



Using wellbeing for public policy: Theory, measurement, and recommendations

Alejandro Adler · Martin E. P. Seligman

Abstract: Indicators of social progress are the primary drivers of public policy. If existing economic measures of prosperity are complemented with wellbeing metrics that better capture changes in individuals' quality of life, decision makers will be better informed to assess and design policy. The science of wellbeing has yielded extensive knowledge and measurement instruments during more than three decades. We review the existing wellbeing literature and answer three questions: (1) What is wellbeing? (2) How do we measure wellbeing? And, importantly, distinguishing this review from previous ones, (3) How do we use wellbeing metrics to assess and design policy? We suggest that the science of wellbeing is empirically mature enough to complement economic assessments of national progress. We build on existing work to provide recommendations on metrics and new, specific policies for societal wellbeing.

Keywords: wellbeing, public policy, measurement, positive psychology

1. Introduction

The history of humanity is a history of progress (e.g., Diamond, 2013; Pinker, 2011). Within the constraints of the human condition, what can we strive for going forward? How do we measure what is intrinsically valuable? How do we structure institutions and make decisions to elevate the human condition?

In this paper, we use a scientific approach to identify what individuals intrinsically value. We refer to this collection of domains as "wellbeing". We first investigate the relationship between wellbeing and Gross Domestic Product (GDP), the current gold standard for national prosperity. We then build on prior work on wellbeing and public policy to present the most recent advancements in the science of wellbeing. We also present specific recommendations on policy-relevant wellbeing metrics and on policies to increase societal wellbeing. Our ultimate goal is to demonstrate that wellbeing science is currently ripe and right to inform public policy.

Decision makers use indicators of progress to assess and design policy. Standard metrics of economic progress can be complemented with wellbeing measures to better depict changes in quality of life (Helliwell, Layard, & Sachs, 2012; Layard, 2011; Stiglitz, Sen, & Fitoussi, 2010). The science of wellbeing has evolved over the last 30 years, and wellbeing can now be reliably measured at both the individual and national levels (Diener, Emmons, Larson, & Griffin, 1985; Diener, Lucas, Schimmack, & Helliwell, 2012). Wellbeing data about individuals and nations can provide useful information for policy makers and governments (Jayawickreme, Forgeard, & Seligman, 2012; Layard, 2011; Sachs, 2012). These data may help align traditional cost-benefit analyses with measures that more accurately represent changes in individuals' quality of life and in what they value (Helliwell et al., 2012). By simultaneously measuring wellbeing and economic growth, governments can assess comprehensive national progress beyond material living

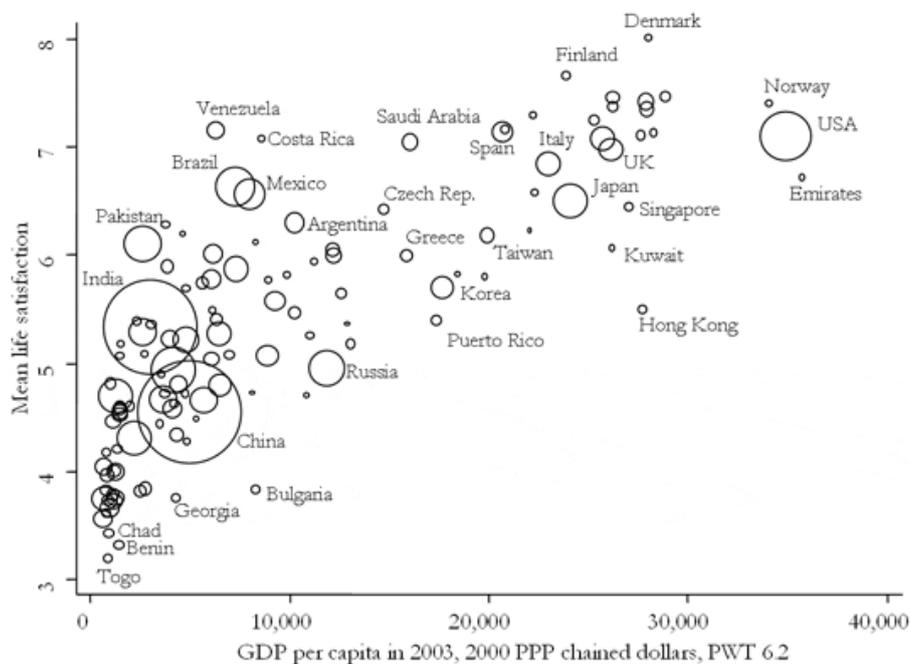
standards and thus be better informed to enact comprehensive societal prosperity (Diener et al., 2009).

2. Is gross domestic product a good enough metric of social progress?

In 1934, economist Simon Kuznets designed GDP as an economic tool to help the United States monitor output and end the Great Depression (Kroll, 2011). Since then, GDP has increasingly become a global proxy for national progress, even though it was never designed as a measure of prosperity; it merely measures the total market value of the goods and services produced by a nation's economy during a given year (Encyclopædia Britannica, 2009). Even its creator, Kuznets, declared that "the welfare of a nation can scarcely be inferred from a measure of national income" (Kuznets, 1934). Regardless, during the past 80 years, institutional architecture and public policy around the world have primarily revolved around maximizing GDP.

Traditional economists and policy makers have assumed that most activities can be measured in terms of monetary costs and benefits, but also that output indicators – especially GDP – reflect desirable social goals. The debate on whether social prosperity is a downstream effect of GDP growth has existed for over four decades. Richard Easterlin (1974) first published data questioning if GDP growth leads to wellbeing. His analyses revealed that GDP and life satisfaction are strongly correlated for low income countries. Past a threshold, however, there is a minimal correlation between GDP and life satisfaction (Easterlin, 1995). Figure 1 shows this general trend.

Figure 1. GDP and life satisfaction

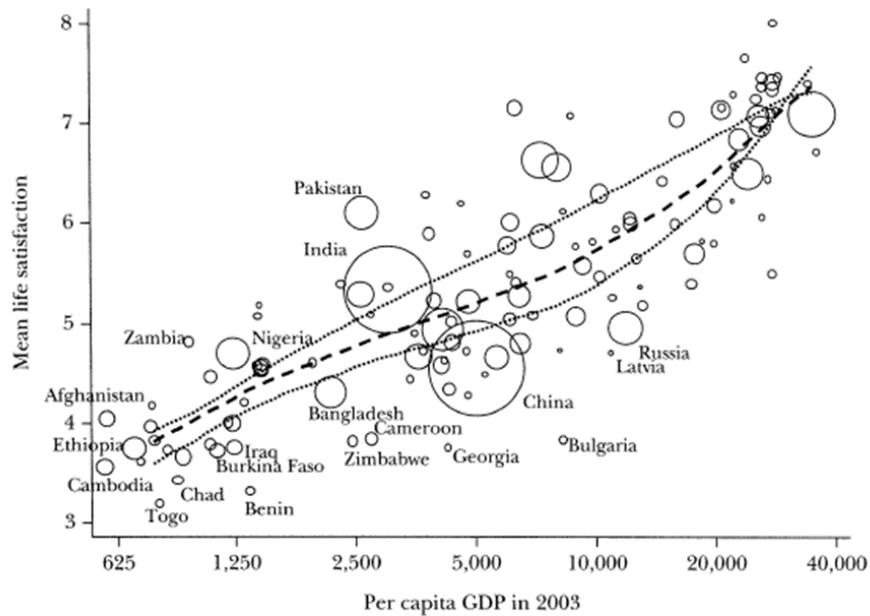


(Deaton, 2008)

Stevenson and Wolfers (2008) reanalyzed Easterlin's data, and they found that when logging income, there is a consistent correlation between GDP and life satisfaction, regardless of per capita GDP. In other words, as can be seen in Figure 2 below, each doubling in per capita GDP is associated with an approximately consistent increase in life satisfaction. Thus, they claim, there does not seem to be a satiation point for money. Even if all society cares about is life satisfaction, they argue, GDP is a good proxy for social wellbeing. And, since GDP is easier to

measure than wellbeing, and since it is a relatively objective measure, then GDP is a good enough measure of social progress. We disagree. We discuss alternatives in future sections.

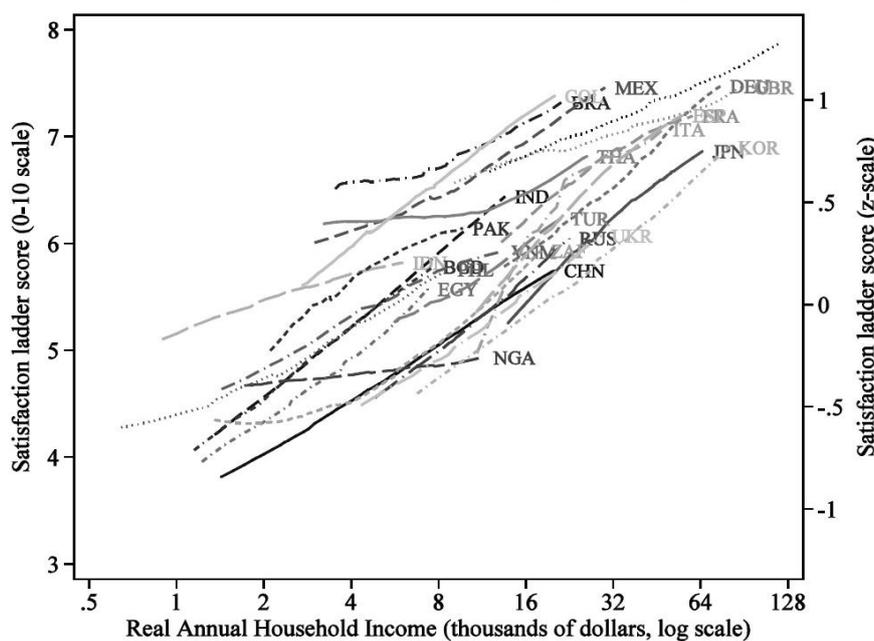
Figure 2. Log GDP and life satisfaction



(Stevenson & Wolfers, 2008)

Recently, Easterlin (2013) and others (e.g., Deaton, 2008) have responded with further analyses of inter- and intra-national data. Their results show that within countries, wealthier people are happier than poorer people. As Figure 3 below shows, within countries, families in lower income brackets report significantly lower life satisfaction than families in higher income brackets. In short, within countries, relative income, rather than absolute income, seems to matter for life satisfaction.

Figure 3. Wealthier families are happier than poor families



(Easterlin, 2013)

Csikszentmihalyi, 2000; Seligman, 2011). Psychological science has traditionally focused most of its efforts on the study of psychopathology and how to eliminate it. The more recent field of positive psychology provides the missing counterpart – the scientific study of flourishing individuals, institutions, and societies – to yield a fully descriptive model of healthy human functioning.

Although originally grounded in happiness and positive affect, which research by Easterlin (1974; 1995; 2003) and others focused on in relation to income, the field's understanding of wellbeing has evolved and expanded. Wellbeing is now understood not simply as positive emotions, but, rather, as thriving across multiple domains of life (Diener, Scollon, & Lucas, 2003). Wellbeing integrates hedonic wellbeing (feeling good) and eudaemonic wellbeing (functioning well). The development of an integral conception of wellbeing that goes beyond affective indicators (e.g., happiness, affect balance) is the framework on which we base this paper.

One of the most widely researched conceptualizations of wellbeing is subjective wellbeing (SWB). Bradburn (1969) empirically found SWB to be a function of the independent dimensions of positive and negative affectivity. This definition of SWB has since been empirically extended; it encompasses how people evaluate their own lives in terms of both affective (how they feel) and cognitive (what they think) components of wellbeing (Diener, Suh, Lucas, & Smith, 1999; Diener, Scollon, & Lucas, 2003; Veenhoven, 1994). Overall, high SWB combines three specific factors: (1) frequent and intense positive affective states, (2) the relative absence of negative emotions, and (3) global life satisfaction. Research has shown that the affective and cognitive components of SWB are separable, but there is some debate over the differential contributions of these factors (Davern, Cummins & Stokes, 2007; Lucas, Diener, & Suh, 1996).

There is evidence that SWB, often also referred to as hedonic wellbeing, does not provide a full picture of wellbeing, failing to capture the complexity of philosophical conceptions around the notions of happiness and wellbeing from humanistic and existential schools of thought. An alternative approach is the eudaemonic paradigm, in which wellbeing is construed as an ongoing, dynamic process (rather than a fixed state) of effortful living by means of engagement in meaningful activities (Kopperud & Vittersø, 2008; Ryan & Deci, 2001, Vittersø, Overwien, & Martinsen, 2009). Advocates of a eudaemonic approach to wellbeing argue that living a virtuous life and actualizing one's inherent potentials are the paths to wellbeing (Delle Fave, Massimini, & Bassi, 2011).

Whereas hedonic wellbeing emphasizes the importance of feeling good, eudaemonic wellbeing is characterized by functioning well in multiple domains of life (Keyes & Annas, 2009; Ryan & Huta, 2009). The concept of eudaemonia was first proposed by Aristotle (c. 350 BCE) who argued that living a life of contemplation and virtue, in accordance with one's inherent nature (i.e., living authentically) was the pathway to wellbeing (Norton, 1976). There have been different approaches to defining eudaemonia in the field of positive psychology, with researchers identifying a number of different dimensions – meaning in life, purpose, autonomy, competence, self-realization, mindfulness, self-acceptance, authenticity, value congruence, and social connectedness (Delle Fave et al., 2011; Baumeister & Vohs, 2002; Huta & Ryan, 2010; Ryan & Deci, 2000; Seligman, 2011).

Seligman's (2011) Wellbeing Theory delineates five domains of life that people pursue for their own sake: positive emotion, engagement or flow, positive relationships, meaning or purpose, and achievement, or PERMA. Ryff (1995) suggested six components of wellbeing: self-acceptance, positive relationships with others, autonomy, environmental mastery, purpose in life, and personal growth. At the societal level, Gallup has created the Healthways Wellbeing Index that includes life evaluation, emotional health, physical health, healthy behaviors, work

environment, and access to basic needs (Kahneman & Deaton, 2010). The Organization for Economic Cooperation and Development (OECD) has created the *Your Better Life Index*, comprised of 11 topics considered essential to quality of life (housing, income, jobs, community, education, environment, governance, health, life satisfaction, safety, and work-life balance). The index allows countries to identify the topics most important to them (Kerényi, 2011). Notably, each of these models and indexes suggests that wellbeing consists of profiles across multiple domains, rather than a single summary metric (Forgeard, Jayawickreme, Kern, & Seligman, 2011; Jayawickreme et al., 2012). Individuals, organizations, and governments can decide which domains of wellbeing are most important, observe how they compare to others, and devise strategic ways to enact change.

3.1 *The instrumental value of wellbeing*

Beyond the intrinsic value of wellbeing, research demonstrates that different domains of wellbeing may significantly contribute to advantageous life outcomes. Studies of adults have shown that individuals with more positive affect report better social relationships, healthier behaviors, better self-reported health, and lower racial biases. Further, adults with higher life-satisfaction enjoy better physical health, greater accomplishment, better social relationships, and more productive economic contributions to society. Research on subjective wellbeing suggests that, compared to people with low SWB, individuals with higher levels of SWB show stronger immune systems, live longer, have reduced cardiovascular mortality, lower levels of sleep complaints, lower levels of burnout, greater self-control, better self-regulatory and coping abilities, and are relatively more cooperative, more pro-social, more charitable, and more other-centered. Optimism research suggests that, compared to pessimists, optimists have better physical health outcomes, including faster recovery from surgery, less reported illness, lower mortality risk, and less smoking and drinking (Brand et al., 2010; Chida & Steptoe 2008; Danner, Snowdon, & Friesen 2001; Dillon, Minchoff, & Baker 1985; Fredrickson & Joiner 2002; Fry & Debats, 2009; Haar & Roche 2010; Howell, Kern, & Lyubomirsky, 2007; Kasser & Ryan 1996; Johnson & Fredrickson, 2005; Lyubomirsky, King, & Diener, 2005; Ostir, Markides, Black, & Goodwin 2000; Pressman & Cohen, 2005; Salovey, Rothman, Detweiler, & Steward, 2000; Segestrom, 2007; Shen, McCreary, & Myers, 2004; Stone et al., 1994; Williams & Shiaw, 1999).

4. How do we measure wellbeing?

Over three decades of research have yielded an extensive collection of validated measurement tools for different domains of wellbeing. These instruments vary on a number of dimensions, including validity and resource utilization (e.g., time, money). We catalog the most widely used wellbeing metrics; depending on what a particular society values, governments may choose the instruments that best capture social wellbeing.

4.1 *Measuring subjective wellbeing*

Subjective questions allow people to express the quality of their own lives, reflecting their own histories, personalities, and preferences. They reflect what people think is important and desirable, rather than what experts or governments think should define a good life. Below, we present some of most widely used SWB questionnaires.

The Satisfaction with Life Scale (SWLS; Diener et al., 1985) is a five-item measure narrowly focused to assess global life satisfaction and not to tap into related constructs such as positive affect or loneliness. The scale has been validated in many countries including Brazil (Gouveia,

Milfont, Nunes de Fonseca, & Pecanha de Miranda Coelho, 2009), the Netherlands (Arrindell, Heesink, & Feij, 1999), Russia (Balatsky & Diener, 1993) and China (Zhang, Yang, & Wang, 2009). The SWLS has been shown to have long-term stability, and it is successful at capturing the effects of stable influences, such as personality, as well as being sensitive to changes during individuals' life spans (Pavot & Diener, 1993).

A measure of the cognitive side of SWB is the Subjective Happiness Scale (SHS; Lyubomirsky & Lepper, 1999). The SHS is a four-item scale designed to assess dispositional happiness. Despite its brevity, the SHS is characterized by high internal consistency and a unitary structure. Studies have reported alpha coefficients for the SHS from .79 to .94 (Lyubomirsky & Lepper, 1999). The SHS has shown stability over time and across 14 different samples, comparable to those reported for other wellbeing instruments (Diener, 1994; Pavot et al., 1991). Studies of the scale's construct validity have indicated that it correlates highly with other hedonic measures and moderately with constructs theoretically and empirically related to happiness and wellbeing. Evidence of discriminant validity has been obtained by low correlations with theoretically unrelated constructs, such as academic success and stressful events (Lyubomirsky & Lepper, 1999).

The Positive and Negative Affect Schedule (PANAS), consists of 20 items divided into two ten-item scales – one for positive affect and one for negative affect. Watson et al. (1988) have reported Cronbach's alpha coefficients ranging from .86 to .90 for the positive affect scale and .84 to .87 for the negative affect scale. Test-retest correlations for an eight-week period ranged from .47 to .68 for positive affect, and .39 to .71 for negative affect. The authors also reported that measures of general distress and dysfunction, depression, and state anxiety are more highly correlated with the negative affect scale (positive correlations) than the positive affect scale (negative correlations), further validating this scale.

Other measures of affect include the Affect Intensity Measure (AIM; Larsen, 1987; Larsen, Diener & Emmons, 1986). The AIM is a 40-item questionnaire that assesses the characteristic strength or intensity with which an individual typically experiences her emotions. Items for the AIM were written based on a construct definition of affect intensity resulting from the empirical work of Diener, Larsen, Levine and Emmons (1985) and Larsen and Diener (1985), which emphasizes the distinction between frequency of emotional experiences and intensity of experienced emotion. The AIM has been shown to have good construct validity and test-retest reliability. Moreover, responses on the AIM are not significantly affected by malingering or social desirability. The AIM shows no significant relationship to measures of depression or to measures of positive affect (Larsen, 1987), indicating that the AIM appears to assess the general tendency to experience emotions more strongly, regardless of their hedonic valence.

Life satisfaction is not an objective experience, and thus the accuracy of respondents' reports cannot be verified (Schwarz, 1987). Life satisfaction has also been shown to fluctuate in natural settings over short time periods (Lucas, Diener, & Suh, 1996). It has been suggested that these limits to the reliability of SWB measures are likely to average out in representative population samples (Kahneman & Kruger, 2006). Furthermore, while these measures do not provide accurate reports of real-time experiences, they still provide a way of understanding how individuals make decisions about their future.

Studies on SWB measurement have shown that individuals do not always accurately report their subjective experiences. For example, Kahneman and colleagues (1993) conducted laboratory studies in which participants were asked to provide a continuous indication of the hedonic quality of their experiences in real time. At the end of the experiment, individuals were asked to evaluate their experience as a whole. The authors reported that, although these retrospective evaluations were related to the participants' real-time report, they were also

susceptible to systematic biases (Kahneman & Kruger, 2006). Another difficulty in measuring WB is that individuals may interpret survey language differently, despite attempts to use clear descriptions in questions and responses. Kahneman and Krueger (2006) proposed a methodology to overcome this problem: the U-index. The U-index is a measure of the proportion of time an individual spends in an unpleasant state. An episode is identified as unpleasant if the most intense feeling reported at a specific time is a negative one. This overcomes the problem of idiosyncratic interpretations of scales because it only requires the respondent to consider the ordinal ranking of their feelings. The U-index is then calculated as the fraction of time that is spent in an unpleasant state. The developers of the U-index suggest that this measurement of SWB is particularly suited for cross-country comparisons, since ordinal rankings of emotions reduce the impact of cultural or language differences between respondents.

Other efforts to overcome some of the limitations with survey evaluation of SWB include the Experience Sampling Method (ESM), which aims to systematically obtain self-report data on participants' everyday lives at many points in time, to obtain real-time experiences of SWB in naturalistic settings (Csikszentmihalyi, 1990; Stone & Shiffman, 1994). This methodology involves participants recording their feelings on a device at several different points throughout the day. There is evidence that this approach provides accurate data, since participants' ratings have been found to be significantly correlated with physiological responses (Steptoe, Wardle, & Marmot, 2005); however, this method is labor intensive and expensive, which limits its use in large studies (aan het Rot, Hogenelst, & Schoevers, 2012). Moreover, ESM generates more missing data than other methods, since ESM requires frequent input by participants over a period of time (Ahmed et al., 2012). An alternative approach is the Day Reconstruction Method (DRM), which asks participants to systematically reconstruct their experiences of the preceding day with procedures designed to reduce recall biases (Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004). The DRM has been shown to have adequate test-retest reliability and high internal consistency (Bylsma, Taylor-Clift, & Rottenberg, 2011; Krueger & Schkade, 2008).

4.2 Measuring eudaemonic wellbeing

Measuring eudaemonic wellbeing provides a multidimensional understanding of individuals' wellbeing beyond hedonia and aligned with a comprehensive, more accurate understanding of wellbeing. Integral measures that try to combine different wellbeing constructs include Ryff's Wellbeing Scales, which encompass six distinct dimensions of wellness (autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance) and have a range of versions, including 84-item, 54-item, and 18-item (Ryff & Keyes, 1995). The most recent measure tapping into the domains of Seligman's (2011) Wellbeing Theory is the PERMA Profiler – Short Form, a 15-item measure of positive emotion, engagement, positive relationships, meaning, and achievement (Butler & Kern, 2012).

The Warwick and Edinburgh Mental Wellbeing Scale (WEMWBS) is a 14-item measure designed to assess the most relevant dimensions of mental wellbeing in the general population, which is considered to be a measure that combines the hedonic and eudaemonic aspects of wellbeing. The WEMWBS measures positive aspects of mental health in the two weeks prior to the scale being completed. It is comprised of 14 positively phrased items, rated on a 5-point Likert scale, which cover both hedonic and eudaemonic aspects of wellbeing. The WEMWBS was developed in the UK and has shown good validity, test-retest reliability (0.83), and internal consistency (0.91). The WEMWBS has been validated for use in the United Kingdom and is employed in addition to the GHQ12, a screening instrument used to detect psychiatric disorders in community settings and non-psychiatric clinical settings (Vieweg & Hedlund, 1983; Parkinson,

2006; Stewart-Brown et al., 2009). In 2010, the WEMWBS was chosen to assess the mental wellbeing of the general population in Catalonia, Spain as part of its National Health Survey; the Spanish version has also been shown to have reliable and consistent results (Lopez et al., 2012).

There is a variety of other unidimensional instruments that measure specific personality constructs shown to be associated with or contribute to wellbeing, such as hope, perseverance, and hardiness (Duckworth, Peterson, Matthews, & Kelly, 2007; Maddi & Khoshaba, 2001; Snyder et al., 1997). Other measures are based on specific theories of eudaemonic wellbeing; these measures include personal autonomy and self-determination, curiosity and exploration, and character strengths and virtues (Deci & Ryan, 2004; Kashdan, Rose, & Fincham, 2004; Peterson & Seligman, 2004; Wehmeyer, 1995).

4.3 Beyond survey methods

There are two core advantages to using GDP as a metric of national progress. Firstly, compared to wellbeing at a national level, it is relatively easy to measure. Secondly, it is a relatively objective measure – governments are virtually unable to manipulate it, so international comparisons are fair. To engage with these two advantages, it is noteworthy to recognize recent advances in leveraging social media to measure wellbeing in real time, unobtrusively, and inexpensively.

Wellbeing scientists are starting to use large social media datasets (“big data”), such as Facebook and Twitter, to track the psychological states of large populations in time and space. Big data researchers are particularly focused on Twitter, since “tweets” are publically available and are generated continuously in large numbers (about 500 million tweets per day from around 200 million users across the world (Park, Schwarz, & Eichstaedt, 2014).

Methods for capturing psychological states through language analysis started at least 50 years ago, and lexical analyses methods have progressed tremendously since (Pennebaker, Mehl, & Niederhoffer, 2003; Stone, Dunphy, Smith, & Ogilvie, 1966). Traditional approaches use a priori dictionaries – predetermined lists of words associated with different constructs (e.g., “happy,” “excited,” and “smile” are part of a positive emotions dictionary (Pennebaker, Chung, Ireland, Gonzales, & Booth, 2007). To date, most big data wellbeing research has focused on affectivity, often by measuring variations in relative frequencies of positive and negative affect words used in tweets, Facebook, or blogs (Dodds, Harris, Kloumann, Bliss, & Danforth, 2011; Kramer, 2010, Dodds and Danforth, 2010).

A new generation of wellbeing research has emerged that builds and validates language models specific to a given wellbeing construct. For example, Schwartz and colleagues (2013) find the words, topics, and phrases that correlate across US counties with county-level life satisfaction as measured through Center for Disease Control (CDC) surveys. Identifying these statistical associations with individual language features, such as words and phrases, enables the empirical construction of better language models that predict a given construct of wellbeing. Such “open-vocabulary” approaches identify and weigh predictive words statistically and are not based on a priori dictionaries (Schwartz et al., 2013). Emerging language-based assessments of psychological states and traits are comparable in validity to existing survey methodologies (Park et al., 2014).

Big data research has demonstrated that social media can be used beyond wellbeing measurement; for instance, big data analyses can predict public health threats. Google has used search queries to track influenza epidemics and detect them earlier than the CDC (Ginsberg et al., 2009). Other studies have used Twitter to reliably detect and track Lyme Disease, H1N1, depression, and other illnesses (Chew & Eysenback, 2010; De Choudhury, Counts, & Horvitz,

2013; Salathé, Freifeld, Mekaru, Tomasulo, & Brownstein, 2013; St Louis & Zorlu, 2012). In the private sector, corporations are increasingly using big data to inform decision making in the domains of supply chains, workforce management, and consumer marketing (Michael & Miller, 2013).

Social media-based assessment of wellbeing offers the promise of a less resource-intensive alternative to survey methods for assessing large-scale wellbeing, which is advantageous for wellbeing measurement for policy. However, the use of social media is currently skewed towards young users, and significant regions of the world do not have universal access to the internet, which may politically disenfranchise some individuals if governments use social media to measure wellbeing. But Schwarz and colleagues (2013) have proposed that young people’s tweets are infused with reliable information about the psychosocial environment which older individuals also inhabit, thus serving as proxies for individuals in both young and older age groups. Furthermore, conservative estimates suggest that by the year 2030, 95% of the world’s adult population will have access to the internet (Chadwick, 2006). Even though the use of social media to measure wellbeing is a nascent methodology, it has the potential to replace survey methods in measuring large-scale wellbeing for policy.

4.4 Measuring national and international wellbeing

In a first attempt to measure multi-dimensional flourishing at an international scale, So and Huppert (2009) surveyed 23 European nations. Their definition of “flourishing” includes hedonia and eudaemonia, but without objective measures to supplement self-report measures. In this study, to flourish, an individual must have all the “core features” below and three of the five “additional features”.

Table 1. Hedonic and Eudaemonic Flourishing

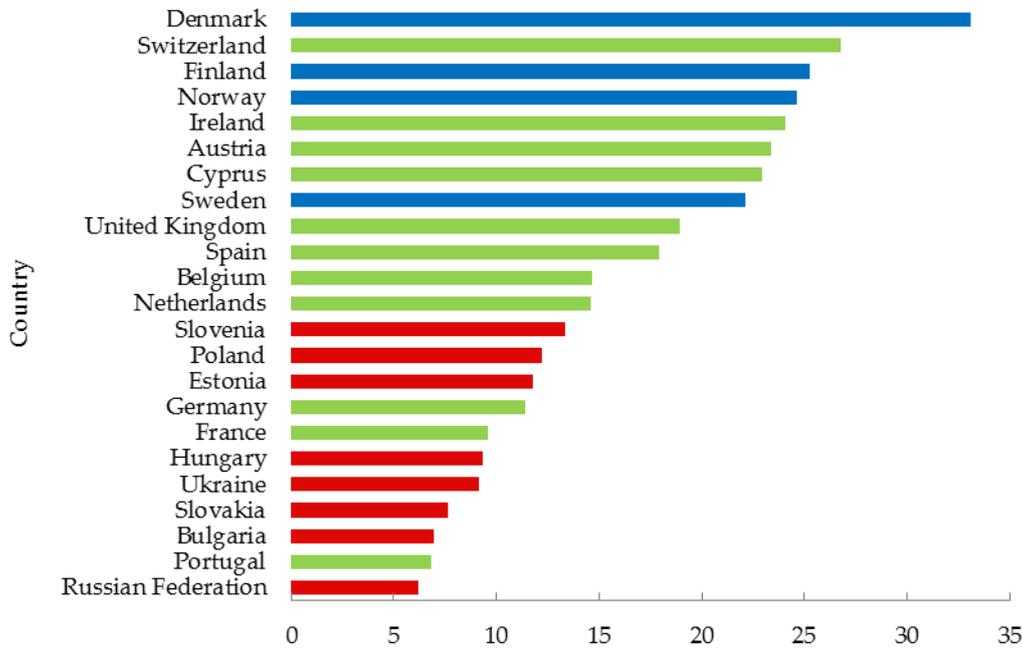
Core features	Additional features
Positive emotions	Self-esteem
Engagement, interest	Optimism
Meaning, purpose	Resilience
	Vitality
	Self-determination
	Positive relationships

So and Huppert administered wellbeing items to over 2,000 adults in each of the European nations in Figure 5 below to assess the wellbeing of each country. Denmark leads the ranking with 33% of its citizens flourishing. The United Kingdom has about half that rate, with 18% flourishing, and Russia sits at the bottom with only 6% of its citizens flourishing. In Figure 5 below, countries in blue are Scandinavian countries, those in green are in Western Europe, and those in red are Eastern European. As our previous discussion on the relationship between relative GDP per capita and life satisfaction would predict, there is a strong correlation between the GDP of each of these countries and their ranking on this list. Regardless, having a “dashboard” measure of their citizens wellbeing informs decision makers which components of wellbeing are low, so that they might design specific policies to target them (Seligman, 2011). We discuss specific policies in another section.

Other international initiatives to measure national wellbeing have gained momentum in the last decade. Below, we highlight the four that have used the most rigorous survey methods. We

aim to highlight that changes in national progress depend on the domains of life that an index incorporates, which should reflect social values.

Figure 5. Prevalence of flourishing across European countries participating in the European Social Survey 2006/7



(So & Huppert, 2009)

The Social Progress Index (SPI) ranks countries according to three equally weighed criteria: basic human needs, wellbeing (mostly SWB), and opportunity for social mobility (Social Progress Imperative, 2014). Ranked by wellbeing alone, Switzerland, Iceland, and the Netherlands top the list, together with other European countries. The bottom of the list is mostly populated by Sub-Saharan countries. Overall, wealthier countries are higher on wellbeing rankings than poorer countries. Ranked by the full SPI, which includes wellbeing, but is not limited to it, New Zealand tops the list, accompanied by European and North American countries, and Japan. Although “social progress,” “wellbeing,” and GDP are correlated, depending on the variables included and their respective weight, international rankings change (see Appendix A for SPI figures with ranking details).

Even though this last point might seem inconsequential, the Happy Planet Index (HPI; McGough, 2012), which endows the ecological footprint domain with a particularly heavy weighting, proves that national accounts variables and their weights are trivial. Considering only “experienced wellbeing,” the data from the HPI are similar to those from the SPI, with Scandinavian and North American countries at the top of the list, and Sub-Saharan countries at the bottom. Ranked by the full HPI, with its heavy weight on ecological footprint, it is middle income countries, mostly in Latin America, that top the list – chiefly because their experienced wellbeing and life expectancy are slightly lower than countries topping the wellbeing lists, but their ecological footprints are orders of magnitude lower than those of countries with the highest wellbeing (see Appendix B for HPI figures with details).

The OECD’s *Better Life Index* (Organization for Economic Cooperation and Development, 2013) allows individuals to decide how important each of 11 domains is to them. The 11 domains are housing, income, jobs, community, education, environment, civic engagement, health, life

satisfaction, safety, and work-life balance. For instance, if an individual only cares about life satisfaction, then countries like Switzerland, Norway, Iceland, and Sweden top the list, with Portugal and Hungary at the bottom of the list (the index only covers the 34 member countries of the OECD). Conversely, if all we care about is income, then the index ranks countries by their GDP per capita. The United States tops the list, followed by the next wealthiest countries (per capita): Switzerland, Luxembourg, and Belgium. If we care about all 11 domains equally, then Australia tops the list, followed by Sweden, Canada, and Norway. As in the Social Progress Index, there is a significant correlation between the different domains, but which factors we choose to weigh impacts the rankings. Even though Australia tops the list if we consider the 11 factors with equal weight, Australia is number 14 out of 34 in income (GDP per capita) and number 12 in life satisfaction. The United States, the wealthiest country, is number 14 in life satisfaction and number 6 when weighing the 11 factors equally (see Appendix C for Better Life Index figures with ranking details).

Using similar methodologies, the UN's *World Happiness Report* (2012) decomposes happiness (SWB) by regions of the world, and, using regression analyses, determines which factors explain the variance in happiness in each region of the world as well as in each country. It is not surprising that North America, Australia, New Zealand, and Western Europe top the regional list, given the average GDP per capita of those countries and the relationship between GDP and life satisfaction discussed earlier. However, it is surprising that, given their significantly lower GDPs per capita, countries in Latin America and the Caribbean enjoy comparable levels of happiness to those in Western Europe. It is noteworthy that although GDP per capita does account for a significant portion of the variance in happiness across countries (about 20% on average), social support accounts for about the same variance, and healthy life expectancy for about 10% (see Appendix D for World Happiness Report figures with ranking details). The happiness rankings of individual countries is consistent with other rankings based on wellbeing or life satisfaction, with Scandinavian countries and Canada topping the list, and mostly Sub-Saharan African countries at the bottom of the list.

These different indexes demonstrate that in measuring national wellbeing, wellbeing correlates significantly with different domains of life (including income), and that a country's relative progress looks different, depending on what factors we choose to include in indexes. Importantly, these indexes demonstrate that the more data about a country that is available, the better equipped decision makers will be to use measures to both design and assess public policies, depending on what they and their constituents value. Thus, multi-dimensional dashboard indexes are descriptive, not prescriptive – decision makers are free to decide what factors to prioritize.

5. Using wellbeing to assess public policy

Research increasingly supports that wellbeing indicators may be employed to assess and inform policy domains such as externalities, social capital and trust, unemployment, tax structures, and moral debates (Cullis & Lewis, 1997; Diener et al., 2009; Dolan, 2008; Dolan, Peasgood, & White, 2008; Green, 2011; Helliwell & Huang, 2011; Helliwell et al., 2012; Layard, Clark, & Senik, 2012; Luechinger & Raschky, 2009; Van Praag & Baarsma, 2004). Even though most of the existing research is based on measures of subjective wellbeing rather than on multidimensional measures of both hedonic and eudaemonic wellbeing, the data still indicate that measuring wellbeing is feasible and desirable.

5.1 Externalities

Several public goods and services (e.g., better roads, day centers for the elderly, public squares, and parks) produce costs or benefits that are not easily captured through traditional economic indicators, even though they may significantly improve or diminish citizens' quality of life. Measuring costs and benefits through changes in people's wellbeing may help policy makers have options to mitigate the negative effects of externalities, and to allocate resources to the most convenient cost-effective alternatives (Diener et al., 2009).

In a key study on externalities, Van Praag and Baarsma (2004) compared self-reported life satisfaction measures of people living in areas with different airport noise. They showed that it is possible to assess the monetary value of airport noise damage as the sum of hedonic house price differentials and a residual cost component. The residual cost component was estimated from the effect of airport noise on life satisfaction. This novel method not only provides an accurate estimate of the effects of noise, based on experienced utility (Kahneman & Tversky, 2003), but it also presents policy makers with the choice to monetarily compensate people affected by externalities using a simple procedure. First, the effect of the externality on life satisfaction needs to be evaluated. Then, using the known association between intra-national differences in income and life satisfaction (Easterlin, 2001; 2013), it would be possible to determine a reasonable amount of money to compensate individuals in affected areas.

5.2 Social capital and trust

Trust plays a key role in building social capital (Meier & Stutzer, 2008; Powdthavee, 2008; Putnam, 2000). Economic growth may bring benefits to inhabitants of a country, especially in developing nations where a large portion of individuals live in poverty (Helliwell et al., 2012). However, we also know that systematic increases in GDP and globalization without the right policies to protect people have contributed to generating detrimental effects on the quality of social relationships and on individuals' sense of community belonging. It is important to have the right accounting measures to monitor these trends (Stiglitz et al., 2010). These findings may explain why life satisfaction has plateaued in the US and the UK during the last five decades, while it has improved considerably in Denmark and Italy. Levels of trust have fallen substantially over time in the former countries, but have risen in the latter ones (Layard, 2011; Layard et al., 2012).

5.3 Unemployment

Unemployment has undeniable serious financial implications. Under the economic assumption that income is related to utility, job loss logically leads to lower levels of wellbeing. The impact of unemployment on wellbeing, however, goes beyond the loss of income (Stiglitz et al., 2010). There is a large body of literature that shows how individuals eventually adapt to most positive or negative events in their lives, whether in the professional or private sphere (Brickman & Campbell, 1971; Frederick & Loewenstein, 1999; Stutzer & Frey, 2006; Zimmerman & Easterlin, 2006). An exception to this habituation phenomenon is unemployment, particularly for men (Clark, Diener, Georgellis, & Lucas, 2008). Unemployment produces a loss of social status, self-esteem, workplace social life, and confidence, and it diminishes other factors that matter for a good quality of life (Layard et al., 2012).

Unemployment also has detrimental effects on unemployed individuals' family members and on their communities (Diener et al., 2009). Also, the effects of job insecurity and of potential unemployment have an adverse effect on those who are employed (Green, 2011). In a meta-

analysis, Paul (2005) found that the negative effects of unemployment are greater for working-class employees, for countries with higher income inequalities, and for nations with lower levels of unemployment protection. These results give key recommendations for public policies aimed at protecting people's wellbeing (Diener et al., 2009). Behavioral economists have developed reliable ways of monetizing the negative impact of adverse life events, such as unemployment, on life satisfaction, or the *shadow prices* of these events. For instance, Clark and Oswald (2002) calculate the pain from unemployment in a British sample at £15,000 per month. Beyond the income lost from losing a job, comprehensive social progress metrics can include and monetize life events like unemployment to inform policy design. We discuss these in the section on wellbeing for policy design.

5.4 Tax structures

Governments need resources to manage the responsibilities that citizens have delegated to them (e.g., education, health, and justice). Taxation is the most common source of governmental income. However, the question regarding the best tax structure arises frequently: are progressive or proportional tax structures better for society? Decisions are normally based on data on the maximum amount of money that governments can generate using different tax systems (Stiglitz, 1988). However, it has been shown that tax structures have different effects on people's wellbeing (Cullis & Lewis, 1997; Layard et al., 2012).

If wellbeing metrics are used when deciding on the most appropriate tax structures, these indicators may help policy makers design optimal tax structures that maximize tax revenue without reducing societal wellbeing. The loss of wellbeing may be calibrated for different levels of taxation to find an efficient taxation structure that will maximize national wellbeing. (Diener et al., 2009).

5.5 Moral debates

How can societies make legal decisions about morally controversial issues, such as prostitution, abortion, drugs, punishment, and gambling? Internally consistent arguments can be made for and against these issues. However, the values of individuals or small groups are rarely aligned. One of the advantages of wellbeing measures for advising public policy is the subjective nature itself of self-report instruments (Helliwell & Wang, 2012). In these cases, subjective indicators of preferences – which reflect people's own values and life goals – provide policy makers with one democratic and fair (from a utilitarian perspective) tool to make decisions on morally-charged issues (Diener et al., 2009).

6. Using wellbeing to design public policy

As a response to the data on GDP and wellbeing discussed earlier, Easterlin (2013) and others (e.g., Deaton, 2008) suggest that rather than targeting GDP growth, national governments can provide the enabling conditions for wellbeing through better public services (e.g., health and education), urban planning that promotes relational leisure and diminishes commuting times, and a stronger social safety net. As others have before them (e.g., Okun, 1975), they acknowledge that there are tradeoffs between different contributors to wellbeing, including freedom, opportunity, efficiency and equality. To best enable social wellbeing, each government needs to weigh up these tradeoffs, depending on what constituents value. On average, for example, the French probably value equality over freedom, whereas Americans prefer freedom over equality.

Below, we propose specific public policies that might advance the domains in Seligman's (2011) Wellbeing Theory.

6.1 Promoting positive relationships

Socializing and getting and giving social support are important precursors to wellbeing in all age groups (Turner, 1981). An absence of opportunities for social interaction leads to loneliness, which has significant negative effects on physical health and wellbeing (Cacioppo, Hawkley, & Berntson, 2003). Urban planning should take into account that spaciousness and other physical characteristics of living spaces are important factors of positive neighboring. Further, community housing provides people with better opportunities for interaction and the prevention of loneliness (Skjaeveland & Garling, 1997; Kuo, Sullivan, Coley, & Brunson, 1998).

Volunteer work is fertile ground for meaningful social interactions. Volunteer work is a result of conscious free choice driven by values and self-congruent goals, and it is an activity that psychologically benefits both the recipient and the helper (Gagné, 2003; Weinstein & Ryan, 2010). Findings from a longitudinal study indicate that volunteer work increases happiness, life satisfaction, self-esteem, sense of control, and physical health (Thoits & Hewitt, 2001). Psychologically beneficial volunteer work depends on an autonomous choice, rather than on external incentives. Millette and Gagné (2008) found that autonomous motivation is a mediator in the association between job characteristics and job satisfaction, and they suggest that volunteer jobs should use team work and establish social contacts between volunteers and clients, and volunteers and colleagues, as well as provide decision-making power and meaning in their work (e.g., defining the mission and vision of projects). Policies can facilitate the creation of different forms of volunteer organizations and promote information about available opportunities to people.

Community centers facilitate interactive and meaningful activities and they create social ties. In adolescents, involvement in structured group activities is associated with increased civic involvement and an increased sense of community, which, in turn, predicts social wellbeing (Albanesi, Cicognani, & Zani, 2007). Albanesi and colleagues suggest that to have a pro-social youth it is important to provide adolescents with opportunities to experience a sense of belonging to peer groups. At the other end of the spectrum is disability associated with aging. One of the aspects of disability that is most relationally harmful is limited mobility. Access to transportation for elderly is associated with higher life satisfaction (Liddle, Gustaffson, & Bartlett, 2012). Policies such as sidewalks and community environments that are accessible for wheelchair users, and providing free wheelchairs and hearing aids for members of socially disadvantaged groups, can increase physical mobility and social interactions.

6.2 Promoting meaning

An important source of psychological meaning comes from an individual's cultural environment. People look to their culture for social values and goals, and some of these are adopted as personal values and guiding principles of behavior. Today, mass media is a core element of the great majority of cultural environments.

There is evidence that the effects of television on cognitive development and academic achievement in children depend on the content of what children watch (Schmidt & Anderson, 2006). Television and social media that connect people and provide them with opportunities for growth (e.g., educational programs) have a positive impact on societal wellbeing. In the domain of mass media, a concrete policy is the funding of public TV that provides informational and educational programs.

Unemployed individuals have lower wellbeing and less opportunities and incentives to engage in meaningful activities (McKee-Ryan, Song, Wanber, & Kinicki, 2005). Furthermore, the shadow prices of unemployment in different contexts can be reliably calculated; these prices include contextual factors such as unemployment as a norm or as an exception, and other factors, such as gender and age (Clark & Oswald, 2002; Clark, 2003). Including the shadow prices of unemployment in national indicators of progress can inform how much funding governments direct towards policies aimed at decreasing unemployment, such as lowering interest rates or temporarily increasing government spending.

Even for employed individuals, providing opportunities to engage in meaningful activities is individually, socially, and economically beneficial (Lucas et al., 2004). Interventions that provide meaning and self-efficacy in the workplace exist (Turner, Kessler, & House, 1991; Vastamäki, Moser, & Paul, 2009). Open, shared office spaces with natural lighting, for example, contribute to information sharing, to employee motivation, and to a sense of belonging to a community.

6.3 Promoting autonomy

Research in Self-Determination Theory (Deci & Ryan, 2000) shows that intrinsic motivation is facilitated by the satisfaction of three basic psychological needs: the need for autonomy (making one's own choices), competence (the experience of success in what one does), and relatedness (the experience of being close to other people). The extent to which different activities (work or leisure) are satisfying is dependent on the content of the goals at which those activities are directed. Ryan, Huta and Deci (2008) propose a Self-Determination Theory model based on autonomous and self-determined action directed at goals that are intrinsically valued and have pro-social consequences.

Autonomy can be promoted indirectly in two ways: firstly, by creating policies that provide people with more opportunities for choice in different domains of their lives, and, secondly, by removing unnecessary legal barriers and limitations in people's daily environments. Crime, for instance, is a significant negative environmental condition that promotes fear and interferes with people's sense of freedom and autonomy (Powdthavee, 2005). Furthermore, the negative impact that violence and crime has on people's lives can be monetized (Clark & Oswald, 2002). Thus, with limited financial resources, governments can use monetized wellbeing data like these to inform what policies to implement – a public security policy in this case. The same rationale applies for health, the negative impacts of illness on freedom and autonomy, and the monetization of health to inform public policy (Powdthavee, 2005; Powdthavee & Van den Berg, 2011). Health is particularly important for promoting autonomy, since studies show that disability, whether temporary or permanent, is one of the domains of life in which people do not show full hedonic or eudaemonic adaptation (Oswald & Powdthavee, 2008).

Regardless of the domain promoting self-efficacy and self-determination, interventions are most effective in autonomy-supportive contexts – when they are implemented as proposed opportunities, rather than enforced necessities (Chirkov, Ryan, & Sheldon, 2011).

6.4 Teaching the tools for wellbeing

Schools usually teach children and adolescents the tools that they will need for academic performance and for accomplishment later in life. Positive education complements the existing pedagogical paradigm with the skills for wellbeing (Seligman, Ernst, Gillham, Reivich, & Linkins, 2009). Founded on the claim that wellbeing is skill-based and can be taught, positive education enhances students' wellbeing and behavior, increases engagement in the classroom,

and teaches tools that a majority of parents value (Seligman, 2002; Seligman, et al., 2009). Research has found that (1) the tools for wellbeing can be taught in formal settings, such as schools and universities, as well as in non-formal settings, such as corporations, governments, and prisons, and (2) that these tools should be taught, due to the intrinsic and instrumental value of wellbeing. Recent experimental research found that teaching the skills for wellbeing (e.g., mindfulness, emotional regulation, communication, decision making, and critical thinking) enhances students' performance on standardized tests (Adler & Seligman, 2014). With the necessary research, public school curricula can include empirically grounded, culturally sensitive, and environmentally relevant skills for wellbeing in parallel to academic subjects.

7. Beyond GDP

Using GDP as the sole measure of national welfare raises two core issues. First, not all market activities can be monetized (e.g., psychological and environmental externalities). Secondly, despite the fact that economic measures of progress provide useful information to governments, businesses, communities, and individuals, they provide a limited depiction of individuals' quality of life and of societal prosperity (Diener et al., 2009; Stiglitz et al., 2010). Measures of wellbeing provide valuable information to complement existing economic measures of national progress; they can empower decision makers to better design policies that enhance individuals' lives, according to what individuals value.

Major international institutions and national governments have begun to support using wellbeing to inform policy. For example, former French President Sarkozy's commission (Stiglitz et al., 2010) recommended that the statistical offices of the world should "incorporate questions to capture people's life evaluations, hedonic experiences, and priorities in their own terms" (p. 18). The Himalayan Kingdom of Bhutan has used Gross National Happiness, rather than Gross Domestic Product, to design its institutional architecture and policies since 1972 (Adler, 2011). British Prime Minister David Cameron has said he will be held accountable to the extent that his government increases gross domestic wellbeing (GDW). At an international level, on June 13th, 2011, a United Nations resolution encouraged Member States "to pursue the elaboration of additional measures that better capture the importance of the pursuit of happiness and wellbeing in development with a view to guiding their public policies" (UN General Assembly Resolution A/65/L.86). Further, as discussed in detail above, the OECD has developed its *Better Life Index* to advocate for wellbeing in its 34 member states.

There is no single measure that can exhaustively capture the state of societies at a given point in time. If GDP is complemented with measures that capture changes in wellbeing, decision makers will have a more comprehensive, multi-dimensional, accurate portrayal of social progress. The science of wellbeing is theoretically, metrically, and empirically ripe enough to complement economic measures of prosperity for public policy.

Authors

Alejandro Adler
University of Pennsylvania
aadler12@gmail.com

Martin E. P. Seligman
University of Pennsylvania

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References

- Adler, A. (2009). Gross national happiness in Bhutan: A living example of an alternative approach to progress. *Social Impact Research Experience Journal*, 5(1), 1-137.
- Adler, A. & Seligman, M. E. P. Increasing well-being enhances academic achievement: Positive education in Bhutan. Manuscript in preparation.
- Ahmed, A. O., Buckley, P. F., & Mabe, P. A. (2012). Latent structure of psychotic experiences in the general population. *Acta Psychiatrica Scandinavica*, 125(1), 54-65. <http://dx.doi.org/10.1111/j.1600-0447.2011.01800.x>
- Aknin, L. B., Norton, M. I., & Dunn, E. W. (2009). From wealth to well-being? Money matters, but less than people think. *The Journal of Positive Psychology*, 4(6), 523-527. <http://dx.doi.org/10.1080/17439760903271421>
- Albanesi, C., Cicognani, E., & Zani, B. (2007). Sense of community, civic engagement and social well-being in Italian adolescents. *Journal of Community & Applied Social Psychology*, 17(5), 387-406. <http://dx.doi.org/10.1002/casp.903>
- Aristotle (1985). *Nicomachean Ethics* (T. Irwin, Trans.). Indianapolis, IN: Hackett.
- Arrindell, W. A., Heesink, J., & Feij, J. A. (1999). The satisfaction with life scale (SWLS): Appraisal with 1700 healthy young adults in the Netherlands. *Personality and Individual Differences*, 26(5), 815-826. [http://dx.doi.org/10.1016/S0191-8869\(98\)00180-9](http://dx.doi.org/10.1016/S0191-8869(98)00180-9)
- Balatsky, G., & Diener, E. (1993). Subjective well-being among Russian students. *Social Indicators Research*, 28(3), 225-243. <http://dx.doi.org/10.1007/BF01079019>
- Baumeister, R. F., & Vohs, K. D. (2002). The pursuit of meaningfulness in life. In S. J. Lopez & C. R. Snyder (Eds.), *Handbook of positive psychology* (pp. 608-618). New York, NY: Oxford University Press.
- Bennett, K. M. (2002). Low level social engagement as a precursor of mortality among people in later life. *Age and Ageing*, 31(3), 165-168. <http://dx.doi.org/10.1093/ageing/31.3.165>
- Bevans, K. B., Riley, A. W., & Forrest, C. B. (2010). Development of the healthy pathways child-report scales. *Quality of Life Research*, 19(8), 1195-1214. <http://dx.doi.org/10.1007/s11136-010-9687-4>
- Brand, A. H., & Johnson, J. H. (1982). Note on reliability of the Life Events Checklist. *Psychological Reports*, 50(3c), 1274. <http://dx.doi.org/10.2466/pr0.1982.50.3c.1274>
- Bradburn, N. M. (1969). *The Structure of Psychological Well-Being*. Chicago, IL: Walter de Gruyter.
- Brand, S., Beck, J., Hatzinger, M., Harbaugh, A., Ruch, H., & Holsboer-Trachsler, E. (2010). Associations between satisfaction with life, burnout-related emotional and physical exhaustion, and sleep complaints. *World Journal of Biological Psychiatry*, 11(5), 744-754. <http://dx.doi.org/10.3109/15622971003624205>
- Brayfield, A. H., & Rothe, H. F. (1951). An index of job satisfaction. *Journal of Applied Psychology*, 35(5), 307-311. <http://dx.doi.org/10.1037/h0055617>
- Bogg, T., & Roberts, B. W. (2004). Conscientiousness and health-related behaviors: A meta-analysis of the leading behavioral contributors to mortality. *Psychology Bulletin*, 130, 887-919. <http://dx.doi.org/10.1037/0033-2909.130.6.887>
- Bolte, A., Goschke, T., & Kuhl, J. (2003). Emotion and intuition: Effects of positive and negative mood on implicit judgments of semantic coherence. *Psychological Science*, 14, 416-421. <http://dx.doi.org/10.1111/1467-9280.01456>
- Bornstein, D. (2010, November 8). Fighting Bullying with Babies. *New York Times*. http://opinionator.blogs.nytimes.com/2010/11/08/fighting-bullying-with-babies/?_r=0
- Butler, J., & Kern, M. L. (2012) The PERMA-Profiler: A brief multidimensional measure of well-being. *University of Pennsylvania*.
- Bylsma, L. M., Taylor-Clift, A., & Rottenberg, J. (2011). Emotional reactivity to daily events in major and minor depression. *Journal of Abnormal Psychology*, 120(1), 155. <http://dx.doi.org/10.1037/a0021662>

- Cacioppo, J. T., Hawkley, L. C., & Berntson, G. G. (2003). The anatomy of loneliness. *Current Directions in Psychological Science*, 12(3), 71-74. <http://dx.doi.org/10.1111/1467-8721.01232>
- Cameron, K., Mora, C., Leutscher, T., & Calarco, M. (2011). Effects of positive practices on organizational effectiveness. *The Journal of Applied Behavioral Science*, 47(3), 266-308. <http://dx.doi.org/10.1177/0021886310395514>
- Chadwick, A. (2006). *Internet politics: States, citizens, and new communication technologies*. Oxford University Press, USA.
- Chew, C., & Eysenbach, G. (2010). Pandemics in the age of Twitter: Content analysis of Tweets during the 2009 H1N1 outbreak. *PLOS ONE*, 5, e14118. <http://dx.doi.org/10.1371/journal.pone.0014118>
- Chida, Y., & Steptoe, A. (2008). Positive psychological well-being and mortality: A quantitative review of prospective observational studies. *Psychosomatic Medicine*, 70(7), 741-756. <http://dx.doi.org/10.1097/PSY.0b013e31818105ba>
- Chirkov, V. I., Ryan, R. M., & Sheldon, K. M. (Eds.). (2011). *Human autonomy in cross-cultural context: Perspectives on the psychology of agency, freedom, and well-being*. The Netherlands: Springer. <http://dx.doi.org/10.1007/978-90-481-9667-8>
- Clark, A. E., & Oswald, A. J. (2002). A simple statistical method for measuring how life events affect happiness. *International Journal of Epidemiology*, 31(6), 1139-1144. <http://dx.doi.org/10.1093/ije/31.6.1139>
- Clark, A. E. (2003). Unemployment as a social norm: Psychological evidence from panel data. *Journal of Labor Economics*, 21(2), 323-351. <http://dx.doi.org/10.1086/345560>
- Clark, A. E., Diener, E., Georgellis, Y., & Lucas, R. E. (2008). Lags and leads in life satisfaction: a test of the baseline hypothesis. *The Economic Journal*, 118(529), F222-F243. <http://dx.doi.org/10.1111/j.1468-0297.2008.02150.x>
- Csikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience*. New York, NY: Harper-Perennial.
- Cullis, J. G., & Lewis, A. (1997). Why people pay taxes: From a conventional economic model to a model of social convention. *Journal of Economic Psychology*, 18(2), 305-321. [http://dx.doi.org/10.1016/S0167-4870\(97\)00010-X](http://dx.doi.org/10.1016/S0167-4870(97)00010-X)
- Dambrun, M., & Ricard, M. (2011). Self-centeredness and selflessness: A theory of self-based psychological functioning and its consequences for happiness. *Review of General Psychology*, 15, 138-157. <http://dx.doi.org/10.1037/a0023059>
- Danner, D. D., Snowdon, D. A., & Friesen, W. V. (2001). Positive emotions in early life and longevity: Findings from the nun study. *Journal of Personality and Social Psychology*, 80, 804-813. <http://dx.doi.org/10.1037/0022-3514.80.5.804>
- Davern, M. T., Cummins, R. A., & Stokes, M. A. (2007). Subjective well-being as an affective-cognitive construct. *Journal of Happiness Studies*, 8(4), 429-449. <http://dx.doi.org/10.1007/s10902-007-9066-1>
- De Choudhury, M., Counts, S., & Horvitz, E. (2013, May). Social media as a measurement tool of depression in populations. In the *WebSci '13 Proceedings of the 5th Annual ACM Web Science Conference*. Paris, France. <http://dx.doi.org/10.1145/2464464.2464480>
- Deaton, A. (2008). Income, health and well-being around the world: Evidence from the Gallup World Poll. *The Journal of Economic Perspectives*, 22(2), 53. <http://dx.doi.org/10.1257/jep.22.2.53>
- Deci, E. L., & Ryan R. M. (2000). The “what” and “why” of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, 11(4), 227-268. http://dx.doi.org/10.1207/S15327965PLI1104_01
- Deci, E. L., & Ryan, R. M. (2004). *Handbook of self-determination research*. New York, NY: University of Rochester Press.
- Delle Fave, A., Massimini, F., & Bassi, M. (2011). Hedonism and eudaimonism in positive psychology. In A. Delle Fave (Ed.), *Psychological selection and optimal experience across cultures: Social empowerment through personal growth* (pp. 3-18). New York, NY: Springer. http://dx.doi.org/10.1007/978-90-481-9876-4_1
- Diamond, J. M. (1998). *Guns, germs, and steel: A short history of everybody for the last 13,000 years*. Random House, USA.

- Diener, E. (1994). Assessing subjective well-being: Progress and opportunities. *Social Indicators Research*, 31, 103-157. <http://dx.doi.org/10.1007/BF01207052>
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction with Life Scale. *Journal of Personality Assessment*, 49(1), 71-75. http://dx.doi.org/10.1207/s15327752jpa4901_13
- Diener, E., Larsen, R. J., Levine, S. A., & Emmons, R. A. (1985). Intensity and frequency: Dimensions underlying positive and negative affect. *Journal of Personality and Social Psychology*, 48, 1253-1265. <http://dx.doi.org/10.1037/0022-3514.48.5.1253>
- Diener, E., Lucas, R., Schimmack, U., & Helliwell, J. (2009). *Well-Being for public policy*. Oxford, United Kingdom: Oxford University Press. <http://dx.doi.org/10.1093/acprof:oso/9780195334074.001.0001>
- Diener, E., Nickerson, C., Lucas, R. E., & Sandvik, E. (2002). Dispositional affect and job outcomes. *Social Indicators Research*, 59, 229-259. <http://dx.doi.org/10.1023/A:1019672513984>
- Diener, E., Oishi, S., & Lucas, R. E. (2003). Personality, culture, and subjective well-being: Emotional and cognitive evaluations of life. *Annual Review of Psychology*, 54, 403-425. <http://dx.doi.org/10.1146/annurev.psych.54.101601.145056>
- Diener, E., Sandvik, E., Seidlitz, L., & Diener, M. (1993). The relationship between income and subjective well-being: Relative or absolute? *Social Indicators Research*, 28(3), 195-223. <http://dx.doi.org/10.1007/BF01079018>
- Diener, E., Scollon, C. N., & Lucas, R. E. (2003). The evolving concept of subjective well-being: The multifaceted nature of happiness. In P. T. Costa & I. C. Siegler (Eds.), *The psychology of aging*. New York, NY: Elsevier Science. [http://dx.doi.org/10.1016/S1566-3124\(03\)15007-9](http://dx.doi.org/10.1016/S1566-3124(03)15007-9)
- Diener, E., & Seligman, M. E. P. (2004). Beyond money: Toward an economy of well-being. *Psychological Science in the Public Interest*, 5, 1-31. <http://dx.doi.org/10.1111/j.0963-7214.2004.00501001.x>
- Diener, E., Suh, E. M., Lucas, R. E., & Smith, H. L. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin*, 125(2), 276-302. <http://dx.doi.org/10.1037/0033-2909.125.2.276>
- Dillon, K. M., Minchoff, B., & Baker, K. H. (1985). Positive emotional states and enhancement of the immune system. *International Journal of Psychiatry in Medicine*, 15, 13-18. <http://dx.doi.org/10.2190/R7FD-URN9-PQ7F-A6I7>
- Dittmar, H. (2008). *Consumer culture, identity, and well-being: The search for the 'good life' and the 'body perfect'* (European Monographs in Social Psychology Series). New York: Psychology Press.
- Dittmar, H., Bond, R., Kasser, T., & Hurst, M. (2012). *The relationship between materialism and personal well-being: A meta-analysis*. Manuscript submitted for publication.
- Dodds, P. S., & Danforth, C. M. (2010). Measuring the happiness of large-scale written expression: Songs, blogs, and presidents. *Journal of Happiness Studies*, 11(4), 441-456. <http://dx.doi.org/10.1007/s10902-009-9150-9>
- Dodds, P. S., Harris, K. D., Kloumann, I. M., Bliss, C. A., & Danforth, C. M. (2011). Temporal patterns of happiness and information in a global social network: Hedonometrics and Twitter. *PLOS ONE*, 6(12), e26752. <http://dx.doi.org/10.1371/journal.pone.0026752>
- Dolan, P. (2008). Developing methods that really do value the 'Q' in the QALY. *Health Economics, Policy and Law*, 3(1), 69. <http://dx.doi.org/10.1017/S1744133107004355>
- Dolan, P., Peasegood, T., & White, M. (2008). Do we really know what makes us happy? A review of the economic literature on the factors associated with subjective well-being. *Journal of Economic Psychology*, 29(1), 94-122. <http://dx.doi.org/10.1016/j.joep.2007.09.001>
- Duckworth, A. L., Peterson, C., Matthews, M. D., & Kelly, D. R. (2007). Grit: Perseverance and passion for long-term goals. *Journal of Personality and Social Psychology*, 92(6), 1087. <http://dx.doi.org/10.1037/0022-3514.92.6.1087>
- Dunn, E. W., Aknin, L. B., & Norton, M. I. (2008). Spending money on others promotes happiness. *Science*, 319(5870), 1687-1688. <http://dx.doi.org/10.1126/science.1150952>
- Dunn, E. W., Gilbert, D. T., & Wilson, T. D. (2011). If money doesn't make you happy, then you probably aren't spending it right. *Journal of Consumer Psychology*, 21(2), 115. <http://dx.doi.org/10.1016/j.jcps.2011.02.002>
- Easterlin, R. A. (1974). Does economic growth improve the human lot? Some empirical evidence. *Nations and households in economic growth*, 89, 89-125. <http://dx.doi.org/10.1016/b978-0-12-205050-3.50008-7>

- Easterlin, R. A. (1995). Will raising the incomes of all increase the happiness of all? *Journal of Economic Behavior & Organization*, 27(1), 35-47. [http://dx.doi.org/10.1016/0167-2681\(95\)00003-B](http://dx.doi.org/10.1016/0167-2681(95)00003-B)
- Easterlin, R. A. (2001). Income and happiness: Towards a unified theory. *Economic Journal*, 111, 465-484. <http://dx.doi.org/10.1111/1468-0297.00646>
- Easterlin, R. A. (2013). Happiness, Growth, and Public Policy. *Economic Inquiry*, 51(1), 1-15. <http://dx.doi.org/10.1111/j.1465-7295.2012.00505.x>
- Eid, M., & Diener, E. (2004). Global judgments of subjective well-being: Situational variability and long-term stability. *Social Indicators Research*, 65(3), 245-277. <http://dx.doi.org/10.1023/B:SOCI.0000003801.89195.bc>
- Emmons, R. A. (2003). Personal goals, life meaning, and virtue: Wellsprings of a positive life. In C. Keyes & J. Haidt (Eds.), *Flourishing: Positive psychology and the life well-lived* (pp. 105-128). Washington, DC: American Psychological Association. <http://dx.doi.org/10.1037/10594-005>
- Erdogan, B., Bauer, T. N., Truxillo, D. M., & Mansfield, L. R. (2012). Whistle while you work: A review of the life satisfaction literature. *Journal of Management*, 38(4), 1038-1083. <http://dx.doi.org/10.1177/0149206311429379>
- Estrada, C. A., Isen, A. M., & Young, M. J. (1994). Positive affect improves creative problem solving and influences reported source of practice satisfaction in physicians. *Motivation and Emotion*, 18(4), 285-299. <http://dx.doi.org/10.1007/BF02856470>
- Forgeard, M. J. C., Jayawickreme, E., Kern, M. L., & Seligman, M. E. P. (2011). Doing the right thing: Measuring well-being for public policy. *International Journal of Wellbeing*, 1, 79-106.
- Frederick, S., & Loewenstein, G. (1999). Hedonic adaptation. In D. Kahneman, E. Diener & N. Schwarz (Eds.), *Well-being: The foundations of hedonic psychology* (pp. 302-329). New York, NY: Russell Sage Foundation.
- Fredrickson, B. L. (1998). What good are positive emotions? *Review of General Psychiatry*, 2(3), 300-319. <http://dx.doi.org/10.1037/1089-2680.2.3.300>
- Fredrickson, B. (2013). *Love 2.0: How our supreme emotion affects everything we feel, think, do, and become*. USA: Hudson Street Press.
- Fredrickson, B. L., & Branigan, C. (2005). Positive emotions broaden the scope of attention and thought-action repertoires. *Cognition & Emotion*, 19(3), 313-332. <http://dx.doi.org/10.1080/02699930441000238>
- 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(5), 1045. <http://dx.doi.org/10.1037/a0013262>
- Fredrickson, B. L., & Joiner, T. (2002). Positive emotions trigger upward spirals toward emotional well-being. *Psychological Science*, 13, 172-175. <http://dx.doi.org/10.1111/1467-9280.00431>
- Froh, J. J., Yurkewicz, C., & Kashdan, T. B. (2009). Gratitude and subjective well-being in early adolescence: Examining gender differences. *Journal of Adolescence*, 32, 633-650. <http://dx.doi.org/10.1016/j.adolescence.2008.06.006>
- Fromm, E. (1976). *To have or to be?* New York: Continuum.
- Fry, P. S., & Debats, D. L. (2009). Perfectionism and the five-factor personality traits as predictors of mortality in older adults. *Journal of Health and Psychology*, 14, 513-524. <http://dx.doi.org/10.1177/1359105309103571>
- Gagné, M. (2003). The role of autonomy support and autonomy orientation in prosocial behavior engagement. *Motivation and Emotion*, 27(3), 199-223. <http://dx.doi.org/10.1023/A:1025007614869>
- Ginsberg, J., Mohebbi, M. H., Patel, R. S., Brammer, L., Smolinski, M. S., & Brilliant, L. (2009). Detecting influenza epidemics using search engine query data. *Nature*, 457, 1012-1014. <http://dx.doi.org/10.1038/nature07634>
- Glass, T. A., De Leon, C. F. M., Bassuk, S. S., & Berkman, L. F. (2006). Social engagement and depressive symptoms in late life longitudinal findings. *Journal of Aging and Health*, 18(4), 604-628. <http://dx.doi.org/10.1177/0898264306291017>
- Goldberg, D., & Williams, P. (1988). *General health questionnaire* (GHQ). Swindon, Wiltshire, UK: nferNelson.

- Gouveia, V. V., Milfont, T. L., da Fonseca, P. N., & de Miranda Coelho, J. A. P. (2009). Life satisfaction in Brazil: Testing the psychometric properties of the Satisfaction with Life Scale (SWLS) in five Brazilian samples. *Social Indicators Research*, 90(2), 267-277. <http://dx.doi.org/10.1007/s11205-008-9257-0>
- Green, F. (2011). Unpacking the misery multiplier: How employability modifies the impacts of unemployment and job insecurity on life satisfaction and mental health. *Journal of Health Economics*, 30(2), 265-276. <http://dx.doi.org/10.1016/j.jhealeco.2010.12.005>
- Greenfield, E. A., & Marks, N. F. (2004). Formal volunteering as a protective factor for older adults' psychological well-being. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 59(5), S258-S264. <http://dx.doi.org/10.1093/geronb/59.5.S258>
- Haar, J., & Roche, M. (2010). Family supportive organisation perceptions and employee outcomes: The mediating effects of life satisfaction. *International Journal of Human Resource Management*, 21(7), 999-1014. <http://dx.doi.org/10.1080/09585191003783462>
- Hamre, B. K., & Pianta, R. C. (2001). Early teacher-child relationships and the trajectory of children's school outcomes through eighth grade. *Child Development*, 72, 625-638. <http://dx.doi.org/10.1111/1467-8624.00301>
- Helliwell, J. F., & Huang, H. (2011). Well-being and trust in the workplace. *Journal of Happiness Studies*, 12(5), 747-767. <http://dx.doi.org/10.1007/s10902-010-9225-7>
- Helliwell, J. F., Layard, R., & Sachs, J. (Eds.). (2012a). *World Happiness Report*. New York, NY: The Earth Institute, Columbia University.
- Helliwell, J. F., Layard, R., & Sachs, J. (2012b). Some policy implications. In J. F. Helliwell, R. Layard & J. Sachs (Eds.), *World Happiness Report*. New York, NY: The Earth Institute, Columbia University.
- Helliwell, J. F., & Wang, S. (2012). The state of world happiness. In J. F. Helliwell, R. Layard & J. Sachs (Eds.), *World Happiness Report*. New York, NY: The Earth Institute, Columbia University.
- Hogenelst, K., & Schoevers, R. A. (2012). Mood disorders in everyday life: A systematic review of experience sampling and ecological momentary assessment studies. *Clinical Psychology Review*, 32(6), 510-523. <http://dx.doi.org/10.1016/j.cpr.2012.05.007>
- Howell, R., Kern, M. L., & Lyubomirsky, S. (2007). Health benefits: Meta-analytically determining the impact of well-being on objective health outcomes. *Health Psychology Review*, 1, 83-136. <http://dx.doi.org/10.1080/17437190701492486>
- Hoyt, L. T., Chase-Lansdale, P. L., McDade, T. W., & Adam, E. K. (2012). Positive youth, healthy adults: Does positive well-being in adolescence predict better perceived health and fewer risky health behaviors in young adulthood? *Journal of Adolescent Health*, 50, 66-73. <http://dx.doi.org/10.1016/j.jadohealth.2011.05.002>
- Huppert, F. A., & So, T. (2009, July). *What percentage of people in Europe are flourishing and what characterises them?* Paper presented at the meeting of the OECD/ISQOLS, Florence, Italy.
- Huta, V., & Ryan, R. M. (2010). Pursuing pleasure or virtue: The differential and overlapping well-being benefits of hedonic and eudaimonic motives. *Journal of Happiness Studies*, 11(6), 735-762. <http://dx.doi.org/10.1007/s10902-009-9171-4>
- Huxley, A. (1932). *Brave new world*. New York, NY: Harper & Brothers.
- Isen, A. M., Daubman, K. A., & Nowicki, G. P. (1987). Positive affect facilitates creative problem solving. *Journal of Personality and Social Psychology*, 52, 1122-1131. <http://dx.doi.org/10.1037/0022-3514.52.6.1122>
- Isen, A. M., Rosenzweig, A. S., & Young, M. J. (1991). The influence of positive affect on clinical problem solving. *Medical Decision Making*, 11, 221-227. <http://dx.doi.org/10.1177/0272989X9101100313>
- Jayawickreme, E., Forgeard, M. J., & Seligman, M. E. (2012). The engine of well-being. *Review of General Psychology*, 16(4), 327. <http://dx.doi.org/10.1037/a0027990>
- Johnson, K. J., & Fredrickson, B. L. (2005). We all look the same to me: Positive emotions eliminate the own-race bias in face recognition. *Psychological Science*, 16, 875-881. <http://dx.doi.org/10.1111/j.1467-9280.2005.01631.x>
- Kahneman, D., & Deaton, A. (2010). High income improves evaluation of life but not emotional well-being. *Proceedings of the National Academy of Sciences*, 107(38), 16489-16493. <http://dx.doi.org/10.1073/pnas.1011492107>

- Kahneman, D., Fredrickson, B. L., Schreiber, C. A., & Redelmeier, D. A. (1993). When more pain is preferred to less: Adding a better end. *Psychological Science*, 4(6), 401-405. <http://dx.doi.org/10.1111/j.1467-9280.1993.tb00589.x>
- Kahneman, D., & Krueger, A. B. (2006). Developments in the measurement of subjective well-being. *The Journal of Economic Perspectives*, 20(1), 3-24. <http://dx.doi.org/10.1257/089533006776526030>
- Kahneman, D., Krueger, A. B., Schkade, D. A., Schwarz, N., & Stone, A. A. (2004). A survey method for characterizing daily life experience: The day reconstruction method. *Science*, 306(5702), 1776-1780. <http://dx.doi.org/10.1126/science.1103572>
- Kahneman, D. & Tversky, A. (2003). Experienced utility and objective happiness: A moment-based approach. *The Psychology of Economic Decisions*, 1, 187-208.
- Kashdan, T. B., Biswas-Diener, R., & King, L. A. (2008). Reconsidering happiness: The costs of distinguishing between hedonics and eudaimonia. *The Journal of Positive Psychology*, 3(4), 219-233. <http://dx.doi.org/10.1080/17439760802303044>
- Kashdan, T. B., Rose, P., & Fincham, F. D. (2004). Curiosity and exploration: Facilitating positive subjective experiences and personal growth opportunities. *Journal of Personality Assessment*, 82(3), 291-305. http://dx.doi.org/10.1207/s15327752jpa8203_05
- Kasser, T., & Kanner, A. D. (2004). *Psychology and consumer culture: The struggle for a good life in a materialistic world*. Washington, DC: American Psychological Association. <http://dx.doi.org/10.1037/10658-000>
- Kasser, T., & Ryan, R. M. (1993). A dark side of the American dream: Correlates of financial success as a central life aspiration. *Journal of Personality and Social Psychology*, 65, 410-422. <http://dx.doi.org/10.1037/0022-3514.65.2.410>
- Kasser, T., & Ryan, R. M. (1996). Further examining the American dream: Differential correlates of intrinsic and extrinsic goals. *Personality and Social Psychology Bulletin*, 22, 280-287. <http://dx.doi.org/10.1177/0146167296223006>
- Kaufman, M. (2005). Interview of Richard Davidson. *Washington Post*, 3 January, 2005, 60.
- Kern, M. L., & Friedman, H. S. (2008). Do conscientious individuals live longer? A quantitative review. *Health Psychology*, 27, 505-512. <http://dx.doi.org/10.1037/0278-6133.27.5.505>
- Keyes, C. L., & Annas, J. (2009). Feeling good and functioning well: Distinctive concepts in ancient philosophy and contemporary science. *The Journal of Positive Psychology*, 4(3), 197-201. <http://dx.doi.org/10.1080/17439760902844228>
- Kimmel, D. C., Price, K. F., & Walker, J. W. (1978). Retirement choice and retirement satisfaction. *Journal of Gerontology*, 33(4), 575-585. <http://dx.doi.org/10.1093/geronj/33.4.575>
- Kok, B. E., & Fredrickson, B. L. (2010). Upward spirals of the heart: Autonomic flexibility, as indexed by vagal tone, reciprocally and prospectively predicts positive emotions and social connectedness. *Biological Psychology*, 85(3), 432-436. <http://dx.doi.org/10.1016/j.biopsycho.2010.09.005>
- Kopperud, K. H., & Vitterso, J. (2008). Distinctions between hedonic and eudaimonic well-being: results from a day reconstruction study among Norwegian jobholders. *The Journal of Positive Psychology*, 3(3), 174-81. <http://dx.doi.org/10.1080/17439760801999420>
- Krueger, A. B., & Schkade, D. A. (2008). The reliability of subjective well-being measures. *Journal of Public Economics*, 92(8), 1833-1845. <http://dx.doi.org/10.1016/j.jpubeco.2007.12.015>
- Kuhl, J. (1983). Emotion, cognition, and motivation: II. The functional significance of emotions in perception, memory, problem-solving, and overt action. *Sprache & Kognition*, 2, 228-253.
- Kuhl, J. (2000). A functional-design approach to motivation and self-regulation: The dynamics of personality systems interactions. In M. Boekaerts, P. R. Pintrich & M. Zeidner (Eds.), *Handbook of self-regulation* (pp. 111-169). San Diego, CA: Academic Press. <http://dx.doi.org/10.1016/B978-012109890-2/50034-2>
- Kuo, F. E., Sullivan, W. C., Coley, R. L., & Brunson, L. (1998). Fertile ground for community: Inner-city neighborhood common spaces. *American Journal of Community Psychology*, 26(6), 823-851. <http://dx.doi.org/10.1023/A:1022294028903>

- Larsen, R. J., & Diener, E. (1985). A multitrait-multimethod examination of affect structure: Hedonic level and emotional intensity. *Personality and Individual Differences*, 6(5), 631-636.
[http://dx.doi.org/10.1016/0191-8869\(85\)90013-3](http://dx.doi.org/10.1016/0191-8869(85)90013-3)
- Larsen, R. J., Diener, E., & Emmons, R. A. (1986). Affect intensity and reactions to daily life events. *Journal of Personality and Social Psychology*, 51(4), 803. <http://dx.doi.org/10.1037/0022-3514.51.4.803>
- Larsen, R. J., & Diener, E. (1987). Affect intensity as an individual difference characteristic: A review. *Journal of Research in Personality*, 21(1), 1-39. [http://dx.doi.org/10.1016/0092-6566\(87\)90023-7](http://dx.doi.org/10.1016/0092-6566(87)90023-7)
- Layard, R. (2005). *Happiness: Lessons from a New Science*. New York, NY: Penguin Press.
- Layard, R. (2011). *Happiness: Lessons from a New Science* (2nd ed.). New York, NY: Penguin Press.
- Layard, R., Clark, A., & Senik, C. (2012). The causes of happiness and misery. In J. F. Helliwell, R. Layard & J. Sachs (Eds.), *World Happiness Report*. New York, NY: The Earth Institute, Columbia University.
- Lemelson, R. B. (2004). Traditional healing and its discontents: Efficacy and traditional therapies of neuropsychiatric disorders in Bali. *Medical Anthropology Quarterly*, 18(1), 48-76.
<http://dx.doi.org/10.1525/maq.2004.18.1.48>
- Liddle, J., Gustaffson, L., & Bartlett, H. (2012). Time use, role participation and life satisfaction of older people: Impact of driving status. *Australian Occupational Therapy Journal*, 59(5), 384-392.
<http://dx.doi.org/10.1111/j.1440-1630.2011.00956.x>
- Lopez, S. J., & Snyder, C. R. (Eds.). (2011). *The Oxford handbook of positive psychology*. Oxford University Press, USA.
- Lucas, R. E. (1996). Nobel lecture: Monetary neutrality. *Journal of Political Economy*, 104, 661-682.
<http://dx.doi.org/10.1086/262037>
- Lucas, R. E., Clark, A. E., Georgellis, Y., & Diener, E. (2004). Unemployment alters the set point for life satisfaction. *Psychological Science*, 15(1), 8-13. <http://dx.doi.org/10.1111/j.0963-7214.2004.01501002.x>
- Lucas, R. E., Diener, E., & Suh, E. (1996). Discriminant validity of well-being measures. *Journal of Personality and Social Psychology*, 71(3), 616. <http://dx.doi.org/10.1037/0022-3514.71.3.616>
- Luechinger, S., & Raschky, P. A. (2009). Valuing flood disasters using the life satisfaction approach. *Journal of Public Economics*, 93(3), 620-633. <http://dx.doi.org/10.1016/j.jpubeco.2008.10.003>
- Lutz, A., Greischar, L. L., Rawlings, N. B., Ricard, M., & Davidson, R. J. (2004). Long-term meditators self-induce high-amplitude gamma synchrony during mental practice. *Proceedings of the National Academy of Sciences of the United States of America*, 101(46), 16369-16373.
<http://dx.doi.org/10.1073/pnas.0407401101>
- Lyubomirsky, S., King, L. A., & Diener, E. (2005). The benefits of frequent positive affect: Does happiness lead to success? *Psychology Bulletin*, 131, 803-855. <http://dx.doi.org/10.1037/0033-2909.131.6.803>
- Lyubomirsky, S., & Lepper, H. S. (1999). A measure of subjective happiness: Preliminary reliability and construct validation. *Social Indicators Research*, 46(2), 137-155.
<http://dx.doi.org/10.1023/A:1006824100041>
- McCullough, M. E., Emmons, R. A., & Tsang, J. A. (2001). *The gratitude questionnaire-six item form (GQ-6)*. <http://www.psy.miami.edu/faculty/mmccullough/gratitude/GQ-6-scoring-interp.pdf>
- McGough, G. (2012). Happy Planet Index. *Nursing Standard*, 26(49), 30.
<http://dx.doi.org/10.7748/ns2012.08.26.49.30.p9099>
- McKee-Ryan, F., Song, Z., Wanberg, C. R., & Kinicki, A. J. (2005). Psychological and physical well-being during unemployment: A meta-analytic study. *Journal of Applied Psychology*, 90(1), 53-76.
<http://dx.doi.org/10.1037/0021-9010.90.1.53>
- Michael, K., & Miller, K. W. (2013). Big data: New opportunities and new challenges. Guest editors' introduction. *Computer*, 46(6), 22-24. <http://dx.doi.org/10.1109/MC.2013.196>
- Millette, V., & Gagné, M. (2008). Designing volunteers' tasks to maximize motivation, satisfaction and performance: The impact of job characteristics on volunteer engagement. *Motivation and Emotion*, 32(1), 11-22. <http://dx.doi.org/10.1007/s11031-007-9079-4>
- Morrow-Howell, N. (2000). *Productive engagement of older adults: Effects on well-being*. St. Louis, MO: Center of Social Development, Washington University.

- Morrow-Howell, N., Hinterlong, J., Rozario, P. A., & Tang, F. (2003). Effects of volunteering on the well-being of older adults. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 58(3), S137-S145. <http://dx.doi.org/10.1093/geronb/58.3.S137>
- Mowday, R. T., Steers, R. M., & Porter, L. W. (1979). The measurement of organizational commitment. *Journal of Vocational Behavior*, 14(2), 224-247. [http://dx.doi.org/10.1016/0001-8791\(79\)90072-1](http://dx.doi.org/10.1016/0001-8791(79)90072-1)
- Myers, D. G. (2000). *The American paradox: Spiritual hunger in an age of plenty*. New Haven, CT: Yale University Press.
- Norton, D. L. (1976). *Personal destinies*. Princeton, NJ: Princeton University Press.
- OECD (2011). *OECD better life initiative. Compendium of OECD well-being indicators*. Organization of Economic Co-Operation and Development, Paris, France.
- OECD (2013). *OECD guidelines on measuring subjective well-being*. <http://dx.doi.org/10.1787/9789264191655-en>
- Oerlemans, W. G. M., Bakker, A. B., & Veenhoven, R. (2011). Finding the key to happy aging: A day reconstruction study of happiness. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 66(6), 665-674. <http://dx.doi.org/10.1093/geronb/gbr040>
- Okun, A. M. (1975). *Equality and efficiency, the big tradeoff*. USA: Brookings Institution Press.
- Ostir, G. V., Markides, K. S., Black, S. A., & Goodwin, J. S. (2000). Emotional well-being predicts subsequent functional independence and survival. *Journal of the American Geriatrics Society*, 48, 473-478. <http://dx.doi.org/10.1111/j.1532-5415.2000.tb04991.x>
- Park, G., Schwarz, A., & Eichstaedt, J. (2014, March). *The phenomenology of mental life*. Paper presented at the University of Pennsylvania. Philadelphia, PA.
- Pavot, W., & Diener, E. (1993). Review of the satisfaction with life scale. *Psychological Assessment*, 5(2), 164. <http://dx.doi.org/10.1037/1040-3590.5.2.164>
- Pavot, W., Diener, E., Colvin, C. R., & Sandvik, E. (1991). Further validation of the Satisfaction with Life Scale: Evidence for the cross-method convergence of well-being measures. *Journal of Personality Assessment*, 57(1), 149-161. http://dx.doi.org/10.1207/s15327752jpa5701_17
- Pennebaker, J. W., Chung, C. K., Ireland, M., Gonzales, A., & Booth, R. J. (2007). *The development and psychometric properties of LIWC2007*. Austin, TX: LIWC.net.
- Pennebaker, J. W., Mehl, M. R., & Niederhoffer, K. G. (2003). Psychological aspects of natural language use: Our words, our selves. *Annual Review of Psychology*, 54, 547-577. <http://dx.doi.org/10.1146/annurev.psych.54.101601.145041>
- Perelman, A. M., Miller, S. L., Clements, C. B., Rodriguez, A., Allen, K., & Cavanaugh, R. (2012). Meditation in a Deep South prison: A longitudinal study of the effects of Vipassana. *Journal of Offender Rehabilitation*, 51(3), 176-198. <http://dx.doi.org/10.1080/10509674.2011.632814>
- Powdthavee, N. (2005). Unhappiness and crime: Evidence from South Africa. *Economica*, 72(287), 531-547. <http://dx.doi.org/10.1111/j.0013-0427.2005.00429.x>
- Powdthavee, N. (2008). Putting a price tag on friends, relatives, and neighbours: Using surveys of life satisfaction to value social relationships. *Journal of Socio-Economics*, 37(4), 1459-1480. <http://dx.doi.org/10.1016/j.socec.2007.04.004>
- Powdthavee, N., & Van den Berg, B. (2011). Putting different price tags on the same health condition: Re-evaluating the well-being valuation approach. *Journal of Health Economics*, 30(5), 1032-1043. <http://dx.doi.org/10.1016/j.jhealeco.2011.06.001>
- Power, M., & Kuyken, W. (1998). The World Health Organisation Quality of Life Assessment (WHOQOL): Development and general psychometric properties. *Social Science and Medicine*, 46(12), 1569-1585. [http://dx.doi.org/10.1016/S0277-9536\(98\)00009-4](http://dx.doi.org/10.1016/S0277-9536(98)00009-4)
- Pressman, S. D., & Cohen, S. (2005). Does positive affect influence health? *Psychology Bulletin*, 131, 925-971. <http://dx.doi.org/10.1037/0033-2909.131.6.925>
- Putnam, R. D. (2000). *Bowling alone: The collapse and revival of American community*. Simon & Schuster, USA. <http://dx.doi.org/10.1145/358916.361990>
- Roberts, B. W., Kuncel, N. R., Shiner, R., Caspi, A., & Goldberg, L. R. (2007). The power of personality: The comparative validity of personality traits, socioeconomic status, and cognitive ability for

- predicting important life outcomes. *Perspectives on Psychological Science*, 2, 313-345.
<http://dx.doi.org/10.1111/j.1745-6916.2007.00047.x>
- Robinson, D. N. (1989). *Aristotle's Psychology*. New York, NY: Columbia University Press.
- Rothwell, N. A., Britton, P. G., & Woods, R. T. (1983). The effects of group living in a residential home for the elderly. *British Journal of Social Work*, 13(1), 639-643.
- Rowe, G., Hirsh, J. B., Anderson, A. K., & Smith, E. E. (2007). Positive affect increases the breadth of attentional selection. *PNAS Proceedings of the National Academy of Sciences of the United States of America*, 104, 383-388. <http://dx.doi.org/10.1073/pnas.0605198104>
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68-78.
<http://dx.doi.org/10.1037/0003-066X.55.1.68>
- Ryan, R. M., & Deci, E. L. (2001). On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. *Annual Review of Psychology*, 52, 141-166.
<http://dx.doi.org/10.1146/annurev.psych.52.1.141>
- Ryan, R. M., Huta, V., & Deci, E. L. (2008). Living well: A self-determination theory perspective on eudaimonia. *Journal of Happiness Studies*, 9(1), 139-170. <http://dx.doi.org/10.1007/s10902-006-9023-4>
- Ryan, R. M., & Huta, V. (2009). Wellness as healthy functioning or wellness as happiness: The importance of eudaimonic thinking (response to the Kashdan et al. and Waterman discussion). *The Journal of Positive Psychology*, 4(3), 202-204. <http://dx.doi.org/10.1080/17439760902844285>
- Ryff, C. D., & Keyes, C. L. M. (1995). The structure of psychological well-being revisited. *Journal of Personality and Social Psychology*, 69, 719-727. <http://dx.doi.org/10.1037/0022-3514.69.4.719>
- Sachs, J. (2012). Introduction. In J. F. Helliwell, R. Layard & J. Sachs (Eds.), *World Happiness Report*. New York, NY: The Earth Institute, Columbia University. http://dx.doi.org/10.1007/978-3-8349-6942-2_1
- Salathé, M., Freifeld, C. C., Mekaru, S. R., Tomasulo, A. F., & Brownstein, J. S. (2013). Influenza A (H7N9) and the importance of digital epidemiology. *New England Journal of Medicine*, 369, 401-404.
<http://dx.doi.org/10.1056/NEJMp1307752>
- Salovey, P., Rothman, A. J., Detweiler, J. B., & Steward, W. T. (2000). Emotional states and physical health. *American Psychologist*, 55, 110-121. <http://dx.doi.org/10.1037/0003-066X.55.1.110>
- Schaufeli, W. B., Salanova, M., González-Romá, V., & Bakker, A. B. (2002). The measurement of engagement and burnout: A two sample confirmatory factor analytic approach. *Journal of Happiness Studies*, 3(1), 71-92. <http://dx.doi.org/10.1023/A:1015630930326>
- Schmidt, M. E., Pempek, T. A., Kirkorian, H. L., Lund, A. F., & Anderson, D. R. (2008). The effects of background television on the toy play behavior of very young children. *Child Development*, 79(4), 1137-1151. <http://dx.doi.org/10.1111/j.1467-8624.2008.01180.x>
- Schwartz, H. A., Eichstaedt, J. C., Kern, M. L., Dziurzynski, L., Ramones, S. M., Agrawal, M., ..., & Ungar, L. H. (2013). Personality, gender, and age in the language of social media: The open-vocabulary approach. *PLOS ONE*, 8, e73791. <http://dx.doi.org/10.1371/journal.pone.0073791>
- Schwarz, N. (1987). *Stimmung als information: Mood as information*. Heidelberg, Germany: Springer.
<http://dx.doi.org/10.1007/978-3-642-72885-3>
- Segerstrom, S. C. (2007). Optimism and resources: Effects on each other and health over 10 years. *Journal of Research in Personality*, 41, 772-786. <http://dx.doi.org/10.1016/j.jrp.2006.09.004>
- Seligman, M. E. P. (2002). *Authentic happiness: Using the new positive psychology to realize your potential for lasting fulfillment*. New York, NY: Free Press.
- Seligman, M. E. P. (2011). *Flourish*. New York, NY: Simon & Schuster.
- Seligman, M. E. P., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist*, 55, 5-14. <http://dx.doi.org/10.1037/0003-066X.55.1.5>
- Seligman, M. E. P., Ernst, R. M., Gillham, J., Reivich, K., & Linkins, M. (2009). Positive education: Positive psychology and classroom interventions. *Oxford Review of Education*, 35, 293-311.
<http://dx.doi.org/10.1080/03054980902934563>
- Sen, A. (2000). A decade of human development. *Journal of Human Development*, 1, 17-23.
<http://dx.doi.org/10.1080/14649880050008746>

- Shen, B. J., McCreary, C. P., & Myers, H. F. (2004). Independent and mediated contributions of personality, coping, social support, and depressive symptoms to physical functioning outcomes among patients in cardiac rehabilitation. *Journal of Behavioral Medicine*, 27, 39-62. <http://dx.doi.org/10.1023/B:JOBM.0000013643.36767.22>
- Shernoff, D. J., Csikszentmihalyi, M., Schneider, B., & Shernoff, E. S. (2003). Student engagement in high school classrooms from the perspective of flow theory. *School Psychology Quarterly*, 18(2), 158-176. <http://dx.doi.org/10.1521/scpq.18.2.158.21860>
- Shmotkin, D., Blumstein, T., & Modan, B. (2003). Beyond keeping active: Concomitants of being a volunteer in old-old age. *Psychology and Aging*, 18(3), 602. <http://dx.doi.org/10.1037/0882-7974.18.3.602>
- Simpson, S., Woods, R., & Britton, P. (1981). Depression and engagement in a residential home for the elderly. *Behaviour Research and Therapy*, 19(5), 435-438. [http://dx.doi.org/10.1016/0005-7967\(81\)90133-9](http://dx.doi.org/10.1016/0005-7967(81)90133-9)
- Skjaeveland, O., & Garling, T. (1997). Effects of interactional space on neighbouring. *Journal of Environmental Psychology*, 17(3), 181-198. <http://dx.doi.org/10.1006/jevps.1997.0054>
- Slocum-Gori, S. L., Zumbo, B. D., Michalos, A. C., & Diener, E. (2009). A note on the dimensionality of quality of life scales: An illustration with the Satisfaction with Life Scale (SWLS). *Social Indicators Research*, 92(3), 489-496. <http://dx.doi.org/10.1007/s11205-008-9303-y>
- Snyder, C. R., Hoza, B., Pelham, W. E., Rapoff, M., Ware, L., & Danovsky, M. (1997). The development and validation of the Children's Hope Scale. *Journal of Pediatric Psychology*, 22(3), 399-421. <http://dx.doi.org/10.1093/jpepsy/22.3.399>
- Snyder, C. R., Sympson, S. C., Ybasco, F. C., Borders, T. F., Babyak, M. A., & Higgins, R. L. (1996). Development and validation of the State Hope Scale. *Journal of Personality and Social Psychology*, 70(2), 321-335. <http://dx.doi.org/10.1037/0022-3514.70.2.321>
- St Louis, C., & Zorlu, G. (2012). Can Twitter predict disease outbreaks? *British Medical Journal*, 344, e2353. <http://dx.doi.org/10.1136/bmj.e2353>
- Steger, M. F., Frazier, P., Oishi, S., & Kaler, M. (2006). The meaning in life questionnaire: Assessing the presence of and search for meaning in life. *Journal of Counseling Psychology*, 53(1), 80-93. <http://dx.doi.org/10.1037/0022-0167.53.1.80>
- Steptoe, A., Wardle, J., & Marmot, M. (2005). Positive affect and health-related neuroendocrine, cardiovascular, and inflammatory processes. *Proceedings of the National Academy of Sciences of the United States of America*, 102(18), 6508-6512. <http://dx.doi.org/10.1073/pnas.0409174102>
- Stevenson, B., & Wolfers, J. (2008). *Economic growth and subjective well-being: Reassessing the Easterlin paradox* (Report No. w14282). National Bureau of Economic Research, USA. <http://dx.doi.org/10.2139/ssrn.1121237>
- Stewart-Brown, S., & Janmohamed, K. (2008). *Warwick-Edinburgh Mental Well-being Scale: User guide. Version, 1*. UK: National Health Service.
- Stewart-Brown, S., Tennant, A., Tennant, R., Platt, S., Parkinson, J., & Weich, S. (2009). Internal construct validity of the Warwick-Edinburgh mental well-being scale (WEMWBS): A Rasch analysis using data from the Scottish health education population survey. *Health and Quality of Life Outcomes*, 7(1), 15-22. <http://dx.doi.org/10.1186/1477-7525-7-15>
- Stiglitz, J. E. (1988). *Pareto efficient and optimal taxation and the new new welfare economics* (NBER Working Paper 2189). <http://www.nber.org/papers/w2189>
- Stiglitz, J. E., Sen, A., & Fitoussi, J. (2010). *Mismeasuring our lives: Why GDP doesn't add up*. New York, NY: New Press.
- Stone, A., & Shiffman, S. (1994). Ecological Momentary Assessment (EMA) in behavioral medicine. *Annals of Behavioral Medicine*, 16(3), 199-202.
- Stone, P. J., Dunphy, D. C., Smith, M. S., & Ogilvie, D. M. (1966). *The general inquirer: A computer approach to content analysis*. Cambridge, MA: MIT Press.
- Stutzer, A., & Frey, B. S. (2006). Does marriage make people happy, or do happy people get married? *The Journal of Socio-Economics*, 35(2), 326-347. <http://dx.doi.org/10.1016/j.socec.2005.11.043>
- Suryani, L. K., Lesmana, C. B., & Tiliopoulos, N. (2011). Treating the untreated: Applying a community-based, culturally sensitive psychiatric intervention to confined and physically restrained mentally ill

- individuals in Bali, Indonesia. *European Archives of Psychiatry and Clinical Neuroscience*, 261(2), 140-144. <http://dx.doi.org/10.1007/s00406-011-0238-y>
- Tadic, M., Oerlemans, W. G. M., Bakker, A. B., & Veenhoven, R. (in press). Daily activities and happiness in later life: The role of work status. *Journal of Happiness Studies*. <http://dx.doi.org/10.1007/s10902-012-9392-9>
- Taylor S. E. (2007). Social support. In H.S. Friedman & R. C. Silva (Eds.), *Foundation of health psychology* (pp. 145-171). New York, NY: Oxford University Press.
- Tennant, R., Hiller, L., Fishwick, R., Platt, S., Joseph, S., Weich, S., ... Stewart-Brown, S. (2007). The Warwick-Edinburgh Mental Well-Being Scale (WEMWBS): Development and UK validation. *Health and Quality of Life Outcomes*, 5(1), 63. <http://dx.doi.org/10.1186/1477-7525-5-63>
- The Social Progress Imperative. (2014). Graph illustrating foundations of well-being for each country in 2014. *Social Progress Index 2014*.
http://www.socialprogressimperative.org/data/spi?sf24611363=1#performance/countries/dim2/dim1_dim2_dim3
- Thoits, P. A., & Hewitt, L. N. (2001). Volunteer work and well-being. *Journal of Health and Social Behavior*, 42(2), 115-131. <http://dx.doi.org/10.2307/3090173>
- Thompson, C. A., & Prottas, D. J. (2006). Relationships among organizational family support, job autonomy, perceived control, and employee well-being. *Journal of Occupational Health Psychology*, 11(1), 100. <http://dx.doi.org/10.1037/1076-8998.10.4.100>
- Turner, R. J. (1981). Social support as a contingency in psychological well-being. *Journal of Health and Social Behavior*, 22(4), 357-367. <http://dx.doi.org/10.2307/2136677>
- Turner, J. B., Kessler, R. C., & House, J. S. (1991). Factors facilitating adjustment to unemployment: Implications for intervention. *American Journal of Community Psychology*, 19(4), 521-542. <http://dx.doi.org/10.1007/BF00937990>
- Van Praag, B., & Baarsma, B. E. (2004). Using happiness surveys to value intangibles: The case of airport noise. *The Economic Journal*, 115(500), 224-246. <http://dx.doi.org/10.1111/j.1468-0297.2004.00967.x>
- Vastamäki, J., Moser, K., & Paul, K. I. (2009). How stable is sense of coherence? Changes following an intervention for unemployed individuals. *Scandinavian Journal of Psychology*, 50(2), 161-171. <http://dx.doi.org/10.1111/j.1467-9450.2008.00695.x>
- Veenhoven, R. (1994). Is happiness a trait? Tests of the theory that a better society does not make people any happier. *Social Indicators Research*, 32, 101-160. <http://dx.doi.org/10.1007/BF01078732>
- Vieweg, B. W., & Hedlund, J. L. (1983). The General Health Questionnaire (GHQ): A comprehensive review. *Journal of Operational Psychiatry*, 14(2), 74-81.
- Vitterso, J., Overwien, P., & Martinsen, E. (2009). Pleasure and interest are differentially affected by replaying versus analyzing a happy life moment. *The Journal of Positive Psychology*, 4(1), 14-20. <http://dx.doi.org/10.1080/17439760802060602>
- Waterman, A. S. (2008). Reconsidering happiness: A eudaimonist's perspective. *The Journal of Positive Psychology*, 3(4), 234-252. <http://dx.doi.org/10.1080/17439760802303002>
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, 54(6), 1063-1070. <http://dx.doi.org/10.1037/0022-3514.54.6.1063>
- Wehmeyer, M. L. (1995). *The Arc's self-determination scale: Procedural guidelines*. Arc of the US, USA.
- Weinstein, N., & Ryan, R. M. (2010). When helping helps: Autonomous motivation for prosocial behavior and its influence on well-being for the helper and recipient. *Journal of Personality and Social Psychology*, 98(2), 222. <http://dx.doi.org/10.1037/a0016984>
- Williams, S., & Shiaw, W. T. (1999). Mood and organizational citizenship behavior: The effects of positive affect on employee organizational citizenship behavior intentions. *Journal of Psychology*, 133, 656-668. <http://dx.doi.org/10.1080/00223989909599771>
- Windsor, T. D., Anstey, K. J., & Rodgers, B. (2008). Volunteering and psychological well-being among young-old adults: How much is too much? *The Gerontologist*, 48(1), 59-70. <http://dx.doi.org/10.1093/geront/48.1.59>

- Zhang, J., Yang, Y., & Wang, H. (2009). Measuring subjective well-being: A comparison of China and the USA. *Asian Journal of Social Psychology*, 12(3), 221-225. <http://dx.doi.org/10.1111/j.1467-839X.2009.01287.x>
- Zimmermann, A. C., & Easterlin, R. A. (2006). Happily ever after? Cohabitation, marriage, divorce, and happiness in Germany. *Population and Development Review*, 32(3), 511-528. <http://dx.doi.org/10.1111/j.1728-4457.2006.00135.x>

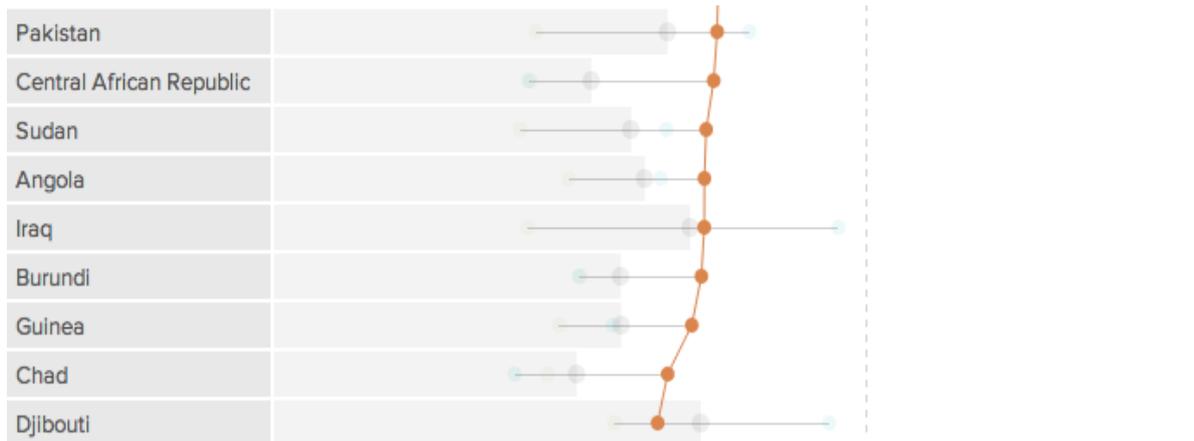
Appendix A: The social progress index

Figure 6. Top rankings based on wellbeing

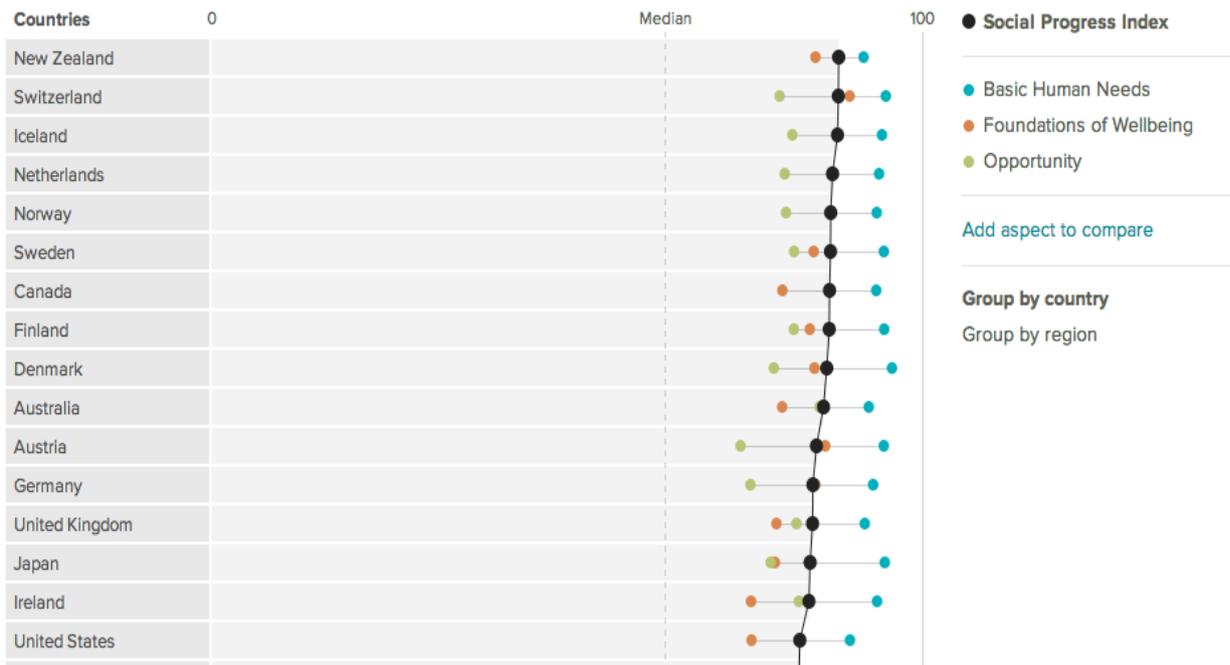


(The Social Progress Imperative, 2014)

Figure 7. Bottom rankings based on wellbeing



(Ibid)

Figure 8. SPI rankings


(Ibid)

Appendix B: The Happy Planet Index
Figure 9. Top rankings by experienced wellbeing

Country	HPI	Experienced wellbeing	Life expectancy	Ecological footprint
Denmark	36.6	7.8	78.8	8.3
Canada	43.6	7.7	81.0	6.4
Norway	51.4	7.6	81.1	4.8
Venezuela	56.9	7.5	74.4	3.0
Switzerland	50.3	7.5	82.3	5.0
Sweden	46.2	7.5	81.4	5.7
Netherlands	43.1	7.5	80.7	6.3
Israel	55.2	7.4	81.6	4.0

(McGough, 2012)

Figure 10. Bottom rankings by experienced wellbeing

Country	HPI	Experienced wellbeing	Life expectancy	Ecological footprint
Mali	26.0	3.8	51.4	1.9
Benin	31.1	3.7	56.1	1.4
Chad	24.7	3.7	49.6	1.9
Central African Republic	25.3	3.6	48.4	1.4
Botswana	22.6	3.6	53.2	2.8
Tanzania	30.7	3.2	58.2	1.2
Togo	28.2	2.8	57.1	1.0

(Ibid)

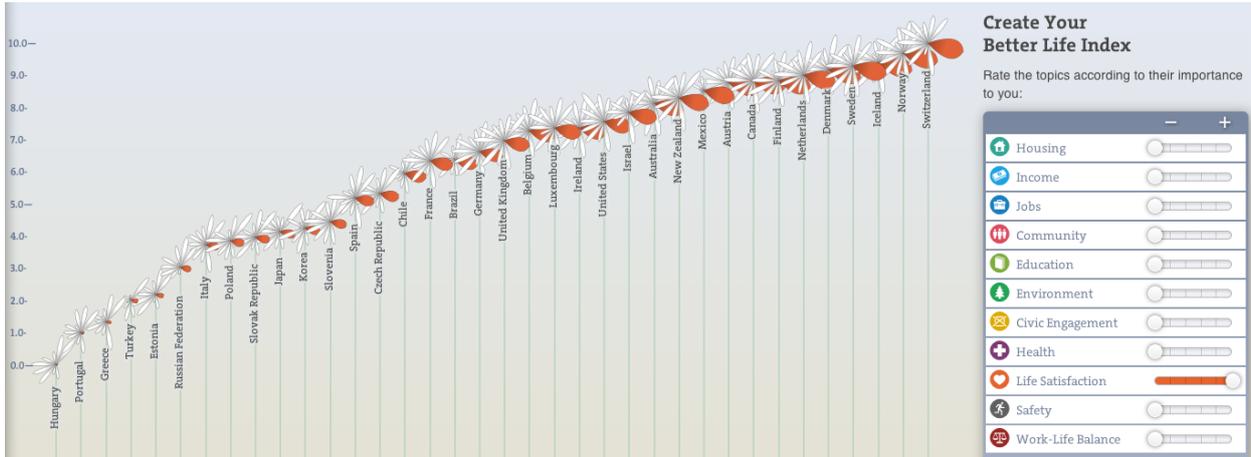
Figure 11. HPI Rankings

Country	HPI	Experienced wellbeing	Life expectancy	Ecological footprint
Costa Rica	64.0	7.3	79.3	2.5
Vietnam	60.4	5.8	75.2	1.4
Colombia	59.8	6.4	73.7	1.8
Belize	59.3	6.5	76.1	2.1
El Salvador	58.9	6.7	72.2	2.0
Jamaica	58.5	6.2	73.1	1.7
Panama	57.8	7.3	76.1	3.0
Nicaragua	57.1	5.7	74.0	1.6

(Ibid)

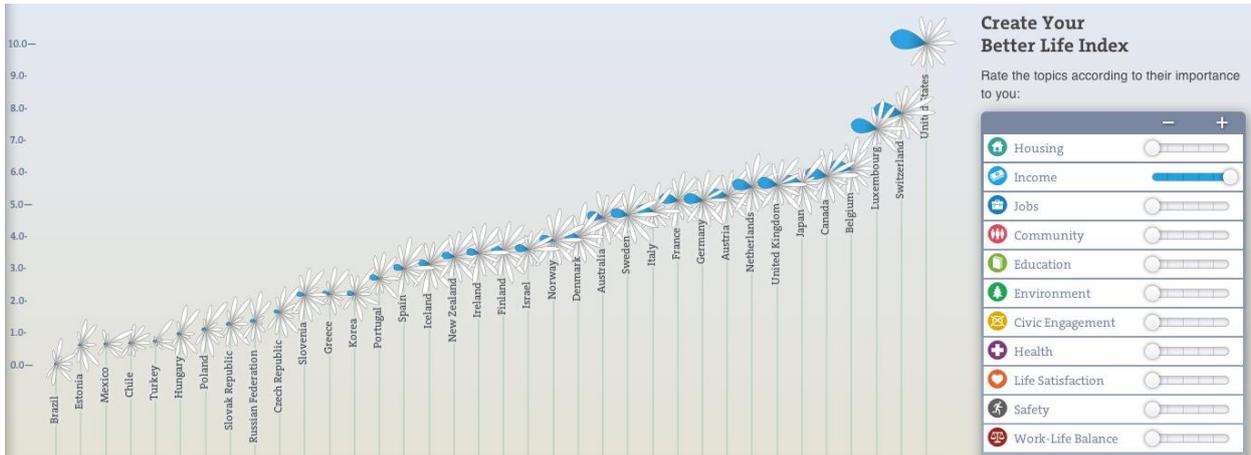
Appendix C: Your Better Life Index

Figure 12. Country rankings by life satisfaction



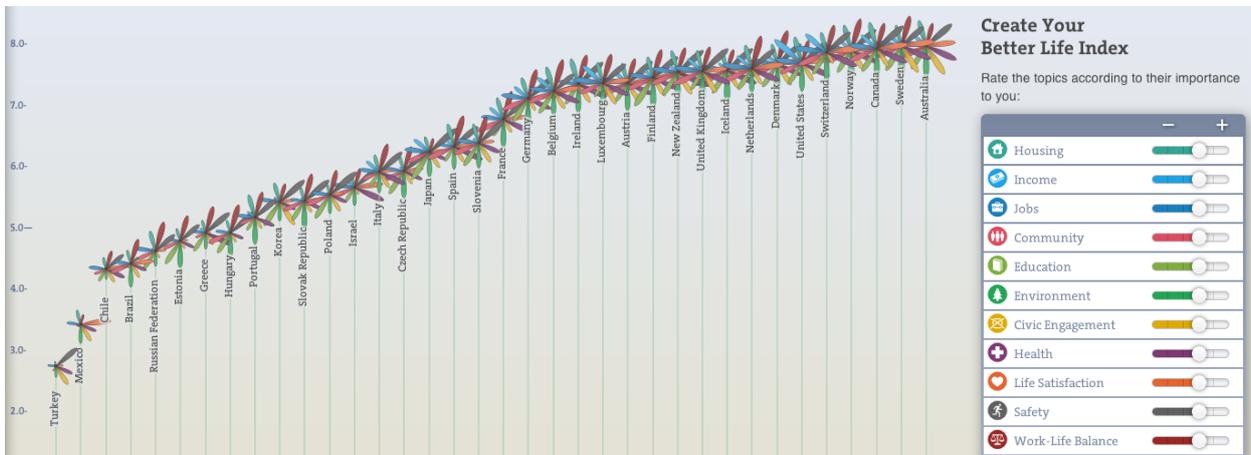
(OECD, 2013)

Figure 13. Country rankings by income



(Ibid)

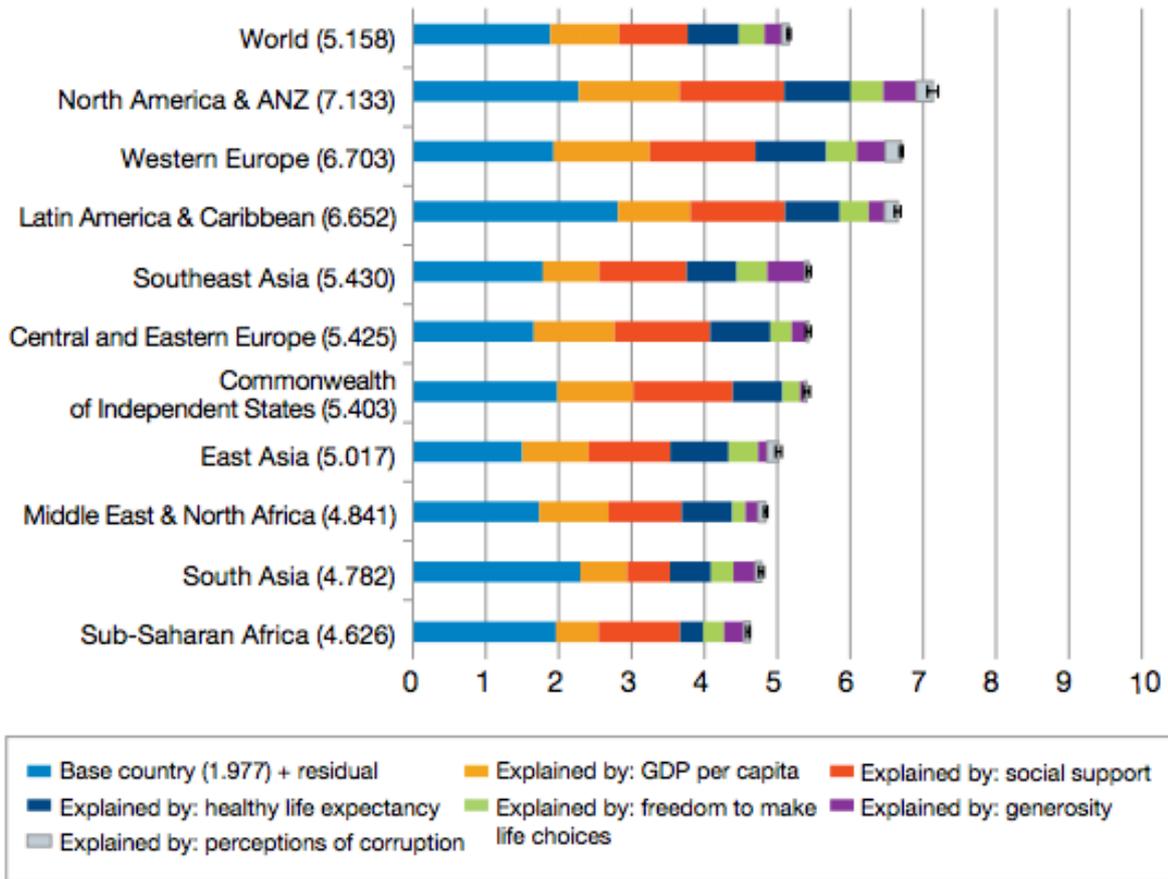
Figure 14. Country rankings weighing 11 factors equally



(Ibid)

Appendix D: World Happiness Report

Figure 15. Happiness rankings by region



(Sachs, 2012)

Figure 16. Top happiness rankings by country



(Ibid)

Figure 17. Bottom happiness rankings by country


(Ibid)