

Economic psychology, sustainability and climate change

Paul Webley

SOAS, University of London

Chapter in S. Ruiter, W. Bernasco, W. Huisman & G. Bruinsma (Eds), *Eenvoud en Verscheidenheid [Simplicity and Diversity]* (pp. 23 -35). Amsterdam: NSCR.

Henk Elffers heeft een belangrijke rol gespeeld in een aantal academische gebieden (belastingontduiking, regel-breken, ruimtelijke aspecten van criminaliteit, enz.) en ook een belangrijke rol in mijn leven. Zijn werk op belastingontduiking, die ik het beste ken, is baanbrekend. Niet alleen heeft hij empirisch onderzoek van de hoogste orde verricht (in het bijzonder de studies gepubliceerd met Dick Hessing en Russ Weigel), maar hij heeft ook een bijdrage geleverd aan de theorie op dit gebied door middel van zijn "WBAD" model. Op persoonlijk vlak, heeft hij mij geïnspireerd om Nederlands te leren (zelfs toen we op een conferentie in Italië waren, maakte hij me voor een week alleen Nederlands spreken!) en door hem ontdekte ik de liefde voor de Nederlandse cultuur en Nederlandse musea. Bovendien maakte hij me een betere onderzoeker, hij stimuleerde mij om meer na te gaan denken over de meting van vraagstukken en de meest eenvoudige statistische test, die men zou kunnen gebruiken om een bepaalde klus op te lossen. Dus het is een waar genoegen om de eer van zijn bijdrage aan de wetenschap met een hoofdstuk in dit Festschrift te mogen beginnen. Helaas kan ik niet meer oefenen met Henk daarom is mijn Nederlands nu te zwak en zal ik doorgaan in het Engels.

As well as making fundamental contributions to our knowledge, Henk has always been concerned to carry out research that matters, research that has an impact. So this chapter follows the approach taken in a paper by Henk Elffers and Dick Hessing from fifteen years ago (Elffers & Hessing, 1997), in which they first describe two features of taxpayers 'mental make-up' and then describe and discuss two measures aimed to improve tax compliance that exploit these psychological characteristics. My plan is to describe four characteristics (derived from research in saving rather than tax evasion) and then consider three ways based on these characteristics in which we might make climate change more salient to people and thereby foster actions that respond to it appropriately.

Despite a large amount of coverage in the media, and the actions of activists, climate change is still mostly seen as something that will impact on future generations. It concerns (largely) other people, remote places and is uncertain. This makes it seem psychologically distant. The decisions that we have to make (collectively and individually) look like a classic example of inter-temporal choice, where one is trading off decisions and behaviours now (e.g. brushing teeth

regularly, smoking, saving in the present) with outcomes and behaviours in the future (having healthy teeth with few fillings, having emphysema or lung cancer, spending in the future).

Since saving is the quintessential economic behaviour that involves conceptualising and planning for the future I will first to give a very brief summary of what economists say about saving, and then describe four characteristics of people's economic behaviour which derive from psychological work on saving that we might take into account when we think about climate change and psychological distance.

In this contribution I am taking a broad-brush approach and will present mainly stylised facts. Usually, like most researchers, I hedge any conclusions I draw: 'it all depends', 'what evidence we have to date suggests', 'we can tentatively conclude'. But Henk, I feel, will appreciate an approach that is less cautious and more definite – when making policy recommendations one has to leave 'it all depends' behind.

### 1. Economists on Saving – a (very) brief summary

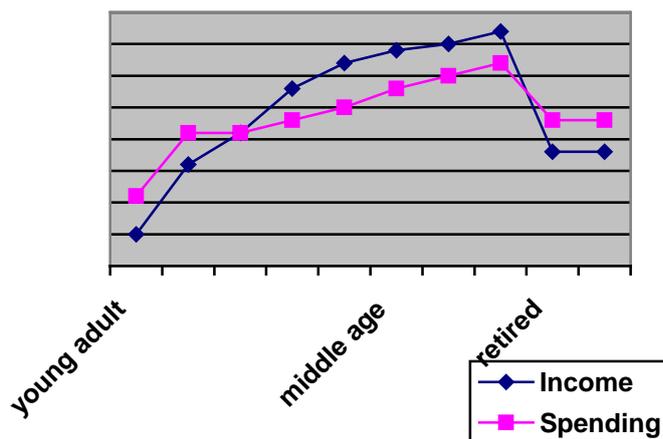
It is worth saying at the outset that saving is one of those areas where economists have made an explicit appeal to psychology to explain behaviour. Keynes (1936), who was not only one of the greatest economists but also a pretty good psychologist, did this in his famous list of 8 motives, which has stood the test of time. According to Browning and Lusardi (1996) only one motive - to create a lump sum of money to making down-payments for expensive and durable goods – needs to be added, though in my view this is just a variant of motive number 6. This is Keynes' list of savings motives:

- ① To build up a reserve against unforeseen contingencies (the precautionary motive)
- ② To provide for the anticipated future relationship between income and needs (the life-cycle motive)
- ③ To enjoy interest (the inter-temporal substitution motive)
- ④ To enjoy a gradually improving expenditure (the improvement motive)
- ⑤ To enjoy a sense of independence and power to do things (the independence motive)
- ⑥ To secure a masse de manoeuvre to carry out speculative or business projects (the enterprise motive)

- ⑦ To bequeath a fortune (the bequest motive) – and my favourite -
- ⑧ To satisfy pure miserliness (the avarice motive) [which is pure psychology!]

Most economic theories of saving concentrate on motive 2 (the most obvious reason for saving today is to spend tomorrow), though recent theories, for example Carroll’s buffer-stock model (Carroll, 1997), also focus on motive 1 (the need to have a reserve for emergencies). Either way, just about all economic theories of saving assume optimisation or utility maximisation across the life span. The life-cycle hypothesis says that saving at any stage of the life cycle can be predicted from a person’s current income and wealth, expectation of future income, life expectancy, by finding the stream of consumption that will maximise utility. This means you would expect a pattern of income and saving across the life span to look something like figure 1.

Figure 1: A schematic representation of ‘hump’ saving.



This suggests that we would expect borrowing in adolescence and early adulthood, saving in adulthood, and dis-saving (spending from saving) in retirement. This means it would be rational for students to borrow – they have low income but a high capacity to enjoy themselves by spending. The evidence suggests otherwise – that young people borrow on average too little, that people save too little in mature adulthood and that many continue to save in retirement.

## 2. Four characteristics of behaviour

Economic psychologists (and behavioural economists) have carried out a considerable amount of research on saving now, and so we find a ‘behavioural life-cycle model of saving’, work on

time preferences and how people discount the future and so on (for a discussion of these see Webley & Nyhus, 2007). But here I will focus on just four characteristics of behaviour:

(i) Saving comes from people thinking and planning over long time periods: but most people are present-oriented and have short time horizons [*myopic time preference*]

(ii) Economic behaviour which involves the future, such as saving, is difficult: most people have a *self-control* problem

(iii) Saving involves *forming expectations* about the future (especially future income) - which is far from straightforward

(iv) People tend to follow 'the *path of least resistance*' (in other words they go for the default option, and, for example, stick too long with savings accounts with poor rates of return)

## 2.1 Myopic time preference

The earliest economic models of saving focussed on inter-temporal choice, that is the choice between consuming now or consuming later. For example, when we choose between buying a computer today at one price and buying the same computer in a year at a lower price, we have to make trade-offs between the differences in the costs to us and the time we have to wait for the benefits. Many economic decisions involve such trade-offs, but perhaps the best example is the trade off between spending money today instead of in the future. We do this when we save (which involves spending less now so that we can spend - from our accumulated savings - in the future) and also when borrow (which involves spending more now and less - because we have to pay off our accumulated debt - in the future).

We know that, all other things being equal, individuals prefer to consume things now, so formally future utility is 'discounted' by the decision maker's subjective discount rate, or rate of time preference. So something that gives the decision maker 100 units of utility now, would if the subjective discount rate was 8%, give 92 utility units in period 2. If the subjective discount rate is high, this means that additional consumption in the present is valued relatively higher than additional consumption in the future, while if it is low additional future consumption is given a relatively high weight compared to additional present consumption.

So much for the theory - what do empirical studies of discount rates show us? Basically most discount rates found in empirical studies are extremely high. Of course some discounting of the future is appropriate because of the possibility of death, default or other unanticipated events but the rate should be low just because the probability of these events is relatively low. The predominance of studies, some involving real purchases, others based on hypothetical choices or behaviour in experiments, give high figures. For example, in one study (Odum and Rainaud, 2003), \$100 delayed for one year was worth \$47.50 now, whereas \$100 of food in a year was only worth \$22.50 now.

Henk will recognise that there are some fundamental and serious measurement issues here, not least because hypothetical versus real choices, real choices involving small or large sums of money, different combinations of present and future gains and losses all give spectacularly different estimates of the subjective discount rate. However, leaving those to one side, it appears that there is a trend for the elderly to discount the most and for the middle-aged to discount less than either the elderly or the young. Put another way, patience increases until middle age and then decreases thereafter.

The most notable finding from empirical research on inter-temporal choice is that an individual's rate of time preference tends to change as a function of time (being high for the present and immediate future and lower for periods in the future). So instead of discounting future events at a constant discount rate individuals give higher rates for the present and near future. Thaler (1981) gives a homely and telling instance: most people prefer two apples in one year and one day, to one apple in one year whereas when asked to choose between an apple today and one tomorrow, most people opt for one apple today.

Figures 2 and 3 (which have been taken from Ainslie, 1992) illustrate this effect. The graphs show the present value assigned to the two alternatives. In Figure 2, at time  $T_0$  the individual prefers alternative X, which is larger but is available at a later point in time than alternative Y. As time  $T_n$  (when Y is available) approaches, the decision-maker still considers alternative X better than alternative Y because the decision-maker uses the same discount rate when

Figure 2 Preferences under constant discount rates:  
Stable preferences

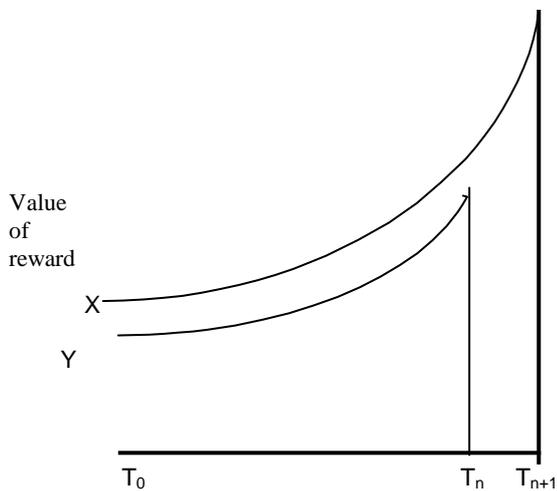
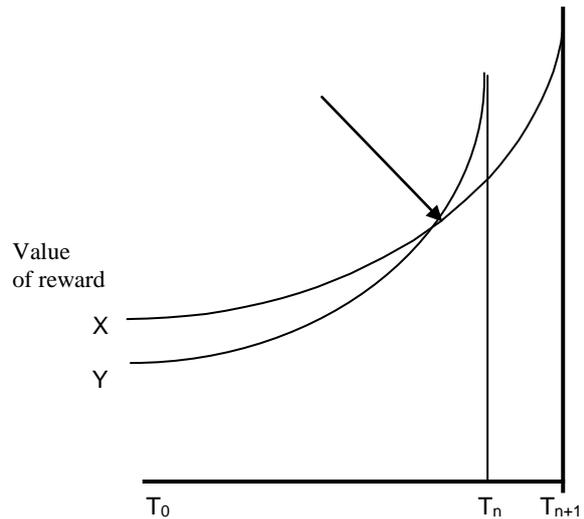


Figure 3: Preferences when discount rates change as  
a function of time: Preference reversal



evaluating the alternatives. This constant rate of discounting produces preference curves that are exponential and proportional to each other so they never cross. The individual waits for alternative X, which is available at time  $T_{n+1}$ . Figure 3 shows preferences and behaviour when the discount rates are higher for events close in time than events further into the future. At time  $T_0$ , the individual prefers alternative X to Y as in the previous case. However, as the time approaches when alternative Y is available, the discount rate used for discounting the value of the two alternatives increases, so that alternative Y at a certain point is perceived as having a higher present value than alternative X. This causes a shift of preferences. The alternative closest in time is discounted with a much higher rate, so after a certain point it has the highest present value. The change in discount rates produces hyperbolic preference curves which results in the curves crossing. The result is that alternative Y is chosen, in spite of the preference for alternative X when choosing from a time which is more remote.

There is lots of evidence of this kind of inconsistent behaviour, in birds, in mammals, in children and in adults. Ainslie labels this impulsivity: people do things that they would not have done if

they had made the decision to act from a remote perspective, and they do not follow their own plans. They plan to chose X rather than Y, but as the time gets closer, they chose Y nonetheless. This brings us nicely to characteristic 2, that is, difficulties in self control.

## 2.2. Self-control

The concept of self-control has long been linked to saving and it is clear that people find it hard to do things in the present (such as putting money aside) that will benefit them in the future. In the area of saving, people generally save less than they planned to do (Rabinovich & Webley, 2007) as well as indicating that they would like to save more. Successful savers score more highly on measures of self-control, and they also have a longer time horizon. This means that the longer ahead people plan, the more likely it is that they will implement their saving plans. Successful savers also make more effective use of techniques to help them to save (such as, in Belarus, transferring their savings into foreign currency - Rabinovich & Webley, 2007).

We know that self-control is a problem across a huge variety of domains: people eat more than they should (and so get obese), students do less work than is sensible (and so get poorer qualifications than they would otherwise have achieved) and people spend more now (and have less for the future) than is optimal.

Children are very oriented to the present, of course, and as they grow older learn to be more future oriented. But exactly what is it they are learning? As well as learning about future consequences they acquire techniques for self-control (see Webley, 2013). We are all familiar with some of these. In order to resist the tempting song of the Sirens Ulysses used two main techniques. He used *prior commitment*, by being tied to the ship's mast so that it was impossible for him to follow his urge to steer the ship off-course and *exposure avoidance*, by putting wax in the ears of his crew so that they were deaf to the Sirens and therefore not tempted. An example of prior commitment in the economic domain would be buying illiquid assets in order to prevent oneself from overspending, and an example of exposure avoidance would be avoiding shopping malls. Or a concrete modern example I have frequently observed: getting money out of a cash machine before you go into a supermarket, so as to limit your spending to a fixed amount of cash.

According to Ainslie, self-control is most likely to be observed for choices that will be repeated (i.e. that are part of a series of similar choices). One very effective way of dealing with these is to establish self-imposed rules of thumb and habits, for example by always starting homework at 7.00 in the evening, which ultimately stop this behaviour from being a conscious choice.

### 2.3 Expectations about the future

The evidence suggests that people have a tendency to be over-optimistic in a wide variety of domains (Sharot, 2012). For example, students see themselves as far more likely to get a good job and salary and far less likely to experience bad events (being fired, having a heart attack) than their fellow students. Individuals have a generally realistic view of the likelihood of divorce in the general population but very idealistic expectations about the longevity of their own marriages. In the economic domain UK students overestimate their post-graduation spending power. We examined this by studying current Exeter University students, alumni and applicants: current students over-estimated their earning but also under-estimated their outgoings, and so significantly over-estimated how big their discretionary income would be (Lea, Webley & Bellamy, 2001). Most of the stylised facts about small businesses (such as their high failure rate and reliance on bank credit) can be explained by unrealistic optimism on the part of novice small business people (de Meza & Southey, 1996).

Newby-Clark and Ross (2003) have compared people's view of their past and their futures. The variation in evaluations of personally significant episodes is much higher in the past than in the future. Their respondents reported both positive and negative events in the past, while they anticipated a homogeneously ideal future. They further reported that people need more time to anticipate negative future events than positive events, and they also needed more time to respond when asked to judge how likely the negative events were, compared to the positive events. This does suggest a certain lack of imagination. In other words, people see their pasts as variable and their futures as ideal: their futures are dominated by goals and plans and rarely include the possibility of unpleasant occurrences, failures, illnesses or other negative events. Older adults show similar effects, but around a quarter of those invited to take part either refused or did not return their questionnaires. For this group it may be that talking about the

past is enjoyable, but contemplating the future is not, as it contains unavoidable negative episodes such as sickness and death.

#### 2.4 The path of least resistance.

Finally, there is lots of evidence that people often do the thing that requires the least effort. Generally the easiest thing to do is to do nothing. This could be the result of procrastination (people tend to put off things that are costly in the present and beneficial in the future), imperfect attention (so people may well not think about financial matters unless they are encouraged to do so) or a fear of making mistakes (people tend to postpone economic decisions when they are not sure what to do).

Since people follow the path of least resistance, saving can be increased by making it easier. A wonderful example of this is Thaler's SMarT (Save More Tomorrow) programme (Thaler and Benartzi, 2004). This shows how people's participation in a voluntary pension system can be influenced by using knowledge of economic psychology. By changing the enrolment procedures, based on understanding of behaviour, the number of people participating in the pension system increased dramatically. Employees were asked to join in a few months, rather than immediately, which has the effect of making this a 'cool' considered decision rather than a 'hot' immediate choice. The system was also designed so that increases in savings were linked to pay increases, so a proportion of any pay increase went into the pension pot. This means that the employees could increase their savings without experiencing a cut in their take home pay, which makes it relatively painless (committing to give up some of the money that you expect and hope to get in the future is much easier than taking a pay cut in the here and now). In the first company that adopted this programme the saving rates quadrupled after being in place for four annual raises, and the evidence from other studies is that this approach works.

The four features I have described show us that saving decisions are not just a matter of rational calculations of self-interest. They also have some relevance to the issue of climate change. So I will turn to this now.

### 3. How to make climate change more salient

So what does Economic psychology tell us, if anything, about how can we make climate change more salient?

### 3.1 Teach strategies and devices that change relevant behaviour

The first thing we must do is to recognise the role that self-knowledge can play in dealing with myopic time preference and self-control. This is very clear when we look at children's economic behaviour. They are not only learning about the world, but about their own characteristics and limitations. So they learn that they can't resist buying chocolate when they go past the newsagent on the way to school and as a result they take another route, or they make sure they don't have any money with them. Many adults also use low tech devices, such as the example I gave earlier of people taking out money from the cash machine before they go into the supermarket, when they could just pay at the check out desk with their debit card. What this tells us is whilst advice may have its place, the key is to help people learn strategies that help them behave sustainably. These strategies need to be ones that work for them (for example, one child I interviewed hid his money in his bedroom – and then forgot where it was hidden - so that when he needed money he simply instituted a bedroom search). There are a range of types of techniques that work: as well as prior commitment and avoidance, there are also distraction techniques (which take one's mind off tempting things) focusing techniques (which involve visualising the future goal to counteract the attractiveness of the present) and establishing behavioural routines, as routines are easier to adhere to than constantly having to take small decisions. Thus we would benefit from individually and collectively visualising the future (which is what films like *The Day after Tomorrow* help us do), establishing recycling routines, publicly committing ourselves always to use trains instead of planes where this is possible and so on. I would advocate collecting examples of the range of strategies that work for people and then sharing them.

### 3.2 Shape people's expectations about the future

The second thing we can do is shape people's expectations about the future. Whilst I characterised these as generally optimistic, in fact it is possible to influence these by providing appropriate information. For example, it is evident in experimental markets that repeated exposure to "bubbles" (providing participants with a common experience), tends to eliminate

them (Porter & Smith, 2003). This is not easy in this context, as others are working to shape alternative expectations (climate change deniers) and proximate changes in weather may alter people's expectations of climate change. This is evident in the U.K. where recent experiences of more severe winters than has been the norm has somewhat undermined a belief in global warming.

L.P Hartley (1953) famously wrote "The past is a foreign country: they do things differently there". But if the past is a foreign country, the future is even more alien and unimaginable. So anything one can do to make the future real and concrete is worthwhile. There is probably a lot to be gained from computer games and simulations (of which there are now a number which have an important element of resource management) which enable people to manage countries and resources. All of these are fun to play whilst bringing home a message about the consequences of actions.

### 3.3 Make dealing with climate change the 'default'

The idea behind this is the notion that people tend to follow the path of least resistance, as we saw in the success of the Save more tomorrow programme. This suggests an approach of benevolent liberalism, where the option is specified (whatever the relevant option is) but one can opt out of it. This is what lies behind the recent introduction of 'auto-enrolment' in pensions in the United Kingdom, where every employer must automatically enrol workers into a workplace pension scheme if they are over 22 (and under the State pension age) and earn more than a specified (low) sum a year. It is also (and less creditably) why many restaurants add a default service charge that you can ask not to pay. The potential applications of this are widespread, from the very minor (e.g. the default is that a shop does not provide plastic bags unless asked) to the more significant (e.g. a default 'local environment charge' that can be opted out of). The limitations here are political (the default has to be generally acceptable) and practical but the potential enormous.

### 4. Cultural change: work to replace a Consumerist ethic by a Sustainability ethic

My final suggestion is not in any way based on the characteristics I have described above, but rather is based on work on attitudes towards saving. Evidentially there have been major

changes in generational attitudes towards financial behaviour, and this is part of a very long term shift (Johnson, 1985; Tucker, 1991). In the 18<sup>th</sup>, 19<sup>th</sup> and early 20<sup>th</sup> century there was an ethic of work and frugality, which played a crucial role with respect to controlling luxury spending and extravagance and encouraging saving. We still see this in older generations today (my mother, now aged 86, being a fine exponent of 'make do and mend'!). Americans responded by saving about 15% of their income. In the 20<sup>th</sup> century, after consumerism became the dominant culture, the personal savings rate dropped by half and over recent decades (up until the credit crisis in 2008) the rate continued to fall.

So in the past saving and thrift were widely seen as a virtue, as they enable the individual to survive (when times are hard) and, more generally, to be independent of others. Exhortations to work and save are common in ancient literature. In Aesop's fable "the ant is storing up food for the winter. When hard times come in the winter and the grasshopper is starving, the ant turns her away.

But times change, and fables change with the times. There is a modern version of this fable which celebrates the idea that there is more to life than food and frugality. In 'Frederick' by Leo Lionni, the eponymous mouse, who spends his time in the summer apparently just day dreaming whilst the other mice work hard and store food for the winter, is the *hero* of the tale. When they get bored of the winter diet he is able to tell them fabulous stories that he thought of during the summer.

The idea of thrift as a virtue started to fade in the 1920s in the U.S.A. and after the second world war in the UK and it gradually faded from language, textbooks, and reference books. The consumer became King, and it was seen as entirely right and proper that individuals should borrow to have what they wanted in the here and now.

But it is possible that we may be witnessing a shift from a consumerist ethic to a sustainability ethic. In terms of financial behaviour this implies both borrowing and saving at different periods, and a life-time approach to sustainability of one's financial position. This is entirely consistent with the UK government's approach to financial capability. A sustainability ethic also fosters an interest in renewable energy, localism in the provision of food, green roofs and so on.

If this is the case, then one can work with the grain of this cultural change, foster it in ways large and small until sustainability broadly conceived becomes the default setting for all.

## References

- Ainslie, G. (1992). *Picoeconomics: The strategic interaction of successive motivational states within the person*. New York: Cambridge University Press.
- Browning, M., & Lusardi, A. (1996). Household saving: Micro theories and micro facts. *Journal of Economic Literature*, 34, 1797-1855
- Carroll, C.D. (1997). Buffer-Stock saving and the Life Cycle/Permanent Income Hypothesis. *Quarterly Journal of Economics*, 112, 1–56.
- de Meza, D. & Southey, C. (1996). The borrower's curse: optimism, finance and entrepreneurship. *Economic journal*, 106, 375-386.
- Elffers, H., & Hessing, D.J. (1997). Influencing the prospects of tax evasion. *Journal of Economic Psychology*, 18, 289- 304.
- Hartley, L.P. (1953). *The Go-Between*. London: Hamish Hamilton
- Johnson, P. (1985). *Saving and Spending: the working class economy in Britain, 1870-1939*. Oxford: Clarendon Press
- Keynes, J.M. (1936). *The General Theory of Employment, Interest and Money*. London: Macmillan
- Lea, S.E.G., Webley, P. & Bellamy G. (2001). Student debt: expecting it, spending it and regretting it. In A.J. Scott, A. Lewis and S.E.G. Lea (Eds) *Student debt: the causes and consequences of undergraduate borrowing in the UK* (pp. 37-47). Bristol: Policy Press.
- Lionni, L. (1971). *Frederick*. London: Abelard-Schuman
- Newby-Clark, I.R., & Ross, M. (2003). Conceiving the past and future. *Personality and Social Psychology Bulletin*, 29, 807-818
- Odum, A.L., & Rainaud, C.P (2003). Discounting of delayed hypothetical money, alcohol, and food. *Behavioral Processes*, 64, 305–13.
- Porter, D.P. & Smith, V.L. (2003). Stock Market bubbles in the laboratory. *Journal of Behavioral Finance*, 4, 7–20
- Rabinovich, A. & Webley, P (2007). Filling the gap between planning and doing: psychological factors involved in the successful implementation of saving intention. *Journal of Economic Psychology*, 28, 444-461
- Sharot, T. (2012). *The Optimism Bias*. London: Constable & Robinson
- Thaler, R. H. (1981). Some empirical evidence on dynamic inconsistency. *Economic Letters*, 8, 201–7.

- Thaler, R.H., & Benartzi, S. (2004). Save More Tomorrow™: Using behavioural economics to increase employee saving. *Journal of Political Economy*, 2004, 112, S164 - S187
- Tucker, D.M. (1991). *The decline of thrift in America: our cultural shift from saving to spending*. New York: Praeger
- Webley, P. & Nyhus (2007). Inter-temporal choice and self-control; saving and borrowing. In A. Lewis (Ed), *Cambridge Handbook of Psychology and Economic Behaviour* (pp 105-131), Cambridge: Cambridge University Press.
- Webley, P. (2013). The development of saving. In S. Preston, M. Kringelbach & B. Knutsen (Eds), *Interdisciplinary Science of Consumption*. Cambridge, MA: The MIT Press.