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Yes We Can …
Happiness Levels Can Change, But Most Recent Changes Are In The Wrong Direction

Bruce Headey
bheadey@diw.de

Influential economists, like Bruno S. Frey and Richard Layard, are advocating that the standard approach in economics of inferring utility from changes in consumption and leisure should be augmented or replaced by use of subjective measures. But psychologists claim that adult life satisfaction (or happiness) is more or less fixed; it has a "set-point" which is largely determined by genetic factors and early childhood development. Analyses of life-span data, collected by the German Socio-Economic Panel Study (SOEP) in the last 20 years, challenge this claim. About a quarter of the West German population experienced substantial changes in life satisfaction, but losses outweighed gains by a ratio of about 3:1. It is likely that a major reason for the negative balance is relatively poor economic performance since the early 1990s. On the other hand, the results show that the "set-point theory" of psychologists is seriously flawed. Life satisfaction can change and may be open to improvement via individual life choices and/or public policy.

Results of the German Socio-Economic Panel Study (SOEP), which is hosted by the DIW Berlin with fieldwork done by TNS Infratest Sozialforschung (Munich), challenge the main theory of happiness or life satisfaction developed by psychologists. This theory—now generally known as set-point theory—has been widely accepted for at least the last ten years. The theory claims that adult happiness/life satisfaction is stable; it has a set-point. That is, the same people tend to remain well satisfied with life, while others are permanently dissatisfied, or just moderately satisfied. The theory allows for temporary (perhaps one or two-year) fluctuations in life satisfaction as a consequence of major life events (for example, getting married or becoming unemployed), but after a temporary deviation, adults are expected to revert to their normal set-points.

There is a great deal of evidence in favour of set-point theory, including evidence of the importance to well-being of stable personality traits (Costa and McCrae, 1980; Headey and Wearing, 1989). It is clear that individuals who rate high on the personality trait of extroversion (sociable, outgoing) are happier than average, and that people who rate high on the trait of neuroticism (emotional instability) are generally unhappy. There is also strong genetic evidence from twin studies; evidence which led Lykken and Tellegen (1996) to declare that "trying to improve your happiness may be about as futile as trying to grow taller". These studies are often taken to imply that a person's life satisfaction or happiness is mainly a con-

sequence of characteristics that he/she was born with or developed early in life. Finally, there is also specific evidence that most people do revert to set-point even after very major life events (Brickman and Campbell, 1971; Clark et al, 2008).

But one crucial type of evidence has been missing. Until SOEP did so, there was no study in the world which actually followed the same individuals for decades, recording their levels of life satisfaction to see if they were actually stable. Some members of the West German sample in SOEP—about 3,000 individuals—have now been interviewed for more than 20 years, reporting their life satisfaction every year. Their reports cast serious doubt on set-point theory. It transpires that over a quarter of these respondents have recorded substantial changes in their life satisfaction; changes large enough to move them from the bottom third of the distribution to the top third, or vice-versa. These results cannot easily be reconciled with set-point theory, as currently understood. It seems that the theory is in need of serious revision, or perhaps replacement by a theory which can both account for the new results, as well as for the fact that a majority do not change much.

Long term SOEP data on life satisfaction

For the purposes of this article, only long term evidence can be used. Somewhat arbitrarily, twenty years will be regarded as 'long term'. So results are based on the responses of the West Germans and immigrants who had already joined the SOEP sample by 1987 and who gave interviews in which they recorded their life satisfaction every year up to 2006. This still provides an adequate sample size of 2,904.

The question in SOEP to assess life satisfaction comes later than a series of questions about satisfaction with particular areas or domains of life - job satisfaction, satisfaction with household income, health and so forth—and directly after questions about life events which may have happened in the last year. Respondents are then asked, "How satisfied are you with your life in general?" The response scale runs from zero ("completely dissatisfied") to 10 ("completely satisfied").

Substantial minorities record large changes in life satisfaction

Clearly, in order to know whether individual respondents change their life satisfaction set-points over the years, we need a method of determining what those set-points were initially. To avoid being at the mercy of temporary annual fluctuations in life satisfaction, which set-point theory allows for, we will take five-year averages. An individual's average life satisfaction score in the first five-year period, 1987-91, is regarded as his/her initial set-point. His/her score in the last available five-year period, 2002-06, is then regarded as the 'final' set-point. The question is: how many people changed and by how much? (Table 1).

Table 1
Changes in life satisfaction between 1987-1991 and 2002-2006: 0-10 response scale*

Changes on the 0-10 life satisfaction scale from 1987-1991 to 2002-2006	%
Less than plus or minus 1.0 point	52.2
Plus or minus 1.0 to 1.49 points	21.2
Plus or minus 1.5 to 1.99 points	9.5
Plus or minus 2.0 points or more	17.1
	(100.0)

* Weighted results. Panel of 2,904 SOEP respondents who recorded life satisfaction each year in 1987-2006.
Source: SOEP.

The evidence in Table 1 lends some support to set-point theory, but also suggests limitations to the theory. Just over 50% of these long-serving SOEP respondents recorded changes of less than a single point on the 0-10 life satisfaction scale in this 20 year period. So a majority do stick close to their initial set-point. So far so good for set-point theory. But just over a quarter of the sample (26.6%) changed by 1.5 points or more. These appear to be long term, *more or less permanent changes in life satisfaction*. A change of 1.5 points is enough to move a person from the bottom third of the distribution to the top third, or vice-versa. A change of 2 or more points, made by 17.1% of the population in this period, moves one from the bottom to the top quarter, or vice-versa.[1] This evidence is clearly not in line with current theory; the challenge is to account for it.

It is matter of considerable interest, although not directly relevant to the debate about set-point theory,

1 Average (mean) scores on the 0-10 scale have been around 7.0 in recent years, with a standard deviation of about 1.4. So a change of 2 points represents almost 1.5 standard deviations; easily enough for movement from the top to the bottom quartile, or vice-versa.

that average levels of life satisfaction in Germany appear to have declined in the last 20 years. The average (mean) score in 1985 was 7.4; in 2006 it was 6.8. Or taking five-year averages, we find a mean of 7.3 for the 1987-91 period, with a decline to 6.9 in 2002-06. These changes are clearly statistically significant. One cause was probably the relative decline in national economic performance and rising unemployment. In the later 1980s and early 1990s the West German economy was booming. In the early years of the 21st century economic growth was positive but disappointing. In these circumstances, most of the people who recorded substantial changes in life satisfaction recorded declines. About three-quarters (75.8%) of those who changed by 1.5 points or more in fact recorded declines, while one-quarter (24.2%) recorded gains.

Personality traits partly account for changes in life satisfaction: some people 'roll the dice' with a positive bias (upside risk); others roll with a negative bias (downside risk)

We now attempt to make a start on explaining why non-trivial minorities record substantial changes in life satisfaction. What is it about these people, or the events that happen to them, that produces more or less permanent changes?

We conjecture that the individuals who are most prone to change are those who rate high on the personality traits of extroversion or neuroticism, or both. As mentioned earlier, extroversion is associated with high levels of life satisfaction and neuroticism with low levels. It has also been shown that extroverts repeatedly experience more favourable or positive life events (for example, getting promotion at work) than introverts, while neurotic (emotionally unstable) individuals repeatedly experience more negative or adverse events, including marital and job difficulties (Headey and Wearing, 1989). Extending this line of thinking, it transpires that people who rate high on extroversion *and* simultaneously low on neuroticism repeatedly experience many positive events and few negative events.[2] They can be thought of as repeatedly 'rolling the dice' with a positive bias or spin. So we hypothesise that they have a higher than average *upside risk of gains in life satisfaction*. Similarly, people who rate low on extroversion and high on neuroticism repeatedly experience few positive events and many adverse ones. They roll the dice with a consistently negative bias. So we hypothesise that they have an above average *downside risk of losses in life satisfaction.*

A point of clarification: it is not suggested that most of the individuals who we think of as running either high upside risks or high downside risks will actually record large long term gains or losses in life satisfaction. We know from previous evidence that this is not what happens. Instead we are attempting to account for changes recorded by substantial minorities. To put it another way, not everyone who takes a chance scores big wins or losses.

SOEP only allows a partial test of these ideas. The personality traits of extroversion and neuroticism were measured in 2005, along with other traits.[3] However, a life events inventory has only recently been included, so it is not possible within SOEP to check that the characteristic patterns of life events which we would expect to have happened to particular individuals actually occurred. The likelihood of these events just has to be assumed on the basis of previous research.

Table 2 shows linkages between the personality traits of extroversion and neuroticism and *upside and downside risks of changes in life satisfaction between 1987-91 and 2002-06*. The outcome measure here is simply life satisfaction scores averaged for the first five-year period subtracted from scores for the last five-year period. Results are given for all respondents, then separately for men and women, and finally for those who were aged 30 to 74 throughout the period. The reason for excluding the under 30s in this last piece of analysis is that it is generally thought that personality is still somewhat malleable up to about age 30. The very old (75+) are excluded for health reasons, which at the end of life typically lower life satisfaction.

It turns out that there is a fairly strong positive relationship between being extroverted and experiencing gains in life satisfaction. Conversely, people who rate high on neuroticism were much more likely than average to experience a decline in satisfaction in this period. So our hypotheses about the upside risks run by extroverts and the downside risks run by neurotics receive some support.[4] It follows, of course, that people who are both high on extroversion and low on neuroticism have doubly favourable prospects, while the prospects of those who rate

2 The two traits are empirically uncorrelated, so there are many people who display this combination.

3 A short version of the Big Five personality inventory (Costa and McCrae, 1991) was included in SOEP for the first time. Here it is assumed that adult personality is essentially stable.

4 As the evidence in the Table indicates, these results hold while controlling for gender and age. They also hold with additional controls for health, educational attainment and disposable household income (and also with a set of dummy variables for age groups). The inclusion of $LS_{1987-71}$ in the equation is needed because, as with many attitudinal variables, there is a negative relationship between the measure at an earlier point in time and subsequent changes.

Table 2
Upside and downside risks of long term change in life satisfaction (LS): ordinary least squares (OLS) regressions

	Outcome variable: change in life satisfaction $LS_{2002-2006}—LS_{1987-1991}$			
	All	Men	Women	Age 30-74
Extroversion	0.15 ***	0.14 ***	0.16 ***	0.13 ***
Neuroticism	–0.27 ***	–0.26 ***	–0.28 ***	–0.29 ***
Female	0.02	–	–	0.08
Age	0.02	–0.00	0.03	0.06
Age^2	-0.00	0.00	–0.00	–0.01
$LS_{1987-1991}$	–0.49 ***	–0.48 ***	–0.50 ***	–0.49 ***
R^2	24.8 %	22.9 %	26.3 %	24.8 %
N	2904	1376	1528	1645

*** significant at 0.001 level.
Source: SOEP.

high on neuroticism and low on extroversion are quite negative.[5]

Discussion

The importance of the challenge to set-point theory from results given by the German Socio-Economic Panel Study (SOEP) can hardly be overstated. Set-point theory was developed, mainly by psychologists, during the last forty years. In the last decade or so, economists have also begun to work intensively in the same area, treating measures of life satisfaction as measures of *subjective utility* (Frey and Stutzer, 2002). Some economists are advocating that the standard approach in economics of inferring utility from changes in consumption and leisure should be augmented or replaced by use of subjective measures. A key aim of public policy, they suggest, should be to improve the subjective utility (life satisfaction) of citizens. But set-point theory implies that it is very difficult, if not impossible to do this. If it is true that adult well-being basically does not change (except for temporary fluctuations), then there is no point in adopting this particular policy goal.

However, if the SOEP results are confirmed, then the whole field is opened up again (Diener et al. 2006). The finding that the life satisfaction of many people can and does change means that the next challenge for research is to discover much more about how and why these changes occur. It may also mean that individuals can do much to help themselves and that public policy can make a substantial difference.

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5 It can also be inferred that those who score high on both extroversion and neuroticism may be at high risk of change in either direction, while those who score low on both measures are at low risk.

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DIW Berlin
Mohrenstraße 58
10117 Berlin

Tel. +49-30-897 89-0
Fax +49-30-897 89-200

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