



The cheerfulness of fruit and veg

By Andrew Oswald

Eating more fruit and vegetables can substantially increase people's later happiness levels.

DO YOU EAT ENOUGH? Fruit and veg, I mean. It has been known for a long time that fruit and vegetables provide important health benefits. These include lower cancer risk and better heart-attack prevention. Yet in Western society the typical citizen eats an unhealthy diet (US data are available at www.cdc.gov/brfss and European data at www.eufic.org). The difficulty of persuading people to consume more fruit and vegetables remains a stubborn one.

My new work, with Redzo Mujcic of the University of Queensland, explores a whole new approach to the problem. We look not at human health but at human happiness. Our findings are unusual – and suggest new reasons to eat lots of fruit and vegetables.

Published in the 2016 *American Journal of Public Health*, our paper, called "Evolution of Wellbeing and Happiness after Increases in Consumption of Fruit and Vegetables", is designed partly for scientific researcher and partly for public-health experts. But we hope it would also be interesting to any general reader. It uncovers evidence consistent with a longitudinal connection between the consumption of certain foods (especially fruit and vegetables) and later subjective well-being, and a channel that appears to be independent of long-run health. In simpler English, eat more fruit and veg today if you want eventually to be happier tomorrow. We were surprised by the strength of the statistical patterns. ►

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Our work follows the lives of 12,000 Australian individuals to trace the potential linkages running from diet to later life satisfaction and happiness. We examine Australia because it has some of the best food-diary data in the world. Our analysis is first done by following individuals between 2007 and 2009. Just as the project was completed, however, new data were released, which made it possible to check the calculations also for the period 2009 to 2013.

There are precursors to our paper. Innovative research by Tamlin Conner and collaborators has found – using data on daily food diaries on 281 students tracked over a three-week period – that a high level of fruit and vegetable consumption appears to be predictive of greater emotional well-being on the following day. Various cross-sectional papers have also pointed to the possible existence of a statistical connection between psychological well-being and the amount of fruit and vegetables eaten.

Figure 1 is a simple graphical illustration of our study's key result for life satisfaction. A similar histogram holds also for happiness data. The plot in Figure 1 is based on a so-called fixed-effect regression equation. Changes in fruit and veg go along with big changes in happiness. This implied connection between diet and happiness is substantial. It is crucial to explain that we also allowed for the influence of household income, age, education, whether working, marital status, health, children, alcohol and food patterns, Body Mass Index, and exercise.

Our work is consistent with the idea that eating certain foods is a form of investment in future happiness. The implications of fruit and vegetable consumption are estimated to be substantial and to operate within the space of two years – too quickly to be a reflection of the physical advantages of diet for outcomes such as cardiovascular disease documented by earlier researchers.

Overall, however, the message of our work is simple. Eat fruit and veg to be cheery. Up to eight a day if possible. Go on – you can.

The first variable examined is self-reported life satisfaction, derived from the question: "All things considered, how satisfied are you with your life?" Respondents are told to: "Pick a number between 0 and 10 to indicate how satisfied you are", and that "the more satisfied you are the higher number you should pick". Another question we used is: "how much of the time in the past four weeks..." did he/she experience particular types of feelings/symptoms, including "... been a happy person".

The patterns that emerged in our numbers were striking.

In a sense, the paper offers a new possibility for future public-policy programs to encourage healthy eating – the possibility that citizens in western society could be given evidence that 'happiness' gains from healthy eating may show up much more quickly than any long-distant improvement to their physical health. If individuals weigh up the likely benefits of fruit and vegetables in their diet, and set that against any perceived costs, both pecuniary and non-pecuniary, of doing so, scientific evidence of extra gains from a healthy diet may help persuade people to raise their intake of fruit and vegetables.



Puzzles remain. The biochemical channels from eating certain food types to subjective well-being are not properly understood. There are a variety of intriguing possibilities. These include a potential influence from vitamin B12 upon the eventual production of human serotonin, as well as the idea of a role for folate deficiency. A further potential channel is that microbiota may modulate brain chemistry. Lastly, it may be possible eventually to link the current research to a new literature on antioxidants that is suggestive of a connection between human optimism and carotenoid in the blood. Further connections between the biology and practical public-health policy of healthy eating remain to be forged.

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The Researchers

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Figure 1. Longitudinal changes in fruit and vegetable (F&V) consumption are positively correlated with longitudinal changes in satisfaction with life.

The vertical axis here measures life satisfaction; the horizontal axis measures daily F&V portions. The 0 on the horizontal axis denotes less than one portion of fruit and vegetables per day, 1 denotes higher than one portion but less than two portions per day and 8 denotes eight-and-above portions a day. The sample size is 12,385 Australian individuals measured in years 2007 and 2009.

(An equivalent diagram would hold symmetrically for reductions in F&V consumption).

