

A MEASURE OF HAPPINESS

Philosophers since Aristotle have puzzled over the meaning of happiness. **Tony Reichhardt** asks what scientists, psychologists and economists can bring to the topic. Are we any closer to being able to quantify joy?

Feeling happy? As you read this, are you taking a well-deserved break from your work, confident that your latest experiment is going to produce the results you want? Or is reading *Nature* a guilty pleasure, snatched in the face of other pressures — your students, your department head, writing the next grant?

Sociological surveys usually try to measure well-being by asking people to assess their current level of happiness. Such questions are a regular feature of surveys of the public, such as the 2005 Pew Research Center survey, which asked 3,014 adult Americans: “How happy are you these days in your life?” Half reported being “pretty happy”, 34% “very happy” and 15% “not too happy”.

But asking people if they are happy raises more questions than it answers, not least of which is how to define happiness. Is it a single emotion or a personality trait? A physical state, with characteristic brain-wave patterns and biomarkers? Is it simply the absence of unhappiness, or something else?

Psychologists, economists and other well-being researchers don't have definitive answers, but they're beginning to approach the subject in a more rigorous way. In the process, they hope to learn more about the link between health and happiness, and to contribute to debates over eternal questions, such as: who's happier, the Americans or the French?

Daniel Kahneman, a Princeton University psychologist who won the 2002 Nobel Prize for Economics for applying psychology to decision-making in the face of uncertainty, wants to develop surveys that ask more sophisticated questions. His work investigates how a person's sense of overall life satisfaction diverges from their everyday ups and downs. Early results suggest that the two do not necessarily correlate.

Kahneman and his colleagues gave two questionnaires to women in Columbus, Ohio, and Rennes, France. The first assessed overall life satisfaction. The second asked for a diary of a single day, broken into discrete episodes (had lunch with a friend, did chores), and to rate specific emotions they'd felt during each episode, on a scale from 0 to 6.

This Day Reconstruction Method (DRM)¹, developed by Kahneman, Princeton economist



Happy hour: how do feelings from moment to moment relate to overall satisfaction with one's life?

Alan Krueger and others in 1994, is easier to administer, but yields results similar to the more intrusive Experience Sampling Method, where subjects are interrupted by a beeper at various points during the day and asked to report their feelings.

Back to normal

Kahneman found some differences between French and American women — for example, Americans spent more time on childcare and enjoyed it less — but in general, similar things made them happy (time with friends and family) and unhappy (commuting and work). And in both cases, overall satisfaction was not strongly correlated with experienced happiness. Rich and married women reported more satisfaction than poor and single women, for example, but weren't happier day-to-day.

Although preliminary, these results provide a new way to investigate the widely held idea that our level of happiness is fixed. When social scientists compared survey reports of happiness with other factors, ranging from income to

pet ownership, they concluded that people with more money report being happier, but only up to a point. Beyond a certain level (for Americans in 2004, an annual household income of \$50,000 to \$90,000), more money doesn't bring more happiness. And in several countries where median income has risen — including America, China and Japan — happiness levels remain stubbornly constant.

These and other data led well-being researchers to conclude that life circumstances don't have much affect on long-term happiness. Surveys show that happiness increases after marriage, but only temporarily. An oft-cited 1978 study found that, a year after their life-changing event, both lottery winners and paralysis victims had reverted to close to their former level of happiness². This contributed to the notion of a 'hedonic setpoint' to which people return no matter what life throws their way. And based on studies showing similar levels of reported happiness in twins, the setpoint appeared to be genetically determined.

Pioneers of 'positive psychology' such as

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Martin Seligman of the University of Pennsylvania in Philadelphia developed research-based practices for being happier at the margins — by consciously expressing gratitude, for example. But most experts agreed that we were stuck at our natural setpoint.

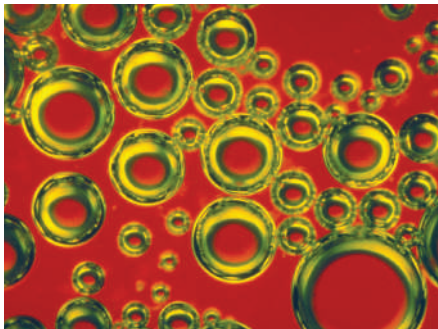
Lately, however, psychologists such as Kahneman and Ed Diener, from the University of Illinois at Urbana-Champaign, have backed away from too rigid an interpretation of this 'hedonic treadmill'. Diener argues that although genetically determined personality factors may predispose people to a certain level of well-being, different kinds of happiness change over time³. For example, older people report declines in both positive and negative moods. In Diener's view, happiness is not a unitary concept with a single set point.

In the blood

Kahneman thinks a greater focus on measuring experienced happiness could change our view of the hedonic setpoint. The observation that married people revert to their previous levels of satisfaction within a few years of the wedding may be explained by marriage adding some sources of daily happiness (time with spouses and children) while decreasing others (time with friends). Future surveys may need to distinguish between daily and long-term happiness more carefully.

In Kahneman's quest for a measure of happiness that "economists can respect", he and Krueger came up with a U-index based on DRM reports of positive and negative episodes. The U-index is the fraction of time a person is unhappy, and relates more to experienced happiness than to life satisfaction⁴.

Krueger has been working with the Gallup Organization to come up with a five-minute version of the DRM, making it suitable for large surveys. Measures such as the U-index



Spit spot: hormones in saliva might reveal a link between physical health and mental well-being.

averaged for the general population, he says, could be incorporated into National Well-being Accounts — already used in Canada and Australia — that try to measure quality of life. Krueger, among other economists, argues that well-being is a better social goal than economic growth. But first they need to agree on a simple measure of well-being.

Well-being researchers are also going beyond questionnaires to borrow tools from medicine, neuroscience and genetics. Kahneman plans to supplement his DRM data with measures of cortisol, a hormone associated with stress, to see how it varies with mood. According to psychologist Carol Ryff, director of the University of Wisconsin's Institute on Aging in Madison, there's currently a boom in well-being studies measuring cortisol.

Ryff is responsible for perhaps the most ambitious well-being research project ever conducted, the Midlife in the United States, or MIDUS II, study. With \$28 million in funding from the National Institute on Aging, MIDUS II is five years into a six-year study to assess adult Americans' health and well-being. As well as the psychological and personality surveys collected in MIDUS I, conducted in the

mid-1990s, researchers will gather data on several biomarkers.

By measuring factors such as hormone levels (cortisol or epinephrine), blood pressure or immune-system functioning, scientists hope to learn more about the physiological underpinnings of psychological well-being and distress. Studies showing that people with positive emotions catch fewer colds⁵ suggest a link between happiness and physical health.

Cut the fluff

Some biomarkers, including measures of brain activity and genetic factors, have been correlated with well-being in previous studies. In the MIDUS II study, twins and siblings will yield information on the role of genetics in well-being. And the project plans a smaller version of MIDUS II in Japan, to gather data from another culture. The researchers hope to tease out the role of some of these biomarkers as they process their results.

Ryff hopes to find out whether well-being and ill-being (depression and so on) have distinct biological correlates, or whether they are at opposite ends of the same psychological spectrum. One of her previous studies on a group of 135 older women assessed on biomarkers such as cortisol and waist-hip ratio, suggested that the biological correlates of well-being and ill-being are largely distinctive⁶. That's one issue MIDUS II will investigate more fully.

In her own work Ryff likes to distinguish between hedonic well-being (moods and feelings) and eudaimonic well-being, which is more concerned with factors such as having purpose in life, continued personal growth and development, and good relationships with others. In fact, Ryff rarely uses the term 'happiness'. Perhaps that's because the more scientists learn, the less precise the term has become.

That's roughly where the science of happiness stands right now — still wrestling with its own terminology. Ryff has little time for the fluffier aspects of positive psychology, which she dismisses as "a lot of PR". But one thing she and other well-being researchers can agree on is the nature of the question, "We're going after it in a serious way," she says. "In the final analysis, it's an empirical question." ■

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See Editorial, page 401.

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Passing mood: lottery winners and accident victims both seem to revert to their prior levels of happiness.