(Dissatisfied) to 10 (Satisfied). Hedonic level of affect can also measured using experience-sampling methods. Available measures of happiness are listed in the item bank of the World Database of Happiness and linked to research findings obtained with them.

How Happy Are We?

In 2005 the average response in the United States to the question about life satisfaction was 7.6 on the 10-point scale. The highest score observed among international samples was an 8.2 in Denmark, and the lowest was a 3.3 in Zimbabwe (3.3). The world average is about 6. So, most people are happy, but not everybody is equally happy—13% of Americans sampled rated their satisfaction at 5 or lower, while 16% rated it at 10. These and related research findings can be found in the collection "Happiness in Nations" of the World Database of Happiness.

What Determines Happiness?

Most of the differences in average happiness across nations are due to the quality of the society. Not surprisingly, people live happier in nations that provide a good material standard of living, safety, freedom, and justice. What may come as a surprise is that people also live happier in modern individualistic societies than in traditional collectivistic societies and that average happiness is not lower in nations where income disparities are great. Together, these societal characteristics explain about 75% of the observed differences in life satisfaction. Social conditions for human happiness are fairly universal.

Social factors explain less of the differences in happiness within modern western societies. Only some 10% of life satisfaction can be attributed to income, education, and social rank. Some 15% seems to be due to strikes of good or bad luck, and about 30% is attributable to genetic make-up. A large part of the difference seems to be in learned art-of-living skills, such as social intelligence. Recent attention to "positive psychology" aims at identifying these aptitudes and finding ways to enhance them. Research results concerning these possible sources of differences in life satisfaction are summarized in the collection "Correlational Findings"' of the World Database of Happiness.

Can Happiness Be Fostered?

Some believe that happiness is relative and that chasing after it will get you as far as a mouse in a treadmill. Others say that happiness is a fixed trait and as such is practically unchangeable. Research shows, however, that happiness can indeed be raised lastingly. Average happiness has gone up in most of the contemporary nations over the last 40 years. On the other hand, long-term follow-up studies have shown that we do not adapt to everything, for example, not to the loss of a child.

Should Happiness Be Fostered?

For some, happiness is the greatest good, and we should aim at greater happiness for the greater number of people. Many religions see this differently and place more value on human suffering. Research into facts cannot determine whether enjoying life is morally better than suffering from it. However, research findings do offer some insight into the consequences of viewpoints and show to what extent seeking happiness meshes with other values. In this connection research has been carried out into the extent to which happiness brings out the good or the bad in people. It appears that happiness does not breed contented cows, but it does activate people. Happiness broadens our scope and helps to build up our resources. Research results indicate that happiness is good for your health and that happy people live longer. Happy people are also better citizens; they need fewer scapegoats, give more of themselves for social organizations and are, perhaps, more sensible voters. In short, fostering happiness achieves more than just a more pleasant life. In a number of ways, subjective happiness can make life objectively better as well.

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See also: **Emotions; Flourishing; Quality of Life; Psychological Health**

HAPTIC PERCEPTION

The human sense of touch consists of two principal subsystems. One of them, the "cutaneous" or "tactile" system, uses sensory information from mechanoreceptors and thermoreceptors embedded in the skin. The other, known as the "haptic" system, relies on all the sensory inputs used by the tactile system in combination with information from position and movement receptors in joints and muscles and force receptors in tendons. Haptic perception typically involves active manual exploration, although other parts of the body, such as the foot and tongue, may also be used for "touching." When people use their haptic system, they tend to focus on their experiences of the external world of surfaces and objects and their properties (e.g., roughness, compliance, shape, weight, and so forth). In contrast, when their tactile system is passively stimulated, people tend rather to focus on their own internal subjective sensations, such as pressure, vibration, and warmth.

People haptically recognize common objects both quickly and accurately. Research has shown that individuals manually explore multi-attribute objects systematically in order to learn about their most diagnostic properties (Lederman & Klatzky, 1987). The reason that they can haptically recognize objects so well is that they execute a variety of stereotypical hand-movement patterns, known as exploratory procedures, to obtain a wealth of information about many different object properties. Each exploratory procedure has proven to be optimal, even necessary, for obtaining information about one or more specific object properties.

For example, people will typically squeeze or tap an object to see how soft or hard it is, they will trace along its edges to learn the most about its shape, and they will lift it away from a supporting surface to assess its weight. Exploratory procedures differ in several other respects as well: they vary in terms of which other properties are simultaneously available to the observer, how quickly each exploratory procedure is typically performed, and which ones can be co-executed. Researchers have discovered that exploratory procedures that best inform the observer about an object's material properties offer highly precise information; they are also faster to execute and more numerous than the exploratory procedures that best provide geometric information. In contrast, the latter offer relatively imprecise geometric cues, and are very slow to execute.

Researchers have shown that the relative performance characteristics of the exploratory procedures have a number of important consequences for perceiving objects and their properties (Klatzky & Lederman, 2007). First, as a result of the differences just noted with respect to the relative precision and speed with which exploratory procedures provide information about material versus geometric properties, observers are more likely to attend to an object's material features and less likely to attend to its geometric features when using touch, as opposed to vision. Second, because haptic information about material properties is typically better than that provided visually, observers who are required to visually discriminate between common objects along some specific dimension (e.g., texture, shape, and so on) are highly likely to touch the objects in forming judgments based on material dimensions; however, there is no need, and they do not choose, to do so when geometric dimensions are critical to their judgments.

Other performance characteristics of exploratory procedures lead to two additional consequences. The third is that people typically manually explore objects in a specific sequence. They begin by executing grasp and lift exploratory procedures, both of which provide coarse information about many different object properties quickly and in parallel. If necessary, this initial stage is followed by another stage in which the exploratory procedure that offers the most precise information about the diagnostic property in question is performed. As a fourth consequence, people can and do reduce the time it takes to learn to classify unfamiliar objects by capitalizing on redundant object properties. To accomplish this goal, they typically perform more than one exploratory procedure simultaneously, provided the relevant exploratory procedures are co-executable, that is, motorically or in the same region of the object. To be able to perform more than one relevant exploratory procedure in tandem means that observers gain more "bang for the buck." Thus hand movements are critical for effective haptic perception. Interestingly, the order in which haptic perception of various object properties develops in infants parallels the sequence in which they are first capable of manually executing the associated exploratory procedures (Bushnell & Boudreau, 1991).

People also frequently use their haptic system in conjunction with other sensory modalities, such as vision or audition. How, then, do they coordinate these multiple sensory sources? For some properties common to both modalities (e.g., 2-D geometry, such as found in Braille or raised-line drawings), the sensory inputs initially processed and represented by the inferior modality—in this case, haptics—may be translated into a representation that can then be used by the superior modality (e.g., vision). For other properties, such as 3-D shape and texture, both sources of information may be used, with the inputs from each modality weighted by their relative reliability (Ernst & Banks, 2002). Given what has previously been discussed, in making multimodal judgments about an object's geometric features (e.g., size, shape), people tend to weight the visual information more strongly than the corresponding haptic information; conversely, in multimodal tasks involving surface roughness, they tend to weight the haptic information more strongly than the corresponding visual information.

In addition to haptically perceiving what the observer is touching, it is also important to know where it is located. This requires the construction of a spatial frame of reference. Researchers have shown that although multiple frames of reference may be adopted (e.g., with respect to absolute points in space, or with respect to one's own body), when haptically exploring an object or environment within arm's reach, an egocentric frame of reference (with the origin or egocenter occurring somewhere within the body) tends to be weighted more strongly. For vision, the egocenter has been consistently shown to lie between the eyes, near the bridge of the observer's nose; for audition, it apparently lies inside the head, midway along a line joining the two ears. In contrast, the haptic egocenter is not fixed; rather it varies with the task and exploring limb (e.g., Haggard, Newman, Blundell, & Andrew, 2000).

Knowledge from scientific research on human haptics has contributed to a number of real-world applications, ranging from sensory communication systems for the blind (e.g., tangible graphics displays that are read by hand as opposed to eye), to haptic interfaces that allow the user to feel a real or virtual world at a distance, to "haptic" art (e.g., Burdea, Lin, & Tachie, 2005).

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See also: **Tactile Sensation**

HARLOW, HARRY F. (1905–1981)

Harry Frederick Harlow, whose innovative studies of love and family propelled him into both fame and controversy, was born Harry F. Israel in the Iowa farm town of Fairfield. He changed his name to Harlow at the urging of his major professor at Stanford University, Lewis Terman, who told him that the Jewish sound of his name would make it difficult for him to get a job.

By the time he completed his PhD in 1930, the name change was official, and he had a solid job offer, as an assistant professor of psychology at the University of Wisconsin in Madison. He would remain at Wisconsin for more than 40 years, where he built a primate research program that continues today at both the Harlow Primate Laboratory and the Wisconsin Regional Primate Research Center.

Harlow had originally planned to continue rat studies he had begun at Stanford. But when he arrived in Madison, he learned that his department had closed down its rodent laboratory. For several years, he attempted makeshift animal experiments—a tiny rat colony in the basement of the administration building, a series of experiments with cats conducted in a spare room of a campus fraternity—but he finally settled on studying the apes and monkeys housed at Madison's small zoo. His first doctoral student, the humanist psychology pioneer Abraham Maslow, worked with him there and focused his own dissertation on dominance strategies in nonhuman primates.

Harlow eventually persuaded the university to let him create an official primate research facility. Using student labor, his own money, and scavenged supplies, he cobbled together a facility out of an abandoned box factory near the edge of campus. He would later say that the close quarters and small number of monkeys that could be housed there led him to some of his most important discoveries.

In particular, because he was forced to use the same monkeys over and over, repeating the same tasks numerous times, he began to see that the animals were doing more than blind repetition. They showed knowledge from previous tests and applied it to the new ones. They became faster and faster at doing the tests, and quicker to correct themselves when presented with a new challenge. Harlow and his students built an elaborate device, called the Wisconsin General Test Apparatus (WGTA), to test monkeys on everything from shape sorting to pattern recognition. He published a series of papers arguing that this was evidence of cognitive ability—that, effectively, the monkeys learned to learn.

Those results, published in the early 1940s, were at first dismissed by the behavioral psychologists dominating the field. But as other researchers confirmed the results, Harlow began to gain attention as a promising researcher. He became president of the Midwest Psychological Association in 1947 and president of the APA's Division of Experimental Psychology in 1950. By that time, though,