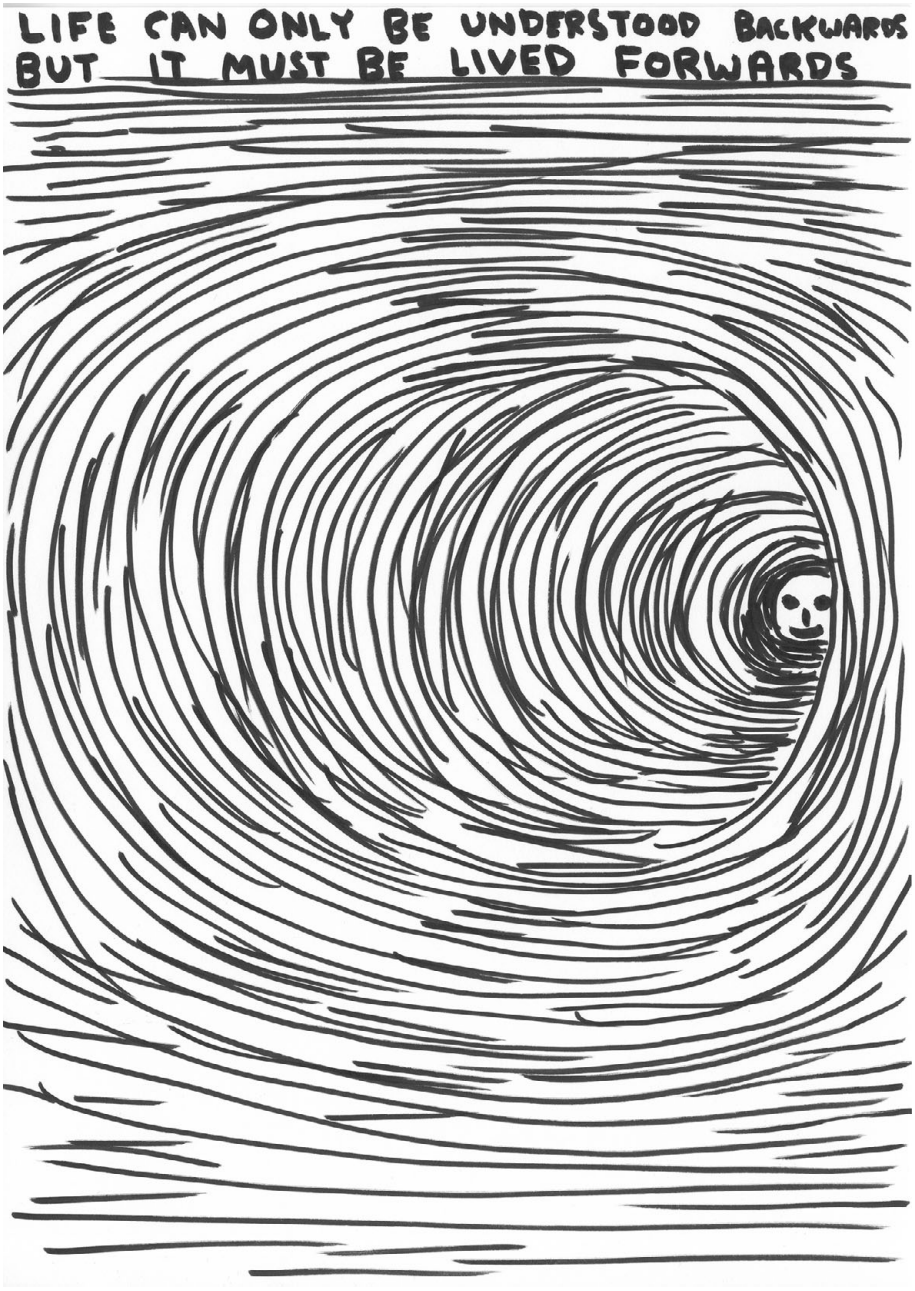

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8 Explaining Wellbeing
A First Exploration

Happy the man who has learned the cause of things . . .

Virgil

We can now put these tools to use in explaining the huge inequalities that exist in wellbeing. These inequalities are interesting in themselves. And they also provide naturalistic evidence that helps us to predict how policies of different kinds would change people's wellbeing.[1] So this chapter applies the tools presented in Chapter 7 to explain and learn from the differences in Chapter 6.

We proceed as follows:

- First, we outline a framework for how adult wellbeing is determined within a country.
- Next, we take adult wellbeing differences within a country and see how these are explained by differences in adult characteristics.
- Then we go back to childhood and see how well the child predicts the adult.
- Finally, we look at the role of social norms and institutions and study their effects by looking at differences between countries.

This chapter is very important in setting the framework for the rest of Part III of the book – which looks at each influence in much more detail.

Wellbeing and the Life Cycle

Our adult wellbeing is the product of our whole life to date (see Figure 8.1). Our early development is affected first by our parents (including their genes) and then by our schooling. These are the main factors that determine our outcomes up to the end of childhood. These outcomes then help to predict our adult outcomes, which in turn determine our adult life satisfaction. In what follows, we shall work backwards, looking first at the role of adult outcomes, then at the role of child outcomes and finally (in Chapter 9) at the role of family and schooling.

[1] This also requires evidence on the immediate effects of the policy, preferably from experiments.

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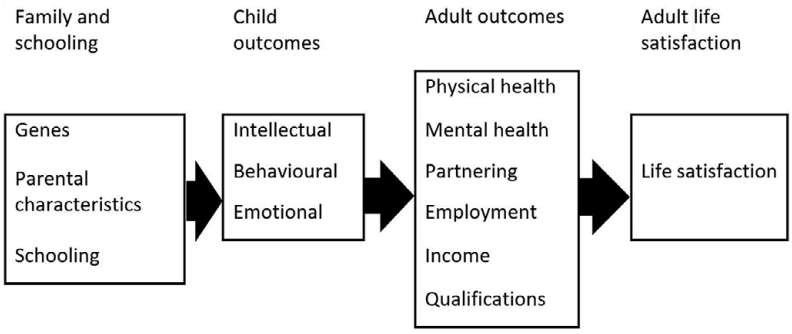

Figure 8.1 How adult wellbeing is determined
Note: Earlier factors also influence later outcomes directly

Personal Determinants of Adult Wellbeing

There have been thousands of studies of the personal causes of adult wellbeing. But they are difficult to compare because they use different measures of wellbeing and they study the effect of different sets of determinants. We shall therefore focus in this chapter on one study that used a single measure of wellbeing (life satisfaction) and looked at all the main influences simultaneously.[2] The main influences included were:

- Health
  Physical health (number of illnesses)
  Mental health (has ever been diagnosed with depression or an anxiety disorder)
- Work
  Is unemployed (versus employed)
  Quality of work (index)
- Family
  Has partner (versus single)
  Is separated (versus single)
  Is widowed (versus single)
- Income (log of household income per equivalent adult)
- Education (years)

Many studies of wellbeing do not include mental health as an explanatory factor, since it is itself a feeling. But this is why we do not include self-reported feelings as measures of mental health – instead, we include an objective diagnosis by a third party. The question used is 'Have you ever been told by a doctor, nurse of other health professional that you had an anxiety disorder and/or depressive disorder?' Since most

[2] A.E. Clark et al. (2018). In Chapter 13, we report results for the full range of countries using the Gallup World Poll.

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Table 8.1 How different factors affect life satisfaction (0–10) of adults over 25 (Britain) (Pooled cross section) ($R^2 = 0.19$)

	Effect on life satisfaction (0–10)
Physical health problems (No. of illnesses)	−0.22 (0.01)
Mental health problems (0,1)	−0.72 (0.05)
Unemployed (versus employed; 0,1)	−0.70 (0.04)
Quality of work (effect of 1SD)	+0.40 (0.04)
Partnered (versus single; 0,1)	+0.59 (0.03)
Separated (versus single; 0,1)	−0.15 (0.04)
Widowed (versus single; 0,1)	+0.11 (0.08)
Income (log)	+0.17 (0.01)
Education (years)	+0.03 (0.00)

Source: A. E. Clark et al. (2018) Table 16.2 Mainly Britain (Understanding Society) 1996–2014 but see text

Notes: Control variables include comparators' income, education, unemployment and partnership, as well as gender, age and age squared and year fixed effects. Standard errors in brackets.

such experiences are prior to being surveyed, they are essentially measuring something exogenous. Besides, it would be quite wrong not to include mental illness as an explanation for wellbeing, when this is such an important issue for so many people, independently of the other right-hand variables. As the equations that follow show, **low wellbeing is not the same as mental illness** and can be caused by many other factors besides mental illness.

So the task is to estimate equation (1) in Chapter 7, with current life satisfaction as the dependent variable and the variables listed above as the independent variables. The equation estimated is cross-sectional – a point to which we shall return. The study covered Britain, Germany, Australia and the United States, with broadly similar results from all four countries. The results we report in Table 8.1 come mainly from a British survey (Understanding Society). But the mental health coefficient is from the United States and Australia (where the measure of mental health is more exogenous and the results are very similar). And the quality of work result comes from a different study using the European Social Survey.[3]

Table 8.1 shows, for example, that people ever diagnosed with mental illness are currently (other things equal) less satisfied with their life by 0.72 points.[4] Unemployment has a similar effect, as does not having a partner. A unit increase in log income increases wellbeing by 0.17 points, which means that the doubling of income raises wellbeing by 0.12 points.[5] Note that the standard error (in brackets) of

[3] For the quality of work, see A. E. Clark et al. (2018) p. 74. On mental health, the British measure (being less exogenous) attracts a higher coefficient than the US measure.

[4] In the Gallup World Poll analysis reported in annex 13.1, there is a similar coefficient on the self-reported question 'Yesterday did you experience a lot of depression'.

[5] $Log_e 2 = 0.7$. Note that we always use logarithms to the base e.

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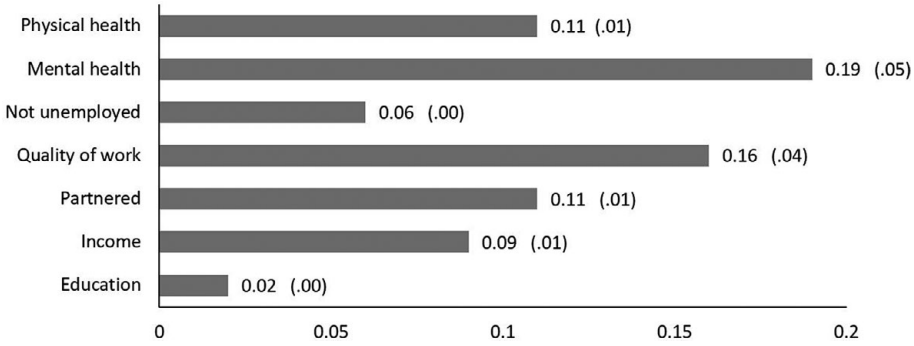

Figure 8.2 What explains the variation of life satisfaction among adults over 25? (Britain) Partial correlation coefficients (β) ($R^2 = 0.19$).
Source: A. E. Clark et al. (2018) Table 16.1; otherwise see Table 8.1; 'partnered' means partnered versus any other relationship status
Notes: For quality of work see their chapter 4. Standard errors in brackets

these coefficients are small relative to the coefficients themselves, so the estimates are fairly well defined and significantly different from zero at the 95% level.

From Table 8.1, we learn the effect of each variable upon wellbeing. But this does not tell us how far the inequality of that variable explains the inequality of wellbeing. For that purpose, we have to multiply the effect of each explanatory variable by its own standard deviation – and then divide it by the standard deviation of wellbeing. This gives us the β_j measure discussed in Chapter 7 – recall that $\beta_j = a_j\sigma_j/\sigma_w$.

In Figure 8.2, we give these β values in graphical form. To simplify the display, we have treated every variable as if it had a positive β – by, for example, relabelling Unemployed as Not unemployed.

Notice first that the whole equation has an R^2 of 0.19 – we are only explaining 19% of the total variance. It is very important not to over-claim explanatory power.[6] And it is also quite wrong to label the unexplained residual as 'luck'. It is quite simply the variation in wellbeing that we have not been able to explain or is due to measurement error. Nevertheless, what we do know is that health is extremely important (especially mental health). Work is also important – having it (if you want it) and its quality. Family life also matters.

So does income, but its explanatory power is no higher than many other variables. In Figure 8.2 it explains under 1% of the variance of life satisfaction, since its β^2 value is under 0.1^2. But as we shall see in Chapter 13, the figure can rise to 3% in some countries – but still no higher than some other influences.

Before we accept this conclusion, we have to ask some of the questions we discussed in Chapter 7. First, is there a problem of **measurement** error? This is unlikely to affect the ranking of income in Figure 8.2 since income is measured more accurately than many of the other variables. Second, are there important omitted

[6] A well-known device for over-claiming is the odds ratio. See Chapter 7.

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variables or problems of endogeneity? To investigate these problems, we can use the panel data to perform a fixed-effects analysis as in Equation (7.4). In panel regressions, all the coefficients are reduced, partly because the problem of measurement error becomes more acute. The coefficients on income fall more than most, though this may be partly because the exact timings are not well caught by the data. For this chapter, we stick to cross-sectional results; but in Chapter 13 we also give the results of fixed effects regressions.

It is important to stress that for all the variables in Table 8.1 and Figure 8.2, the coefficients reflect the effect of the variable, **other things constant.** If we wanted to investigate the **total** effect of income on wellbeing, we would also have to include its effects through other 'mediating' variables like having a partner. This is quite difficult to compute. But it is easy to compute a **maximum** value for the total coefficient on income (or any other variable). It is the simple bivariate coefficient, which in this case is about double the coefficient holding other things constant.

Another obvious question is this: Doesn't income explain more of the prevalence of **low wellbeing** than is implied by Figure 8.2? To investigate this, we construct a new variable. This is a simple binary variable for misery (M), which is constructed as follows:[7]

M equals 1 if wellbeing is 5 or below
M equals 0 if wellbeing is above 5

Misery (thus defined) affects the bottom 10% or so of the British population – so it is a good measure of deprivation. We can then run the following simple equation:

$$M_i = a_0 + \sum a_j X_{ij} + e_i.$$

If we take averages across all individuals, this equation predicts the proportion of people in misery, which is given by

$$\bar{M} = a_0 + \sum a_j \bar{X}_j.$$

In an analysis for Britain, Australia and the United States, mental health problems accounted for more of the misery than any other factor.[8] In Britain and Australia, this was followed by physical illness, and in the United States by low income. Unemployment, though devastating to those affected, came in lower than health and poverty, because of the smaller numbers affected.

A slightly different question is What best explains **who** is in misery and who is not? In other words, what are the most important elements in the following relationship:

$$R^2 = 1 - \frac{\sigma_e^2}{\sigma_M^2} = \sum \beta_j^2 + \sum \sum \beta_k \beta_s r_{ks} (k \neq s).$$

[7] In the original Understanding Society survey, life satisfaction is measured on a scale of 1–7. We have here transformed it to a scale of 0–10. Note that the multiple regression approach can be used to examine binary outcomes, with easy-to-interpret coefficients. Logit and probit analysis can also be used, but usually deliver equivalent results but in a form that is more difficult to understand.

[8] A. E. Clark et al. (2018) Table 6.1.

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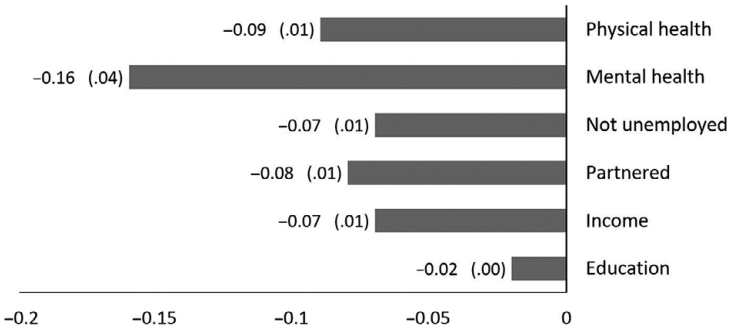

Figure 8.3 What explains the variation of misery among adults over 25? (Britain) Partial correlation coefficients (β) ($R^2 = 0.14$)
Source: A. E. Clark et al. (2018) Table 16.1 Mainly Britain (Understanding Society) but see text
Note: See Figure 8.2

In Figure 8.3, we show the values of the β coefficients where this time Misery is the dependent variable. As can be seen, these coefficients are slightly smaller than when we are explaining the full continuous range of Life–Satisfaction (in Figure 8.2). This is to be expected. But, strikingly, the relative importance of the different factors is the same whether we are explaining low wellbeing or the whole spread across the spectrum.

Childhood Predictors of Individual Wellbeing

So much for the adult causes of adult wellbeing. But aren't many of the adult influences we have looked at caused by how we were in childhood? They are indeed. There are three main dimensions of **child development**: intellectual, emotional and behavioural. A big question for schools is 'Which of these is the best predictor of whether a child will have a satisfying adult life?'

The following analysis is based on a follow-up of all British children born in a week in 1970 (the British Cohort Study 1970). The measures of child development that we use are these:

- Intellectual: highest qualification ever obtained
- Behavioural: behaviour measured at age 16 (by 17 questions asked to the mother)
- Emotional: emotional health measured at age 16 (by 22 questions asked to the young person and 8 to the mother).

As Figure 8.4 shows, **the best predictor of a satisfying adult life is not your qualifications but a simple measure of your emotional health at 16**. This is an important finding for educational policy since, as Chapter 9 shows, schools have such a huge influence on the wellbeing of their children. Qualifications also matter of course and are by far the best predictor of an adult's income. But, as we have seen,

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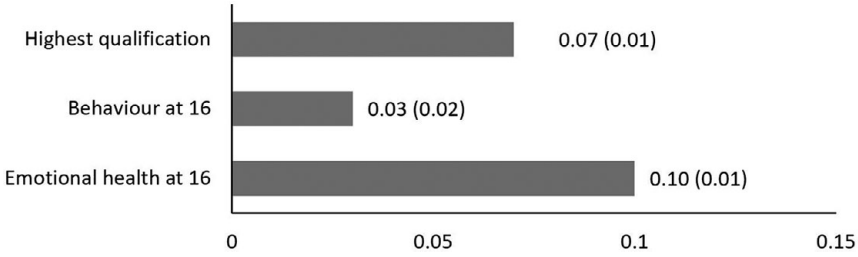

Figure 8.4 How adult life satisfaction is predicted by child outcomes (Britain) Partial correlation coefficients (β) ($R^2 = 0.035$)
Source: See A. E. Clark et al. (2018) Figure 1.2 British Cohort Study (BCS)
Note: Adult life satisfaction is average at ages 34 and 42. Controls include family variables. Standard errors in brackets

income is less important for adults than their mental health, which is best predicted by their emotional health in childhood.

As we argue in Chapter 9, child wellbeing is important in itself – childhood is a substantial part of our whole life experience. But wellbeing as a child is also the foundation for wellbeing as an adult.

The Effects of Social Norms and Institutions

We have focused so far on what explains the differences in wellbeing between people within the same country. But what explains the differences between countries? There are important **social norms and institutions** that everyone in a country shares. While we cannot identify these effects by studying people in one country only, we can do it by comparing one country with another. The Gallup World Poll data enable us to do just that – to study the effect of

- ethical standards (trustworthiness and generosity),
- networks of social support and
- personal freedom.

We measure these by the answers in each country to the following questions:

Trust	Proportion who say Yes to the first half of 'In general, do you think that most people can be trusted, or alternatively that you can't be too careful in dealing with people?'
Generosity	Proportion who say Yes to 'Have you donated money to a charity in the present month?'
Social Support	Proportion who say Yes to 'If you were in trouble, do you have relatives or friends you can count on to help you whenever you need them?'
Freedom	Proportion who say Yes to 'Are you satisfied or dissatisfied with your freedom to choose what you do with your life?'.

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Table 8.2 How national life satisfaction (0–10) is affected by country-level variables ($R^2 = 0.77$)

	Change	Effect on average life satisfaction (0–10)
Trust	100% v. 0%	1.08 (.45)
Generosity	100% v. 0%	0.54 (.41)
Social support	100% v. 0%	2.03 (.61)
Freedom	100% v. 0%	1.41 (.49)
Income	Doubling	0.23 (.06)
Health	Years of healthy life	0.03 (.01)

Source: Gallup World Poll, Cantril ladder; average data for 2009–2015 except for trust (mostly 2009); analysis by John Helliwell; standard errors in brackets

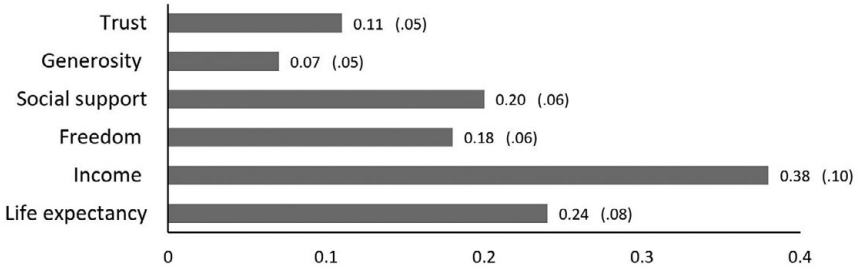

Figure 8.5 How differences in national life satisfaction are explained by country-level variables – partial correlation coefficients (β) ($R^2 = 0.77$)
Source: See Table 8.2

We also include the effect of average GDP per head and healthy life expectancy (measured in years).

In the cross-sectional analysis in Table 8.2, we show for each of these variables how average life-evaluation changes when the percentage who say Yes rises from 0 to 100. All four factors have substantial effect. So does healthy life-expectancy – for example, an increase of 10 years raises life evaluation by 0.3 points. And the effect of income across countries is similar to its effect within many countries – a doubling of income raises average life-evaluation by 0.23 points (out of 10).

It is also interesting to see how far the different factors contribute to the actual dispersion of life satisfaction across countries. Here income plays a more conspicuous role due to the huge income differences between countries. Health differences also come through as very important. This can be seen in Figure 8.5, which gives the β_j coefficients corresponding to the a_j coefficients in Table 8.2. The social norms are also very important. For example, what distinguishes the eight countries with the highest life satisfaction in the world is not their income but their high levels of trust, social support, freedom and generosity.[9] These are the five Nordic countries as well as the Netherlands, Switzerland and New Zealand (see Table 13.1). The countries at the

[9] See Helliwell et al. (2019) Table 2.2.

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bottom are mainly the war-torn countries of sub-Saharan Africa and the Middle East (Afghanistan, Syria and Yemen), which not only have poor income and healthcare but are low on the social features that wellbeing requires.[10]

Conclusions

This concludes our brief initial overview of the main causes of high and low wellbeing – and of the huge variation in wellbeing in the world. All the findings are cross-sectional, with time series and experiments left to later chapters. The findings of this chapter provide the framework for the rest of Part III of the book – starting with personal factors and working outwards to those relating to whole communities.

- Within a country (if it is advanced), the main factors explaining the variance of wellbeing (and the prevalence of misery) are in rough order of importance:
  mental illness,
  physical illness,
  having work and the quality of that work,
  having a partner,
  family income and
  education
- The variation of wellbeing across countries is largely explained (in rough order of importance) by:
  income,
  health,
  social support,
  personal freedom,
  trusting social relations and
  generosity
- Predicting whether a child will become a happy adult is not easy. But the child's wellbeing is a better predictor of satisfaction in adult life than the child's academic success is. And as Chapter 9 shows, both schools and parents have big effects on children's wellbeing.

Questions for discussion

(1) Are the findings about income in Figure 8.2 credible? Could problems of measurement error have produced incorrect rankings?
(2) Is Figure 8.5 informative?

[10] If the Global Peace Index is added to a fixed effects regression of average life satisfaction on the 6 variables, a 1 standard deviation of the Index raises average live-satisfaction by 0.15 points (Helliwell et al. [2019] p. 40).

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Further Reading

Clark, A. E., Flèche, S., Layard, R., Powdthavee, N., and Ward, G. (2018). *The Origins of Happiness: The Science of Wellbeing over the Life Course*: Princeton University Press. Especially chapters 1, 2, 6 and 16.

World Happiness Report (latest version). Helliwell, J. F., Layard, R., Sachs, J., and De Neve, J. E. (Eds.). World Happiness Report. New York: Sustainable Development Solutions Network. Chapter 2.