High income improves evaluation of life but not emotional well-being

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Recent research has begun to distinguish two aspects of subjective well-being. Emotional well-being refers to the emotional quality of an individual's everyday experience—the frequency and intensity of experiences of joy, stress, sadness, anger, and affection that make one's life pleasant or unpleasant. Life evaluation refers to the thoughts that people have about their life when they think about it. We raise the question of whether money buys happiness, separately for these two aspects of well-being. We report an analysis of more than 450,000 responses to the Gallup-Healthways Well-Being Index, a daily survey of 1,000 US residents conducted by the Gallup Organization. We find that emotional well-being (measured by questions about emotional experiences yesterday) and life evaluation (measured by Cantril's Self-Anchoring Scale) have different correlates. Income and education are more closely related to life evaluation, but health, care giving, loneliness, and smoking are relatively stronger predictors of daily emotions. When plotted against log income, life evaluation rises steadily. Emotional well-being also rises with log income, but there is no further progress beyond an annual income of ~$75,000. Low income exacerbates the emotional pain associated with such misfortunes as divorce, ill health, and being alone. We conclude that high income buys life satisfaction but not happiness, and that low income is associated both with low life evaluation and low emotional well-being.

life evaluation | emotional experience | household income | satiation | happiness

The question of whether "money buys happiness" comes up frequently in discussions of subjective well-being in both scholarly debates and casual conversation. The topic has been addressed in a vast and inconclusive research literature (for a selection of recent reviews, see refs. 1–4). No single article can settle this complex question definitively, but data recently collected by the Gallup Organization in the Gallup-Healthways Well-Being Index (GHWBI) provide a rich source of observations, as well as an unusually detailed measurement of well-being. We analyze the responses of more than 450,000 US residents surveyed in 2008 and 2009 to several questions about their subjective well-being. The results suggest a rather complex answer to our opening question.

A discussion of subjective well-being must recognize a distinction between two concepts that are often confounded (5–8). Emotional well-being (sometimes called hedonic well-being or experienced happiness) refers to the emotional quality of an individual's everyday experience—the frequency and intensity of experiences of joy, fascination, anxiety, sadness, anger, and affection that make one's life pleasant or unpleasant. Life evaluation refers to a person's thoughts about his or her life. Surveys of subjective well-being have traditionally emphasized life evaluation. The most commonly asked question in these surveys is the life satisfaction question: "How satisfied are you with your life as a whole these days?" The GHWBI survey is unusual in its attempt to distinguish and capture both aspects of subjective well-being. Emotional well-being is assessed by questions about the presence of various emotions in the experience of yesterday (e.g., enjoyment, happiness, anger, sadness, stress, worry). Life evaluation is measured using Cantril's Self-Anchoring Scale, which has the respondent rate his or her current life on a ladder scale in which 0 is "the worst possible life for you" and 10 is "the best possible life for you." We find that emotional well-being and life evaluation have different correlates in the circumstances of people's lives. In particular, we observe striking differences in the relationship of these aspects of well-being to income. (For related observations in the Gallup World Poll, see ref. 9.)

Confusion abounds in discussions of our question. For an example, consider the statement that "a lasting marriage. . .is estimated to be worth $100,000 a year" (10). This correct statement of a research finding is likely to be misunderstood, because many readers will interpret it by imagining the pleasure of a change of this magnitude in their income. The pleasure of a raise is likely to be transient, however, due to a phenomenon known as adaptation. Because of adaptation, the difference in well-being between two random individuals whose income differs by $100,000 is far less impressive than the joy and misery that these individuals would immediately experience were they to trade places. Because the observed effects of long-established income differences are much smaller than intuitively expected, they are sometimes described as inconsequential, but this too is misleading. When entered in multiple regression model to predict well-being along with other aspects of life circumstances (marital status, age, education), the effects of household income are almost invariably both statistically significant and quantitatively important. We report that household income matters for both emotional well-being and life evaluation, and that there are circumstances under which it matters for the latter when it does not matter for the former.

Some of the confusion regarding the effects of income on well-being can be traced to incorrect analysis. Psychologists and sociologists often plot measures of subjective well-being against income in dollars, but a strong argument can be made for the logarithm of income as the preferred scale. The logarithmic transformation represents a basic fact of perception known as Weber's Law, which applies generally to quantitative dimensions of perception and judgment (e.g., the intensity of sounds and lights). The rule is that the effective stimulus for the detection and evaluation of changes or differences in such dimensions is the *percentage* change, not its absolute amount. In the context of income, a $100 raise does not have the same significance for a financial services executive as for an individual earning the minimum wage, but a doubling of their respective incomes might have a similar impact on both. The logarithmic transformation reveals an important regularity of judgment that risks being masked when a dollar scale is used.

Plots of subjective well-being against income in dollars invariably yield a strongly concave function. Although concavity is entailed by the psychophysics of quantitative dimensions, it often has been cited as evidence that people derive little or no psychological benefit from income beyond some threshold. Although this conclusion has been widely accepted in discussions of the relationship between life evaluation and gross domestic product (GDP) across nations (11–14), it is false, at least for this

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aspect of subjective well-being. In accordance with Weber's Law, average national life evaluation is linear when appropriately plotted against log GDP (15); a doubling of income provides similar increments of life evaluation for countries rich and poor. As this example illustrates, the statement that "money does not buy happiness" may be inferred from a careless reading of a plot of life evaluation against raw income—an error avoided by using the logarithm of income. In the present study, we confirm the contribution of higher income to improving individuals' life evaluation, even among those who are already well off. However, we also find that the effects of income on the emotional dimension of well-being satiate fully at an annual income of ~$75,000, a result that is, of course, independent of whether dollars or log dollars are used as a measure of income.

The aims of our analysis of the GHWBI were to examine possible differences between the correlates of emotional well-being and of life evaluation, focusing in particular on the relationship between these measures and household income.

Results

Some observations were deleted to eliminate likely errors in the reports of income. The GHWBI asks individuals to report their monthly family income in 11 categories. The three lowest categories—0, <$60, and $60–$499—cannot be treated as serious estimates of household income. We deleted these three categories (a total of 14,425 observations out of 709,183), as well as those respondents for whom income is missing (172,677 observations). We then regressed log income on indicators for the congressional district in which the respondent lived, educational categories, sex, age, age squared, race categories, marital status categories, and height. Thus, we predict the log of each individual's income by the mean of log incomes in his or her congressional district, modified by personal characteristics. This regression explains 37% of the variance, with a root mean square error (RMSE) of 0.67852. To eliminate outliers and implausible income reports, we dropped observations in which the absolute value of the difference between log income and its prediction exceeded 2.5 times the RMSE. This trimming lost 14,510 observations out of 450,417, or 3.22%. In all, we lost 28.4% of the original sample. In comparison, the US Census Bureau imputed income for 27.5% of households in the 2008 wave of the American Community Survey (ACS). As a check that our exclusions do not systematically bias income estimates compared with Census Bureau procedures, we compared the mean of the logarithm of income in each congressional district from the GHWBI with the logarithm of median income from the ACS. If income is approximately lognormal, then these should be close. The correlation was 0.961, with the GHWBI estimates about 6% lower, possibly attributable to the fact that the GHWBI data cover both 2008 and 2009.

We defined positive affect by the average of three dichotomous items (reports of happiness, enjoyment, and frequent smiling and laughter) and what we refer to as "blue affect"—the average of worry and sadness. Reports of stress (also dichotomous) were analyzed separately (as was anger, for which the results were similar but not shown) and life evaluation was measured using the Cantril ladder. The correlations between the emotional well-being measures and the ladder values had the expected sign but were modest in size (all <0.31). Positive affect, blue affect, and stress also were weakly correlated (positive and blue affect correlated –0.38, and –0.28, and 0.52 with stress.) The results shown here are similar when the constituents of positive and blue affect are analyzed separately.

As in other studies of well-being, we found that most people were quite happy and satisfied with their lives. About 85% of respondents experienced much positive affect (the average of smiling, enjoyment, and happiness) each day. Blue affect (sadness and worry) was reported by 24%, and stress was reported by 39%. The average of the Cantril ladder score was 6.76. Compared with about 150 other countries for which we have corresponding data from the Gallup World Poll, these results indicate that the US population ranks high on the ladder (ninth after the Scandinavian countries, Canada, The Netherlands, Switzerland, and New Zealand), and also does well in terms of happiness (fifth), smiling (33rd), and enjoyment (10th), but much less well on worry (89th from best), sadness (69th from best), and anger (75th). Americans report very high levels of stress (fifth among 151 countries).

Table 1 presents regressions of the four well-being measures on a set of demographic variables, which provide context for interpreting these measures. All of the predictors are dichotomous. The first row of the table shows the regression coefficient for an indicator of high income, defined as reporting a monthly income of at least $4,000, which corresponds to the top 58% of the population. These coefficients cannot be compared across the row, because the outcomes have different scales. The entries in other rows are ratios normalized by the coefficient on the high-income indicator, thus representing the estimated effect relative to the effect of increasing income by approximately 4-fold. The sign of each ratio is positive if its regression coefficient has the same sign as the coefficient for income (positive for positive affect, negative for blue affect, etc.). A coefficient >1 indicates an effect larger

Table 1. Life evaluation, emotional well-being, income, and the income-normalized effects of other correlates

	Positive affect	Blue affect	Stress	Ladder
Regression coefficient				
High income	0.03	−0.06	−0.03	0.64
Ratio of coefficient to log income coefficient				
High income	1.00	1.00	1.00	1.00
Insured	0.40	0.92	1.19	0.59
Old	0.79	0.93	6.28	0.50
Graduate	0.03	0.01	−1.93	0.48
Religious	1.16	−0.02	1.21	0.35
Female	0.16	−0.60	−1.89	0.29
Married	0.66	0.45	0.66	0.32
Weekend	1.13	0.72	4.83	0.01
Children	0.08	−0.37	−2.47	−0.11
Caregiver	−0.49	−1.02	−2.99	−0.25
Obese	−0.38	−0.14	−0.42	−0.31
Divorced	−0.38	−0.27	−0.88	−0.32
Health condition	−1.36	−1.22	−3.15	−0.48
Headache	−4.45	−3.41	−9.82	−0.78
Alone	−7.13	−2.10	−3.73	−0.75
Smoker	−1.01	−0.84	−2.85	−0.70

All correlates are dichotomous. The first row reports the coefficient of an indicator for high income in regressions of the ladder, positive affect, blue affect, and stress on all correlates. Note that the four outcomes are on different scales. High income is the 58% of the sample whose monthly income is at least $4,000/mo. The subsequent rows give the regression coefficients on the other correlates divided by the regression coefficient on the high-income indicator, and thus show the estimated effect relative to the effect of increasing income by approximately 4-fold. Income has a beneficial effect on all outcomes, so the ratios in rows other than the first are positive when the correlate is associated with a good effect on the outcome and negative otherwise. "Insured" indicates that the respondent has health insurance. "Old" is age 60 y or above. "Graduate" indicates a college degree. "Religious" indicates that the respondent reports that religion is an important part of his or her daily life. "Weekend" indicates that the day reported on was a Saturday or a Sunday; this is the previous day for stress and for positive and blue affect, and the day of the interview for the ladder. "Children" is 1 if there are children living in the household, and "caregiver" is 1 if the respondent currently helps care for an elderly or disabled family member, relative, or friend. "Obese" is 1 if body mass index (based on self-reported height and weight) is ≥30. "Health condition" is 1 if the respondent reports ever having been diagnosed by a doctor or nurse with one or more of the following: high blood pressure, high cholesterol, diabetes, myocardial infarction, asthma, cancer, or other chronic condition. "Alone" is 1 if the respondent reports zero social time with friends or family yesterday, including telephone and e-mail contact.

than that of the income dichotomy. Because higher incomes are always associated with better outcomes, positive ratios indicate that the predictor is associated with better outcomes, and negative ratios indicate the opposite.

With few exceptions, the various predictors have the same sign for all four well-being measures, but their relative sizes vary considerably. As might be expected, weekends are associated with improved affect, especially with reduced stress. Physical illness, headaches, spending a day alone, and caring for an adult all have relatively larger adverse effects on emotional well-being than on life evaluation. Headaches and being alone, like emotional well-being, are measured for yesterday, which may enhance their importance in the regressions. At the other extreme, being a college graduate is associated with high life evaluation but has only a small association with positive and blue affect and a (perhaps) counterintuitive relation with stress; all other factors being equal, college graduates report more stress than nongraduates. The Gallup World Poll found high levels of stress in high-GDP countries (16).

Religion has a substantial influence on improving positive affect and reducing reports of stress, but no effect on reducing sadness or worry. Females report slightly higher positive affect and life evaluation, but also more blue affect and much more stress. The presence of children at home is associated with significant increases in stress, sadness, and worry (6). As reported recently, older people enjoy greater emotional well-being, most notably a pronounced reduction in the experience of stress and anger (17). Smoking is an impressively strong predictor of low well-being—especially its emotional dimensions—even when income and education are controlled for. A propensity to smoke is in part genetically determined (18) and is a known indicator of a tense personality (19, 20).

Fig. 1 and Table 2 characterize the relationship between the dimensions of subjective well-being and household income. Fig. 1 presents averages over eight income groups for the three aspects of emotional well-being and for the Cantril ladder measure of life evaluation. Here blue affect and stress are converted to their complements, not blue and stress-free, so that higher values in the figure always refer to better psychological outcomes. Income is converted to an annual basis and plotted on a log scale. (The midpoints of each income range, used only in the figure, are imputed assuming that the underlying distribution of income is lognormal; the figure shows vertical lines for the top three interval limits.) Stress is the average of a yes/no response to the question: "Did you experience a lot of stress yesterday?" Thus, Fig. 1 shows the percentage of the population in each income group who did not report experiencing this emotion on the previous day. Not blue is 1 minus the average of the percentage reporting sadness and worry. The right-hand axis shows the average score on the ladder, with values ranging from 0 to 11.

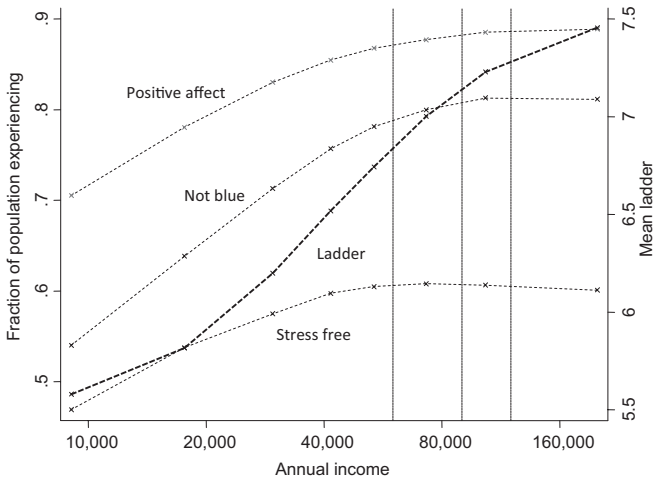

Fig. 1. Positive affect, blue affect, stress, and life evaluation in relation to household income. Positive affect is the average of the fractions of the population reporting happiness, smiling, and enjoyment. "Not blue" is 1 minus the average of the fractions of the population reporting worry and sadness. "Stress free" is the fraction of the population who did not report stress for the previous day. These three hedonic measures are marked on the left-hand scale. The ladder is the average reported number on a scale of 0–10, marked on the right-hand scale.

Table 2. Tests for income satiation of life evaluation and emotional well-being

	Positive affect	Blue affect	Stress	Ladder
Top vs. second	0.0035	0.0013	0.0055	0.2264
t value	(1.9)	(0.6)	(1.5)	(19.4)
Second vs. third	0.0082	−0.0131	0.0016	0.2268
t value	(4.4)	(5.7)	(0.4)	(19.7)
Observations				
Top group	72,744	73,104	73,109	73,068
Second group	40,136	40,291	40,301	40,283
Third group	88,887	89,278	89,290	89,245

The coefficients reported are the differences in mean outcomes between the two indicated income categories. The top category is >$10,000/mo, the second category is $7,500–$9,999/mo, and the third category $5,000–$7,499/mo. SEs are corrected for spatial clustering within zip codes.

Fig. 1 shows that for all measures of experienced well-being, individuals in the lower- income groups do worse on average than those above them, but that those in the top two groups do not differ. For the two top categories to be equal, the entire range of the second category must lie above the satiation point. This observation implies that emotional well-being satiates somewhere in the *third* category of income from the top. We infer that beyond about $75,000/y, there is no improvement whatever in any of the three measures of emotional well-being. In contrast, the figure shows a fairly steady rise in life evaluation with log income over the entire range; the effects of income on individuals' life evaluations show no satiation, at least to an amount well over $120,000.

Table 2 reports a formal test of satiation for the four measures, showing how the second-to-top income group (annual income $90,000–$120,000) differs from the group immediately below it ($60,000–$90,000) and from the group immediately above it (> $120,000). Positive affect, blue affect, and Cantril ladder score are all significantly improved in the first comparison with the exception of stress, which appears to satiate at a lower income level, roughly $60,000. In comparisons of the top two categories, only the ladder score shows a significant improvement with higher income. The small *t* values are remarkable in these very large samples. We conclude that lack of money brings both emotional misery and low life evaluation; similar results were found for anger. Beyond ~$75,000 in the contemporary United States, however, higher income is neither the road to experienced happiness nor the road to the relief of unhappiness or stress, although higher income continues to improve individuals' life evaluations.

Below $75,000, many factors become gradually worse, at least on average. For example, the emotional pain associated with ill health depends on income; for those reporting a monthly income of at least $3,000 (about two-thirds of households), the fractions reporting blue affect with and without headaches are 38% and 19%, respectively, a difference of 19 percentage points. The corresponding values for those with a monthly income of <$1,000 (about 10% of households) are 70% and 38%, a difference of 32%. Table 3 shows that the pain of some of life's misfortunes, including asthma, divorce, and being alone, is significantly exacerbated by poverty; even the benefits of the weekend are less for the poor. Similar results apply to stress and positive affect.

Table 3. Poverty exacerbates the effect of adverse circumstances: Average percentage of people reporting a lot of sadness and worry yesterday, by income group and condition

	Income <$1,000/mo			Income ≥$3,000/mo		
	No	Yes	Difference	No	Yes	Difference
Weekend	46.6	44.5	−2.1	22.3	17.1	−5.2
Divorced	44.3	50.5	6.2	20.5	24.4	3.9
Alone	44.0	58.9	14.9	20.5	31.5	11.0
Headache	38.0	69.5	31.6	18.9	38.4	19.5
Asthma	33.1	40.8	7.8	18.0	21.6	3.6

Approximately 10% of US households have a monthly income <$1,000, and around two-thirds have a monthly income of ≥$3,000. The reported figures are unadjusted for covariates. For the asthma variable, to control for persons with multiple conditions, who are more common at low incomes, the comparison is between those with asthma and no other health conditions and those reporting no health conditions at all. The difference in the third column is statistically different from the difference in the sixth column in each case; the *t* values range from 23.9 (headache) to 3.1 (asthma.)

Discussion

The data for positive and blue affect provide an unexpectedly sharp answer to our original question. More money does not necessarily buy more happiness, but less money is associated with emotional pain. Perhaps $75,000 is a threshold beyond which further increases in income no longer improve individuals' ability to do what matters most to their emotional well-being, such as spending time with people they like, avoiding pain and disease, and enjoying leisure. According to the ACS, mean (median) US household income was $71,500 ($52,000) in 2008, and about a third of households were above the $75,000 threshold. It also is likely that when income rises beyond this value, the increased ability to purchase positive experiences is balanced, on average, by some negative effects. A recent psychological study using priming methods provided suggestive evidence of a possible association between high income and a reduced ability to savor small pleasures (21).

When interpreting our findings, it is essential to distinguish changes from differences. Our data speak only to differences; they do not imply that people will not be happy with a raise from $100,000 to $150,000, or that they will be indifferent to an equivalent drop in income. Changes of income in the high range certainly have emotional consequences. What the data suggest is that above a certain level of stable income, individuals' emotional well-being is constrained by other factors in their temperament and life circumstances.

We observe a qualitative difference between our measures of emotional well-being and of life evaluation—the former satiates with high income, whereas the latter does not. This observation underscores the importance of the distinction between the judgments individuals make when they think about their life and the feelings that they experience as they live it. As might be expected, the former is sensitive to socioeconomic status, whereas the latter is sensitive to circumstances that evoke positive and negative emotions, such as spending time with others and caring for a sick relative.

Several authors have commented on a related difference between two questions that are often used in surveys of subjective well-being: "How satisfied are you with your life?" and "How happy are you these days?" (8, 22, 23). The common conclusion is that income is more strongly related to satisfaction than to happiness, but the difference that we found in the present study is unusually sharp. We speculate that the Cantril ladder of life is a purer measure of life evaluation than the life satisfaction question, which has an emotional aspect, and that the reports of the emotions of yesterday provide a purer measure of emotional well-being than the standard happiness question. If both aspects of subjective well-being are considered important, then the separation of the measures is an advantage.

The relevance of subjective well-being as a guide to policy is a contentious issue, on which we do not take a position. If measures of well-being are to be used to assess human welfare and to guide policy, the present findings raise the question of whether life evaluation or emotional well-being is better suited to these aims. The Cantril ladder is a serious contender for the best tool for measuring the degree to which individuals view themselves as achieving their goals, both material and other. But emotional well-being also is clearly important for individuals and for policy, and here there are choices as well. Not everyone will agree that enhancing the happiness experienced by those who are already quite happy is a legitimate policy objective. The policy goal of reducing suffering is likely to raise fewer objections, and measures of emotional pain may be useful for that purpose. This topic merits serious debate.

Materials and Methods

The survey involved a telephone interview using a dual-frame random-digit dial methodology that included cell phone numbers from all 50 US states. Interviews were conducted between 9:00 AM and 10:00 PM (local time), with most done in the evening. Up to five callbacks were made in the case of no answer. Spanish language interviews were conducted when appropriate. Approximately 1,000 interviews were completed daily from January 2 through December 30, 2009.

The questionnaire covered many topics of interest to the Gallup Organization and Healthways Corporation, including basic demographic information, participants' opinions about the current economic climate and their personal financial situation, information about past diseases, and other topics.

Life evaluation was assessed using Cantril's Self-Anchoring Scale (the ladder), worded as follows: "Please imagine a ladder with steps numbered from 0 at the bottom to 10 at the top. The top of the ladder represents the best possible life for you, and the bottom of the ladder represents the worst possible life for you. On which step of the ladder would you say you personally feel you stand at this time?" (15). Questions about emotional well-being had yes/no response options and were worded as follows: "Did you experience the following feelings during a lot of the day yesterday? How about _____?" Each of several emotions (e.g., enjoyment, stress) was reported separately. The positive affect score was the average of the reports of enjoyment and happiness and of a dichotomous question about the frequency of smiling: "Did you smile or laugh a lot yesterday?" The blue affect score was the average of worry and sadness.

To broaden coverage and representativeness, cell phones were part of the sampling design. Relative to land lines, the response rate for cell phones was typically lower. Of all calls that resulted in contacts with an eligible candidate, 31% of the candidates agreed to be interviewed; of these, 90% completed the entire interview. Despite the sampling limitations, available evidence suggests that the estimates of population parameters were not compromised; for example, the survey predicted recent election results within an acceptable margin of error.

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1. Diener E, Biswas-Diener R (2002) Will money increase subjective well-being? *Soc Indic Res* 57:119–169.
2. Headey B, Muffels R, Wooden M (2008) Money does not buy happiness: Or does it? A reassessment based on the combined effects of wealth, income and consumption. *Soc Indic Res* 87:65–82.
3. Clark AE, Frijters P, Shields M (2008) Relative income, happiness and utility: An explanation for the Easterlin paradox and other puzzles. *J Econ Lit* 46:95–144.
4. Clark AE, Kristensen N, Westergaard-Nielsen N (2009) Economic satisfaction and income rank in small neighbourhoods. *J Eur Econ Assoc* 7:519–527.
5. Diener E (1984) Subjective well-being. *Psychol Bull* 95:542–575.
6. Kahneman D, Krueger AB, Schkade DA, Schwarz N, Stone AA (2004) A survey method for characterizing daily life experience: The day reconstruction method. *Science* 306:1776–1780.
7. Kahneman D, Riis J (2005) *The Science Of Well-Being*, eds Huppert FA, Baylis N, Keverne B (Oxford Univ. Press, Oxford), pp 285–304.

8. Graham C (2010) *Happiness Around the World: The Paradox of Happy Peasants and Miserable Millionaires* (Oxford University Press, New York).
9. Diener E, Ng W, Harter J, Arora R (2010) Wealth and happiness across the world: Material prosperity predicts life evaluation, whereas psychosocial prosperity predicts positive feeling. *J Pers Soc Psychol* 99:52–61.
10. Blanchflower DG, Oswald AJ (2004) Well-being over time in Britain and the USA. *J Public Econ* 88:1359–1386.
11. Diener E, Suh EM (1999) *Well-Being: The Foundations of Hedonic Psychology*, eds Kahneman D, Diener E, Schwarz N (Russell Sage Foundation, New York), pp 434–452.
12. Layard R (2005) *Happiness: Lessons from a New Science* (Penguin, New York).
13. Inglehart R, Klingemann HD (2000) *Culture and Subjective Well-Being*, eds Diener E, Suh EM (MIT Press, Cambridge, MA), pp 165–184.
14. Veenhoven R (1991) Is happiness relative? *Soc Indic Res* 24:1–34.
15. Deaton A (2008) Income, health, and well-being around the world: Evidence from the Gallup World Poll. *J Econ Perspect* 22:53–72.
16. Ng W, Diener E, Arora R, Harter J (2009) Affluence, feelings of stress, and well-being. *Soc Indic Res* 94:257–271.
17. Stone AA, Schwartz JE, Broderick JE, Deaton A (2010) A snapshot of the age distribution of psychological well-being in the United States. *Proc Natl Acad Sci USA* 107:9985–9990.
18. Munafò MR, Johnstone EC (2008) Genes and cigarette smoking. *Addiction* 103:893–904.
19. Munafò MR, Zetteler JI, Clark TG (2007) Personality and smoking status: A meta-analysis. *Nicotine Tob Res* 9:405–413.
20. Terracciano A, Costa PT, Jr. (2004) Smoking and the five-factor model of personality. *Addiction* 99:472–481.
21. Quoidbach J, Dunn EW, Petrides KV, Mikolajczak M (2010) Money giveth, money taketh away: The dual effect of wealth on happiness. *Psychol Sci* 21:759–763.
22. Howell RT, Howell CJ (2008) The relation of economic status to subjective well-being in developing countries: A meta-analysis. *Psychol Bull* 134:536–560.
23. Veenhoven R, Hagerty M (2006) Rising happiness in nations, 1946–2004: A reply to Easterlin. *Soc Indic Res* 79:421–436.