach that views EI as a standard intelligence that utilizes a distinct set of mental abilities that (1) are intercorrelated, (2) relate to other extant intelligences, and (3) develop with age and experience (Mayer & Salovey, 1997).

## **Emotional intelligence**

The ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions. (Salovey & Mayer, 1990). EI includes four specific abilities: perceiving, using, understanding, and managing emotions.

## **Four-Branch Model**

An ability model developed by Drs. Peter Salovey and John Mayer that includes four main components of EI, arranged in hierarchical order, beginning with basic psychological processes and advancing to integrative psychological processes. The branches are (1) perception of emotion, (2) use of emotion to facilitate thinking, (3) understanding emotion, and (4) management of emotion.

## **Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT)**

A 141-item performance assessment of EI that measures the four emotion abilities (as defined by the four-branch model of EI) with a total of eight tasks.

## **Mixed and Trait Models**

Approaches that view EI as a combination of self-perceived emotion skills, personality traits, and attitudes.

**Performance assessment**

A method of measurement associated with ability models of EI that evaluate the test taker's ability to solve emotion-related problems.

**Self-report assessment**

A method of measurement associated with mixed and trait models of EI, which evaluates the test taker's perceived emotion-related skills, distinct personality traits, and other characteristics.

**Social and emotional learning (SEL)**

The real-world application of EI in an educational setting and/or classroom that involves curricula that teach the process of integrating thinking, feeling, and behaving in order to become aware of the self and of others, make responsible decisions, and manage one's own behaviors and those of others (Elias et al., 1997)

## Reference List

- Bar-On, R. (2006). The Bar-On model of emotional-social intelligence (ESI). *Psicometha*, 18 (Suppl.), 13–25.
- Bass, B. M. (1985). *Leadership and performance beyond expectations*. New York, NY: Free Press.
- Bass, B. M., & Riggio, R. E. (2006). *Transformational leadership* (2nd ed.) Mahwah, NJ: Erlbaum.
- Becker, B.E., & Luthar, S.S. (2002). Social-emotional factors affecting achievement outcomes among disadvantaged students: Closing the achievement gap. *Educational Psychologist*, 37, 197-214.
- Bower, G. H. (1981). Mood and memory. *American Psychologist*, 36, 129–148.
- Boyatzis, R., & Sala, F. (2004). The Emotional Competency Inventory (ECI). In G. Geher (Ed.), *Measuring emotional intelligence: Common ground and controversy* (pp. 143–178). Hauppauge, NY: Nova Science.
- Brackett, M. A., Bertoli, M., Elbertson, N., Bausseron, E., Castillo, R., and Salovey, P. (2013). Reconceptualizing the cognition-emotion link. In M. D. Robinson, E. R. Watkins, E. Harmon-Jones (Eds.), *Handbook of Cognition and Emotion* (pp. 365-379). New York, NY: Guilford.

Brackett, M. A., Palomera, R., Mojsa-kaja, J., Reyes, M. R., & Salovey, P. (2010). Emotion-regulation ability, burnout, and job satisfaction among British secondary-school teachers. *Psychology in the Schools*, 47, 406–417.

Brackett, M. A., Reyes, M. R., Rivers, S. E., Elbertson, N. A., & Salovey, P. (2011). Emotional climate, teacher affiliation, and student conduct. *Journal of Classroom Interaction*, 46, 27–36.

Brackett, M. A., Rivers, S. E., Shiffman, S., Lerner, N., & Salovey, P. (2006). Relating emotional abilities to social functioning: A comparison of self-report and performance measures of emotional intelligence. *Journal of Personality and Social Psychology*, 91, 780–795.

Brackett, M. A., & Mayer, J. D. (2003). Convergent, discriminant, and incremental validity of competing measures of emotional intelligence. *Personality and Social Psychology Bulletin*, 29, 1147–1158.

Brackett, M.A., Rivers, S.E., & Salovey, P. (2011). Emotional Intelligence, Implications for Personal, Social, Academic, and Workplace Success. *Social and Personality Psychology Compass*, 5, 88-103.

Catalino, R.F., Berglund, L., Ryan, J.A.M., Lonczek, H.S., & Hawkins, J.D. (2004). Positive youth development in the United States: Research findings on evaluations of positive youth development programs. *The Annals of American Academy of Political and Social Science*, 591, 98-124. Doi: 10.1177/0002716203260102.

Cherniss, C. (2010). Emotional intelligence: Toward clarification of a concept. \*



Industrial and  
Organizational Psychology, 3\*, 110–126.

Day, A. L., & Carroll, S. A. (2008). Faking emotional intelligence (EI): Comparing response distortion on ability and trait-based EI measures, *Journal of Organizational Behavior*, 29, 761–784.

Day, A. L., & Carroll, S. A. (2004). Using an ability-based measure of emotional intelligence to predict individual performance, group performance, and group citizenship behaviors. *Personality and Individual Differences*, 36, 1443–1458.

Durlak, J. A., Weissberg, R. P., Dymnicki, A. B., Taylor, R. D., & Schellinger, K. B. (2011). The impact of enhancing students' social and emotional learning: A meta-analysis of school-based universal interventions. *Child Development*, 82, 405–432.

Elbertson, N. A., Brackett, M. A., & Weissberg, R. P. (2010). School-based social and emotional learning (SEL) programming: Current perspectives. In A. Hargreaves, M. Fullan, D. Hopkins, & A. Lieberman (Eds.), *The second international handbook of educational change* (pp. 1017–1032). New York, NY: Springer.

Elias, M. J., Zins, J. E., Weissberg, R. P., Frey, K. S., Greenberg, M. T., Haynes, N. M., Shriver, T. P. (1997). *Promoting social and emotional learning: Guidelines for educators*. Alexandria, VA: Association for Supervision and Curriculum Development.

Feldman Barrett, L., Gross, J., Christensen, T. C., & Benvenuto, M. (2001). *Knowing what you're*

feeling and knowing what to do about it: Mapping the relation between emotion differentiation and emotion regulation. *Cognition and Emotion*, 15, 713–724.

Feyerherm, A. E., & Rice, C. I. (2002). Emotional intelligence and team performance: The good, the bad and the ugly. *International Journal of Organizational Analysis*, 10, 343–362.

Gardner, H. (1993). *Frames of mind: The theory of multiple intelligences* (10th Anniversary Edition). New York, NY: Basic. (Original work published 1983)

Goleman, D. (1995). *Emotional intelligence*. New York, NY: Bantam.

Greenberg, M. T., Weissberg, R. P., O'Brien, M. U., Zins, J. E., Fredericks, L., Resnik, H., & Elias, M. J. (2003). Enhancing school-based prevention and youth development through coordinated social, emotional, and academic learning. *American Psychologist*, 58, 466–474. Doi: 10.1037/0003-066X.58.6-7.466

Gross, J.J. (1998). The emerging field of emotion regulation: An integrative review. *Review of General Psychology*, 2, 271-299.

Hargreaves, A. (2001). The emotional geographies of teachers' relations with colleagues. *International Journal of Educational Research*, 35, 503–527.

Isen, A. M., Shalcker, T. E., Clark, M., & Karp, L. (1978). Affect, accessibility of material in memory, and behavior: A cognitive loop? *Journal of Personality and Social Psychology*, 36, 1–12.

Leban, W., & Zulauf, C. (2004). Linking emotional intelligence abilities and transformational leadership styles. *Leadership Organization Development*

Journal, 25, 554–564.

Locke, E.A. (2005). Why emotional intelligence is an invalid concept. *Journal of Organizational Behavior*, 26, 425-431.

Lopes, P. N., Grewal, D., Kadis, J., Gall, M., & Salovey, P. (2006). Evidence that emotional intelligence is related to job performance and affect and attitudes at work. *Psicothema*, 18(Suppl.), 132–138.

Lopes, P. N., & Salovey, P. (2004). Toward a broader education: Social, emotional, and practical skills. In J. E. Zins, R. P. Weissberg, M. C. Wang, & H. J. Walberg (Eds.), *Building academic success on social and emotional learning: What does the research say?* (pp. 76–93). New York, NY: Teachers College Press.

Lyons, W. (1999). The philosophy of emotion and cognition. In T. Dalgleish & M. J. Power (Eds.), *Handbook of cognition and emotion* (pp. 21–44). Chichester, UK: Wiley.

Mayer, J. D., Caruso, D. R., & Salovey, P. (1999). Emotional intelligence meets traditional standards for an intelligence. *Intelligence*, 27, 267–298.

Mayer, J. D., Salovey, P., Caruso, D. R., & Sitarenios, G. (2003). Measuring emotional intelligence with the MSCEIT V2.0. *Emotion*, 3, 97–105.

Mayer, J. D., Salovey, P., & Caruso, D. R. (2008). Emotional intelligence: New ability or eclectic traits? *American Psychologist*, 63, 503–517.

Mayer, J. D., Salovey, P., & Caruso, D. R. (2002). *The Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT), Version 2.0*. Toronto, Canada: Multi Health Systems.

- Mayer, J. D., & Salovey, P. (1997). What is emotional intelligence? In P. Salovey & D. J. Sluyter (Eds.), *Emotional development and emotional intelligence: Educational implications* (pp. 3–34). New York, NY: Basic.
- Mestre, J. M., Guil, R., Lopes, P. N., Salovey, P., & Gil-Olarte, P. (2006). Emotional intelligence and social and academic adaptation to school. *Psicothema*, 18 (Suppl.), 112–117.
- Mueller, J. S., & Curhan, J. R. (2006). Emotional intelligence and counterpart mood induction in a negotiation. *International Journal of Conflict Management*, 17, 110–128.
- O'Boyle, E. H., Humphrey, R. H., Pollack, J. M., Hawver, T. H., & Story, P. A. (2010). The relation between emotional intelligence and job performance: A meta-analysis. *Journal of Organizational Behavior*, 32, 788–818.
- Paulhus, D. L., Lysy, D. C., & Yik, M. S. M. (1998). Self-report measures of intelligence: Are they useful as proxy IQ tests? *Journal of Personality*, 66, 525–554.
- Petrides, K. V., & Furnham, A. (2003). Trait emotional intelligence: Behavioural validation in two studies of emotion recognition and reactivity to mood induction. *European Journal of Personality*, 17, 39-57.
- Reyes, M. R., Brackett, M. A., Rivers, S. E., White, M., & Salovey, P. (2012). Classroom emotional climate, student engagement, and academic achievement. *Journal of Educational Psychology*, 104, 700–712.
- Rivers, S. E., Brackett, M. A., Salovey, P., & Mayer, J. D. (2007). Measuring emotional intelligence as a set of mental abilities. In G. Matthews, M.

Zeidner, & R. D. Roberts (Eds.), *The science of emotional intelligence* (pp. 230–257). New York, NY: Oxford University Press.

Rivers, S.E., Brackett, M.A., Reyes, M.R., Elbertson, N.A., & Salovey, P. (2013). Improving the social and emotional climate of classrooms: A clustered randomized controlled trial testing The RULER Approach. *Prevention Science, 14*, 77-87.

Salovey, P., & Mayer, J. D. (1990). Emotional intelligence. *\*Imagination, Cognition, and Personality, 9\**, 185–211.

Sternberg, R. J. (1985). *The triarchic mind: A new theory of human intelligence*. New York, NY: Penguin.

Sutton, R. E., & Wheatly, K. F. (2003). Teachers' emotions and teaching: A review of the literature and directions for future research. *Educational Psychology Review, 15*, 327–358.

Travers, C. J. (2001). Stress in teaching: Past, present, and future. In J. Dunham (Ed.), *Stress in the workplace: Past, present, and future* (pp. 130–163). Philadelphia, PA: Whurr.

Young, P. T. (1943). *Emotion in man and in animal: Its nature and relation to attitude and motive*. New York, NY: Wiley.



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## **Topic 3**

# Relaciones Interpersonales

# Positive Relationships

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N O B A



## Abstract

Most research in the realm of relationships has examined that which can go wrong in relationships (e.g., conflict, infidelity, intimate partner violence). I summarize much of what has been examined about what goes right in a relationship and call these positive relationship deposits. Some research indicates that relationships need five positive interactions for every negative interaction. Active-constructive responding, gratitude, forgiveness, and time spent together are some sources of positive deposits in one's relational bank account. These kinds of deposits can reduce the negative effects of conflict on marriage and strengthen relationships.

# Learning Objectives

- Understand some of the challenges that plague close relationships today.
- Become familiar with the concept of positive emotional deposits.
- Review some of the research that is relevant to positive emotional deposits.
- Describe several ways people make positive emotional deposits.

## Introduction

The status of close relationships in America can sometimes look a bit grim. More than half of marriages now end in divorce in the United States (Pinsof, 2002). Infidelity is the leading cause of divorce (Priviti & Amato, 2004) and is on the rise across all age groups (Allen et al., 2008). Cybersex has likely contributed to the increased rates of infidelity, with some 65% of those who look for sex online having intercourse with their “Internet” partner offline as well. Research on intimate partner violence indicates that it occurs at alarmingly high rates, with over one-fifth of couples reporting at least one episode of violence over the course of a year (Schafer, Caetano, & Clark, 1998). These and other issues that arise in relationships (e.g., substance abuse, conflict) represent significant obstacles to close relationships. With so many problems that plague relationships, how can a positive relationship be cultivated? Is there some magic bullet or ratio? Yes, kind of.

## The Magic Formula

Of course, no research is perfect, and there really is no panacea that will cure any relationship. However, we do have some research that suggests that long-term, stable marriages have been shown to display a particular ratio between positive and negative interactions. That ratio is not 1:1, in fact, 1:1 is approximately the ratio of couples who were heading toward divorce. Thus, in a couple where a spouse gives one compliment for each criticism, the likely outcome is divorce. Happier couples have five positive interactions for every one negative interaction (Gottman, 1994).

What can you do to increase the ratio of positive interactions on a regular basis?—through positive relationship deposits. Naturally, making positive relationship deposits will boost your overall positive emotions—so by making positive relationships a priority in your life you can boost your positive emotions,

becoming a flourishing individual.

## Positive Relationship Deposits

In *Seven Habits of Highly Effective People*, Covey (1989) compared human relationships to actual bank accounts—suggesting that every day we make deposits or withdrawals from our relationship accounts with each person in our lives. He recommended that to keep an overall positive balance, we need to make regular positive deposits. This will ultimately help buffer the negatives that are bound to occur in relationships. Keeping this metaphor of emotional capital in mind could be beneficial for promoting the well-being of the relationships in one's life.

Some research suggests that people, on average, have more positive than negative experiences (Gable & Haidt, 2005). Thus, there are far more opportunities for deposits than for withdrawals. Conversely, even though there may be fewer negatives, Baumeister, Bratslavsky, Finkenauer, and Vohs (2001) argue quite persuasively that bad events overpower good events in one's life, which suggests that the negative withdrawals are more salient and more impactful. This further accentuates the need to ensure that we have a healthy store of positive deposits that can help to counteract these more impactful account withdrawals. Positive deposits that accumulate over time should provide a buffer against the withdrawals that happen in every relationship. In other words, the inevitable occasional conflict is not nearly so bad for the relationship when it occurs in a partnership that is otherwise highly positive. What opportunities does relationships science suggest are effective opportunities each day to make positive relationship deposits?

## Common Opportunities for Daily Positive Deposits

An individual's general sentiment of his or her partner is dependent on ongoing interactions, and these interactions provide many opportunities for deposits or withdrawals. To illustrate how much daily interaction can give opportunities to make deposits in relationships, I will describe research that has been done on **capitalization** and **active-constructive responding**, gratitude, forgiveness, and spending time together in meaningful ways. Although there are several other ways by which positive relationship deposits can be made, these four have received quite a bit of attention by researchers. Then I will discuss some evidence on how an accumulation of such daily relationship deposits seems to provide a safeguard against the impact of conflict.

### Building Intimacy Through Capitalization and Active-Constructive Responding

Intimacy has been defined as a close and familiar bond with another person. Intimacy has been positively related with satisfaction in marriage (Patrick, Sells, Giordano & Tollerud, 2007) and well-being in general (e.g., Waltz & Badura, 1987; Prager & Buhrmester, 1998). On the other hand, lacking marital intimacy is related to higher severity of depression (Waring & Patton, 1984). Thus, achieving intimacy with one's partner is essential for a happy marriage and happiness in general and is something worth seeking.

Given that 60% to 80% of the time, people disclose their most positive daily experiences with their partner (Gable et al., 2004), this becomes a regular opportunity for intimacy building. When we disclose certain private things about ourselves, we increase the potential intimacy that we can have with another person, however, we also make ourselves vulnerable to getting hurt by the other person. What if they do not like what I have disclosed or react negatively? It can

be a double-edged sword. Disclosing positive news from one's day is a great opportunity for a daily deposit if the response from the other person is positive. What constitutes a positive response?

To achieve intimacy we must respond positively to remarks our partner makes. When a person responds enthusiastically to a partner's good news, this fosters higher levels of intimacy (Gable, Reis, Impett, & Asher, 2004). Thus, responding in a positive manner to a relationship partner's good news provides frequent opportunities to make deposits in the **relationship bank account**. In fact, most people are presented the chance to make this kind of relationship deposit almost every day. Most research has focused on support (partners' responses to negative events), however, one study found that responses to positive events tend to be better predictors of relationship well-being than responses to negative events (Gable, Gonzaga, & Strachman, 2006).

When one person seeks out another person with the intent to share positive news, it has been called capitalization (Gable et al., 2004). The best, supportive response to someone who shares good news has been termed active-constructive and is characterized by enthusiastic support. These active-constructive responses are positively associated with trust, satisfaction, commitment, and intimacy. On the other hand, when the listener points out something negative about what is said, it is called active-destructive responding. Ignoring what is said is termed passive-destructive, and understating support is called passive-constructive. All of these types of responses (see Figure 1) have been related to adverse relationship outcomes (Gable et al., 2004).

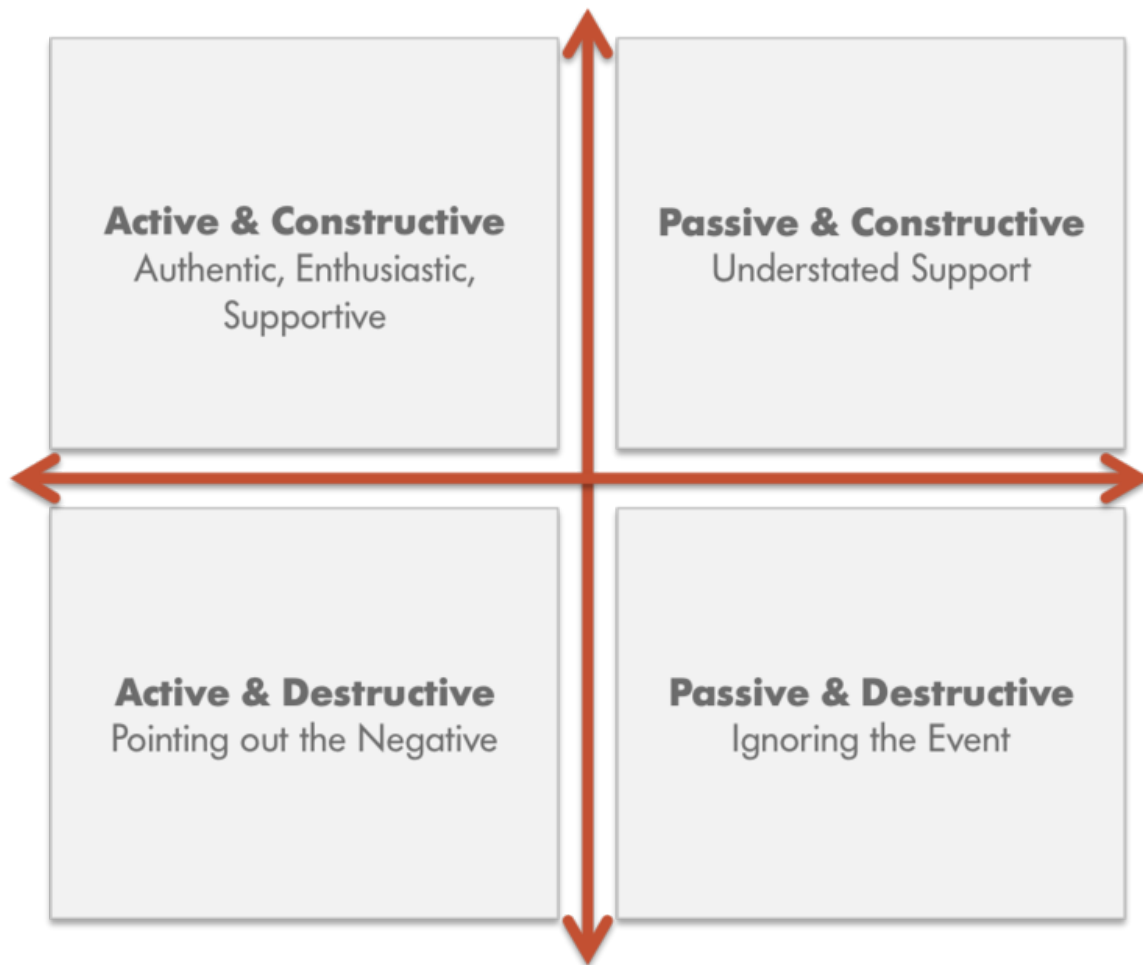


Figure 1. Types of Responding (figure used with permission from thecoachinghouse.ca)

If partners listen and are enthusiastic about the good news of the other, they build a stronger relationship. If they ignore the good news, change the subject, devalue the good news, or refocus the good news to be about themselves, they may make a withdrawal from the account. Being aware of this research and findings can help individuals to focus on better providing helpful responses to those they care about.

## Gratitude

Relationship researchers report that expressing gratitude on a regular basis is an important means by which positive deposits may be made into relationship bank accounts. In a recent study, participants were randomly assigned to write about daily events, express gratitude to a friend, discuss a positive memory with a friend, or think grateful thoughts about a friend twice a week for three weeks. At the conclusion of the three weeks, those who were randomly assigned to express gratitude to their friend reported higher positive regard for their friend and more comfort voicing relationship concerns than did those in the two control conditions (Lambert & Fincham, 2011). Also, those who expressed gratitude to a close relationship partner reported greater perceived communal strength (e.g., caring, willingness to sacrifice) than participants in all control conditions (Lambert, Clark, Durtschi, Fincham, & Graham, 2010). Similarly, Algoe, Fredrickson, and Gable (2013) found that benefactors positive perceptions of beneficiaries were increased when gratitude was expressed for the benefit, and these perceptions enhanced relationship quality. These studies suggest that expressing gratitude to someone you are close to is an important way of making positive relationship deposits.

## Forgiveness

Forgiveness is something else you can do regularly to aid relationship satisfaction (e.g., Fincham, 2000; Paleari, Regalia, & Fincham, 2003) and commitment (e.g., Finkel, Rusbult, Kumashiro, & Hannon, 2002; Karremans & Van Lange, 2008). Unresolved conflict can put couples at risk of developing the negative cycle of interaction that causes further harm to relationships. For instance, one study found that lack of forgiveness is linked to ineffective conflict resolution (Fincham, Beach, & Davila, 2004). For instance, if Cindy cannot forgive Joe, Cindy will struggle to effectively resolve other disagreements in their



relationship. Yet, those who do forgive report much better conflict resolution a year later (Fincham, Beach, & Davila, 2007). It appears that forgiveness can be an important way of building emotional capital in the relationship. Not forgiving the people in your life can block positive deposits to the relationship bank account.

## Spending Time in Meaningful Ways

Some suggest that the best way to spell love is T-I-M-E. In our fast-paced society, many relationships are time deprived. In the beginning phases of a relationship, this rarely seems to be an issue given the novelty and excitement of the relationship, however, discovering new things about one's partner declines and couples can slump into relationship boredom. The **self-expansion model** (Aron & Aron, 1996) suggests that people naturally seek to expand their capacity and that intimate relationships are an important way by which they accomplish self-expansion. They have found that couples who engaged in more challenging and novel activities felt more satisfied with their relationship immediately afterward than control couples (Aron et al., 2000). The takeaway message here is that simply watching TV with one's romantic partner will not make nearly the magnitude of a deposit in a relational bank account as would a more engaging or challenging joint activity.

## Accumulated Positive Deposits and Conflict Management

When there is a positive balance of relationship deposits this can help the overall relationship in times of conflict. For instance, some research indicates that a husband's level of enthusiasm in everyday marital interactions was related to a wife's affection in the midst of conflict (Driver & Gottman, 2004), showing that being pleasant and making deposits can change the nature of conflict. Also, Gottman and Levinson (1992) found that couples rated as having more pleasant

interactions (compared with couples with less pleasant interactions) reported marital problems as less severe, higher marital satisfaction, better physical health, and less risk for divorce. Finally, Janicki, Kamarck, Shiffman, and Gwaltney (2006) showed that the intensity of conflict with a spouse predicted marital satisfaction unless there was a record of positive partner interactions, in which case the conflict did not matter as much. Again, it seems as though having a positive balance through prior positive deposits helps to keep relationships strong even in the midst of conflict.

Relationships today are riddled with problems including divorce, infidelity, intimate partner violence, and chronic conflict. If you want to avoid some of these common pitfalls of relationships, if you want to build a good relationship with a partner or with your friends, it is crucial to make daily positive deposits in your relationship bank accounts. Doing so will help you enjoy each other more and also help you weather the inevitable conflicts that pop up over time. Some of the ways that have been most explored by researchers as a way to build your positive relationship bank account are through building intimacy by active constructive responding, expressing gratitude to the others, forgiving, and spending time in engaging joint activities. Although these are not the only ways that you can make positive deposits in one's relationship bank accounts, they are some of the best examined. Consider how you might do more to make positive relationship deposits through these or other means for the survival and improvement of your relationships.

## Discussion Questions

1. What are some of the main challenges that face relationships today?
2. How would you describe the concept of an emotional bank account?
3. What are some ways people can make deposits to their relationship bank accounts?
4. What do you think are the most effective ways for making positive relationship deposits?
5. What are some of the most powerful relationship deposits that others have made into your relationship bank account?
6. What would you consider to be some challenging or engaging activities that you would consider doing more of with a close relationship partner?
7. Are there relationships of yours that have gotten into a negative spiral and could profit from positive relationship deposits?

# Vocabulary

## **Active-constructive responding**

Demonstrating sincere interest and enthusiasm for the good news of another person.

## **Capitalization**

Seeking out someone else with whom to share your good news.

## **Relationship bank account**

An account you hold with every person in which a positive deposit or a negative withdrawal can be made during every interaction you have with the person.

## **Self-expansion model**

Seeking to increase one's capacity often through an intimate relationship.

## Reference List

- Algoe, S. B., Fredrickson, B. L. & Gable, S. L. (2013) The social functions of the emotion of gratitude via expression. *Emotion*, 13, 605-609.
- Allen, E. S., Atkins, D. C., Baucom, D. H., Snyder, D. K., Gordon, K. C., & Glass, S. P. (2005). Intrapersonal, interpersonal, and contextual factors in engaging in and responding to extramarital involvement. *Clinical Psychology: Science and Practice*, 12, 101–130.
- Aron, A., Norman, C., Aron, E., McKenna, C., & Heyman, R. (2000). Couples' shared participation in novel and arousing activities and experienced relationship quality. *Journal of Personality and Social Psychology*, 78, 273–284.
- Aron, A., & Aron, E. N. (1996). Self and self-expansion in relationships. In G. J. O. Fletcher & J. Fitness (Eds.), *Knowledge structures in close relationships: A social psychological approach* (pp. 325–344). Mahway, NJ: Lawrence Erlbaum Associates
- Baumeister, R. F., Bratslavsky, E., Finkenauer, C., & Vohs, K. D. (2001). Bad is stronger than good. *Review of General Psychology*, 5, 323-370.
- Covey, S. R. (1989). *The seven habits of highly effective people*. New York, NY: Simon and Schuster.
- Driver, J., & Gottman, J. (2004). Daily marital interactions and positive affect during marital conflict among newlywed couples. *Family Process*, 43, 301–314.
- Fincham, F., Beach, S., & Davila, J. (2004). Conflict resolution in marriage and

forgiveness. *Journal of Family Psychology*, 18, 72–81.

Fincham, F. D. (2000). The kiss of the porcupines: From attributing responsibility to forgiving. *Personal Relationships*, 7, 1–23.

Fincham, F. D., Beach, S. R. H., & Davila, J. (2007). Longitudinal relations between forgiveness and conflict resolution in marriage. *Journal of Family Psychology*, 21, 542–545.

Finkel, E. J., Rusbult, C. E., Kumashiro, M., & Hannon, P. A. (2002). Dealing with betrayal in close relationships: Does commitment promote forgiveness? *Journal of Personality and Social Psychology*, 82, 956–974.

Gable, S., Reis, H., Impett, E., & Asher, E. (2004). What do you do when things go right? The intrapersonal and interpersonal benefits of sharing positive events. *Journal of Personality and Social Psychology*, 87, 228–245.

Gable, S., & Haidt, J. (2005). What (and why) is positive psychology? *Review of General Psychology*, 9, 103–110.

Gable, S. L., Gonzaga, G., & Strachman, A. (2006). Will you be there for me when things go right? Social support for positive events. *Journal of Personality and Social Psychology*, 91, 904–917.

Gottman, J. M. (1994). *Why marriages succeed or fail and how you can make yours last*. New York, NY: Fireside.

Gottman, J. M., & Levenson, R. W. (1992). Marital processes predictive of later dissolution: Behavior, physiology and health. *Journal of Personality and Social Psychology*, 63, 221–233.

- Janicki, D., Kamarck, T., Shiffman, S., & Gwaltney, C. (2006). Application of ecological momentary assessment to the study of marital adjustment and social interactions during daily life. *Journal of Family Psychology, 20*, 168–172.
- Karremans, J. C., & Van Lange, P. A. M. (2008). Forgiveness in interpersonal relationships: Its malleability and powerful consequences. *European Review of Social Psychology, 19*, 202–241.
- Lambert, N. M., Clarke, M. S., Durtschi, J. A., Fincham, F. D., & Graham, S. M. (2010). Benefits of expressing gratitude: Expressing gratitude to a partner changes one's view of the relationship. *Psychological Science, 21*, 574–580.
- Lambert, N. M., & Fincham, F. D. (2011). Expressing gratitude to a partner leads to more relationship maintenance behavior. *Emotion, 11*, 52–60.
- Paleari, G., Regalia, C., & Fincham, F. D. (2003). Adolescents' willingness to forgive parents: An empirical model. *Parenting: Science and Practice, 3*, 155–174.
- Patrick, S., Sells, J. N., Giordano, F. G., & Tollerud, T. R. (2007). Intimacy, differentiation, and personality variables as predictors of marital satisfaction. *The Family Journal, 15*, 359–367.
- Pinsof, W. M. (2002). The death of "till death us do part": The transformation of pair-bonding in the 20th century. *Family Process, 41*(2), 135–157.
- Prager, K. J., & Buhrmester, D. (1998). Intimacy and need fulfillment in couple relationships. *Journal of Social & Personal Relationships, 15*, 435–469.
- Schafer, J., Caetano, R., & Clark, C. L. (1998). Rates of intimate partner violence

in the United States. *American Journal of Public Health*, 88, 1702-1704.

Waltz, M., & Badura, B. (1987). Subjective health, intimacy, and perceived self-efficacy after heart attack: Predicting life quality five years afterwards. *Social Indicators Research*, 20, 303-332.

Waring, E. M., & Patton, D. (1984). Marital intimacy and depression. *British Journal of Psychiatry*, 145, 641-644.





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# Biochemistry of Love

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N O B A

## Abstract

Love is deeply biological. It pervades every aspect of our lives and has inspired countless works of art. Love also has a profound effect on our mental and physical state. A “broken heart” or a failed relationship can have disastrous effects; bereavement disrupts human physiology and may even precipitate death. Without loving relationships, humans fail to flourish, even if all of their other basic needs are met. As such, love is clearly not “just” an emotion; it is a biological process that is both dynamic and bidirectional in several dimensions. Social interactions between individuals, for example, trigger cognitive and physiological processes that influence emotional and mental states. In turn, these changes influence future social interactions. Similarly, the maintenance of loving relationships requires constant feedback through sensory and cognitive systems; the body seeks love and responds constantly to interactions with loved ones or to the absence of such interactions. The evolutionary principles and ancient hormonal and neural systems that support the beneficial and healing effects of loving relationships are described here.

# Learning Objectives

- Understand the role of Oxytocin in social behaviors.
- Articulate the functional differences between Vasopressin and Oxytocin.
- List sex differences in reaction to stress.

## Introduction

Although evidence exists for the healing power of love, only recently has science turned its attention to providing a physiological explanation for love. The study of love in this context offers insight into many important topics, including the biological basis of interpersonal relationships and why and how disruptions in social bonds have such pervasive consequences for behavior and physiology. Some of the answers will be found in our growing knowledge of the neurobiological and endocrinological mechanisms of social behavior and interpersonal engagement.

## The evolution of social behavior

Nothing in biology makes sense except in the light of evolution. Theodosius Dobzhansky's famous dictum also holds true for explaining the evolution of love. Life on earth is fundamentally social: The ability to dynamically interact with other living organisms to support mutual homeostasis, growth, and reproduction evolved very early. Social interactions are present in primitive invertebrates and even among prokaryotes: Bacteria recognize and approach members of their own species. Bacteria also reproduce more successfully in the presence of their own kind and are able to form communities with physical and chemical characteristics that go far beyond the capabilities of the individual cell (Ingham & Ben-Jacob, 2008).

As another example, various insect species have evolved particularly complex social systems, known as eusociality. Characterized by a division of labor, eusociality appears to have evolved independently at least 11 times in insects. Research on honeybees indicates that a complex set of genes and their interactions regulate eusociality, and that these resulted from an "accelerated form of evolution" (Woodard et al., 2011). In other words, molecular mechanisms favoring high levels of sociality seem to be on an evolutionary fast

track.

The evolutionary pathways that led from reptiles to mammals allowed the emergence of the unique anatomical systems and biochemical mechanisms that enable social engagement and selectively reciprocal sociality. Reptiles show minimal parental investment in offspring and form nonselective relationships between individuals. Pet owners may become emotionally attached to their turtle or snake, but this relationship is not reciprocal. In contrast, most mammals show intense parental investment in offspring and form lasting bonds with their children. Many mammalian species—including humans, wolves, and prairie voles—also develop long-lasting, reciprocal, and selective relationships between adults, with several features of what humans experience as “love.” In turn, these reciprocal interactions trigger dynamic feedback mechanisms that foster growth and health.

## What is love? An evolutionary and physiological perspective

Human love is more complex than simple feedback mechanisms. Love may create its own reality. The biology of love originates in the primitive parts of the brain—the emotional core of the human nervous system—which evolved long before the cerebral cortex. The brain “in love” is flooded with vague sensations, often transmitted by the **vagus nerve**, and creating much of what we experience as emotion. The modern cortex struggles to interpret love’s primal messages, and weaves a narrative around incoming visceral experiences, potentially reacting to that narrative rather than to reality. It also is helpful to realize that mammalian social behavior is supported by biological components that were repurposed or co-opted over the course of mammalian evolution, eventually permitting lasting relationships between adults.

## Is there a hormone of love and other relationships?

One element that repeatedly appears in the biochemistry of love is the neuropeptide **oxytocin**. In large mammals, oxytocin adopts a central role in reproduction by helping to expel the big-brained baby from the uterus, ejecting milk and sealing a selective and lasting bond between mother and offspring (Keverne, 2006). Mammalian offspring crucially depend on their mother's milk for some time after birth. Human mothers also form a strong and lasting bond with their newborns immediately after birth, in a time period that is essential for the nourishment and survival of the baby. However, women who give birth by cesarean section without going through labor, or who opt not to breastfeed, are still able to form a strong emotional bond with their children. Furthermore, fathers, grandparents, and adoptive parents also form lifelong attachments to children. Preliminary evidence suggests that the simple presence of an infant can release oxytocin in adults as well (Feldman, 2012; Kenkel et al., 2012). The baby virtually forces us to love it.

The case for a major role for oxytocin in love is strong, but until recently was based largely on extrapolation from research on parental behavior (Feldman, 2012) or social behaviors in animals (Carter, 1998; Kenkel et al., 2012). However, recent human experiments have shown that intranasal delivery of oxytocin can facilitate social behaviors, including eye contact and social cognition (Meyer-Lindenberg, Domes, Kirsch, & Heinrichs, 2011)—behaviors that are at the heart of love.

Of course, oxytocin is not the molecular equivalent of love. Rather, it is just one important component of a complex neurochemical system that allows the body to adapt to highly emotional situations. The systems necessary for reciprocal social interactions involve extensive neural networks through the brain and autonomic nervous system that are dynamic and constantly changing across the life span of an individual. We also now know that the properties of oxytocin are not predetermined or fixed. Oxytocin's cellular receptors are

regulated by other hormones and **epigenetic** factors. These receptors change and adapt based on life experiences. Both oxytocin and the experience of love can change over time. In spite of limitations, new knowledge of the properties of oxytocin has proven useful in explaining several enigmatic features of love.

## Stress and love

Emotional bonds can form during periods of extreme duress, especially when the survival of one individual depends on the presence and support of another. There also is evidence that oxytocin is released in response to acutely stressful experiences, perhaps serving as hormonal “insurance” against overwhelming stress. Oxytocin may help to ensure that parents and others will engage with and care for infants; develop stable, loving relationships; and seek out and receive support from others in times of need.

## Animal models and the biology of social bonds

To dissect the anatomy and chemistry of love, scientists needed a biological equivalent of the Rosetta Stone. Just as the actual stone helped linguists decipher an archaic language by comparison to a known one, animal models are helping biologists draw parallels between ancient physiology and contemporary behaviors. Studies of socially monogamous mammals that form long-lasting social bonds, such as prairie voles, have been especially helpful to an understanding the biology of human social behavior.



## There is more to love than oxytocin

Research in prairie voles showed that, as in humans, oxytocin plays a major role in social interactions and parental behavior (Carter, 1998; Carter, Boone, Pournajafi-Nazarloo, & Bales, 2009; Kenkel et al., 2012). Of course, oxytocin does not act alone. Its release and actions depend on many other neurochemicals, including endogenous opioids and dopamine (Aragona & Wang, 2009). Particularly important to social bonding are the interactions of oxytocin with a related neuropeptide known as **vasopressin**. The systems regulated by oxytocin and vasopressin are sometimes redundant. Both peptides are implicated in behaviors that require social engagement by either males or females, such as huddling over an infant (Kenkel et al., 2012). For example, it was necessary in voles to block both oxytocin and vasopressin receptors to induce a significant reduction in social engagement, either among adults or between adults and infants. Blocking only one of these two receptors did not eliminate social approach or contact. However, antagonists for either the oxytocin or vasopressin receptor inhibited the selective sociality, which is essential for the expression of a social bond (Bales, Kim, Lewis-Reese, & Carter, 2004; Cho, DeVries, Williams, & Carter, 1999). If we accept selective social bonds, parenting, and mate protection as proxies for love in humans, research in animals supports the hypothesis that oxytocin and vasopressin interact to allow the dynamic behavioral states and behaviors necessary for love.

Oxytocin and vasopressin have shared functions, but they are not identical in their actions. The specific behavioral roles of oxytocin and vasopressin are especially difficult to untangle because they are components of an integrated neural network with many points of intersection. Moreover, the genes that regulate the production of oxytocin and vasopressin are located on the same chromosome, possibly allowing coordinated synthesis or release of these peptides. Both peptides can bind to and have antagonist or agonist effects on each other's receptors. Furthermore, the pathways necessary for reciprocal

social behavior are constantly adapting: These peptides and the systems that they regulate are always in flux. In spite of these difficulties, some of the different functions of oxytocin and vasopressin have been identified.

## Functional differences between vasopressin and oxytocin

Vasopressin is associated with physical and emotional mobilization, and can help support vigilance and behaviors needed for guarding a partner or territory (Carter, 1998), as well as other forms of adaptive self-defense (Ferris, 2008). Vasopressin also may protect against physiologically “shutting down” in the face of danger. In many mammalian species, mothers exhibit agonistic behaviors in defense of their young, possibly through the interactive actions of vasopressin and oxytocin (Bosch & Neumann, 2012). Prior to mating, prairie voles are generally social, even toward strangers. However, within a day or so of mating, they begin to show high levels of aggression toward intruders (Carter, DeVries, & Getz, 1995), possibly serving to protect or guard a mate, family, or territory. This mating-induced aggression is especially obvious in males.

Oxytocin, in contrast, is associated with immobility without fear. This includes relaxed physiological states and postures that permit birth, lactation, and consensual sexual behavior. Although not essential for parenting, the increase of oxytocin associated with birth and lactation may make it easier for a woman to be less anxious around her newborn and to experience and express loving feelings for her child (Carter & Altemus, 1997). In highly social species such as prairie voles (Kenkel et al., 2013), and presumably in humans, the intricate molecular dances of oxytocin and vasopressin fine-tune the coexistence of caretaking and protective aggression.

## Fatherhood also has a biological basis

The biology of fatherhood is less well-studied than motherhood is. However, male care of offspring also appears to rely on both oxytocin and vasopressin (Kenkel et al., 2012), probably acting in part through effects on the autonomic nervous system (Kenkel et al., 2013). Even sexually naïve male prairie voles show spontaneous parental behavior in the presence of an infant (Carter et al., 1995). However, the stimuli from infants or the nature of the social interactions that release oxytocin and vasopressin may differ between the sexes (Feldman, 2012).

## At the heart of the benefits of love is a sense of safety

Parental care and support in a safe environment are particularly important for mental health in social mammals, including humans and prairie voles. Studies of rodents and of lactating women suggest that oxytocin has the important capacity to modulate the behavioral and autonomic distress that typically follows separation from a mother, child, or partner, reducing defensive behaviors and thereby supporting growth and health (Carter, 1998).

## The absence of love in early life can be detrimental to mental and physical health

During early life in particular, trauma or neglect may produce behaviors and emotional states in humans that are socially pathological. Because the processes involved in creating social behaviors and social emotions are delicately balanced, these be may be triggered in inappropriate contexts, leading to aggression toward friends or family. Alternatively, bonds may be formed with prospective partners who fail to provide social support or protection.

## Sex differences exist in the consequences of early life experiences

Males seem to be especially vulnerable to the negative effects of early experiences, possibly helping to explain the increased sensitivity of males to various developmental disorders. The implications of sex differences in the nervous system and in the response to stressful experiences for social behavior are only slowly becoming apparent (Carter et al., 2009). Both males and females produce vasopressin and oxytocin and are capable of responding to both hormones. However, in brain regions that are involved in defensive aggression, such as the extended amygdala and lateral septum, the production of vasopressin is androgen-dependent. Thus, in the face of a threat, males may be experiencing higher central levels of vasopressin.

Oxytocin and vasopressin pathways, including the peptides and their receptors, are regulated by coordinated genetic, hormonal, and epigenetic factors that influence the adaptive and behavioral functions of these peptides across the animal's life span. As a result, the endocrine and behavioral consequences of a stress or challenge may be different for males and females (DeVries, DeVries, Taymans, & Carter, 1996). For example, when unpaired prairie voles were exposed to an intense but brief stressor, such as a few minutes of swimming, or injection of the adrenal hormone corticosterone, the males (but not females) quickly formed new pair bonds. These and other experiments suggest that males and females have different coping strategies, and possibly may experience both stressful experiences, and even love, in ways that are gender-specific.

In the context of nature and evolution, sex differences in the nervous system are important. However, sex differences in brain and behavior also may help to explain gender differences in the vulnerability to mental and physical disorders (Taylor, et al., 2000). Better understanding these differences will provide clues to the physiology of human mental health in both sexes.

## Loving relationships in early life can have epigenetic consequences

Love is “epigenetic.” That is, positive experiences in early life can act upon and alter the expression of specific genes. These changes in gene expression may have behavioral consequences through simple biochemical changes, such as adding a methyl group to a particular site within the genome (Zhang & Meaney, 2010). It is possible that these changes in the genome may even be passed to the next generation.

Social behaviors, emotional attachment to others, and long-lasting reciprocal relationships also are both plastic and adaptive, and so is the biology upon which they are based. For example, infants of traumatized or highly stressed parents might be chronically exposed to vasopressin, either through their own increased production of the peptide, or through higher levels of vasopressin in maternal milk. Such increased exposure could sensitize the infant to defensive behaviors or create a lifelong tendency to overreact to threat. Based on research in rats, it seems that in response to adverse early experiences of chronic isolation, the genes for vasopressin receptors can become upregulated (Zhang et al., 2012), leading to an increased sensitivity to acute stressors or anxiety that may persist throughout life.

Epigenetic programming triggered by early life experiences is adaptive in allowing neuroendocrine systems to project and plan for future behavioral demands. But epigenetic changes that are long-lasting also can create atypical social or emotional behaviors (Zhang & Meaney, 2010) that may be especially likely to surface in later life, and in the face of social or emotional challenges.

Exposure to exogenous hormones in early life also may be epigenetic. For example, prairie voles treated postnatally with vasopressin (especially males) were later more aggressive, whereas those exposed to a vasopressin antagonist showed less aggression in adulthood. Conversely, in voles the exposure of infants to slightly increased levels of oxytocin during development increased

the tendency to show a pair bond. However, these studies also showed that a single exposure to a higher level of oxytocin in early life could disrupt the later capacity to pair bond (Carter et al., 2009).

There is little doubt that either early social experiences or the effects of developmental exposure to these neuropeptides holds the potential to have long-lasting effects on behavior. Both parental care and exposure to oxytocin in early life can permanently modify hormonal systems, altering the capacity to form relationships and influence the expression of love across the life span. Our preliminary findings in voles further suggest that early life experiences affect the methylation of the oxytocin receptor gene and its expression (Connelly, Kenkel, Erickson, & Carter, 2011). Thus, we can plausibly argue that love is epigenetic.

## The absence of social behavior or isolation also has consequences for the oxytocin system

Given the power of positive social experiences, it is not surprising that a lack of social relationships also may lead to alterations in behavior as well as changes in oxytocin and vasopressin pathways. We have found that social isolation reduced the expression of the gene for the oxytocin receptor, and at the same time increased the expression of genes for the vasopressin peptide. In female prairie voles, isolation also was accompanied by an increase in blood levels of oxytocin, possibly as a coping mechanism. However, over time, isolated prairie voles of both sexes showed increases in measures of depression, anxiety, and physiological arousal, and these changes were observed even when endogenous oxytocin was elevated. Thus, even the hormonal insurance provided by endogenous oxytocin in face of the chronic stress of isolation was not sufficient to dampen the consequences of living alone. Predictably, when isolated voles were given additional exogenous oxytocin, this treatment did restore many of these functions to normal (Grippe, Trahanas, Zimmerman,

Porges, & Carter, 2009).

In modern societies, humans can survive, at least after childhood, with little or no human contact. Communication technology, social media, electronic parenting, and many other recent technological advances may reduce social behaviors, placing both children and adults at risk for social isolation and disorders of the autonomic nervous system, including deficits in their capacity for social engagement and love (Porges, 2011).

Social engagement actually helps us to cope with stress. The same hormones and areas of the brain that increase the capacity of the body to survive stress also enable us to better adapt to an ever-changing social and physical environment. Individuals with strong emotional support and relationships are more resilient in the face of stressors than those who feel isolated or lonely. Lesions in various bodily tissues, including the brain, heal more quickly in animals that are living socially versus in isolation (Karelina & DeVries, 2011). The protective effects of positive sociality seem to rely on the same cocktail of hormones that carries a biological message of “love” throughout the body.

## **Can love—or perhaps oxytocin—be a medicine?**

Although research has only begun to examine the physiological effects of these peptides beyond social behavior, there is a wealth of new evidence showing that oxytocin can influence physiological responses to stress and injury. As only one example, the molecules associated with love have restorative properties, including the ability to literally heal a “broken heart.” Oxytocin receptors are expressed in the heart, and precursors for oxytocin appear to be critical for the development of the fetal heart (Danalache, Gutkowska, Slusarz, Berezowska, & Jankowski, 2010). Oxytocin exerts protective and restorative effects in part through its capacity to convert undifferentiated stem cells into cardiomyocytes. Oxytocin can facilitate adult neurogenesis and tissue repair, especially after a stressful experience. We now know that oxytocin has direct anti-inflammatory

and antioxidant properties in in vitro models of atherosclerosis (Szeto et al., 2008). The heart seems to rely on oxytocin as part of a normal process of protection and self-healing.

Thus, oxytocin exposure early in life not only regulates our ability to love and form social bonds, it also affects our health and well-being. Oxytocin modulates the hypothalamic–pituitary adrenal (HPA) axis, especially in response to disruptions in homeostasis (Carter, 1998), and coordinates demands on the immune system and energy balance. Long-term, secure relationships provide emotional support and down-regulate reactivity of the HPA axis, whereas intense stressors, including birth, trigger activation of the HPA axis and sympathetic nervous system. The ability of oxytocin to regulate these systems probably explains the exceptional capacity of most women to cope with the challenges of childbirth and childrearing.

Dozens of ongoing clinical trials are currently attempting to examine the therapeutic potential of oxytocin in disorders ranging from autism to heart disease. Of course, as in hormonal studies in voles, the effects are likely to depend on the history of the individual and the context, and to be dose-dependent. As this research is emerging, a variety of individual differences and apparent discrepancies in the effects of exogenous oxytocin are being reported. Most of these studies do not include any information on the endogenous hormones, or on the oxytocin or vasopressin receptors, which are likely to affect the outcome of such treatments.

## Conclusion

Research in this field is new and there is much left to understand. However, it is already clear that both love and oxytocin are powerful. Of course, with power comes responsibility. Although research into mechanisms through which love—or hormones such as oxytocin—may protect us against stress and disease is in its infancy, this knowledge will ultimately increase our understanding of the



way that our emotions impact upon health and disease. The same molecules that allow us to give and receive love also link our need for others with health and well-being.

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## Outside Resources

**Book:** C. S. Carter, L. Ahnert et al. (Eds.), (2006). Attachment and bonding: A new synthesis. Cambridge, MA: MIT Press.

**Book:** Porges, S.W. (2011). The polyvagal theory: Neurophysiological foundations of emotions, attachment, communication and self-regulation. New York, NY: Norton.

**Web:** Database of publicly and privately supported clinical studies of human participants conducted around the world.

<http://www.clinicaltrials.gov>

**Web:** PubMed comprises over 22 million citations for biomedical literature from MEDLINE, life science journals, and online books. PubMed citations and abstracts include the fields of biomedicine and health, covering portions of the life sciences, behavioral sciences, chemical sciences, and bioengineering. PubMed also provides access to additional relevant web sites and links to the other NCBI molecular biology resources.

<http://www.ncbi.nlm.nih.gov/pubmed>

**Web:** Website of author Stephen Porges

<http://www.stephenporges.com/>

## Discussion Questions

1. If love is so important in human behavior, why is it so hard to describe and understand?
2. Discuss the role of evolution in understanding what humans call “love” or other forms of prosociality.
3. What are the common biological and neuroendocrine elements that appear in maternal love and adult-adult relationships?
4. Oxytocin and vasopressin are biochemically similar. What are some of the differences between the actions of oxytocin and vasopressin?
5. How may the properties of oxytocin and vasopressin help us understand the biological bases of love?
6. What are common features of the biochemistry of “love” and “safety,” and why are these important to human health?

# Vocabulary

## Epigenetics

Heritable changes in gene activity that are not caused by changes in the DNA sequence. <http://en.wikipedia.org/wiki/Epigenetics>

## Oxytocin

A nine amino acid mammalian neuropeptide. Oxytocin is synthesized primarily in the brain, but also in other tissues such as uterus, heart and thymus, with local effects. Oxytocin is best known as a hormone of female reproduction due to its capacity to cause uterine contractions and eject milk. Oxytocin has effects on brain tissue, but also acts throughout the body in some cases as an antioxidant or anti-inflammatory.

## Vagus nerve

The 10th cranial nerve. The mammalian vagus has an older unmyelinated branch which originates in the dorsal motor complex and a more recently evolved, myelinated branch, with origins in the ventral vagal complex including the nucleus ambiguus. The vagus is the primary source of autonomic-parasympathetic regulation for various internal organs, including the heart, lungs and other parts of the viscera. The vagus nerve is primarily sensory (afferent), transmitting abundant visceral input to the central nervous system.

## Vasopressin

A nine amino acid mammalian neuropeptide. Vasopressin is synthesized primarily in the brain, but also may be made in other tissues. Vasopressin is best known for its effects on the cardiovascular system (increasing blood pressure) and also the kidneys (causing water retention). Vasopressin has effects on brain tissue, but also acts throughout the body.

## Reference List

- Aragona, B. J., & Wang, Z. (2009). Dopamine regulation of social choice in a monogamous rodent species. *Frontiers in Behavioral Neuroscience*, 3, 15.
- Bales, K. L., Kim, A. J., Lewis-Reese, A. D., & Carter, C. S. (2004). Both oxytocin and vasopressin may influence alloparental care in male prairie voles. *Hormones and Behavior*, 44, 454–361.
- Bosch, O. J., & Neumann, I. D. (2012). Both oxytocin and vasopressin are mediators of maternal care and aggression in rodents: from central release to sites of action. *Hormones and Behavior*, 61, 293–303.
- Carter, C. S. (1998). Neuroendocrine perspectives on social attachment and love. *Psychoneuroendocrinology*, 23, 779–818.
- Carter, C. S., Boone, E. M., Pournajafi-Nazarloo, H., & Bales, K. L. (2009). The consequences of early experiences and exposure to oxytocin and vasopressin are sexually-dimorphic. *Developmental Neuroscience*, 31, 332–341.
- Carter, C. S., DeVries, A. C., & Getz, L. L. (1995). Physiological substrates of mammalian monogamy: The prairie vole model. *Neuroscience and Biobehavioral Reviews*, 19, 303–314.
- Carter, C. S., & Altemus, M. (1997). Integrative functions of lactational hormones in social behavior and stress management. *Annals of the New York Academy of Sciences, Integrative Neurobiology of Affiliation* 807, 164–174.
- Cho, M. M., DeVries, A. C., Williams, J. R., Carter, C. S. (1999). The effects of

oxytocin and vasopressin on partner preferences in male and female prairie voles (*Microtus ochrogaster*). *Behavioral Neuroscience*, 113, 1071–1080.

Connelly, J., Kenkel, W., Erickson, E., & Carter, C. S. (2011). Are birth and oxytocin epigenetic events. *Society for Neuroscience Abstracts*, 388.10.

Danalache, B. A., Gutkowska, J., Slusarz, M. J., Berezowska, I., & Jankowski, M. (2010). Oxytocin-Gly-Lys-Arg: A novel cardiomyogenic peptide. *PloS One*, 5 (10), e13643.

DeVries, A. C., DeVries, M. B., Taymans, S. E., & Carter, C. S. (1996). Stress has sexually dimorphic effects on pair bonding in prairie voles. *Proceedings of the National Academy of Sciences, USA*, 93, 11980–11984.

Feldman, R. (2012). Oxytocin and social affiliation in humans. *Hormones and Behavior*, 61, 380–391.

Ferris, C. F. (2008). Functional magnetic resonance imaging and the neurobiology of vasopressin and oxytocin. *Progress in Brain Research*, 170, 305–320.

Grippe, A. J., Trahanas, D. M., Zimmerman, R. R., Porges, S. W., & Carter, C. S. (2009). Oxytocin protects against negative behavioral and autonomic consequences of long-term social isolation. *Psychoneuroendocrinology*, 34, 1542–1553.

Ingham, C. J., & Ben-Jacob, E. (2008). Swarming and complex pattern formation in *Paenibacillus vortex* studied by imaging and tracking cells. *BMC Microbiol*, 8, 36.

- Karelina, K., & DeVries, A. C. (2011). Modeling social influences on human health. *Psychosomatic Medicine*, 73, 67–74.
- Kenkel, W.M., Paredes, J., Lewis, G.F., Yee, J.R., Pournajafi-Nazarloo, H., Grippo, A.J., Porges, S.W., & Carter, C.S. (2013). Autonomic substrates of the response to pups in male prairie voles. *PlosOne* Aug 5;8(8):e69965. doi: 10.1371/journal.pone.0069965.
- Kenkel, W.M., Paredes, J., Yee, J. R., Pournajafi-Nazarloo, H., Bales, K. L., & Carter, C. S. (2012). Exposure to an infant releases oxytocin and facilitates pair-bonding in male prairie voles. *Journal of Neuroendocrinology*, 24, 874–886.
- Keverne, E. B. (2006). Neurobiological and molecular approaches to attachment and bonding. In C. S. Carter, L. Ahnert et al. (Eds.), *Attachment and bonding: A new synthesis*. Cambridge, MA: MIT Press. Pp. 101-117.
- Meyer-Lindenberg, A., Domes, G., Kirsch, P., & Heinrichs, M. (2011). Oxytocin and vasopressin in the human brain: social neuropeptides for translational medicine. *Nature: Reviews in Neuroscience* 12, 524–538.
- Porges, S. W. (2011). *The polyvagal theory: Neurophysiological foundations of emotions, attachment, communication and self-regulation*. New York, NY: Norton.
- Szeto, A., Nation, D. A., Mendez, A. J., Dominguez-Bendala, J., Brooks, L. G., Schneiderman, N., & McCabe, P. M. (2008). Oxytocin attenuates NADPH-dependent superoxide activity and IL-6 secretion in macrophages and vascular cells. *American Journal of Physiology, Endocrinology and Metabolism* 295, E1495–1501.

Taylor, S. E., Klein, L. C., Lewis, B. P., Gruenewald, T. L., Gurung, R. A., & Updegraff, J. A. (2000). Biobehavioral responses to stress in females: Tend-and-befriend, not fight-or-flight. *Psychol Rev*, 107, 411–429.

Woodard, S. H., Fischman, B. J., Venkat, A., Hudson, M. E., Varala, K., Cameron S.A., . . . Robinson, G. E. (2011). Genes involved in convergent evolution of eusociality in bees. *Proc Natl Acad Sci USA*, 108, 7472–7477.

Zhang, L., Hernandez, V. S., Liu, B., Medina, M. P., Nava-Kopp, A. T., Irles, C., & Morales, M. (2012). Hypothalamic vasopressin system regulation by maternal separation: Its impact on anxiety in rats. *Neuroscience*, 215, 135–148.

Zhang, T. Y., & Meaney, M. J. (2010). Epigenetics and the environmental regulation of the genome and its function. *Annual Review of Psychology*, 61, 439–466.





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# Helping and Prosocial Behavior

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N O B A

## Abstract

People often act to benefit other people, and these acts are examples of prosocial behavior. Such behaviors may come in many guises: helping an individual in need; sharing personal resources; volunteering time, effort, and expertise; cooperating with others to achieve some common goals. The focus of this chapter is on helping—prosocial acts in dyadic situations in which one person is in need and another provides the necessary assistance to eliminate the other's need. Although people are often in need, help is not always given. Why not? The decision of whether or not to help is not as simple and straightforward as it might seem, and many factors need to be considered by those who might help. In this chapter, we will try to understand how the decision to help is made by answering the question: Who helps when and why?

# Learning Objectives

- Learn which situational and social factors affect when a bystander will help another in need.
- Understand which personality and individual difference factors make some people more likely to help than others.
- Discover whether we help others out of a sense of altruistic concern for the victim, for more self-centered and egoistic motives, or both.

## Introduction

Go to YouTube and search for episodes of “Primetime: What Would You Do?” You will find video segments in which apparently innocent individuals are victimized, while onlookers typically fail to intervene. The events are all staged, but they are very real to the bystanders on the scene. The entertainment offered is the nature of the bystanders’ responses, and viewers are outraged when bystanders fail to intervene. They are convinced that they would have helped. But would they? Viewers are overly optimistic in their beliefs that they would play the hero. Helping may occur frequently, but help is not always given to those in need. So when do people help, and when do they not? All people are not equally helpful—who helps? Why would a person help another in the first place? Many factors go into a person’s decision to help—a fact that the viewers do not fully appreciate. This chapter will answer the question: Who helps when and why?

## When Do People Help?

Social psychologists began trying to answer this question following the unfortunate murder of Kitty Genovese in 1964 (Dovidio, Piliavin, Schroeder, & Penner, 2006; Penner, Dovidio, Piliavin, & Schroeder, 2005). A knife-wielding assailant attacked Kitty repeatedly as she was returning to her apartment early one morning. At least 38 people may have been aware of the attack, but no one came to save her. More recently, in 2010, Hugo Alfredo Tale-Yax was stabbed when he apparently tried to intervene in an argument between a man and woman. As he lay dying in the street, only one man checked his status, but many others simply glanced at the scene and continued on their way. (One passerby did stop to take a cellphone photo, however.) Unfortunately, failures to come to the aid of someone in need are not unique, as the segments on “What Would You Do?” show. Help is not always forthcoming for those who may need it the

most. Trying to understand why people do not always help became the focus of **bystander intervention** research (e.g., Latané & Darley, 1970).

To answer the question regarding when people help, researchers have focused on

1. how bystanders come to define emergencies,
2. when they decide to take responsibility for helping, and
3. how the costs and benefits of intervening affect their decisions of whether to help.

## Defining the situation: The role of pluralistic ignorance

The decision to help is not a simple yes/no proposition. In fact, a series of questions must be addressed before help is given—even in emergencies in which time may be of the essence. Sometimes help comes quickly; an onlooker recently jumped from a Philadelphia subway platform to help a stranger who had fallen on the track. Help was clearly needed and was quickly given. But some situations are ambiguous, and potential helpers may have to decide whether a situation is one in which help, in fact, needs to be given.

To define ambiguous situations (including many emergencies), potential helpers may look to the action of others to decide what should be done. But those others are looking around too, also trying to figure out what to do. Everyone is looking, but no one is acting! Relying on others to define the situation and to then erroneously conclude that no intervention is necessary when help is actually needed is called **pluralistic ignorance** (Latané & Darley, 1970). When people use the inactions of others to define their own course of action, the resulting pluralistic ignorance leads to less help being given.

## Do I have to be the one to help?: Diffusion of responsibility

Simply being with others may facilitate or inhibit whether we get involved in other ways as well. In situations in which help is needed, the presence or absence of others may affect whether a bystander will assume personal responsibility to give the assistance. If the bystander is alone, personal responsibility to help falls solely on the shoulders of that person. But what if others are present? Although it might seem that having more potential helpers around would increase the chances of the victim getting help, the opposite is often the case. Knowing that someone else could help seems to relieve bystanders of personal responsibility, so bystanders do not intervene. This phenomenon is known as **diffusion of responsibility** (Darley & Latané, 1968).

On the other hand, watch the video of the race officials following the 2013 Boston Marathon after two bombs exploded as runners crossed the finish line. Despite the presence of many spectators, the yellow-jacketed race officials immediately rushed to give aid and comfort to the victims of the blast. Each one no doubt felt a personal responsibility to help by virtue of their official capacity in the event; fulfilling the obligations of their roles overrode the influence of the diffusion of responsibility effect.

There is an extensive body of research showing the negative impact of pluralistic ignorance and diffusion of responsibility on helping (Fisher et al., 2011), in both emergencies and everyday need situations. These studies show the tremendous importance potential helpers place on the social situation in which unfortunate events occur, especially when it is not clear what should be done and who should do it. Other people provide important social information about how we should act and what our personal obligations might be. But does knowing a person needs help and accepting responsibility to provide that help mean the person will get assistance? Not necessarily.

## The costs and rewards of helping

The nature of the help needed plays a crucial role in determining what happens next. Specifically, potential helpers engage in a **cost-benefit analysis** before getting involved (Dovidio et al., 2006). If the needed help is of relatively low cost in terms of time, money, resources, or risk, then help is more likely to be given. Lending a classmate a pencil is easy; confronting the knife-wielding assailant who attacked Kitty Genovese is an entirely different matter. As the unfortunate case of Hugo Alfredo Tale-Yax demonstrates, intervening may cost the life of the helper.

The potential rewards of helping someone will also enter into the equation, perhaps offsetting the cost of helping. Thanks from the recipient of help may be a sufficient reward. If helpful acts are recognized by others, helpers may receive social rewards of praise or monetary rewards. Even avoiding feelings of guilt if one does not help may be considered a benefit. Potential helpers consider how much helping will cost and compare those costs to the rewards that might be realized; it is the economics of helping. If costs outweigh the rewards, helping is less likely. If rewards are greater than cost, helping is more likely.

## Who Helps?

Do you know someone who always seems to be ready, willing, and able to help? Do you know someone who never helps out? It seems there are personality and individual differences in the helpfulness of others. To answer the question of who chooses to help, researchers have examined 1) the role that sex and gender play in helping, 2) what personality traits are associated with helping, and 3) the characteristics of the “prosocial personality.”



## Who are more helpful—men or women?

In terms of individual differences that might matter, one obvious question is whether men or women are more likely to help. In one of the “What Would You Do?” segments, a man takes a woman’s purse from the back of her chair and then leaves the restaurant. Initially, no one responds, but as soon as the woman asks about her missing purse, a group of men immediately rush out the door to catch the thief. So, are men more helpful than women? The quick answer is “not necessarily.” It all depends on the type of help needed. To be very clear, the general level of helpfulness may be pretty much equivalent between the sexes, but men and women help in different ways (Becker & Eagly, 2004; Eagly & Crowley, 1986). What accounts for these differences?

Two factors help to explain sex and gender differences in helping. The first is related to the cost–benefit analysis process discussed previously. Physical differences between men and women may come into play (e.g., Wood & Eagly, 2002); the fact that men tend to have greater upper body strength than women makes the cost of intervening in some situations less for a man. Confronting a thief is a risky proposition, and some strength may be needed in case the perpetrator decides to fight. A bigger, stronger bystander is less likely to be injured and more likely to be successful.

The second explanation is simple socialization. Men and women have traditionally been raised to play different social roles that prepare them to respond differently to the needs of others, and people tend to help in ways that are most consistent with their gender roles. Female gender roles encourage women to be compassionate, caring, and nurturing; male gender roles encourage men to take physical risks, to be heroic and chivalrous, and to be protective of those less powerful. As a consequence of social training and the gender roles that people have assumed, men may be more likely to jump onto subway tracks to save a fallen passenger, but women are more likely to give comfort to a friend with personal problems (Diekmann & Eagly, 2000; Eagly &

Crowley, 1986). There may be some specialization in the types of help given by the two sexes, but it is nice to know that there is someone out there—man or woman—who is able to give you the help that you need, regardless of what kind of help it might be.

## A trait for being helpful: Agreeableness

Graziano and his colleagues (e.g., Graziano & Tobin, 2009; Graziano, Habishi, Sheese, & Tobin, 2007) have explored how **agreeableness**—one of the Big Five personality dimensions (e.g., Costa & McCrae, 1988)—plays an important role in **prosocial behavior**. Agreeableness is a core trait that includes such dispositional characteristics as being sympathetic, generous, forgiving, and helpful, and behavioral tendencies toward harmonious social relations and likeability. At the conceptual level, a positive relationship between agreeableness and helping may be expected, and research by Graziano et al. (2007) has found that those higher on the agreeableness dimension are, in fact, more likely than those low on agreeableness to help siblings, friends, strangers, or members of some other group. Agreeable people seem to expect that others will be similarly cooperative and generous in interpersonal relations, and they, therefore, act in helpful ways that are likely to elicit positive social interactions.

## Searching for the prosocial personality

Rather than focusing on a single trait, Penner and his colleagues (Penner, Fritzsche, Craiger, & Freifeld, 1995; Penner & Orom, 2010) have taken a somewhat broader perspective and identified what they call the **prosocial personality orientation**. Their research indicates that two major characteristics are related to the prosocial personality and prosocial behavior. The first characteristic is called **other-oriented empathy**: People high on this dimension have a strong sense of social responsibility, empathize with and feel emotionally

tied to those in need, understand the problems the victim is experiencing, and have a heightened sense of moral obligation to be helpful. This factor has been shown to be highly correlated with the trait of agreeableness discussed previously. The second characteristic, **helpfulness**, is more behaviorally oriented. Those high on the helpfulness factor have been helpful in the past, and because they believe they can be effective with the help they give, they are more likely to be helpful in the future.

## Why Help?

Finally, the question of why a person would help needs to be asked. What motivation is there for that behavior? Psychologists have suggested that 1) evolutionary forces may serve to predispose humans to help others, 2) egoistic concerns may determine if and when help will be given, and 3) selfless, altruistic motives may also promote helping in some cases.

## Evolutionary roots for prosocial behavior

Our evolutionary past may provide keys about why we help (Buss, 2004). Our very survival was no doubt promoted by the prosocial relations with clan and family members, and, as a hereditary consequence, we may now be especially likely to help those closest to us—blood-related relatives with whom we share a genetic heritage. According to evolutionary psychology, we are helpful in ways that increase the chances that our DNA will be passed along to future generations (Burnstein, Crandall, & Kitayama, 1994)—the goal of the “selfish gene” (Dawkins, 1976). Our personal DNA may not always move on, but we can still be successful in getting some portion of our DNA transmitted if our daughters, sons, nephews, nieces, and cousins survive to produce offspring. The favoritism shown for helping our blood relatives is called **kin selection** (Hamilton, 1964).

But, we do not restrict our relationships just to our own family members. We live in groups that include individuals who are unrelated to us, and we often help them too. Why? **Reciprocal altruism** (Trivers, 1971) provides the answer. Because of reciprocal altruism, we are all better off in the long run if we help one another. If helping someone now increases the chances that you will be helped later, then your overall chances of survival are increased. There is the chance that someone will take advantage of your help and not return your favors. But people seem predisposed to identify those who fail to reciprocate, and punishments including social exclusion may result (Buss, 2004). Cheaters will not enjoy the benefit of help from others, reducing the likelihood of the survival of themselves and their kin.

Evolutionary forces may provide a general inclination for being helpful, but they may not be as good an explanation for why we help in the here and now. What factors serve as proximal influences for decisions to help?

## Egoistic motivation for helping

Most people would like to think that they help others because they are concerned about the other person's plight. In truth, the reasons why we help may be more about ourselves than others: Egoistic or selfish motivations may make us help. Implicitly, we may ask, "What's in it for me?" There are two major theories that explain what types of reinforcement helpers may be seeking. The **negative state relief model** (e.g., Cialdini, Darby, & Vincent, 1973; Cialdini, Kenrick, & Baumann, 1982) suggests that people sometimes help in order to make themselves feel better. Whenever we are feeling sad, we can use helping someone else as a positive mood boost to feel happier. Through socialization, we have learned that helping can serve as a secondary reinforcement that will relieve negative moods (Cialdini & Kenrick, 1976).

The **arousal: cost–reward model** provides an additional way to understand why people help (e.g., Piliavin, Dovidio, Gaertner, & Clark, 1981). This model focuses on the aversive feelings aroused by seeing another in need. If you have ever heard an injured puppy yelping in pain, you know that feeling, and you know that the best way to relieve that feeling is to help and to comfort the puppy. Similarly, when we see someone who is suffering in some way (e.g., injured, homeless, hungry), we vicariously experience a sympathetic arousal that is unpleasant, and we are motivated to eliminate that aversive state. One way to do that is to help the person in need. By eliminating the victim’s pain, we eliminate our own aversive arousal. Helping is an effective way to alleviate our own discomfort.

As an egoistic model, the arousal: cost–reward model explicitly includes the cost/reward considerations that come into play. Potential helpers will find ways to cope with the aversive arousal that will minimize their costs—maybe by means other than direct involvement. For example, the costs of directly confronting a knife-wielding assailant might stop a bystander from getting involved, but the cost of some indirect help (e.g., calling the police) may be acceptable. In either case, the victim’s need is addressed. Unfortunately, if the costs of helping are too high, bystanders may reinterpret the situation to justify not helping at all. We now know that the attack of Kitty Genovese was a murderous assault, but it may have been misperceived as a lover’s spat by someone who just wanted to go back to sleep. For some, fleeing the situation causing their distress may do the trick (Piliavin et al., 1981).

The egoistically based negative state relief model and the arousal: cost–reward model see the primary motivation for helping as being the helper’s own outcome. Recognize that the victim’s outcome is of relatively little concern to the helper—benefits to the victim are incidental byproducts of the exchange (Dovidio et al., 2006). The victim may be helped, but the helper’s real motivation according to these two explanations is egoistic: Helpers help to the extent that it makes them feel better.

## Altruistic help

Although many researchers believe that **egoism** is the only motivation for helping, others suggest that **altruism**—helping that has as its ultimate goal the improvement of another’s welfare—may also be a motivation for helping under the right circumstances. Batson (2011) has offered the **empathy-altruism model** to explain altruistically motivated helping for which the helper expects no benefits. According to this model, the key for altruism is empathizing with the victim, that is, putting oneself in the shoes of the victim and imagining how the victim must feel. When taking this perspective and having **empathic concern**, potential helpers become primarily interested in increasing the well-being of the victim, even if the helper must incur some costs that might otherwise be easily avoided. The empathy-altruism model does not dismiss egoistic motivations; helpers not empathizing with a victim may experience **personal distress** and have an egoistic motivation, not unlike the feelings and motivations explained by the arousal: cost-reward model. Because egoistically motivated individuals are primarily concerned with their own cost-benefit outcomes, they are less likely to help if they think they can escape the situation with no costs to themselves. In contrast, altruistically motivated helpers are willing to accept the cost of helping to benefit a person with whom they have empathized—this “self-sacrificial” approach to helping is the hallmark of altruism (Batson, 2011).

Although there is still some controversy about whether people can ever act for purely altruistic motives, it is important to recognize that, while helpers may derive some personal rewards by helping another, the help that has been given is also benefitting someone who was in need. The residents who offered food, blankets, and shelter to stranded runners who were unable to get back to their hotel rooms because of the Boston Marathon bombing undoubtedly received positive rewards because of the help they gave, but those stranded runners who were helped got what they needed badly as well. “In fact, it is quite

remarkable how the fates of people who have never met can be so intertwined and complementary. Your benefit is mine; and mine is yours" (Dovidio et al., 2006, p. 143).

## Conclusion

We started this chapter by asking the question, "Who helps when and why?" As we have shown, the question of when help will be given is not quite as simple as the viewers of "What Would You Do?" believe. The power of the situation that operates on potential helpers in real time is not fully considered. What might appear to be a split-second decision to help is actually the result of consideration of multiple situational factors (e.g., the helper's interpretation of the situation, the presence and ability of others to provide the help, the results of a cost-benefit analysis) (Dovidio et al., 2006). We have found that men and women tend to help in different ways—men are more impulsive and physically active, while women are more nurturing and supportive. Personality characteristics such as agreeableness and the prosocial personality orientation also affect people's likelihood of giving assistance to others. And, why would people help in the first place? In addition to evolutionary forces (e.g., kin selection, reciprocal altruism), there is extensive evidence to show that helping and prosocial acts may be motivated by selfish, egoistic desires; by selfless, altruistic goals; or by some combination of egoistic and altruistic motives. (For a fuller consideration of the field of prosocial behavior, we refer you to Dovidio et al. [2006].)

## Outside Resources

Book: Batson, C.D. (2009). *Altruism in humans*. New York, NY: Oxford University Press.

Book: Dovidio, J. F., Piliavin, J. A., Schroeder, D. A., & Penner, L. A. (2006). *The social psychology of prosocial behavior*. Mahwah, NJ: Erlbaum.

Book: Mikuliner, M., & Shaver, P. R. (2010). *Prosocial motives, emotions, and behavior: The better angels of our nature*. Washington, DC: American Psychological Association.

Book: Schroeder, D. A. & Graziano, W. G. (forthcoming). *The Oxford handbook of prosocial behavior*. New York, NY: Oxford University Press.

Institution: Center for Generosity, University of Notre Dame, 936 Flanner Hall, Notre Dame, IN 46556.

<http://www.generosityresearch.nd.edu>

Institution: The Greater Good Science Center, University of California, Berkeley.

<http://www.greatergood.berkeley.edu>



**Video: Episodes (individual) of "Primetime: What Would You Do?"**

<http://www.YouTube.com>

**Video: Episodes of "Primetime: What Would You Do?" that often include some commentary from experts in the field may be available at**

<http://www.abc.com>

## Discussion Questions

1. Pluralistic ignorance suggests that inactions by other observers of an emergency will decrease the likelihood that help will be given. What do you think will happen if even one other observer begins to offer assistance to a victim?
2. In addition to those mentioned in the chapter, what other costs and rewards might affect a potential helper's decision of whether to help? Receiving help to solve some problem is an obvious benefit for someone in need; are there any costs that a person might have to bear as a result of receiving help from someone?
3. What are the characteristics possessed by your friends who are most helpful? By your friends who are least helpful? What has made your helpful friends and your unhelpful friends so different? What kinds of help have they given to you, and what kind of help have you given to them? Are you a helpful person?
4. Do you think that sex and gender differences in the frequency of helping and the kinds of helping have changed over time? Why? Do you think that we might expect more changes in the future?
5. What do you think is the primary motive for helping behavior: egoism or altruism? Are there any professions in which people are being "pure" altruists, or are some egoistic motivations always playing a role?
6. There are other prosocial behaviors in addition to the kind of helping discussed here. People volunteer to serve many different causes and organizations. People come together to cooperate with one another to

achieve goals that no one individual could reach alone. How do you think the factors that affect helping might affect prosocial actions such as volunteering and cooperating? Do you think that there might be other factors that make people more or less likely to volunteer their time and energy or to cooperate in a group?

# Vocabulary

## **Agreeableness**

A core personality trait that includes such dispositional characteristics as being sympathetic, generous, forgiving, and helpful, and behavioral tendencies toward harmonious social relations and likeability.

## **Altruism**

A motivation for helping that has the improvement of another's welfare as its ultimate goal, with no expectation of any benefits for the helper.

## **Arousal: cost-reward model**

An egoistic theory proposed by Piliavin et al. (1981) that claims that seeing a person in need leads to the arousal of unpleasant feelings, and observers are motivated to eliminate that aversive state, often by helping the victim. A cost-reward analysis may lead observers to react in ways other than offering direct assistance, including indirect help, reinterpretation of the situation, or fleeing the scene.

## **Bystander intervention**

The phenomenon whereby people intervene to help others in need even if the other is a complete stranger and the intervention puts the helper at risk.

## **Cost-benefit analysis**

A decision-making process that compares the cost of an action or thing against the expected benefit to help determine the best course of action.

### **Diffusion of responsibility**

When deciding whether to help a person in need, knowing that there are others who could also provide assistance relieves bystanders of some measure of personal responsibility, reducing the likelihood that bystanders will intervene.

### **Egoism**

A motivation for helping that has the improvement of the helper's own circumstances as its primary goal.

### **Empathic concern**

According to Batson's empathy-altruism hypothesis, observers who empathize with a person in need (that is, put themselves in the shoes of the victim and imagine how that person feels) will experience empathic concern and have an altruistic motivation for helping.

### **Empathy-altruism model**

An altruistic theory proposed by Batson (2011) that claims that people who put themselves in the shoes of a victim and imagining how the victim feel will experience empathic concern that evokes an altruistic motivation for helping.

### **Helpfulness**

A component of the prosocial personality orientation; describes individuals who have been helpful in the past and, because they believe they can be effective with the help they give, are more likely to be helpful in the future.

### **Helping**

Prosocial acts that typically involve situations in which one person is in need and another provides the necessary assistance to eliminate the other's need.

### **Kin selection**

According to evolutionary psychology, the favoritism shown for helping our blood relatives, with the goals of increasing the likelihood that some portion of our DNA will be passed on to future generations.

### **Negative state relief model**

An egoistic theory proposed by Cialdini et al. (1982) that claims that people have learned through socialization that helping can serve as a secondary reinforcement that will relieve negative moods such as sadness.

### **Other-oriented empathy**

A component of the prosocial personality orientation; describes individuals who have a strong sense of social responsibility, empathize with and feel emotionally tied to those in need, understand the problems the victim is experiencing, and have a heightened sense of moral obligations to be helpful.

### **Personal distress**

According to Batson's empathy-altruism hypothesis, observers who take a detached view of a person in need will experience feelings of being "worried" and "upset" and will have an egoistic motivation for helping to relieve that distress.

### **Pluralistic ignorance**

Relying on the actions of others to define an ambiguous need situation and to then erroneously conclude that no help or intervention is necessary.

**Prosocial behavior**

Social behavior that benefits another person.

**Prosocial personality orientation**

A measure of individual differences that identifies two sets of personality characteristics (other-oriented empathy, helpfulness) that are highly correlated with prosocial behavior.

**Reciprocal altruism**

According to evolutionary psychology, a genetic predisposition for people to help those who have previously helped them.

## Reference List

- Batson, C. D. (2011). *Altruism in humans*. New York, NY: Oxford University Press.
- Becker, S. W., & Eagly, A. H. (2004). The heroism of women and men. *American Psychologist*, 59, 163–178.
- Burnstein, E., Crandall, C., & Kitayama, S. (1994). Some neo-Darwinian decision rules for altruism: Weighing cues for inclusive fitness as a function of the biological importance of the decision. *Journal of Personality and Social Psychology*, 67, 773–789.
- Buss, D. M. (2004). *Evolutionary psychology: The new science of the mind*. Boston, MA: Allyn Bacon.
- Cialdini, R. B., Darby, B. K. & Vincent, J. E. (1973). Transgression and altruism: A case for hedonism. *Journal of Experimental Social Psychology*, 9, 502–516.
- Cialdini, R. B., Kenrick, D. T., & Baumann, D. J. (1982). Effects of mood on prosocial behavior in children and adults. In N. Eisenberg (Ed.), *The development of prosocial behavior* (pp. 339–359). New York, NY: Academic Press.
- Cialdini, R. B., & Kenrick, D. T. (1976). Altruism as hedonism: A social developmental perspective on the relationship of negative mood state and helping. *Journal of Personality and Social Psychology*, 34, 907–914.
- Costa, P. T., & McCrae, R. R. (1998). Trait theories in personality. In D. F. Barone, M. Hersen, & V. B. Van Hasselt (Eds.), *Advanced Personality* (pp. 103–121). New York, NY: Plenum.



- Darley, J. M. & Latané, B. (1968). Bystander intervention in emergencies: Diffusion of responsibility. *Journal of Personality and Social Psychology*, 8, 377–383.
- Dawkins, R. (1976). *The selfish gene*. Oxford, U.K.: Oxford University Press.
- Diekmann, A. B., & Eagly, A. H. (2000). Stereotypes as dynamic structures: Women and men of the past, present, and future. *Personality and Social Psychology Bulletin*, 26, 1171–1188.
- Dovidio, J. F., Piliavin, J. A., Schroeder, D. A., & Penner, L. A. (2006). *The social psychology of prosocial behavior*. Mahwah, NJ: Erlbaum.
- Eagly, A. H., & Crowley, M. (1986). Gender and helping behavior: A meta-analytic review of the social psychological literature. *Psychological Review*, 66, 183–201.
- Fisher, P., Krueger, J. I., Greitemeyer, T., Vogrinic, C., Kastenmiller, A., Frey, D., Henne, M., Wicher, M., & Kainbacher, M. (2011). The bystander-effect: A meta-analytic review of bystander intervention in dangerous and non-dangerous emergencies. *Psychological Bulletin*, 137, 517–537.
- Graziano, W. G., Habashi, M. M., Sheese, B. E., & Tobin, R. M. (2007). Agreeableness, empathy, and helping: A person x situation perspective. *Journal of Personality and Social Psychology*, 93, 583–599.
- Graziano, W. G., & Tobin, R. (2009). Agreeableness. In M. R. Leary & R. H. Hoyle (Eds.), *Handbook of Individual Differences in Social Behavior*. New York, NY: Guilford Press.

Hamilton, W. D. (1964). The genetic evolution of social behavior. *Journal of Theoretical Biology*, 7, 1–52.

Latané, B., & Darley, J. M. (1970). *The unresponsive bystander: Why doesn't he help?* New York, NY: Appleton-Century-Crofts.

Penner, L. A., Dovidio, J. F., Piliavin, J. A., & Schroeder, D. A. (2005). Prosocial behavior: Multilevel perspectives. *Annual Review of Psychology*, 56, 365–392.

Penner, L. A., Fritzsche, B. A., Craiger, J. P., & Freifeld, T. R. (1995). Measuring the prosocial personality. In J. Butcher & C.D. Spielberger (Eds.), *Advances in personality assessment* (Vol. 10, pp. 147–163). Hillsdale, NJ: Erlbaum.

Penner, L. A., & Orom, H. (2010). Enduring goodness: A Person X Situation perspective on prosocial behavior. In M. Mikuliner & P.R. Shaver, P.R. (Eds.), *Prosocial motives, emotions, and behavior: The better angels of our nature* (pp. 55–72). Washington, DC: American Psychological Association.

Piliavin, J. A., Dovidio, J. F., Gaertner, S. L., & Clark, R. D., III (1981). *Emergency intervention*. New York, NY: Academic Press.

Trivers, R. (1971). The evolution of reciprocal altruism. *Quarterly Review of Biology*, 46, 35–57.

Wood, W., & Eagly, A. H. (2002). A cross-cultural analysis of the behavior of women and men: Implications for the origins of sex differences. *Psychological Bulletin*, 128, 699–727.





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# Love, Friendship, and Social Support

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N O B A

## **Abstract**

Friendship and love, and more broadly, the relationships that people cultivate in their lives, are some of the most valuable treasures a person can own. This chapter explores ways in which we try to understand how friendships form, what attracts one person to another, and how love develops. It also explores how the Internet influences how we meet people and develop deep relationships. Finally, this chapter will examine social support and how this can help many through the hardest times and help make the best times even better.

# Learning Objectives

- Understand what attracts us to others.
- Review research that suggests that friendships are important for our health and well-being.
- Examine the influence of the Internet on friendship and developing relationships.
- Understand what happens to our brains when we are in love.
- Consider the complexity of love.
- Examine the construct and components of social support.

## Introduction

The importance of relationships has been examined by researchers for decades. Many researchers point to sociologist Émile Durkheim's classic study of suicide and social ties (1951) as a starting point for this work. Durkheim argued that being socially connected is imperative to achieving personal well-being. In fact, he argued that a person who has no close relationships is likely a person who is at risk for suicide. It is those relationships that give a person meaning in their life. In other words, suicide tends to be higher among those who become disconnected from society. What is interesting about that notion is when people are asked to describe the basic necessities for life—people will most often say food, water, and shelter, but seldom do people list “close relationships” in the top three. Yet time and time again, research has demonstrated that we are social creatures and we need others to survive and thrive. Another way of thinking about it is that close relationships are the psychological equivalent of food and water; in other words, these relationships are necessary for survival. Baumeister and Leary (1995) maintain that humans have basic needs and one of them is the need to belong; these needs are what makes us human and give a sense of purpose and identity to our lives (Brissette, Cohen, & Seeman, 2000; Ryff, 1989).

Given that close relationships are so vital to well-being, it is important to ask how interpersonal relationships begin. What makes us like or love one person but not another? Why is it that when bad things happen, we frequently want to talk to our friends or family about the situation? Though these are difficult questions to answer because relationships are complicated and unique, this chapter will examine how relationships begin; the impact of technology on relationships; and why coworkers, acquaintances, friends, family, and intimate partners are so important in our lives.



## Attraction: The Start of Friendship and Love

Why do some people hit it off immediately? Or decide that the friend of a friend was not likable? Using scientific methods, psychologists have investigated factors influencing attraction and have identified a number of variables, such as similarity, proximity (physical or functional), familiarity, and reciprocity, that influence with whom we develop relationships.

### Proximity

Often we “stumble upon” friends or romantic partners; this happens partly due to how close in proximity we are to those people. Specifically, **proximity** or physical nearness has been found to be a significant factor in the development of relationships. For example, when college students go away to a new school, they will make friends consisting of classmates, roommates, and teammates (i.e., people close in proximity). Proximity allows people the opportunity to get to know one other and discover their similarities—all of which can result in a friendship or intimate relationship. Proximity is not just about geographic distance, but rather **functional distance**, or the frequency with which we cross paths with others. For example, college students are more likely to become closer and develop relationships with people on their dorm-room floors because they see them (i.e., cross paths) more often than they see people on a different floor. How does the notion of proximity apply in terms of online relationships? Deb Levine (2000) argues that in terms of developing online relationships and attraction, functional distance refers to being at the same place at the same time in a virtual world (i.e., a chat room or Internet forum)—crossing virtual paths.

## Familiarity

One of the reasons why proximity matters to attraction is that it breeds familiarity; people are more attracted to that which is familiar. Just being around someone or being repeatedly exposed to them increases the likelihood that we will be attracted to them. We also tend to feel safe with familiar people, as it is likely we know what to expect from them. Dr. Robert Zajonc (1968) labeled this phenomenon the **mere-exposure effect**. More specifically, he argued that the more often we are exposed to a stimulus (e.g., sound, person) the more likely we are to view that stimulus positively. Moreland and Beach (1992) demonstrated this by exposing a college class to four women (similar in appearance and age) who attended different numbers of classes, revealing that the more classes a woman attended, the more familiar, similar, and attractive she was considered by the other students.

There is a certain comfort in knowing what to expect from others; consequently research suggests that we like what is familiar. While this is often on a subconscious level, research has found this to be one of the most basic principles of attraction (Zajonc, 1980). For example, a young man growing up with an overbearing mother may be attracted to other overbearing women not because he likes being dominated but rather because it is what he considers normal (i.e., familiar).

## Similarity

When you hear about couples such as Sandra Bullock and Jesse James, or Kim Kardashian and Kanye West, do you shake your head thinking “this won’t last”? It is probably because they seem so different. While many make the argument that opposites attract, research has found that is generally not true; similarity is key. Sure, there are times when couples can appear fairly different, but overall we like others who are like us. Ingram and Morris (2007) examined this

phenomenon by inviting business executives to a cocktail mixer, 95% of whom reported that they wanted to meet new people. Using electronic name tag tracking, researchers revealed that the executives did not mingle or meet new people; instead, they only spoke with those they already knew well (i.e., people who were similar).

When it comes to marriage, research has found that couples tend to be very similar, particularly when it comes to age, social class, race, education, physical attractiveness, values, and attitudes (McCann Hamilton, 2007; Taylor, Fiore, Mendelsohn, & Cheshire, 2011). This phenomenon is known as the matching hypothesis (Feingold, 1988; Mckillip & Redel, 1983). We like others who validate our points of view and who are similar in thoughts, desires, and attitudes.

## Reciprocity

Another key component in attraction is reciprocity; this principle is based on the notion that we are more likely to like someone if they feel the same way toward us. In other words, it is hard to be friends with someone who is not friendly in return. Another way to think of it is that relationships are built on give and take; if one side is not reciprocating, then the relationship is doomed. Basically, we feel obliged to give what we get and to maintain equity in relationships. Researchers have found that this is true across cultures (Gouldner, 1960).

## Friendship

Research has found that close friendships can protect our mental and physical health when times get tough. For example, Adams, Santo, and Bukowski (2011) asked fifth- and sixth-graders to record their experiences and self-worth, and to provide saliva samples for 4 days. Children whose best friend was present during or shortly after a negative experience had significantly lower levels of

the stress hormone cortisol in their saliva compared to those who did not have a best friend present. Having a best friend also seemed to protect their feelings of self-worth. Children who did not identify a best friend or did not have an available best friend during distress experienced a drop in self-esteem over the course of the study.

## Workplace friendships

Friendships often take root in the workplace, due to the fact that people are spending as much, or more, time at work than they are with their family and friends (Kaufman & Hotchkiss, 2003). Often, it is through these relationships that people receive mentoring and obtain social support and resources, but they can also experience conflicts and the potential for misinterpretation when sexual attraction is an issue. Indeed, Elsesser and Peplau (2006) found that many workers reported that friendships grew out of collaborative work projects, and these friendships made their days more pleasant.

In addition to those benefits, Riordan and Griffeth (1995) found that people who worked in an environment where friendships could develop and be maintained were more likely to report higher levels of job satisfaction, job involvement, and organizational commitment, and they were less likely to leave that job. Similarly, a Gallup poll revealed that employees who had “close friends” at work were almost 50% more satisfied with their jobs than those who did not (Armour, 2007).

## Internet friendships

What influence does the Internet have on friendships? It is not surprising that people use the Internet with the goal of meeting and making new friends (Fehr, 2008; McKenna, 2008). Researchers have wondered if the issue of not being face-to-face reduces the authenticity of relationships, or if the Internet really

allows people to develop deep, meaningful connections. Interestingly, research has demonstrated that virtual relationships are often as intimate as in-person relationships; in fact, Bargh and colleagues found that online relationships are sometimes more intimate (Bargh et al., 2002). This can be especially true for those individuals who are more socially anxious and lonely—such individuals who are more likely to turn to the Internet to find new and meaningful relationships (McKenna, Green, & Gleason, 2002). McKenna et al. (2002) suggest that for people who have a hard time meeting and maintaining relationships, due to shyness, anxiety, or lack of face-to-face social skills, the Internet provides a safe, nonthreatening place to develop and maintain relationships. Similarly, Penny Benford (2008) found that for high-functioning autistic individuals, the Internet facilitated communication and relationship development with others, which would have been more difficult in face-to-face contexts, leading to the conclusion that Internet communication could be empowering for those who feel frustrated when communicating face to face.

## Love

Is all love the same? Are there different types of love? Examining these questions more closely, Robert Sternberg's (2004; 2007) work has focused on the notion that all types of love are comprised of three distinct areas: intimacy, passion, and commitment. Intimacy includes caring, closeness, and emotional support. The passion component of love is comprised of physiological and emotional arousal; these can include physical attraction, emotional responses that promote physiological changes, and sexual arousal. Lastly, commitment refers to the cognitive process and decision to commit to love another person and the willingness to work to keep that love over the course of your life. The elements involved in intimacy (caring, closeness, and emotional support) are generally found in all types of close relationships—for example, a mother's love for a child or the love that friends share. Interestingly, this is not true for passion.

Passion is unique to romantic love, differentiating friends from lovers. In sum, depending on the type of love and the stage of the relationship (i.e., newly in love), different combinations of these elements are present.

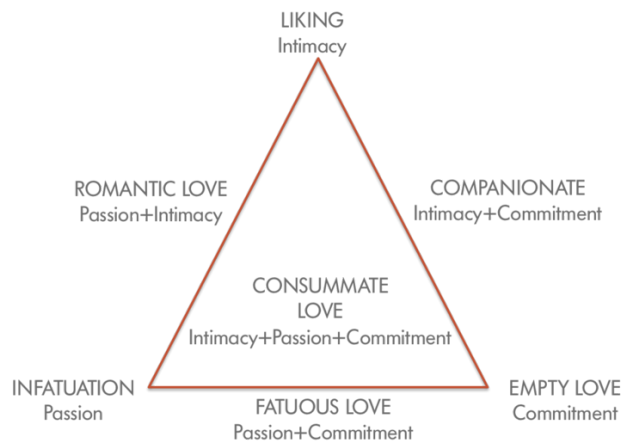


Figure 1: Triangular Theory of Love. Adapted from Wikipedia Creative Commons, 2013

Taking this theory a step further, anthropologist Helen Fisher explained that she scanned the brains (using fMRI) of people who had just fallen in love and observed that their brain chemistry was “going crazy,” similar to the brain of an addict on a drug high (Cohen, 2007). Specifically, serotonin production increased by as much as 40% in newly in-love individuals. Further, those newly in love tended to show obsessive-compulsive tendencies. Conversely, when a person experiences a breakup, the brain processes it in a similar way to quitting a heroin habit (Fisher, Brown, Aron, Strong, & Mashek, 2009). Thus, those who believe that breakups are physically painful are correct! Another interesting point is that long-term love and sexual desire activate different areas of the brain. More specifically, sexual needs activate the part of the brain that is particularly sensitive to innately pleasurable things such as food, sex, and drugs (i.e., the striatum—a rather simplistic reward system), whereas love requires conditioning—it is more like a habit. When sexual needs are rewarded consistently, then love can develop. In other words, love grows out of positive rewards, expectancies, and habit (Cacioppo, Bianchi-Demicheli, Hatfield &

Rapson, 2012).

## Love and the Internet

The ways people are finding love has changed with the advent of the Internet. In a poll, 49% of all American adults reported that either themselves or someone they knew had dated a person they met online (Madden & Lenhart, 2006). As Finkel and colleagues (2007) found, social networking sites, and the Internet generally, perform three important tasks. Specifically, sites provide individuals with access to a database of other individuals who are interested in meeting someone. Dating sites generally reduce issues of proximity, as individuals do not have to be close in proximity to meet. Also, they provide a medium in which individuals can communicate with others. Finally, some Internet dating websites advertise special matching strategies, based on factors such as personality, hobbies, and interests, to identify the “perfect match” for people looking for love online. In general, scientific questions about the effectiveness of Internet matching or online dating compared to face-to-face dating remain to be answered.

It is important to note that social networking sites have opened the doors for many to meet people that they might not have ever had the opportunity to meet; unfortunately, it now appears that the social networking sites can be forums for unsuspecting people to be duped. In 2010 a documentary, *Catfish*, focused on the personal experience of a man who met a woman online and carried on an emotional relationship with this person for months. As he later came to discover, though, the person he thought he was talking and writing with did not exist. As Dr. Aaron Ben-Zeév stated, online relationships leave room for deception; thus, people have to be cautious.

# Social Support



When bad things happen, it is important for people to know that others care about them and can help them out. Unsurprisingly, research has found that this is a common thread across cultures (Markus & Kitayma, 1991; Triandis, 1995) and over time (Reis, Sheldon, Gable, Roscoe, & Ryan, 2000); in other words, social support is the active ingredient that makes our relationships particularly beneficial. But what is social support? One way of thinking about social support is that it consists of three discrete conceptual components.

## Perceived Social Support

Have you ever thought that when things go wrong, you know you have friends/family members that are there to help you? This is what psychologists call **perceived social support** or “a psychological sense of support” (Gottlieb, 1985). How powerful is this belief that others will be available in times of need? To examine this question, Dr. Arnberg and colleagues asked 4,600 survivors of the tragic 2004 Indian Ocean (or Boxing Day) Tsunami about their perception of social support provided by friends and family after the event. Those who experienced the most amount of stress found the most benefit from just knowing others were available if they needed anything (i.e., perceived support). In other words, the magnitude of the benefits depended on the extent of the stress, but the bottom line was that for these survivors, knowing that they had



people around to support them if they needed it helped them all to some degree.

Perceived support has also been linked to well-being. Brannan and colleagues (2012) found that perceived support predicted each component of well-being (high positive affect, low negative affect, high satisfaction with life) among college students in Iran, Jordan, and the United States. Similarly, Cohen and McKay (1984) found that a high level of perceived support can serve as a buffer against stress. Interestingly enough, Dr. Cohen found that those with higher levels of social support were less likely to catch the common cold. The research is clear—perceived social support increases happiness and well-being and makes our lives better in general (Diener & Seligman, 2002; Emmons & Colby, 1995).

## Received Social Support

**Received support** is the actual receipt of support or helping behaviors from others (Cohen & Wills, 1985). Interestingly, unlike perceived support, the benefits of received support have been beset with mixed findings (Stroebe & Stroebe, 1996). Similar to perceived support, receiving support can buffer people from stress and positively influence some individuals—however, others might not want support or think they need it. For example, dating advice from a friend may be considered more helpful than such advice from your mom! Interestingly, research has indicated that regardless of the support-provider's intentions, the support may not be considered as helpful to the person receiving the support if it is unwanted (Dunkel-Schetter, Blasband, Feinstein, & Herbert, 1992; Cutrona, 1986). Indeed, mentor support was viewed negatively by novice ESOL teachers (those teaching English as a second language in other countries; Brannan & Bleistein, 2012). Yet received support from family was perceived as very positive—the teachers said that their family members cared enough to ask about their jobs and told them how proud they were. Conversely, received

mentor support did not meet teachers' needs, instead making them feel afraid and embarrassed to receive mentor support.

## Quality or Quantity?

With so many mixed findings, psychologists have asked whether it is the quality of social support that matters or the quantity (e.g., more people in my **support network**). Interestingly, research by Friedman and Martin (2011) examining 1,500 Californians over 8 decades found that while quality does matter, individuals with larger social networks lived significantly longer than those with smaller networks. This research suggests we should count the number of our friends / family members—the more, the better, right? Not necessarily: Dunbar (1992; 1993) argued that we have a cognitive limit with regard to how many people with whom we can maintain social relationships. The general consensus is about 150—we can only “really” know (maintain contact and relate to) about 150 people. Finally, research shows that diversity also matters in terms of one’s network, such that individuals with more diverse social networks (i.e., different types of relationships including friends, parents, neighbors, and classmates) were less likely to get the common cold compared to those with fewer and less diverse networks (Cohen, Doyle, Turner, Alper, & Skoner, 2003). In sum, it is important to have quality relationships as well as quantity—and as the Beatles said, “all you need is love—love is all you need.”

## Outside Resources

**Movie: Official Website of Catfish the Movie**

<http://www.iamrogue.com/catfish>

**Video: Ted Talk from Helen Fisher on the brain in love**

[http://www.ted.com/talks/helen\\_fisher\\_studies\\_the\\_brain\\_in\\_love.html](http://www.ted.com/talks/helen_fisher_studies_the_brain_in_love.html)

**Web: Groundbreaking longitudinal study on longevity from Howard S. Friedman and Leslie R. Martin**

<http://www.howardsfriedman.com/longevityproject/>

## Discussion Questions

1. What is more important—perceived social support or received social support? Why?
2. We understand how the Internet has changed the dating scene—how might it further change how we become romantically involved?
3. Can you love someone whom you have never met?
4. Do you think it is the quality or quantity of your relationships that really matters most?

# Vocabulary

## **Functional distance**

The frequency with which we cross paths with others.

## **Mere-exposure effect**

The notion that people like people/places/things merely because they are familiar with them.

## **Perceived social support**

A person's perception that others are there to help them in times of need.

## **Proximity**

Physical nearness.

## **Received social support**

The actual act of receiving support (e.g., informational, functional).

## **Support support network**

The people who care about and support a person.

## Reference List

- Adams, R. E., Santo, J., & Bukowski, W. M. (2011). The presence of a best friend buffers the effects of negative experiences. *Developmental Psychology*, 47(6), 1786–1791. doi:10.1037/a0025401
- Aristotle. (n.d.). In poverty and other misfortunes of life.... BrainyQuote.com. Retrieved July 25, 2013, from <http://www.brainyquote.com/quotes/quotes/a/aristotle148482.html>
- Armour, S. (2007, August 2). Friendships and work: A good or bad partnership? USA Today. Retrieved from [http://usatoday30.usatoday.com/money/workplace/2007-08-01-work-friends\\_N.htm](http://usatoday30.usatoday.com/money/workplace/2007-08-01-work-friends_N.htm)
- Bargh, J. A., McKenna, K. Y. A, & Fitsimons, G. G. (2002). Can you see the real me? Activation and expression of the true self on the Internet. *Journal of Social Issues*, 58, 33–48.
- Baumeister, R. & Leary, M. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, 117(3), 497–529.
- Benford, P. (2008). The use of Internet-based communication by people with autism (Doctoral dissertation, University of Nottingham).
- Brannan, D., Biswas-Diener, R., Mohr, C. D., Mortazavi, S., & Stein, N. (2012). Friends and family, a cross-cultural investigation of social support and subjective well-being. *Journal of Positive Psychology*, 8(1), 65–75.
- Brannan, D., & Bleisten, T. (2012). Novice ESOL teachers' perceptions of social

support and self-efficacy. *TESOL Quarterly*, 46, 519–541.

Brissette, I., Cohen, S., & Seeman, T. E. (2000). Measuring social integration and social networks. In S. Cohen, L. Underwood, & B. Gottlieb (Eds.), *Measuring and intervening in social support*, (pp. 53–85), New York, NY: Oxford University Press.

Cacioppo, S., Bianchi-Demicheli, F., Hatfield, E., & Rapson, R. L. (2012). Social neuroscience of love. *Clinical Neuropsychiatry*, 9(1), 3–13.

Cohen, E. (2007, February 15). Loving with all your ... brain. CNN.com. Retrieved July 25th, 2013, from <http://www.cnn.com/2007/HEALTH/02/14/love.science/>.

Cohen, S., Doyle, W. J., Turner, R. B., Alper, C. M., & Skoner, D. P. (2003). Sociability and susceptibility to the common cold. *Psychological Science*, 14, 389–395.

Cohen, S., & McKay, G. (1984). Social support, stress, and the buffering hypothesis: A theoretical analysis. In A. Baum, J. E. Singer, & S. E. Taylor (Eds.), *Handbook of psychology and health* (pp. 253–267), Volume IV. Hillsdale, NJ: Erlbaum.

Cohen, S., & Wills, T. A. (1985). Stress, social support and the buffering hypothesis. *Psychological Bulletin*, 98, 310–357.

Cutrona, C. (1986). Behavioral manifestations of social support: A microanalytic investigation. *Journal of Personality and Social Psychology*, 51(1), 201–208.

Diener, E. & Seligman, M. E. P. (2002). Very happy people. *Psychological Science*, 13, 81–84.

Dunbar, R. I. M. (1993). Coevolution of neocortical size, group size and language in humans. *Behavioral and Brain Sciences*, 16, 681–735.

Dunbar, R. I. M. (1992). Neocortex size as a constraint on group size in primates. *Journal of Human Evolution*, 22, 469–493. doi:10.1016/0047-2484(92)90081-J

Dunkel-Schetter, C., Blasband, D., Feinstein, L., & Herbert, T. (1992). Elements of supportive interactions: When are attempts to help effective? In Spacapan, S. & Oskamp, S. (Eds.) *Helping and being helped: Naturalistic studies*. (pp. 83–114). Thousand Oaks, CA, US: Sage Publications, Inc.

Durkheim, E. (1951). *Suicide: A study in sociology*. Ornstein, R. & Swencionis, C. (Eds). New York, NY: Free Press.

Elsesser, L., & Peplau, L. A. (2006). The glass partition: Obstacles to cross-sex friendships at work. *Human Relations*, 59(8), 1077–1100.

Emmons, R. A. & Colby, P. M. (1995). Emotional conflict and well-being relation to perceived availability, daily utilization, and observer reports of social support. *Journal of Personality and Social Psychology*, 68, 947–959.

Fehr, B. (2008). Friendship formation. In S. Sprecher, A. Wenzel, & J. Harvey (Eds.), *Handbook of Relationship Initiation* (pp. 29–54). New York, NY: Psychology Press.

Feingold, Alan (1988). Matching for attractiveness in romantic partners and same-sex friends: A meta-analysis and theoretical critique. *Psychological Bulletin* 104, 226–235.



Finkel, E. J., Burnette J. L., & Scissors L. E. (2007). Vengefully ever after: Destiny beliefs, state attachment anxiety, and forgiveness. *Journal of Personality and Social Psychology*, 92, 871–886.

Fisher, H. E., Brown, L. L., Aron, A., Strong, G., & Mashek, D. (2009). Reward, addiction, and emotion regulation systems associated with rejection in love. *Journal of Neurophysiology*, 104, 51–60.

Friedman, H. S. & Martin, L. R. (2011). *The Longevity Project: Surprising Discoveries for Health and Long Life from the Landmark Eight-Decade Study*. New York, NY: Hudson Street Press.

Gottlieb, B. H. (1985). Social support and community mental health. In S. Cohen & S. Syme (Eds.), *Social Support and Health* (pp. 303–326). Orlando, FL: Academic Press.

Gouldner, A. W. (1960). The norm of reciprocity: A preliminary statement. *American Sociological Review*, 25, 169–186.

Ingram, P., & Morris, M. W. (2007). Do people mix at mixers? Structure, homophily, and the “life of the party.” *Administrative Science Quarterly*, 52, 558–585.

Kaufman, B. E., & Hotchkiss, J. L. 2003. *The economics of labor markets* (6th ed.). Mason, OH: Thomson South-Western.

Levine, D. (2000). Virtual attraction: What rocks your boat. *Cyberpsychology & Behavior*, 3(4), 565–573. doi:10.1089/109493100420179

Madden, M. & Lenhart, A. (2006). Americans who are seeking romance use the

Internet to help them in their search, but there is still widespread public concern about safety of online dating. Pew/Internet and American Life Project. Retrieved from <http://www.pewinternet.org/Reports/2006/OnlineDating.aspx>

Markus, H., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review*, 98, 224–253.

McCann Hamilton, V. (2007) *Human relations: The art and science of building effective relationships*. Upper Saddle River, NJ: Pearson Prentice Hall.

McKenna, K. A. (2008) MySpace or your place: Relationship initiation and development in the wired and wireless world. In S. Sprecher, A. Wenzel, & J. Harvey (Eds.), *Handbook of relationship initiation* (pp. 235–247). New York, NY: Psychology Press.

McKenna, K. Y. A., Green, A. S., & Gleason, M. E. J. (2002). Relationship formation on the Internet: What's the big attraction? *Journal of Social Issues*, 58, 9–31.

Mckillip, J., & Redel, S. L. (1983). External validity of matching on physical attractiveness for same- and opposite-sex couples. *Journal of Applied Social Psychology*, 13, 328–337.

Moreland, R. L., & Beach, S. R. (1992). Exposure effects in the classroom: The development of affinity among students. *Journal of Experimental Social Psychology*, 28, 255–276.

Reis, H. T., Sheldon, K. M., Gable, S. L., Roscoe, R., & Ryan, R. (2000). Daily well being: The role of autonomy, competence, and relatedness. *Personality and*

Social Psychology Bulletin, 26, 419–435.

Riordan, C. M., & Griffeth, R. W. (1995). The opportunity for friendship in the workplace: An underexplored construct. *Journal of Business and Psychology*, 10, 141–154.

Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology*, 57 (6), 1069–1081.

Sternberg, R. J. (2007). Triangulating Love. In Oord, T. J. *The Altruism Reader: Selections from Writings on Love, Religion, and Science* (pp 331-347). West Conshohocken, PA: Templeton Foundation.

Sternberg, R. J. (2004). A Triangular Theory of Love. In Reis, H. T.; Rusbult, C. E. *Close Relationships* (pp: 528-276). New York, NY: Psychology Press.

Stroebe, W., & Stroebe, M. (1996). The social psychology of social support. In *Social psychology: Handbook of basic principles* (pp. 597–621). New York, NY: Guilford Press.

Taylor, L. S., Fiore, A. T., Mendelsohn, G. A., & Cheshire, C. (2011). "Out of my league": A real-world test of the matching hypothesis. *Personality and Social Psychology Bulletin*, 37, 942–955.

Triandis, H. C. (1995). *Individualism and collectivism*. Boulder, CO: Westview.


Triangular Theory of Love. (n.d.). In Wikipedia. Retrieved April 3, 2013, from [http://en.wikipedia.org/wiki/Triangular\\_theory\\_of\\_love](http://en.wikipedia.org/wiki/Triangular_theory_of_love)

Zajonc, R. B. (1980). Feeling and thinking: Preferences need no inferences. *American Psychologist*, 35(2), 151–175.

Zajonc, R. B. (1968) Attitudinal effects of mere exposure. *Journal of Personality and Social Psychology*, 9, 1–27.



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## **Topic 4**

### Metas y Logros

# Motives and Goals

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N O B A

## **Abstract**

This chapter provides an overview of the main theories and findings on goals and motivation. We address the origins, manifestations, and types of goals, and the various factors that influence motivation in goal pursuit. We further address goal conflict and, specifically, the exercise of self-control in protecting long-term goals from momentary temptations.



# Learning Objectives

- Define the basic terminology related to goals, motivation, self-regulation, and self-control.
- Describe the antecedent and consequences of goal activation.
- Describe the factors that influence motivation in the course of goal pursuit.
- Explain the processes underlying goal activation, self-regulation, and self-control.
- Give examples of goal activation effects, self-regulation processes, and self-control processes.

## Introduction

Whether your goal is to pass a course, eat healthily, or land on Mars, you need a certain level of motivation to stay on course and achieve it. A **goal** is the cognitive representation of a desired state (Fishbach & Ferguson 2007; Kruglanski, 1996), whereas **motivation** refers to the psychological driving force that enables action in the pursuit of that goal (Lewin, 1935). The desired end state of a goal can be clearly defined (e.g., step on the surface of Mars), or more abstract and representing a motivational state that is never fully completed (e.g., eat healthily). Motivation can stem from the benefits associated with the process of pursuing a goal (**intrinsic** motivation). For example, you might be driven by the desire to have a fulfilling experience while working on your Mars mission. Motivation can also come from the benefits associated with achieving a goal such as fame and fortune (**extrinsic** motivation) (Deci & Ryan, 1985).

Social psychologists recognize that goal pursuit and motivation do not depend solely on an individual's personality but rather are products of personal characteristics and situational factors. Indeed, cues in a person's immediate environment—including images, words, sounds, and the presence of other people—can activate or **prime** a goal. This activation can be **conscious**, such that the person is aware of environmental cues that made her want to pursue a goal (i.e., why?) and the resulting goal-directed judgments and behaviors (i.e., how?). However, this activation can also occur outside a person's awareness and lead to **nonconscious** goal pursuit. In this case, the person is unaware of why she is pursuing a goal or does not even realize that she is pursuing a goal.

In this chapter we review key aspects of goals and motivation. We first discuss the origins and manifestation of goals. We then review factors that influence individuals' motivation in the course of pursuing a goal such as studying an 800-page book for an exam (**self-regulation**). Finally, we discuss what motivates individuals to keep following their goals when faced with other conflicting desires—for example, when a tempting opportunity to socialize on Facebook

presents itself in the course of studying for an exam (**self-control**).

## The Origins and Manifestation of Goals

### Goal Adoption

What makes you commit to a goal? Commitment stems from a sense that your goal is both valuable and attainable, such that you adopt goals that are highly likely to bring positive outcomes (the value × expectancy model) (Fishbein & Ajzen, 1974; Liberman & Förster, 2008). This process of committing to a goal can occur without much conscious deliberation. For example, people infer value and attainability and become committed to a goal because they previously engaged in behaviors consistent with that goal. Indeed, people often learn about themselves in the same way they learn about other people: by observing their own behaviors and drawing inferences about their own preferences. Thus, after going through a kickboxing class, you might infer from your efforts that you are indeed committed to staying physically fit (Fishbach, Zhang, & Koo, 2009).

### Goal Priming

What makes people adhere to a goal in any given context? Cues in the immediate environment (e.g., objects, images, words, and sounds) can influence the pursuit of goals to which people are already committed (Bargh, 1990; Custers, Aarts, Oikawa, & Elliot, 2009; Förster, Liberman, & Friedman, 2007). In memory, goals are organized in associative networks, which connect each goal to corresponding **means** (i.e., activities or objects that contribute to goal attainment; Kruglanski et al., 2002). For example, the goal to stay physically fit may be associated with several means, including the nearby gym, one's bicycle,

or a training partner. Cues related to the goal or means will activate or prime that goal pursuit. For example, the presence of one's training partner or the word "workout" in a puzzle can activate the goal of staying physically fit and, hence, increase a person's motivation to exercise. Soon after goal priming, the motivation to act on a goal peaks, and then slowly declines after some delay, as the person moves away from the prime or after she pursues the goal (Bargh, Gollwitzer, Lee-Chai, Barndollar, & Trötschel, 2001).

## Consequences of Goal Activation

The activation of a goal and accompanying increase in motivation can influence many aspects of behavior and judgment, including how people perceive, evaluate, and feel about the world around them. Indeed, motivational states can alter something as fundamental as visual perception. Thus, Balci and Dunning (2006) found research participants automatically identified an ambiguous figure (e.g., 13) as a letter (B) or number (13) depending on whether seeing a letter or a number lead to a positive outcome within the experimental context.

Goals can also exert a strong influence on how people evaluate the objects (and people) around them. When pursuing a goal such as quenching one's thirst, people evaluate goal-relevant objects (e.g., a glass) more positively than objects that are not relevant to the goal (e.g., pencil) and more positively than people who are not pursuing the goal (Ferguson & Bargh, 2004). Finally, priming a goal can lead to behaviors consistent with that goal without awareness of the source of this motivation. For example, after seeing words related to achievement, research participants automatically performed better on a subsequent achievement test (Bargh & Chartrand, 1999; Srull & Wyer, 1979).

This section reviewed the antecedents and consequences of goal-directed behavior. In the next section, we discuss the processes that influence thoughts, feelings, and effort investment in the course of goal pursuit.

## Self-Regulation in Goal Pursuit

Self-regulation refers to the processes through which individuals alter their perceptions, feelings, and actions in the course of pursuing a goal. In this section, we review the main theories and findings on self-regulation.

### From Deliberation to Implementation

Self-regulation involves two basic stages associated with two distinct mindsets: deciding which of many potential goals to pursue at a given point in time (**deliberative** phase) and planning specific actions related to the selected goal (**implemental** phase). The deliberative phase elicits a mindset that fosters an effective choice of goals by promoting open-mindedness and realism about available options, but hinders action initiation. On the other hand, the implemental phase corresponds to a mindset conducive to the effective implementation of a goal through immediate action, but often leads to closed-mindedness and unrealistically positive expectations about the chosen goal (Gollwitzer, Heckhausen, & Steller, 1990; Kruglanski et al., 2000; Thaler & Shefrin, 1981).

## Regulation of Ought- and Ideals-Goals

In addition to two phases in goal pursuit, research also distinguishes between two distinct self-regulatory orientations in pursuing a goal: **prevention** and **promotion**. These orientations differ across individuals (chronic regulatory focus) and situations (momentary regulatory focus, Higgins, 1997). A prevention focus emphasizes safety, responsibility, and security needs, and views goals as “oughts.” This self-regulatory focus leads to a vigilant strategy aimed at avoiding losses (the presence of negatives) and approaching nonlosses (the absence of negatives). On the other hand, a promotion focus views goals as “ideals” and emphasizes hopes, accomplishments, and advancement needs, which leads to the adoption of an eager strategy concerned with approaching gains (the presence of positives) and avoiding nongains (the absence of positives). Therefore, emphasizing potential losses will motivate individuals with a prevention focus, whereas emphasizing potential gains will motivate individuals with a promotion focus.

## A Cybernetic Process of Self-Regulation

Self-regulation depends on feelings that arise from comparing actual **progress** to expected progress. During goal pursuit, an individual calculates the discrepancy between her current state (i.e., all goal-related action completed so far) and her desired end state, and then directs action toward closing that gap (Miller, Galanter, & Pribram, 1960; Powers, 1973). In this cybernetic process of self-regulation, a higher-than-expected rate of closing the discrepancy creates a signal in the form of positive feelings, which makes individuals “coast” or reduce their efforts on the focal goal and focus on other goals. By contrast, a lower-than-expected rate of closing the gap elicits negative feelings, which leads to greater effort investment on the focal goal (Carver & Scheier, 1998).

## Highlighting One Goal or Balancing Between Goals

Completed goal actions can also influence self-regulation through the meanings people assign to these actions. Completed actions can signal commitment or progress with respect to the goal (see dynamics of self-regulation framework; Fishbach et al., 2009). **Commitment** results from the perceived value and attainability of a goal, whereas progress describes an individual's perception of reducing the discrepancy between her current and desired states in goal pursuit (i.e., cybernetic process). When people interpret their previous actions as a sign of commitment to a goal, they tend to **highlight** the pursuit of that goal by prioritizing it and putting more effort into it. However, when people interpret their previous actions as a sign of progress, they tend to **balance** between this goal and other goals and put less effort into the focal goal. For example, when buying a product on sale signals to you that you are committed to saving, you will continue to behave in a financially responsible manner. However, when you take the same action as evidence of progress toward the saving goal, it might justify your desire to splurge on a subsequent purchase. Several factors can influence the meanings people assign to previous goal actions. For example, the more certain a person is about her commitment to a goal, the more likely she is to infer progress rather than commitment from her actions (Koo & Fishbach, 2008).

This section summarized the main drivers of self-regulation within the pursuit of a single focal goal. In many cases, however, people may want to pursue several—and often conflicting—goals at the same time. In the final section of this chapter, we look at how individuals maintain their motivation when faced with other pursuits that may be at odds with their main goal.

## Conflicting Goals and Self-Control

In the pursuit of your ordinary and extraordinary goals (e.g., stay physically or financially healthy, land on Mars), you inevitably come across other goals (e.g., live a little, or a lot) that might get in the way of your lofty ambitions. In such situations, you must exercise self-control to stay on course. Self-control is the capacity to control impulses, emotions, desires, and actions in order to resist a temptation (e.g., going on a shopping spree) and protect a valued goal (e.g., stay financially sound). As such, self-control is self-regulation in contexts involving a clear trade-off between long-term interests (e.g., health, financial, or Martian) and some form of immediate gratification (Fishbach & Converse, 2010; Rachlin, 2000; Read, Loewenstein, & Rabin, 1999; Thaler & Shefrin, 1981). For example, whereas reading each page of a textbook requires self-regulation, doing so while resisting the tempting sounds of friends socializing in the next room requires self-control. This section reviews research specific to the conflicting-goal contexts that call for self-control. Self-control is both a personal characteristic that varies across individuals and a resource that diminishes after it is utilized within the individual.

### Self-Control as an Innate Ability

Mischel, Shoda, and Rodriguez (1989) identified enduring individual differences in self-control and found that this chronic capacity to postpone immediate gratification for the sake of future interests leads to greater cognitive and social competence over the course of a lifetime. In a series of lab experiments, preschoolers (4-year-olds) chose between getting a smaller treat available now in front of them (e.g., one marshmallow) or waiting as long as 15 minutes to get a better one (e.g., two marshmallows). Some children were better able to exercise self-control than others, by resisting the temptation to take the available treat and waiting for the better treat. Ten years later, these researchers



found that children who were able to wait longer in the experiment performed better academically and socially and had better psychological coping skills as adolescents.

## Self-Control as a Limited Resource

Beyond personal characteristics, the ability to exercise self-control can fluctuate from one context to the next. In particular, previous exercise of self-control drains individuals of the limited physiological and psychological resources required to continue the pursuit of a goal. **Ego-depletion** refers to the exhaustion of such resources following the completion of effortful self-control tasks and reduces individuals' capacity to exert more self-control subsequently within the same domain or within a different goal context (Baumeister, Bratslavsky, Muraven, & Tice, 1998; Vohs & Heatherton, 2000). In the study by Baumeister et al. (1998), research participants depleted after forcing themselves to eat radishes instead of tempting chocolates were subsequently less persistent at an unsolvable puzzle task than other participants who had not had to resist cookies by exerting self-control.

## A Prerequisite to Self-Control: Identification

Although factors such as resources and personal characteristics contribute to the successful exercise of self-control, identifying the self-control conflict inherent to a particular situation is an important—and often overlooked—prerequisite. Specifically, the successful pursuit of a goal in the face of temptation requires that an individual first identifies that she is having impulses that need to be controlled. However, individuals often fail to identify self-control conflicts because many everyday temptations seem to have very minimal negative consequences: One bowl of ice cream is unlikely to destroy a person's health, but what about 200 bowls of ice cream over the course of a few months?

People are more likely to identify a self-control conflict and exercise self-control when they think of a choice as part of a broader pattern of repeated behavior rather than as one isolated choice. Indeed, when considering broader decision patterns, consistent temptations become more problematic for long-term interests (Rachlin, 2000; Read, Loewenstein, & Kalyanaraman, 1999). Moreover, conflict identification is more likely if people see their current choices as similar to their future choices, in a dynamic of highlighting.

## Self-Control Processes: Counteracting Temptation

The protection of a valued goal involves several cognitive and behavioral strategies ultimately aimed at “counteracting” the pull of temptations and pushing oneself toward goal-related alternatives (Fishbach & Trope, 2007). One such cognitive process involves decreasing the value of temptations but increasing of the value of goal-consistent objects or actions. For example, health-conscious individuals might evaluate a sugary treat as less appealing than a fruit in order to direct their choice toward the latter. Other behavioral strategies include precommitment to pursue goals and forgo temptation (e.g., leaving one’s credit card at home before going to the mall), establishing rewards for goals but penalties for temptations, or physically approaching goals and distancing the self from temptations (e.g., pushing away a dessert plate). These self-control processes benefit individuals’ long-term interest consciously or without conscious awareness. Thus, at times, individuals automatically activate goal-related thoughts in response to temptation and inhibit temptation-related thoughts in the presence of goal cues (Fishbach, Friedman, & Kruglanski, 2003).

## Conclusion

In this chapter, we adopted a social-cognitive approach to review some of the main theories and findings on goals and motivation. We described the principles of goal priming and how goals influence perceptions, feelings, and actions. We then summarized the principles of self-regulation, including phases, orientations, and fluctuations in the course of goal pursuit. Finally, we discussed key research on self-control, including the antecedents and processes involved in overcoming temptation.

## Discussion Questions

1. What is the difference between goal and motivation?
2. What is the difference between self-regulation and self-control?
3. How do positive and negative feelings inform goal pursuit in a cybernetic self-regulation process?
4. Describe the characteristics of the deliberative mindset that allows individuals to decide between different goals. How might these characteristics hinder the implemental phase of self-regulation?
5. You just read a chapter on “Goals and Motivation,” and you believe it is a sign of commitment to the goal of learning about social psychology. Define commitment in this context. How would interpreting your efforts as a sign of commitment influence your motivation to read more about social psychology? By contrast, how would interpreting your efforts as a sign of progress influence your motivation to read more?
6. Mel and Alex are friends. Mel has a prevention focus self-regulatory orientation, whereas Alex has a promotion focus. They are both training for a marathon and are looking for motivational posters to hang in their respective apartments. While shopping, they find a poster with the following Confucius quote: “The will to win, the desire to succeed, the urge to reach your full potential ... These are the keys that will unlock the door to personal excellence.” Who is this poster more likely to help stay motivated for the marathon (Mel or Alex)? Why? Find or write a quote that might help the other friend.

7. Give an example in which an individual fails to exercise self-control. What are some factors that can cause such a self-control failure?

# Vocabulary

## **Balancing between goals**

Shifting between a focal goal and other goals or temptations by putting less effort into the focal goal—usually with the intention of coming back to the focal goal at a later point in time.

## **Commitment**

The sense that a goal is both valuable and attainable

## **Conscious goal activation**

When a person is fully aware of contextual influences and resulting goal-directed behavior.

## **Deliberative phase**

The first of the two basic stages of self-regulation in which individuals decide which of many potential goals to pursue at a given point in time.

## **Ego-depletion**

The exhaustion of physiological and/or psychological resources following the completion of effortful self-control tasks, which subsequently leads to reduction in the capacity to exert more self-control.

## **Extrinsic motivation**

Motivation stemming from the benefits associated with achieving a goal such as obtaining a monetary reward.

**Goal**

The cognitive representation of a desired state (outcome).

**Goal priming**

The activation of a goal following exposure to cues in the immediate environment related to the goal or its corresponding means (e.g., images, words, sounds).

**Highlighting a goal**

Prioritizing a focal goal over other goals or temptations by putting more effort into the focal goal.

**Implemental phase**

The second of the two basic stages of self-regulation in which individuals plan specific actions related to their selected goal.

**Intrinsic motivation**

Motivation stemming from the benefits associated with the process of pursuing a goal such as having a fulfilling experience.

**Means**

Activities or objects that contribute to goal attainment.

**Motivation**

The psychological driving force that enables action in the course of goal pursuit.

**Nonconscious goal activation**

When activation occurs outside a person's awareness, such that the person is unaware of the reasons behind her goal-directed thoughts and behaviors.

**Prevention focus**

One of two self-regulatory orientations emphasizing safety, responsibility, and security needs, and viewing goals as “oughts.” This self-regulatory focus seeks to avoid losses (the presence of negatives) and approach non-losses (the absence of negatives).

**Progress**

The perception of reducing the discrepancy between one’s current state and one’s desired state in goal pursuit.

**Promotion focus**

One of two self-regulatory orientations emphasizing hopes, accomplishments, and advancement needs, and viewing goals as “ideals.” This self-regulatory focus seeks to approach gains (the presence of positives) and avoid non-gains (the absence of positives).

**Self-control**

The capacity to control impulses, emotions, desires, and actions in order to resist a temptation and adhere to a valued goal.

**Self-regulation**

The processes through which individuals alter their emotions, desires, and actions in the course of pursuing a goal.



## Reference List

- Balcetis, E., & Dunning, D. (2006). See what you want to see: Motivational influences on visual perception. *Journal of Personality and Social Psychology*, 91(4), 612–625.
- Bargh, J. A. (1990). Conditional automaticity. *Bulletin of the Psychonomic Society*, 28(6), 486–486.
- Bargh, J. A., Gollwitzer, P. M., Lee-Chai, A., Barndollar, K., & Trötschel, R. (2001). The automated will: Nonconscious activation and pursuit of behavioral goals. *Journal of Personality and Social Psychology*, 81(6), 1014–1027.
- Bargh, J. A., & Chartrand, T. L. (1999). The unbearable automaticity of being. *American Psychologist*, 54(7), 462–479.
- Baumeister, R. F., Bratslavsky, E., Muraven, M., & Tice, D. M. (1998). Ego depletion: Is the active self a limited resource? *Journal of Personality and Social Psychology*, 74(5), 1252–1265.
- Carver, C. S., & Scheier, M. F. (1998). *On the self-regulation of behavior*. New York, NY: Cambridge University Press
- Custers, R., Aarts, H., Oikawa, M., & Elliot, A. (2009). The nonconscious road to perceptions of performance: Achievement priming augments outcome expectancies and experienced self-agency. *Journal of Experimental Social Psychology*, 45(6), 1200–1208.
- Deci, E. L., & Ryan, R. M. (1985). The general causality orientations scale—Self-determination in personality. *Journal of Research in Personality*, 19(2), 109–

134.

Ferguson, M.J., & Bargh, J.A. (2004). Liking is for doing: The effects of goal pursuit on automatic evaluation. *Journal of Personality and Social Psychology*, 87(5), 557–572.

Fishbach, A., Friedman, R. S., & Kruglanski, A. W. (2003). Leading us not unto temptation: Momentary allurements elicit overriding goal activation. *Journal of Personality and Social Psychology*, 84(2), 296–309.

Fishbach, A., Zhang, Y., & Koo, M. (2009). The dynamics of self-regulation. *European Review of Social Psychology*, 20, 15–344.

Fishbach, A., & Converse, B. A. (2010). Identifying and battling temptation. In K. D. Vohs & R. F. Baumeister (Eds.), *Handbook of self-regulation: Research, theory, and applications* (2nd ed., pp. 244–260). New York, NY: Guilford Press.

Fishbach, A., & Ferguson, M. F. (2007). The goal construct in social psychology. In A. W. Kruglanski & E. T. Higgins (Eds.), *Social psychology: Handbook of basic principles* (pp. 490–515). New York, NY: Guilford Press.

Fishbach, A. & Trope, Y., (2007). Implicit and explicit mechanisms of counteractive self-control. In J. Shah and W. Gardner (Eds.), *Handbook of motivation science* (pp. 281–294). New York, NY: Guilford Press.

Fishbein, M., & Ajzen, I. (1974). Attitudes toward objects as predictors of single and multiple behavioral criteria. *Psychological Review*, 81(1), 59–74.

Förster, J., Liberman, N., & Friedman, R. S. (2007). Seven principles of goal

activation: A systematic approach to distinguishing goal priming from priming of non-goal constructs. *Personality and Social Psychology Review*, 11(3), 211–233.

Gollwitzer, P. M., Heckhausen, H., & Steller, B. (1990). Deliberative and implemental mindsets—Cognitive tuning toward congruous thoughts and information. *Journal of Personality and Social Psychology*, 59(6), 1119–1127.

Higgins, E. T. (1997). Beyond pleasure and pain. *American Psychologist*, 52(12), 1280–1300.

Koo, M., & Fishbach, A. (2008). Dynamics of self-regulation: How (un)accomplished goal actions affect motivation. *Journal of Personality and Social Psychology*, 94(2), 183–195.

Kruglanski, A. W. (1996). Goals as knowledge structures. In P. M. Gollwitzer & J. A. Bargh (Eds.), *The psychology of action: Linking cognition and motivation to behavior* (pp. 599–618). New York, NY: Guilford Press.

Kruglanski, A. W., Shah, J. Y., Fishbach, A., Friedman, R., Chun, W. Y., & Sleeth-Keppler, D. (2002). A theory of goal systems. *Advances in Experimental Social Psychology*, 34, 331–378.

Kruglanski, A. W., Thompson, E. P., Higgins, E. T., Atash, M. N., Pierro, A., Shah, J. Y., ... et al. (2000). To “do the right thing” or to “just do it”: Locomotion and assessment as distinct self-regulatory imperatives. *Journal of Personality and Social Psychology*, 79(5), 793–815.

Lewin, K. (1935). *A dynamic theory of personality: Selected papers* (D. E. Adams & K. E. Zener, Trans). New York, NY: McGraw Hill.

- Liberman, N., & Förster, J. (2008). Expectancy, value and psychological distance: A new look at goal gradients. *Social Cognition*, 26(5), 515–533.
- Miller, G. A., Galanter, E., & Pribram, K. H. (1960). *Plans and the structure of behavior*. New York, NY: Henry Holt.
- Mischel, W., Shoda, Y., & Rodriguez, M. L. (1989). Delay of gratification in children. *Science*, 244(4907), 933–938.
- Powers, W. T. (1973). *Behavior: The control of perception*. Oxford, UK: Aldine.
- Rachlin, H. (2000). *The science of self-control*. Cambridge, MA: Harvard University Press.
- Read, D., Loewenstein, G., & Kalyanaraman, S. (1999). Mixing virtue and vice: Combining the immediacy effect and the diversification heuristic. *Journal of Behavioral Decision Making*, 12(4), 257–273.
- Read, D., Loewenstein, G., & Rabin, M. (1999). Choice bracketing. *Journal of Risk and Uncertainty*, 19(1-3), 171–197.
- Srull, T. K., & Wyer, R. S. (1979). Role of category accessibility in the interpretation of information about persons—Some determinants and implications. *Journal of Personality and Social Psychology*, 37(10), 1660–1672.
- Thaler, R. H., & Shefrin, H. M. (1981). An economic-theory of self-control. *Journal of Political Economy*, 89(2), 392–406.
- Vohs, K. D., & Heatherton, T. F. (2000). Self-regulatory failure: A resource-depletion approach. *Psychological Science*, 11(3), 249–254.





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# Self-Regulation and Conscientiousness

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N O B A

## **Abstract**

Self-regulation means changing oneself based on standards, that is, ideas of how one should or should not be. It is a centrally important capacity that contributes to socially desirable behavior, including moral behavior. Effective self-regulation requires knowledge of standards for proper behavior, careful monitoring of one's actions and feelings, and the ability to make desired changes.



# Learning Objectives

- Understand what self-regulation means and how it works.
- Understand the requirements and benefits of effective self-regulation.
- Understand differences in state (ego depletion) and trait (conscientiousness).

## Introduction

**Self-regulation** is the capacity to alter one's responses. It is broadly related to the term "self-control". The term "regulate" means to change something—but not just any change, rather change to bring it into agreement with some idea, such as a rule, a goal, a plan, or a moral principle. To illustrate, when the government regulates how houses are built, that means the government inspects the buildings to check that everything is done "up to code" or according to the rules about good building. In a similar fashion, when you regulate yourself, you watch and change yourself to bring your responses into line with some ideas about how they should be.

People regulate four broad categories of responses. They control their thinking, such as in trying to concentrate or to shut some annoying earworm tune out of their mind. They control their emotions, as in trying to cheer themselves up or to calm down when angry (or to stay angry, if that's helpful). They control their impulses, as in trying not to eat fattening food, trying to hold one's tongue, or trying to quit smoking. Last, they try to control their task performances, such as in pushing themselves to keep working when tired and discouraged, or deciding whether to speed up (to get more done) or slow down (to make sure to get it right).

## Early Work on Delay of Gratification

Research on self-regulation was greatly stimulated by early experiments conducted by Walter Mischel and his colleagues (e.g., Mischel, 1974) on the capacity to delay gratification, which means being able to refuse current temptations and pleasures to work toward future benefits. In a typical study with what later came to be called the "marshmallow test," a 4-year-old child would be seated in a room, and a favorite treat such as a cookie or marshmallow was placed on the table. The experimenter would tell the child, "I have to leave

for a few minutes and then I'll be back. You can have this treat any time, but if you can wait until I come back, you can have two of them." Two treats are better than one, but to get the double treat, the child had to wait. Self-regulation was required to resist that urge to gobble down the marshmallow on the table so as to reap the larger reward.

Many situations in life demand similar delays for best results. Going to college to get an education often means living in poverty and debt rather than getting a job to earn money right away. But in the long run, the college degree increases your lifetime income by hundreds of thousands of dollars. Very few nonhuman animals can bring themselves to resist immediate temptations so as to pursue future rewards, but this trait is an important key to success in human life.

## Benefits of Self-Control

People who are good at self-regulation do better than others in life. Follow-up studies with Mischel's samples found that the children who resisted temptation and delayed gratification effectively grew into adults who were better than others in school and work, more popular with other people, and who were rated as nicer, better people by teachers and others (Mischel, Shoda, & Peake, 1988; Shoda, Mischel, & Peake, 1990). College students with high self-control get better grades, have better close relationships, manage their emotions better, have fewer problems with drugs and alcohol, are less prone to eating disorders, are better adjusted, have higher self-esteem, and get along better with other people, as compared to people with low self-control (Tangney, Baumeister, & Boone, 2004). They are happier and have less stress and conflict (Hofmann, Vohs, Fisher, Luhmann, & Baumeister, 2013). Longitudinal studies have found that children with good self-control go through life with fewer problems, are more successful, are less likely to be arrested or have a child out of wedlock, and enjoy other benefits (Moffitt et al., 2011). Criminologists have concluded

that low self-control is a—if not the—key trait for understanding the criminal personality (Gottfredson & Hirschi, 1990; Pratt & Cullen, 2000).

Some researchers have searched for evidence that too much self-control can be bad (Tangney et al., 2004)—but without success. There is such a thing as being highly inhibited or clinically “over-controlled,” which can impair initiative and reduce happiness, but that does not appear to be an excess of self-regulation. Rather, it may stem from having been punished excessively as a child and, therefore, adopting a fearful, inhibited approach to life. In general, self-control resembles intelligence in that the more one has, the better off one is, and the benefits are found through a broad range of life activities.

## Three Ingredients of Effective Self-Regulation

For self-regulation to be effective, three parts or ingredients are involved. The first is **standards**, which are ideas about how things should (or should not) be. The second is **monitoring**, which means keeping track of the target behavior that is to be regulated. The third is the capacity to change.

Standards are an indispensable foundation for self-regulation. We already saw that self-regulation means change in relation to some idea; without such guiding ideas, change would largely be random and lacking direction. Standards include goals, laws, moral principles, personal rules, other people’s expectations, and social norms. Dieters, for example, typically have a goal in terms of how much weight they wish to lose. They help their self-regulation further by developing standards for how much or how little to eat and what kinds of foods they will eat.

The second ingredient is monitoring. It is hard to regulate something without being aware of it. For example, dieters count their calories. That is, they keep track of how much they eat and how fattening it is. In fact, some evidence suggests that dieters stop keeping track of how much they eat when they break their diet or go on an eating binge, and the failure of monitoring contributes to

eating more (Polivy, 1976). Alcohol has been found to impair all sorts of self-regulation, partly because intoxicated persons fail to keep track of their behavior and compare it to their standards.

The combination of standards and monitoring was featured in an influential theory about self-regulation by Carver and Scheier (1981, 1982, 1998). Those researchers started their careers studying self-awareness, which is a key human trait. The study of self-awareness recognized early on that people do not simply notice themselves the way they might notice a tree or car. Rather, self-awareness always seemed to involve comparing oneself to a standard. For example, when a man looks in a mirror, he does not just think, "Oh, there I am," but more likely thinks, "Is my hair a mess? Do my clothes look good?" Carver and Scheier proposed that the reason for this comparison to standards is that it enables people to regulate themselves, such as by changing things that do not measure up to their standards. In the mirror example, the man might comb his hair to bring it into line with his standards for personal appearance. Good students keep track of their grades, credits, and progress toward their degree and other goals. Athletes keep track of their times, scores, and achievements, as a way to monitor improvement.

The process of monitoring oneself can be compared to how a thermostat operates. The thermostat checks the temperature in the room, compares it to a standard (the setting for desired temperature), and if those do not match, it turns on the heat or air conditioner to change the temperature. It checks again and again, and when the room temperature matches the desired setting, the thermostat turns off the climate control. In the same way, people compare themselves to their personal standards, make changes as needed, and stop working on change once they have met their goals. People feel good not just when they reach their goals but even when they deem they are making good progress (Carver & Scheier, 1990). They feel bad when they are not making sufficient progress.

That brings up the third ingredient, which is the capacity to change oneself. In effective self-regulation, people operate on themselves to bring about these changes. The popular term for this is “willpower,” which suggests some kind of energy is expended in the process. Psychologists hesitate to adopt terms associated with folk wisdom, because there are many potential implications. Here, the term is used to refer specifically to some energy that is involved in the capacity to change oneself.

Consistent with the popular notion of willpower, people do seem to expend some energy during self-regulation. Many studies have found that after people exert self-regulation to change some response, they perform worse on the next unrelated task if it too requires self-regulation (Hagger, Wood, Stiff, & Chatzisarantis, 2010). That pattern suggests that some energy such as willpower was used up during the first task, leaving less available for the second task. The term for this state of reduced energy available for self-regulation is **ego depletion** (Baumeister, Bratslavsky, Muraven, & Tice, 1998). As people go about their daily lives, they have to resist many desires and impulses and must control themselves in other ways, and so over the course of a typical day many people gradually become ego depleted. The result is that they become increasingly likely to give in to impulses and desires that they would have resisted successfully earlier in the day (Hofmann, Vohs, & Baumeister, 2012). During the state of ego depletion, people become less helpful and more aggressive, prone to overeat, misbehave sexually, express more prejudice, and in other ways do things that they may later regret.

Thus, a person’s capacity for self-regulation is not constant, but rather it fluctuates. To be sure, some people are generally better than others at controlling themselves (Tangney et al., 2004). But even someone with excellent self-control may occasionally find that control breaks down under ego depletion. In general, self-regulation can be improved by getting enough sleep and healthy food, and by minimizing other demands on one’s willpower.

There is some evidence that regular exercise of self-control can build up one's willpower, like strengthening a muscle (Baumeister & Tierney, 2011; Oaten & Cheng, 2006). Even in early adulthood, one's self-control can be strengthened. Furthermore, research has shown that disadvantaged, minority children who take part in preschool programs such as Head Start (often based on the Perry program) end up doing better in life even as adults. This was thought for a while to be due to increases in intelligence quotient (IQ), but changes in IQ from such programs are at best temporary. Instead, recent work indicates that improvement in self-control and related traits may be what produce the benefits (Heckman, Pinto, & Savelyev, in press). It's not doing math problems or learning to spell at age 3 that increases subsequent adult success—but rather the benefit comes from having some early practice at planning, getting organized, and following rules.

## Conscientiousness

**Conscientiousness** is a stable dimension of personality, which means that some people are typically higher on it than others. Being a personality trait does not mean that it is unchangeable. Most people do show some changes over time, particularly becoming higher on conscientiousness as they grow older. Some psychologists look specifically at the trait of self-control, which is understood (and measured) in personality psychology in a very specific, narrowly focused, well-defined sense. Conscientiousness, in contrast, is one of five super-traits that supposedly account for all the other traits, in various combinations. The trait self-control is one big part of conscientiousness, but there are other parts.

Two aspects of conscientiousness that have been well documented are being orderly and being industrious (Roberts, Lejuez, Krueger, Richards, & Hill, 2012). Orderliness includes being clean and neat, making and following plans, and being punctual (which is helpful with following plans!). Low conscientious means the opposite: being disorganized, messy, late, or erratic. Being industrious not

only means working hard but also persevering in the face of failures and difficulties, as well as aspiring to excellence. Most of these reflect good self-control.

Conscientious people are careful, disciplined, responsible, and thorough, and they tend to plan and think things through before acting. People who are low in conscientiousness tend to be more impulsive and spontaneous, even reckless. They are easygoing and may often be late or sloppy, partly because they are not strongly focused on future goals for success and not highly concerned to obey all rules and stay on schedule. Psychologists prefer not to make a value judgment about whether it is better to be high or low in any personality trait. But when it comes specifically to self-control, it is difficult to resist the conclusion that high self-control is better, both for the person and for society at large.

Some aspects of conscientiousness have less apparent connection to self-control, however. People high in conscientiousness tend to be decisive. They are often formal, in the sense of following social norms and rules, such as dressing properly, waiting one's turn, or holding doors for others. They tend to respect traditions and traditional values.

Conscientious people behave differently from people who score low on that trait. People scoring low on conscientiousness are more likely than others to report driving without wearing seatbelts, daydreaming, swearing, telling dirty jokes, and picking up hitchhikers (Hirsh, DeYoung, & Peterson, 2009). In terms of more substantial life outcomes, people low on conscientiousness are more likely than others to get divorced, presumably because they make bad choices and misbehave during the marriage such as by saying hurtful things, getting into arguments and fights, and behaving irresponsibly (Roberts, Jackson, Fayard, Edmonds, & Meints, 2009). People low on conscientiousness are more likely than others to lose their jobs, to become homeless, to do time in prison, to have money problems, and to have drug problems.



Conscientious people make better spouses. They are less likely than others to get divorced, partly because they avoid many behaviors that undermine intimacy, such as abusing their partners, drinking excessively, or having extramarital affairs (Roberts et al., 2009).

Encompassing self-control, conscientiousness is the personality trait with the strongest effect on life or death: People high on that trait live longer than others (Deary, Weiss, & Batty, 2010). Why? Among other things, they avoid many behavior patterns associated with early death, including alcohol abuse, obesity and other eating problems, drug abuse, smoking, failure to exercise, risky sex, suicide, violence, and unsafe driving (Bogg & Roberts, in press). They also visit physicians more regularly and take their prescribed medicines more reliably than people low in conscientiousness. Their good habits help avoid many life-threatening diseases.

## Outside Resources

**Book:** For more advanced and in-depth coverage, consult *The Handbook of Self-Regulation* (2nd Edition), edited by Kathleen Vohs and Roy Baumeister. This book contains different chapters by different experts in the field, covering large amounts of research findings.

**Book:** To read more, the easiest and most fun source would be *The New York Times* bestseller *Willpower: Rediscovering the Greatest Human Strength*, by Roy Baumeister and John Tierney, published by Penguin. This is intended not as a purely scientific work but as an entertaining summary for the general public.

**Video:** For an enjoyable and brief re-enactment of Mischel's "marshmallow" studies on delay of gratification, try the following video. Watching those children struggle to resist temptation is sure to bring a smile.

<http://vimeo.com/5239013>

## Discussion Questions

1. Why do you think criminals are often poor at self-regulation?
2. On average, children growing up without both parents present do worse at many things, from math achievement in school to the likelihood of being arrested for crimes. Might self-control be part of the explanation? Why?
3. Many people make New Year's resolutions to change themselves in various ways, but often they fail at these. Why?
4. Is good self-control something one is born with or something that is learned?
5. How would a parent teach his or her children to have good self-control?
6. Why are people with good self-control happier than other people?

# Vocabulary

## **Conscientiousness**

A personality trait consisting of self-control, orderliness, industriousness, and traditionalism.

## **Ego depletion**

The state of diminished willpower or low energy associated with having exerted self-regulation.

## **Monitoring**

Keeping track of a target behavior that is to be regulated.

## **Self-regulation**

The process of altering one's responses, including thoughts, feelings, impulses, actions, and task performance.

## **Standards**

Ideas about how things should (or should not) be.

## Reference List

- Baumeister, R. F., Bratslavsky, E., Muraven, M., & Tice, D. M. (1998). Ego depletion: Is the active self a limited resource? *Journal of Personality and Social Psychology*, 74, 1252–1265. doi: 10.1037/0022-3514.74.5.1252
- Baumeister, R. F., & Tierney, J. (2011). *Willpower: Rediscovering the greatest human strength*. New York, NY: Penguin Press.
- Bogg, T., & Roberts, B.W. (in press). The case for conscientiousness: Evidence and implications for a personality trait marker of health and longevity. *Annals of Behavioral Medicine*.
- Carver, C. S., & Scheier M. F. (1981). *Attention and self-regulation: A control theory approach to human behavior*. New York, NY: Springer-Verlag.
- Carver, C. S., & Scheier, M. E. (1990). Origins and functions of positive and negative affect: A control-process view. *Psychological Review*, 97, 19–35.
- Carver, C. S., & Scheier, M. F. (1998). *On the self-regulation of behavior*. New York, NY: Cambridge University Press.
- Carver, C. S., & Scheier, M. F. (1982). Control theory: A useful conceptual framework for personality-social, clinical, and health psychology. *Psychological Bulletin*, 92, 111–135.
- Deary, I. J., Weiss, A., & Batty, G. D. (2010). Intelligence and personality as predictors of illness and death: How researchers in differential psychology and chronic disease epidemiology are collaborating to understand and address health inequalities. *Psychological Science in the Public Interest*, 11,

53–79.

Gottfredson, M. R., & Hirschi, T. (1990). *A general theory of crime*. Stanford, CA: Stanford University Press.

Hagger, M. S., Wood, C., Stiff, C. & Chatzisarantis, N. L. D. (2010). Ego depletion and the strength model of self-control: A meta-analysis. *Psychological Bulletin*, 136, 495–525.

Heckman, J., Pinto, R., & Savelyev, P. (in press). Understanding the mechanisms through which an influential early childhood program boosted adult outcomes. *American Economic Review*.

Hirsh, J. B., DeYoung, C. G., & Peterson, J. B. (2009). Metatraits of the Big Five differentially predict engagement and restraint of behavior. *Journal of Personality*, 77, 1085–1102.

Hofmann, W., Vohs, K. D., Fisher, R., Luhmann, M., & Baumeister, R. F. (2013). Yes, but are they happy? Effects of trait self-control on affective well-being and life satisfaction. Manuscript submitted for publication. University of Chicago.

Hofmann, W., Vohs, K. D., & Baumeister, R. F. (2012). What people desire, feel conflicted about, and try to resist in everyday life. *Psychological Science*, 23, 582-588. doi: 10.1177/0956797612437426

Mischel, W. (1974). Processes in delay of gratification. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 7, pp. 249–292). San Diego, CA: Academic Press.

- Mischel, W., Shoda, Y., & Peake, P. (1988). The nature of adolescent competencies predicted by preschool delay of gratification. *Journal of Personality and Social Psychology*, 54, 687–696.
- Moffitt, T. E., Arseneault, L., Belsky, D., Dickson, N., Hancox, R. J., Harrington, H., Houts, R., Poulton, R., Roberts, B. W., Ross, S., Sears, M. R., Thomson, W. M., & Caspi, A. (2011). A gradient of childhood self-control predicts health, wealth, and public safety. *Proceedings of the National Academy of Sciences*, 108, 2693–2698.
- Oaten, M., & Cheng, K. (2006). Improved self-control: The benefits of a regular program of academic study. *Basic and Applied Social Psychology*, 28, 1–16.
- Polivy, J. (1976). Perception of calories and regulation of intake in restrained and unrestrained subjects. *Addictive Behaviors*, 1, 237-243.
- Pratt, T. C., & Cullen, F. T. (2000). The empirical status of Gottfredson and Hirschi's general theory of crime: A meta-analysis. *Criminology*, 38, 931–964.
- Roberts, B. W., Jackson, J. J., Fayard, J. V., Edmonds, G., & Meints, J. (2009). Conscientiousness. In M. Leary & R. Hoyle (Eds.), *Handbook of individual differences in social behavior* (pp. 369–381). New York, NY: Guilford.
- Roberts, B. W., Lejuez, C., Krueger, R. F., Richards, J. M., & Hill, P. L. (2012). What is conscientiousness and how can it be assessed? *Developmental Psychology*. Advance online publication. doi: 10.1037/a0031109
- Shoda, Y., Mischel, W., & Peake, P. K. (1990). Predicting adolescent cognitive and self-regulatory competencies from preschool delay of gratification: Identifying diagnostic conditions. *Developmental Psychology*, 26, 978–986.

Tangney, J. P., Baumeister, R. F., & Boone, A. L. (2004). High self-control predicts good adjustment, less pathology, better grades, and interpersonal success. *Journal of Personality, 72*, 271–322.





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## **Topic 5**

### Salud y bienestar subjetivo

# The Healthy Life

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N O B A

## Abstract

Our emotions, thoughts, and behaviors play an important role in our health. Not only do they influence our day-to-day health practices, but they can also influence how our body functions. This chapter provides an overview of health psychology, which is a field devoted to understanding the connections between psychology and health. Discussed here are examples of topics a health psychologist might study, including stress, psychosocial factors related to health and disease, how to use psychology to improve health, and the role of psychology in medicine.

# Learning Objectives

- Describe basic terminology used in the field of health psychology.
- Explain theoretical models of health, as well as the role of psychological stress in the development of disease.
- Describe psychological factors that contribute to resilience and improved health.
- Defend the relevance and importance of psychology to the field of medicine.

## What Is Health Psychology?

Today, we face more **chronic disease** than ever before because we are living longer lives while also frequently behaving in unhealthy ways. One example of a chronic disease is coronary heart disease (CHD): It is the number one cause of death worldwide (World Health Organization, 2013). CHD develops slowly over time and typically appears midlife, but related heart problems can persist for years after the original diagnosis or cardiovascular event. In managing illnesses that persist over time (other examples might include cancer, diabetes, and long-term disability) many psychological factors will determine the progression of the ailment. For example, do patients seek help when appropriate? Do they follow doctor recommendations? Do they develop negative psychological symptoms due to lasting illness (e.g., depression)? Also important is that psychological factors can play a significant role in who develops these diseases, the prognosis, and the nature of the symptoms related to the illness. Health psychology is a relatively new, interdisciplinary field of study that focuses on these very issues, or more specifically, the role of psychology in maintaining health, as well as preventing and treating illness.

Consideration of how psychological and social factors influence health is especially important today because many of the leading causes of illness in developed countries are often attributed to psychological and behavioral factors. In the case of CHD, discussed above, psychosocial factors, such as excessive stress, smoking, unhealthy eating habits, and some personality traits can also lead to increased risk of disease and worst health outcomes. That being said, many of these factors can be adjusted using psychological techniques. For example, clinical health psychologists can improve health practices like poor dietary choices and smoking, they can teach important stress reduction techniques, and they can help treat psychological disorders tied to poor health. Health psychology considers how the choices we make, the behaviors we engage in, and even the emotions that we feel, can play an

important role in our overall health (Cohen & Herbert, 1996; Taylor, 2012).

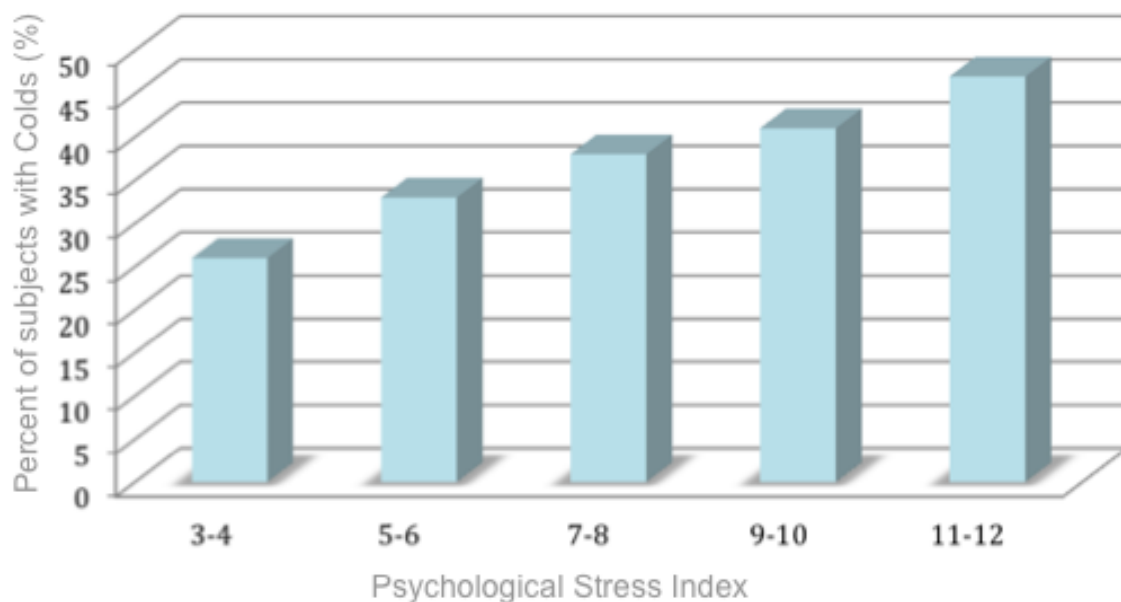
Health psychology relies on the **Biopsychosocial Model of Health**. This model posits that biology, psychology, and social factors are just as important in the development of disease as biological causes (e.g., germs, viruses), which is consistent with the World Health Organization (1946) definition of **health**. This model replaces the older **Biomedical Model of Health**, which primarily considers the physical, or pathogenic, factors contributing to illness. Thanks to advances in medical technology, there is a growing understanding of the physiology underlying the **mind-body connection**, and in particular, the role that different feelings can have on our body's function. Health psychology researchers working in the fields of **psychosomatic medicine** and **psychoneuroimmunology**, for example, are interested in understanding how psychological factors can "get under the skin" and influence our physiology in order to better understand how factors like stress can make us sick.

## Stress And Health

You probably know exactly what it's like to feel stress, but what you may not know is that it can objectively influence your health. Answers to questions like, "How stressed do you feel?" or "How overwhelmed do you feel?" can predict your likelihood of developing both minor illnesses as well as serious problems like future heart attack (Cohen, Janicki-Deverts, & Miller, 2007). (Want to measure your own stress level? Check out the links at the end of the chapter.) To understand how health psychologists study these types of associations, we will describe one famous example of a stress and health study. Imagine that you are a research subject for a moment. After you check into a hotel room as part of the study, the researchers ask you to report your general levels of stress. Not too surprising; however, what happens next is that you receive droplets of cold virus into your nose! The researchers intentionally try to make you sick by exposing you to an infectious illness. After they expose you to the virus, the

researchers will then evaluate you for several days by asking you questions about your symptoms, monitoring how much mucus you are producing by weighing your used tissues, and taking body fluid samples—all to see if you are objectively ill with a cold. Now, the interesting thing is that not everyone who has drops of cold virus put in their nose develops the illness. Studies like this one find that people who are less stressed and those who are more positive at the beginning of the study are at a decreased risk of developing a cold (Cohen, Tyrrell, & Smith, 1991; Cohen, Alper, Doyle, Treanor, & Turner, 2006) (see Figure 1 for an example).

**Figure 1: Association between the Psychological Stress Index and the Rate of Clinical Colds**



Source: Adapted from Cohen et al. 1991



Importantly, it is not just major life **stressors** (e.g., a family death, a natural disaster) that increase the likelihood of getting sick. Even small **daily hassles** like getting stuck in traffic or fighting with your girlfriend can raise your blood pressure, alter your stress hormones, and even suppress your immune system function (DeLongis, Folkman, & Lazarus, 1988; Twisk, Snel, Kemper, & van Machelen, 1999).

It is clear that stress plays a major role in our mental and physical health, but what exactly is it? The term **stress** was originally derived from the field of mechanics where it is used to describe materials under pressure. The word was first used in a psychological manner by researcher Hans Selye. He was examining the effect of an ovarian hormone that he thought caused sickness in a sample of rats. Surprisingly, he noticed that almost any injected hormone produced this same sickness. He smartly realized that it was not the hormone under investigation that was causing these problems, but instead, the aversive experience of being handled and injected by researchers that led to high physiological arousal and, eventually, to health problems like ulcers. Selye (1946) coined the term stressor to label a stimulus that had this effect on the body and developed a model of the stress response called the **General Adaptation Syndrome**. Since then, psychologists have studied stress in a myriad of ways, including stress as negative events (e.g., natural disasters or major life changes like dropping out of school), as chronically difficult situations (e.g., taking care of a loved one with Alzheimer's), as short-term hassles, as a biological fight-or-flight response, and even as clinical illness like post-traumatic stress disorder (PTSD). It continues to be one of the most important and well-studied psychological correlates of illness, because excessive stress causes potentially damaging wear and tear on the body and can influence almost any imaginable disease process.

# Protecting Our Health

An important question that health psychologists ask is: What keeps us protected from disease and alive longer? When considering this issue of **resilience** (Rutter, 1985), five factors are often studied in terms of their ability to protect (or sometimes harm) health. They are:

1. Coping
2. Control and Self-Efficacy
3. Social Relationships
4. Dispositions and Emotions
5. Stress Management

## Coping Strategies

How individuals cope with the stressors they face can have a significant impact on health. Coping is often classified into two categories: problem-focused coping or emotion-focused coping (Carver, Scheier, & Weintraub, 1989). **Problem-focused coping** is thought of as actively addressing the event that is causing stress in an effort to solve the issue at hand. For example, say you have an important exam coming up next week. A problem-focused strategy might be to spend additional time over the weekend studying to make sure you understand all of the material. **Emotion-focused coping**, on the other hand, regulates the emotions that come with stress. In the above examination example, this might mean watching a funny movie to take your mind off the

anxiety you are feeling. In the short term, emotion-focused coping might reduce feelings of stress, but problem-focused coping seems to have the greatest impact on mental wellness (Billings & Moos, 1981; Herman-Stabl, Stemmler, & Petersen, 1995). That being said, when events are uncontrollable (e.g., the death of a loved one), emotion-focused coping directed at managing your feelings, at first, might be the better strategy. Therefore, it is always important to consider the match of the stressor to the coping strategy when evaluating its plausible benefits.

## Control and Self-Efficacy

Another factor tied to better health outcomes and an improved ability to cope with stress is having the belief that you have **control** over a situation. For example, in one study where participants were forced to listen to unpleasant (stressful) noise, those who were led to believe that they had control over the noise performed much better on proofreading tasks afterwards (Glass & Singer, 1972). In other words, even though participants did not have actual control over the noise, the control belief aided them in completing the task. In similar studies, perceived control benefited immune system functioning (Sieber et al., 1992). Outside of the laboratory, studies have shown that older residents in assisted living facilities, which are notorious for low control, lived longer and showed better health outcomes when given control over something as simple as watering a plant or choosing when student volunteers came to visit (Rodin & Langer, 1977; Schulz & Hanusa, 1978). In addition, feeling in control of a threatening situation can actually change stress hormone levels (Dickerson & Kemeny, 2004). Believing that you have control over your own behaviors can also have a positive influence on important outcomes like smoking cessation, contraception use, and weight management (Wallston & Wallston, 1978). When individuals do not believe they have control, they do not try to change. **Self-efficacy** is closely related to control, in that people with high levels of this trait

believe they can complete tasks and reach their goals. Just as feeling in control can reduce stress and improve health, higher self-efficacy can reduce stress and negative **health behaviors**, and is associated with better health (O'Leary, 1985).

## Social Relationships

Research has shown that the impact of social isolation on our risk for disease and death is similar in magnitude to the risk associated with smoking regularly (Holt-Lunstad, Smith, & Layton, 2010; House, Landis, & Umberson, 1988). In fact, the importance of social relationships for our health is so significant that some scientists believe our body has developed a physiological system that encourages us to seek out our relationships, especially in times of stress (Taylor et al., 2000). **Social integration** is the concept used to describe the number of social roles that you have (Cohen & Wills, 1985), as well as the lack of isolation. For example, you might be a daughter, a basketball team member, a Humane Society volunteer, a coworker, and a student. Maintaining these different roles can improve your health via encouragement from those around you to maintain a healthy lifestyle. Those in your social network might also provide you with **social support** (e.g., when you are under stress). This support might include emotional help (e.g., a hug when you need it), tangible help (e.g., lending you money), or advice. By helping to improve health behaviors and reduce stress, social relationships can have a powerful, protective impact on health, and in some cases, might even help people with serious illnesses stay alive longer (Spiegel, Kraemer, Bloom, & Gottheil, 1989).

## Dispositions and Emotions: What's Risky and What's Protective?

Negative dispositions and personality traits have been strongly tied to an array of health risks. One of the earliest negative trait-to-health connections was discovered in the 1950s by two cardiologists. They made the interesting discovery that there were common behavioral and psychological patterns among their heart patients that were not present in other patient samples. This pattern included being competitive, impatient, hostile, and time urgent. They labeled it **Type A Behavior**. Importantly, it was found to be associated with double the risk of heart disease as compared with **Type B Behavior** (Friedman & Rosenman, 1959). Since the 1950s, researchers have discovered that it is the **hostility** and competitiveness components of Type A that are especially harmful to heart health (Iribarren et al., 2000; Matthews, Glass, Rosenman, & Bortner, 1977; Miller, Smith, Turner, Gujjarro, & Hallet, 1996). Hostile individuals are quick to get upset, and this angry arousal can damage the arteries of the heart. In addition, given their negative personality style, hostile people often lack a health-protective supportive social network.

Positive traits and states, on the other hand, are often health protective. For example, characteristics like positive emotions (e.g., feeling happy or excited) have been tied to a wide range of benefits such as increased longevity, a reduced likelihood of developing some illnesses, and better outcomes once you are diagnosed with certain diseases (e.g., heart disease, HIV) (Pressman & Cohen, 2005). Across the world, even in the most poor and underdeveloped nations, positive emotions are consistently tied to better health (Pressman, Gallagher, & Lopez, 2013). Positive emotions can also serve as the “antidote” to stress, protecting us against some of its damaging effects (Fredrickson, 2001; Pressman & Cohen, 2005; see Figure 2). Similarly, looking on the bright side can also improve health. Optimism has been shown to improve coping, reduce stress, and predict better disease outcomes like recovering from a heart attack more

rapidly (Kubzansky, Sparrow, Vokonas, & Kawachi, 2001; Nes & Segerstrom, 2006; Scheier & Carver, 1985; Segerstrom, Taylor, Kemeny, & Fahey, 1998).

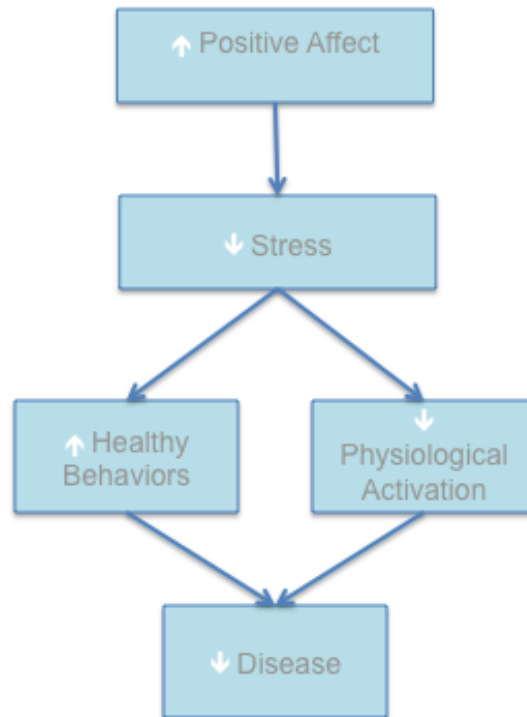


Figure 2. This figure illustrates one possible way that positive affect protects individuals against disease. Positive affect can reduce stress perceptions (a), thereby improving health behaviors (b) and lowering physiological stress responses (c) (e.g., decreased cardiovascular reactivity, lower stress hormones, non-suppressed immune activity). As a result, there is likely to be less incidence of disease (d, e). (Adapted from Pressman & Cohen, 2005)

## Stress Management

About 20 percent of Americans report having stress, with 18–33 year-olds reporting the highest levels (American Psychological Association, 2012). Given that the sources of our stress are often difficult to change (e.g., personal finances, current job), a number of interventions have been designed to help reduce the aversive responses to duress. For example, relaxation activities and forms of meditation are techniques that allow individuals to reduce their stress via breathing exercises, muscle relaxation, and mental imagery. Physiological arousal from stress can also be reduced via **biofeedback**, a technique where the individual is shown bodily information that is not normally available to them (e.g., heart rate), and then taught strategies to alter this signal. This type of intervention has even shown promise in reducing heart and hypertension risk, as well as other serious conditions (e.g., Moravec, 2008; Patel, Marmot, & Terry, 1981). But reducing stress does not have to be complicated! For example, exercise is a great stress reduction activity (Salmon, 2001) that has a myriad of health benefits.

## The Importance Of Good Health Practices

As a student, you probably strive to maintain good grades, to have an active social life, and to stay healthy (e.g., by getting enough sleep), but there is a popular joke about what it's like to be in college: you can only pick two of these things (see Figure 3 for an example). The busy life of a college student doesn't always allow you to maintain all three areas of your life, especially during test-taking periods. In one study, researchers found that students taking exams were more stressed and, thus, smoked more, drank more caffeine, had less physical activity, and had worse sleep habits (Oaten & Chang, 2005), all of which could have detrimental effects on their health. Positive health practices are especially important in times of stress when your immune system is

compromised due to high stress and the elevated frequency of exposure to the illnesses of your fellow students in lecture halls, cafeterias, and dorms.

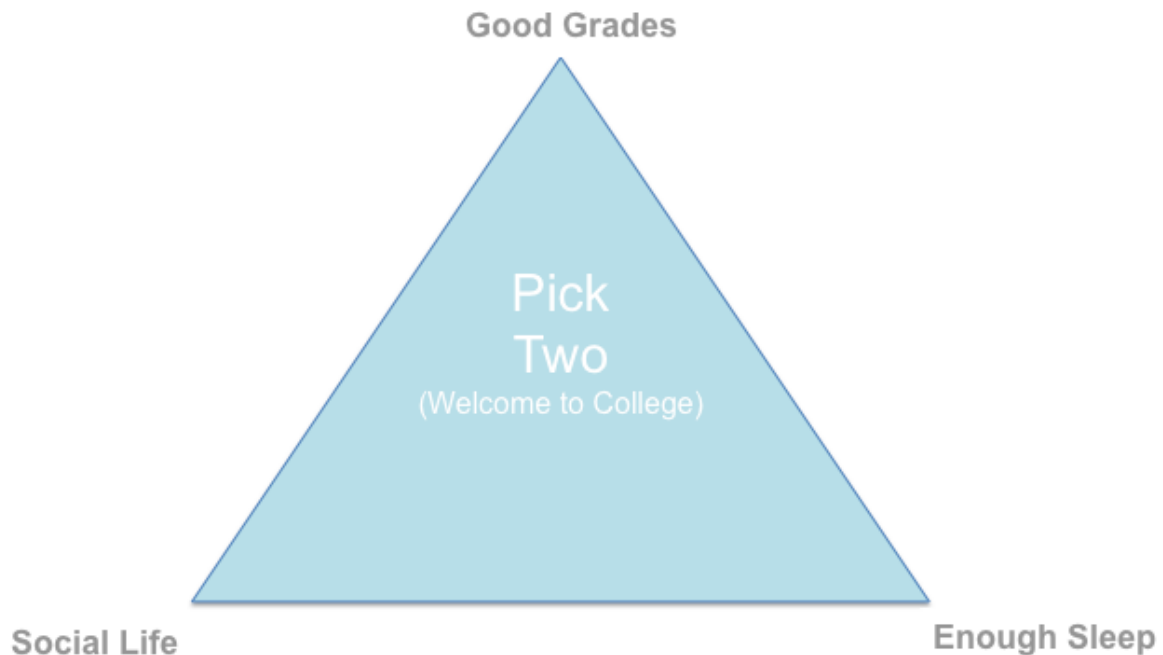


Figure 3: A popular joke about how difficult it is to stay balanced and healthy during college.

Psychologists study both **health behaviors** and health habits. The former are behaviors that can improve or harm your health. Some examples include regular exercise, flossing, and wearing sunscreen, versus negative behaviors like drunk driving, pulling all-nighters, or smoking. These behaviors become habits when they are firmly established and performed automatically. For example, do you have to think about putting your seatbelt on or do you do it automatically? Habits are often developed early in life thanks to parental encouragement or the influence of our peer group.

While these behaviors sound minor, studies have shown that those who engaged in more of these protective habits (e.g., getting 7–8 hours of sleep regularly, not smoking or drinking excessively, exercising) had fewer illnesses, felt better, and were less likely to die over a 9–12-year follow-up period (Belloc



& Breslow 1972; Breslow & Enstrom 1980). For college students, health behaviors can even influence academic performance. For example, poor sleep quality and quantity are related to weaker learning capacity and academic performance (Curcio, Ferrara, & De Gennaro, 2006). Due to the effects that health behaviors can have, much effort is put forward by psychologists to understand how to change unhealthy behaviors, and to understand why individuals fail to act in healthy ways. Health promotion involves enabling individuals to improve health by focusing on behaviors that pose a risk for future illness, as well as spreading knowledge on existing risk factors. These might be genetic risks you are born with, or something you developed over time like obesity, which puts you at risk for Type 2 diabetes and heart disease, among other illnesses.

## Psychology And Medicine

There are many psychological factors that influence medical treatment outcomes. For example, older individuals, (Meara, White, & Cutler, 2004), women (Briscoe, 1987), and those from higher socioeconomic backgrounds (Adamson, Ben-Shlomo, Chaturvedi, & Donovan, 2008) are all more likely to seek medical care. On the other hand, some individuals who need care might avoid it due to financial obstacles or preconceived notions about medical practitioners or the illness. Thanks to the growing amount of medical information online, many people now use the Internet for health information and 38% percent report that this influences their decision to see a doctor (Fox & Jones, 2009). Unfortunately, this is not always a good thing because individuals tend to do a poor job assessing the credibility of health information. For example, college-student participants reading online articles about HIV and syphilis rated a physician's article and a college student's article as equally credible if the participants said they were familiar with the health topic (Eastin, 2001). Credibility of health information often means how accurate or

trustworthy the information is, and it can be influenced by irrelevant factors, such as the website's design, logos, or the organization's contact information (Freeman & Spyridakis, 2004). Similarly, many people post health questions on online, unmoderated forums where anyone can respond, which allows for the possibility of inaccurate information being provided for serious medical conditions by unqualified individuals.

After individuals decide to seek care, there is also variability in the information they give their medical provider. Poor communication (e.g., due to embarrassment or feeling rushed) can influence the accuracy of the diagnosis and the effectiveness of the prescribed treatment. Similarly, there is variation following a visit to the doctor. While most individuals are tasked with a health recommendation (e.g., buying and using a medication appropriately, losing weight, going to another expert), not everyone adheres to medical recommendations (Dunbar-Jacob & Mortimer-Stephens, 2010). For example, many individuals take medications inappropriately (e.g., stopping early, not filling prescriptions) or fail to change their behaviors (e.g., quitting smoking). Unfortunately, getting patients to follow medical orders is not as easy as one would think. For example, in one study, over one third of diabetic patients failed to get proper medical care that would prevent or slow down diabetes-related blindness (Schoenfeld, Greene, Wu, & Leske, 2001)! Fortunately, as mobile technology improves, physicians now have the ability to monitor **adherence** and work to improve it (e.g., with pill bottles that monitor if they are opened at the right time). Even text messages are useful for improving treatment adherence and outcomes in depression, smoking cessation, and weight loss (Cole-Lewis, & Kershaw, 2010).

## Being A Health Psychologist

Training as a clinical health psychologist provides a variety of possible career options. Clinical health psychologists often work on teams of physicians, social workers, allied health professionals, and religious leaders. These teams may be formed in locations like rehabilitation centers, hospitals, primary care offices, emergency care centers, or in chronic illness clinics. Work in each of these settings will pose unique challenges in patient care, but the primary responsibility will be the same. Clinical health psychologists will evaluate physical, personal, and environmental factors contributing to illness and preventing improved health. In doing so, they will then help create a treatment strategy that takes into account all dimensions of a person's life and health, which maximizes its potential for success. Those who specialize in health psychology can also conduct research to discover new health predictors and risk factors, or develop interventions to prevent and treat illness. Researchers studying health psychology work in numerous locations, such as universities, public health departments, hospitals, and private organizations. In the related field of **behavioral medicine**, careers focus on the application of this type of research. Occupations in this area might include jobs in occupational therapy, rehabilitation, or preventative medicine. Training as a health psychologist provides a wide skill set applicable in a number of different professional settings and career paths.

## The Future Of Health Psychology

Much of the past medical research literature provides an incomplete picture of human health. "Health care" is often "illness care." That is, it focuses on the management of symptoms and illnesses as they arise. As a result, in many developed countries, we are faced with several health epidemics that are difficult and costly to treat. These include obesity, diabetes, and cardiovascular

disease, to name a few. The National Institutes of Health have called for researchers to use the knowledge we have about risk factors to design effective interventions to reduce the prevalence of preventable illness. Additionally, there are a growing number of individuals across developed countries with multiple chronic illnesses and/or lasting disabilities, especially with older age. Addressing their needs and maintaining their quality of life will require skilled individuals who understand how to properly treat these populations. Health psychologists will be on the forefront of work in these areas.

With this focus on prevention, it is important that health psychologists move beyond studying risk (e.g., depression, stress, hostility, low socioeconomic status) in isolation, and move toward studying factors that confer resilience and protection from disease. There is, fortunately, a growing interest in studying the positive factors that protect our health (e.g., Diener & Chan, 2011; Pressman & Cohen, 2005; Richman, Kubzansky, Maselko, Kawachi, Choo, & Bauer, 2005) with evidence strongly indicating that people with higher positivity live longer, suffer fewer illnesses, and generally feel better. Seligman (2008) has even proposed a field of “Positive Health” to specifically study those who exhibit “above average” health—something we do not think about enough. By shifting some of the research focus to identifying and understanding these health-promoting factors, we may capitalize on this information to improve public health.

Innovative interventions to improve health are already in use and continue to be studied. With recent advances in technology, we are starting to see great strides made to improve health with the aid of computational tools. For example, there are hundreds of simple applications (apps) that use email and text messages to send reminders to take medication, as well as mobile apps that allow us to monitor our exercise levels and food intake (in the growing mobile-health, or m-health, field). These m-health applications can be used to raise health awareness, support treatment and compliance, and remotely collect data on a variety of outcomes. Also exciting are devices that allow us to

monitor physiology in real time; for example, to better understand the stressful situations that raise blood pressure or heart rate. With advances like these, health psychologists will be able to serve the population better, learn more about health and health behavior, and develop excellent health-improving strategies that could be specifically targeted to certain populations or individuals. These leaps in equipment development, partnered with growing health psychology knowledge and exciting advances in neuroscience and genetic research, will lead health researchers and practitioners into an exciting new time where, hopefully, we will understand more and more about how to keep people healthy.

## Outside Resources

**App: 30 iPhone apps to monitor your health**

<http://www.hongkiat.com/blog/iphone-health-app/>

**Quiz: Hostility**

[http://www.mhhe.com/socscience/hhp/fahey7e/wellness\\_worksheets/wellness\\_worksheet\\_090.html](http://www.mhhe.com/socscience/hhp/fahey7e/wellness_worksheets/wellness_worksheet_090.html)

**Self-assessment: Perceived Stress Scale**

[http://www.ncsu.edu/assessment/resources/perceived\\_stress\\_scale.pdf](http://www.ncsu.edu/assessment/resources/perceived_stress_scale.pdf)

**Self-assessment: What's your real age (based on your health practices and risk factors)?**

<http://www.realage.com>

**Video: Try out a guided meditation exercise to reduce your stress**

<http://www.youtube.com/watch?v=Zh-klfBJIHc>

**Web: American Psychosomatic Society**

<http://www.psychosomatic.org/home/index.cfm>

**Web: APA Division 38, Health Psychology**

<http://www.health-psych.org>

**Web: Society of Behavioral Medicine**

<http://www.sbm.org>

## Discussion Questions

1. What psychological factors contribute to health?
2. Which psychosocial constructs and behaviors might help protect us from the damaging effects of stress?
3. What kinds of interventions might help to improve resilience? Who will these interventions help the most?
4. How should doctors use research in health psychology when meeting with patients?
5. Why do clinical health psychologists play a critical role in improving public health?

# Vocabulary

## **Adherence**

In health, it is the ability of a patient to maintain a health behavior prescribed by a physician. This might include taking medication as prescribed, exercising more, or eating less high-fat food.

## **Behavioral medicine**

A field similar to health psychology that integrates psychological factors (e.g., emotion, behavior, cognition, and social factors) in the treatment of disease. This applied field includes clinical areas of study, such as occupational therapy, hypnosis, rehabilitation or medicine, and preventative medicine.

## **Biofeedback**

The process by which physiological signals, not normally available to human perception, are transformed into easy-to-understand graphs or numbers. Individuals can then use this information to try to change bodily functioning (e.g., lower blood pressure, reduce muscle tension).

## **Biomedical Model of Health**

A reductionist model that posits that ill health is a result of a deviation from normal function, which is explained by the presence of pathogens, injury, or genetic abnormality.

## **Biopsychosocial Model of Health**

An approach to studying health and human function that posits the importance of biological, psychological, and social (or environmental) processes.



**Chronic disease**

A health condition that persists over time, typically for periods longer than three months (e.g., HIV, asthma, diabetes).

**Control**

Feeling like you have the power to change your environment or behavior if you need or want to.

**Daily hassles**

Irritations in daily life that are not necessarily traumatic, but that cause difficulties and repeated stress.

**Emotion-focused coping**

Coping strategy aimed at reducing the negative emotions associated with a stressful event.

**General Adaptation Syndrome**

A three-phase model of stress, which includes a mobilization of physiological resources phase, a coping phase, and an exhaustion phase (i.e., when an organism fails to cope with the stress adequately and depletes its resources).

**Health**

According to the World Health Organization, it is a complete state of physical, mental, and social well-being and not merely the absence of disease or infirmity.

**Health behavior**

Any behavior that is related to health—either good or bad.

**Hostility**

An experience or trait with cognitive, behavioral, and emotional components. It often includes cynical thoughts, feelings of emotion, and aggressive behavior.

**Mind–body connection**

The idea that our emotions and thoughts can affect how our body functions.

**Problem-focused coping**

A set of coping strategies aimed at improving or changing stressful situations.

**Psychoneuroimmunology**

A field of study examining the relationship among psychology, brain function, and immune function.

**Psychosomatic medicine**

An interdisciplinary field of study that focuses on how biological, psychological, and social processes contribute to physiological changes in the body and health over time.

**Resilience**

The ability to “bounce back” from negative situations (e.g., illness, stress) to normal functioning or to simply not show poor outcomes in the face of adversity. In some cases, resilience may lead to better functioning following the negative experience (e.g., post-traumatic growth).

**Self-efficacy**

The belief that one can perform adequately in a specific situation.

**Social integration**

The size of your social network, or number of social roles (e.g., son, sister, student, employee, team member).

**Social support**

The perception or actuality that we have a social network that can help us in times of need and provide us with a variety of useful resources (e.g., advice, love, money).

**Stress**

A pattern of physical and psychological responses in an organism after it perceives a threatening event that disturbs its homeostasis and taxes its abilities to cope with the event.

**Stressor**

An event or stimulus that induces feelings of stress.

**Type A Behavior**

Type A behavior is characterized by impatience, competitiveness, neuroticism, hostility, and anger.

**Type B Behavior**

Type B behavior reflects the absence of Type A characteristics and is represented by less competitive, aggressive, and hostile behavior patterns.

## Reference List

- Adamson, J., Ben-Shlomo, Y., Chaturvedi, N., & Donovan, J. (2008). Ethnicity, socio-economic position and gender—do they affect reported health—care seeking behaviour? *Social Science & Medicine*, 57, 895–904.
- American Psychological Association (2012). Stress in American 2012 [Press release]. Retrieved from <http://www.apa.org/news/press/releases/stress/2012/generations.aspx>
- Belloc, N. B., & Breslow, L. (1972). Relationship of physical health status and health practices. *Preventive Medicine*, 1, 409–421.
- Billings, A. G., & Moos, R. H. (1981). The role of coping responses and social resources in attenuating the stress of life events. *Journal of Behavioral Medicine*, 4, 139–157.
- Breslow, L., & Enstrom, J. E. (1980). Persistence of health habits and their relationship to mortality. *Preventive Medicine*, 9, 469–483.
- Briscoe, M. E. (1987). Why do people go to the doctor? Sex differences in the correlates of GP consultation. *Social Science & Medicine*, 25, 507–513.
- Carver, C. S., Scheier, M. F., & Weintraub, J. K. (1989). Assessing coping strategies: A theoretically based approach. *Journal of Personality and Social Psychology*, 56, 267–283.
- Cohen, S., Alper, C. M., Doyle, W. J., Treanor, J. J., & Turner, R. B. (2006). Positive emotional style predicts resistance to illness after experimental exposure to rhinovirus or influenza A virus. *Psychosomatic Medicine*, 68, 809–815.

- Cohen, S., Janicki-Deverts, D., & Miller, G. E. (2007). Psychological stress and disease. *Journal of the American Medical Association*, 298, 1685–1687.
- Cohen, S., Tyrrell, D. A., & Smith, A. P. (1991). Psychological stress and susceptibility to the common cold. *New England Journal of Medicine*, 325, 606–612.
- Cohen, S., & Herbert, T. B. (1996). Health psychology: Psychological factors and physical disease from the perspective of human psychoneuroimmunology. *Annual Review of Psychology*, 47, 113–142.
- Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin*, 98, 310–357.
- Cole-Lewis, H., & Kershaw, T. (2010). Text messaging as a tool for behavior change in disease prevention and management. *Epidemiologic Reviews*, 32, 56–69.
- Curcio, G., Ferrara, M., & De Gennaro, L. (2006). Sleep loss, learning capacity and academic performance. *Sleep Medicine Reviews*, 10, 323–337.
- DeLongis, A., Folkman, S., & Lazarus, R. S. (1988). The impact of daily stress on health and mood: Psychological and social resources as mediators. *Journal of Personality and Social Psychology*, 54, 486–495.
- Dickerson, S. S., & Kemeny, M. E. (2004). Acute stressors and cortisol responses: a theoretical integration and synthesis of laboratory research. *Psychological Bulletin*, 130, 355–391.
- Dunbar-Jacob, J., & Mortimer-Stephens, M. (2001). Treatment adherence in

chronic disease. *Journal of Clinical Epidemiology*, 54(12), S57–S60

Eastin, M. S. (2001). Credibility assessments of online health information: The effects of source expertise and knowledge of content. *Journal of Computer Mediated Communication*, 6.

Fox, S. & Jones, S. (2009). The social life of health information. Pew Internet and American Life Project, California HealthCare Foundation. Retrieved from <http://www.pewinternet.org/Reports/2009/8-The-Social-Life-of-Health-Information.aspx>

Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist*, 56, 218–226.

Freeman, K. S., & Spyridakis, J. H. (2004). An examination of factors that affect the credibility of online health information. *Technical Communication*, 51, 239–263.

Friedman, M., & Rosenman, R. (1959). Association of specific overt behaviour pattern with blood and cardiovascular findings. *Journal of the American Medical Association*, 169, 1286–1296.

Glass, D. C., & Singer, J. E. (1972). Behavioral aftereffects of unpredictable and uncontrollable aversive events: Although subjects were able to adapt to loud noise and other stressors in laboratory experiments, they clearly demonstrated adverse aftereffects. *American Scientist*, 60, 457–465.

Herman-Stabl, M. A., Stemmler, M., & Petersen, A. C. (1995). Approach and avoidant coping: Implications for adolescent mental health. *Journal of Youth*

and Adolescence, 24, 649–665.

Holt-Lunstad, J., Smith, T. B., & Layton, J. B. (2010). Social relationships and mortality risk: a meta-analytic review. *PLoS Medicine*, 7(7), e1000316.

House, J. S., Landis, K. R., & Umberson, D. (1988). Social relationships and health. *Science*, 241, 540–545.

Iribarren, C., Sidney, S., Bild, D. E., Liu, K., Markovitz, J. H., Roseman, J. M., & Matthews, K. (2000). Association of hostility with coronary artery calcification in young adults. *Journal of the American Medical Association*, 283, 2546–2551.

Kubzansky, L. D., Sparrow, D., Vokonas, P., & Kawachi, I. (2001). Is the glass half empty or half full? A prospective study of optimism and coronary heart disease in the normative aging study. *Psychosomatic Medicine*, 63, 910–916.

Matthews, K. A., Glass, D. C., Rosenman, R. H., & Bortner, R. W. (1977). Competitive drive, pattern A, and coronary heart disease: A further analysis of some data from the Western Collaborative Group Study. *Journal of Chronic Diseases*, 30, 489–498.

Meara, E., White, C., & Cutler, D. M. (2004). Trends in medical spending by age, 1963–2000. *Health Affairs*, 23, 176–183.

Miller, T. Q., Smith, T. W., Turner, C. W., Guijarro, M. L., & Hallet, A. J. (1996). Meta-analytic review of research on hostility and physical health. *Psychological Bulletin*, 119, 322–348.

Moravec, C. S. (2008). Biofeedback therapy in cardiovascular disease: rationale

and research overview. *Cleveland Clinic Journal of Medicine*, 75, S35–S38.

Nes, L. S., & Segerstrom, S. C. (2006). Dispositional optimism and coping: A meta-analytic review. *Personality and Social Psychology Review*, 10, 235–251.

Oaten, M., & Cheng, K. (2005). Academic examination stress impairs self-control. *Journal of Social and Clinical Psychology*, 24, 254–279.

O’Leary, A. (1985). Self-efficacy and health. *Behaviour Research and Therapy*, 23, 437–451.

Patel, C., Marmot, M. G., & Terry, D. J. (1981). Controlled trial of biofeedback-aided behavioural methods in reducing mild hypertension. *British Medical Journal (Clinical research ed.)*, 282, 2005–2008.

Pressman, S. D., Gallagher, M. W., & Lopez, S. J. (2013). Is the emotion-health connection a “first-world problem”? *Psychological Science*, 24, 544–549.

Pressman, S. D., & Cohen, S. (2005). Does positive affect influence health? *Psychological Bulletin*, 131, 925–971.

Richman, L. S., Kubzansky, L., Maselko, J., Kawachi, I., Choo, P., & Bauer, M. (2005). Positive emotion and health: Going beyond the negative. *Health Psychology*, 24, 422–429.

Rodin, J., & Langer, E. J. (1977). Long-term effects of a control-relevant intervention with the institutionalized aged. *Journal of Personality and Social Psychology*, 35, 897–902.

Rutter, M. (1985). Resilience in the face of adversity. *British Journal of Psychiatry*,



147, 598–611.

Salmon, P. (2001). Effects of physical exercise on anxiety, depression, and sensitivity to stress: A unifying theory. *Clinical Psychology Review*, 21(1), 33–61.

Scheier, M. F., & Carver, C. S. (1985). Optimism, coping, and health: assessment and implications of generalized outcome expectancies. *Health Psychology*, 4, 219–247.

Schoenfeld, E. R., Greene, J. M., Wu, S. Y., & Leske, M. C. (2001). Patterns of adherence to diabetes vision care guidelines: Baseline findings from the Diabetic Retinopathy Awareness Program. *Ophthalmology*, 108, 563–571.

Schulz, R., & Hanusa, B.H. (1978). Long-term effects of control and predictability-enhancing interventions: Findings and ethical issues. *Journal of Personality and Social Psychology*, 36, 1194–1202.

Seegerstrom, S. C., Taylor, S. E., Kemeny, M. E., & Fahey, J. L. (1998). Optimism is associated with mood, coping, and immune change in response to stress. *Journal of Personality and Social Psychology*, 74, 1646–1655.

Seligman, M. E. P. (2008). Positive health. *Applied Psychology*, 57, 3–18.

Selye, H. (1946). The general adaptation syndrome and the diseases of adaptation. *Journal of Clinical Endocrinology*, 6, 117–230.

Sieber, W.J., Rodin, J., Larson, L., Ortega, S., Cummings, N., Levy, S., ... Herberman, R. (1992). Modulation of human natural killer cell activity by exposure to uncontrollable stress. *Brain, Behavior, and Immunity*, 6, 141–156.

Spiegel, D., Kraemer, H., Bloom, J., & Gottheil, E. (1989). Effect of psychosocial treatment on survival of patients with metastatic breast cancer. *The Lancet*, 334, 888–891.

Taylor, S. E. (2012) *Health psychology* (8th ed.). New York, NY: McGraw-Hill.

Taylor, S. E., Klein, L. C., Lewis, B. P., Gruenewald, T. L., Gurung, R. A., & Updegraff, J. A. (2000). Biobehavioral responses to stress in females: Tend-and-befriend, not fight-or-flight. *Psychological Review*, 107, 411–429.

Twisk, J. W., Snel, J., Kemper, H. C., & van Mechelen, W. (1999). Changes in daily hassles and life events and the relationship with coronary heart disease risk factors: A 2-year longitudinal study in 27–29-year-old males and females. *Journal of Psychosomatic Research*, 46, 229–240.

Wallston, B. S., & Wallston, K. A. (1978). Locus of control and health: a review of the literature. *Health Education & Behavior*, 6, 107–117.

World Health Organization (2013). Cardiovascular diseases. Retrieved from <http://www.who.int/mediacentre/factsheets/fs317/en/index.html>

World Health Organization. (1946). Preamble to the Constitution of the World Health Organization. Retrieved from <http://www.who.int/about/definition/en/print.html>



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