To cite this chapter:

van der Werf, M. M. B., van Dijk, W. W., Wilderjans, T. F., & van Dillen, L. F. (2019). The road to the piggy bank: Two behavioural interventions to increase savings. In K. Sassenberg & M. L. W. Vliek (Eds.), *Social psychology in action: Evidence-based interventions form theory to practice* (pp. 195-204). Springer. https://doi.org/10.1007/978-3-030-13788-5_13

The Road to the Piggy Bank: Two Behavioral Interventions to Increase Savings

13

Minou M. B. van der Werf, Wilco W. van Dijk, Tom F. Wilderjans, and Lotte F. van Dillen

Contents

On the Importance of Having Money and Saving Some of It 195
Why Saving Doesn't Come Easy 196
A SMarT Intervention 197
Setting a Saving Goal: Let's Be More Specific 198
An Intervention Based on Goal Progress Monitoring 199
Conclusion 202
Recommended Readings 202
Guiding Answers to Questions in the Chapter 203
References 203

On the Importance of Having Money and Saving Some of It

Poor financial decision-making can have a long-lasting impact on individuals and society. Therefore it is perhaps not surprising that households' incomes, savings, and debts are extensively monitored by national and international organizations. A recent survey of the Organization for Economic Co-operation and Development (OECD) showed that, in G20 countries, on average 22% of all respondents had to borrow money to make ends meet in the previous year (OECD, 2017). Furthermore, 11.6 million adults living in the UK are categorized as struggling financially (Money Advice Service, 2016), whereas almost one in five Dutch households has debts that can be considered problematic (Simonse, Wilmink, & Van der Werf, 2017). These numbers indicate that even in countries considered to be well-developed and wealthy, many people fail to make ends meet and are at risk of running into financial problems.

This should be a reason for concern, because financial problems can cause stress, tensions within families, domestic violence, poor physical and psychological health, stigmatization, social isolation, and even suicide (e.g., Chapman & Freak, 2013; Drentea, 2000; Drentea & Lavrakas, 2000; Lane 2016). Moreover, the impact of financial problems reaches further than the individuals

M. M. B. van der Werf
National Institute for Family Finance Information (Nibud), Utrecht, The Netherlands

W. W. van Dijk (✉) · T. F. Wilderjans · L. F. van Dillen
Leiden University, Leiden, The Netherlands
e-mail: dijkwvan@fsw.leidenuniv.nl

© Springer Nature Switzerland AG 2019
K. Sassenberg, M. L. W. Vliek (eds.), *Social Psychology in Action*,
https://doi.org/10.1007/978-3-030-13788-5_13

dijkwvan@fsw.leidenuniv.nl

and families directly involved. For example, the financial problems of households in the Netherlands cost the Dutch society an estimated 10 billion euros a year. This amount includes, among others, costs for debt assistance, benefit payments, reduced work productivity, house evictions, and childcare (Simonse et al., 2017).

Given the profound impact that financial problems have on individuals, their families, and society as a whole, financial resilience (which includes preventing problematic debts) and financial self-reliance are of utmost importance (OECD, 2016; Simonse et al., 2017). People should, for example, manage their money well on a day-to-day basis: having a budget, keeping records of expenses, and keeping up with payment and other financial commitments. Moreover, they should engage in financial planning: making provision for retirement, being aware of financial risks and opportunities, and taking effective actions to minimize the effects of financial risks, such as taking out appropriate insurances or putting sufficient money aside in savings (OECD, 2016). Research by the Consumer Financial Protection Bureau of the USA (2017) underlines the importance of "healthy" financial behavior, such as sound financial planning. Their results showed that saving money—thereby increasing resilience to unexpected expenses—is one of the strongest predictors of financial well-being.

Box 13.1 Question for Elaboration

Have you put aside sufficient money in savings?

Although financial resilience and financial self-reliance are crucial for financial well-being, people struggle with making healthy financial decisions. For example, often people do not manage to put sufficient money aside in savings in order to be prepared for financial calamities. Why is this the case? First, there might be financial reasons. For example, people might simply need all their money to make ends meet. Especially for households with low (or even moderate) incomes, insufficient financial resources might drive low saving rates. Some of these low-income households, however, do manage to save money, whereas those with sufficient financial resources sometimes fail to do so (e.g., Hayhoe, Cho, DeVaney, Worthy, Kim, & Gorham, 2012). Apparently, there is more to saving than having the money for it. Indeed, other reasons for not saving often are of a more psychological nature. For example, saving money means sacrificing immediate gratification for future financial well-being, which, in turn, means overcoming a number of psychological hurdles. In the next section, we will elaborate on several of these hurdles.

Why Saving Doesn't Come Easy

A first psychological hurdle on the road to the piggy bank is the **optimism bias** (Sharot, 2011). In general, people are (too) "rosy" about their financial future. For example, they tend to overestimate their future income while underestimating their future spending and expenses (Lewis & Van Venrooij, 1995; Norvilitis et al., 2006; Peetz & Buehler, 2009) and therefore fail to see the necessity of putting money aside for future financial needs.

Definition Box

Optimism bias: The tendency to overestimate the probability of positive events and underestimate the probability of negative events.

Even when people are more realistic about their financial future and consider the risks they might face, there is still no guarantee that they will build a financial buffer in their savings account. To do so would mean resisting the temptation of spending money now in favor of spending possibilities in the future, and this requires **self-control** (Thaler & Shefrin, 1981; see also Gieseler, Loschelder, & Friese, Chap. 1). Many people, however, have "self-control issues."

dijkwvan@fsw.leidenuniv.nl

And they know it, because they are perfectly willing to use a **commitment device** to deal with these issues (Rogers, Milkman, & Volpp, 2014; Van der Swaluw et al., 2018). For example, to preempt overspending, people cut up their credit cards, literally freeze them in a container of water, or sign up for savings accounts that charge withdrawal penalties for early take-up (Ashraf, Karlan, & Yin, 2016). And banks also know it. Already in 1910, Dutch banks provided clients with "saving canisters" that could only be opened by the bank. Actually, people have been outsourcing financial self-control to their environments for centuries, as money boxes that had to be broken before the valuables inside could be spent date back to at least the fourteenth century.

Definition Box

Self-control: The ability to regulate one's thoughts, emotions, and behavior in the face of temptations and impulses.

Commitment device: A voluntary imposed arrangement that restricts future behavior to avoid temptations.

Another hurdle on the road to a fat piggy bank is that saving money requires an intertemporal choice—a trade-off between costs (e.g., foregoing current spending) and benefits (e.g., increased savings) that occur at different points in time. The problem with this is that immediate outcomes are more valued than delayed ones (Loewenstein & Elster, 1992). This **present bias** can result in a spend-now-and-save-later attitude, which surely will not fatten a piggy bank.

Definition Box

Present bias: The tendency to assign more value to payoffs (e.g., money or goo ds) that are closer to the present time when considering trade-offs between two future moments.

Not only are present outcomes given more weight than future ones; losses are also more heavily weighted than gains (Kahneman & Tversky, 1979). It is even estimated that the psychological pain of losses hurts roughly twice as much as gains yield pleasure (Kahneman, Knetch, & Thaler, 1991). Because "losses loom larger than gains," people often show **loss aversion**, and this places yet another hurdle on their road to the piggy bank. Once people get used to a particular level of disposable income, a gain in savings does not outweigh the loss in disposable income.

Definition Box

Loss aversion: People's tendency to prefer avoiding losses to acquiring equivalent gains.

Thus, when it comes to saving money, there is many a slip "twixt the cup and the lip." The optimism bias, self-control, the present bias, and loss aversion are all psychological hurdles that can withhold people from putting money aside in savings. On a positive note, however, these biases can also provide useful starting points for designing interventions that steer people in the right direction on the way to the piggy bank, as we have seen when discussing commitment devices. To illustrate this point further, we will next address a "modern classic" in behavioral interventions: the Save More Tomorrow™ program.

Box 13.2 Question for Elaboration

What are your personal reasons for not saving (more) and how do these reasons relate to the psychological hurdles described in this chapter?

A SMarT Intervention

The Save More Tomorrow™ (SMarT) program is an intervention designed by behavioral economists Richard Thaler and Shlomo Benartzi (2004)

dijkwvan@fsw.leidenuniv.nl

to help those (US) employees who wish to save (more) money for retirement but lack the self-control to act on this desire. The essence of SMarT is that employees commit themselves in advance to allocating a portion of their future pay raise toward their retirement savings. The program has four core elements: (1) employees are approached about increasing their contribution to their retirement savings plans; (2) if employees join, their contribution is increased beginning with their first salary after a raise; (3) their contribution continues to increase on each scheduled raise until it reaches a preset maximum; and (4) employees can opt out of the plan at any time.

Results of the first three implementations of the program showed that, (1) 78% of the employees offered the plan joined, (2) 80% of those enrolled in the plan remained in it, and (3) the average saving rates for participating employees increased from 3.5% to 13.6% over the course of 40 months (Thaler & Benartzi, 2004). These findings clearly demonstrate that SMarT is highly effective in making saving for retirement more attractive and easier for employees who want to save more.

SMarT works so well because it is built in a way that bypasses several psychological hurdles while exploiting people's biases to create commitment to the plan. To illustrate, employees are asked to join the program well before a scheduled pay raise. This means that an increase in their contribution is not starting now but some considerable time in the future, which makes joining the program very attractive. Due to the optimism bias, employees are more optimistic about their ability to save in the future. In addition, employees are still able to enjoy the rewards of spending and discount the costs of saving (e.g., less consumption now) to the future. The program also mitigates perceiving a reduction in income due to saving as a loss in disposable income, because if employees join, their contribution to the retirement savings plan is increased beginning with their first pay check after their salary increased. By contributing a part of their pay raise, employees do not feel (as much) that they "lose" money when saving—actually, after each pay raise, they can spend more while also saving more. Furthermore, their contribution continues to increase on each scheduled pay raise until it reaches a preset maximum, a feature that makes employees' **status quo bias** work to keep them in the plan (Kahneman et al., 1991). Thus, by accounting for people's biased perceptions of their present and future financial situation, SMarT encourages employees to start saving (and keep saving) for their retirement.

Definition Box

Status quo bias: People's tendency, when choosing among alternatives, toward sticking with the status quo alternative—that is, doing nothing or stick with their current or previous decision.

Putting money aside in savings, however, is much harder when it entails making more active savings decisions rather than opting in or out of a retirement savings plan. After all, such decisions rely much more heavily on people's self-control capacity. In these situations, interventions targeting efficient goal progress monitoring might be particularly effective as they guide people in making the right behavioral adjustments at the right time. In what follows, we will describe one such intervention that was designed to aid Dutch households to increase their savings. Before we turn to the details of the intervention, we briefly discuss its theoretical basis.

Box 13.3 Question for Elaboration

If your friend wants to save more, what would you advise her?

Setting a Saving Goal: Let's Be More Specific

The road to a fat piggy bank is paved with good intentions. Many people want to save. Yet, their good intentions are often not followed up by the

dijkwvan@fsw.leidenuniv.nl

necessary actions. The devil might also here be in the details. Research suggests that something may change for the better when a goal is formulated in specific terms (Locke & Latham, 1990; Oettingen, Pak, & Schnetter, 2001). A specific goal provides concrete guidelines for attaining the goal and therefore facilitates appropriate actions for successful goal attainment. Moreover, a specific goal can act as a schema for making the most use of the available information (Ashford & Cummings, 1983). Saving €15,000 for a new car provides a concrete standard against which the current state of affairs can be compared and on which appropriate follow-up actions can be planned. Without a specific goal, for example, when saving for a rainy day, it is hard to know exactly what to aim for, and clear action guidelines for goal attainment are lacking (Sheeran & Webb, 2011; Triandis, 1980).

Setting a specific goal, however, is by no means a guarantee that the set goal will be attained. Several scholars have pointed out that goal progress monitoring is an important aspect of successful goal attainment (e.g., Carver & Scheier, 1982; Locke & Latham, 1990, 2002; Powers, 1973). Attaining a goal requires, in addition to setting a specific goal and planning needed actions, noticing discrepancies between the goal and the current state of affairs and being able to "fix" discrepancies (see also Keller, Bieleke, & Gollwitzer, Chap. 2). Whereas setting a specific goal merely involves adopting a standard for performance, the real work is probably in monitoring goal progress—periodically evaluating progress in relation to the set standard and closing the gap accordingly. Without such progress monitoring, it becomes impossible to identify discrepancies and, for example, knowing when it is necessary to exercise (more) self-control. A recent meta-analysis showed that health interventions focusing on goal progress monitoring are effective in attaining a health goal (Harkin et al., 2016). In the context of saving, this would mean that monitoring progress toward a saving goal, for example, by checking a savings account regularly, might facilitate successfully attaining a saving goal.

Goal progress monitoring, however, is not always a pleasant activity. Progress can be slower than anticipated and this might hinder continuous and adequate monitoring. To prevent potentially disheartening feedback, people might want to "bury their heads in the sand" and avoid relevant information on their goal progress (Webb, Chang, & Benn, 2013). In the next section, we will describe a behavioral intervention that was designed, using a goal progress monitoring framework, to help people attain a specific saving goal (Van der Werf, Van Dijk, Van der Schors, Wilderjans, & Van Dillen, 2019).

An Intervention Based on Goal Progress Monitoring

When saving for a specific goal, goal progress monitoring can be done in at least two ways. First, monitoring can be done by people themselves, for example, by checking their bank accounts regularly and keeping good track of savings. In the current digital day and age, a quick glimpse on one's accounts should be sufficient to establish how much money has been saved already. As easy as this may sound, one still has to make an active decision to engage in monitoring progress toward a saving goal. Especially, when progress is expected to be less than hoped for, people might decide against it and avoid goal progress monitoring as a result.

A second way of goal progress monitoring—one that circumvents the hiatus described above—is "outsourcing" it to an external party. Banks or other financial organizations could help their customers by explicitly informing them of their progress toward a saving goal (e.g., via e-mail, SMS, or in-app messages).

To test whether such outsourcing is effective in helping people to attain their saving goal, we recruited participants via the website of the National Institute for Family Information (Nibud).[1] This resulted in over 400 people registering voluntarily for participation in the study.

[1]The National Institute of Family Finance Information (Nibud) is a well-known and respected independent foundation in the Netherlands and gives advice to households about all kinds of financial matters (www.nibud.nl).

dijkwvan@fsw.leidenuniv.nl

Table 13.1 Messages in the feedback and extensive feedback condition

Feedback condition	Extensive feedback condition
Dear [name]	Dear [name]
You saved €[amount saved]	You saved €[amount saved], only
Your saving goal is €[saving goal]	€[discrepancy with saving goal] to go
Kind regards, Nibud	Your saving goal is €[saving goal]
	Kind regards, Nibud



Fig. 13.1 Illustration in the extensive feedback condition indicating a goal progress of 65%

Table 13.2 Percentage of goal attainment per period for the three conditions

Month Condition	July	August	September	October	November	February
Feedback	0%	−19%	−36%	−24%	−10%	+26%
Extensive feedback	0%	+19%	−18%	−9%	−21%	+43%
Control	0%	−16%	−43%	−20%	−15%	−23%

At the start of the study (July 2016), participants indicated their current savings and their saving goal for the period of the study (July–November 2016), and were randomly assigned to the reminder condition, the extensive feedback condition, or the control condition.

During the study, we assessed participants' progress toward their saving goal four times through online questionnaires (in August, September, October, and November 2016). In addition to these questionnaires, participants in the feedback condition received feedback via e-mail messages three times (in August, September, and October 2016) about the amount they had saved so far, and they were reminded about their saving goal. Participants in the extensive feedback condition received, in addition to this feedback, information about how much they still needed to save to attain their saving goal (see Table 13.1) and a visual illustration of their goal progress. Participants in the control condition did not receive any additional information via e-mail messages.

The goal progress illustration in the extensive feedback condition consisted of one row of ten "moneybags"—each representing 10% progress in attaining their saving goal—and participants' progress was made visual by the number of moneybags that were colored (see Fig. 13.1). We added this visual illustration for two reasons. First, we argued that it would help information processing and therefore facilitate goal progress monitoring better (Cheema & Bagchi, 2011). Second, we argued that dividing a larger end goal into smaller subgoals would result in the experience of short-term successes on the road to a (longer-term) end goal and this might increase motivation and self-efficacy (e.g., Locke & Latham, 2002; but see Cheema & Bagchi, 2011).

We expected that the intervention in both feedback conditions would facilitate goal progress monitoring and therefore would be effective in helping participants to attain their saving goal. Moreover, for the reasons explained above, we expected that the intervention in the extensive feedback condition would be most effective.

How did our participants do? And more important, was our intervention effective in helping them to attain their saving goal? Overall, participants did not seem to show progress toward their saving goal. After 5 months, they attained, on average, minus 15% (!) of their saving goal (see Table 13.2).[2] Yes, you read that correctly:

[2]Results showed that the mean of minus 15% had a standard deviation of 341%, indicating large individual differences in goal progress. Half of the participants had a goal progress of plus 50% or less.

dijkwvan@fsw.leidenuniv.nl

on average, participants actually had less savings at the end of the study in comparison to the beginning of our study. One reason for this finding might be the time period in which the study was conducted. In May, many people in the Netherlands receive a holiday allowance (about 8% of their yearly income). Participants might have temporarily put aside this extra money in savings until they use it for their holiday expenses, usually in July or August. This might explain the decreases in savings we observed during these periods and, in our view, also illustrates the optimism bias. When setting their saving goal in July, participants most likely were aware of their upcoming holiday expenses, but they clearly underestimated how much they would spend in these periods.

More interesting, however, is whether our goal progress intervention was effective in increasing the progress. The results of our analyses,[3] however, did not show a statistically significant difference in goal progress between the three conditions, for the period July to November 2016. To examine whether the lack of statistically significant differences in goal progress between the three conditions could be due to the relatively short duration of our study, we decided to add an additional post-intervention assessment of goal progress. Three months after our initial study was completed, we invited those participants who filled out all five questionnaires during the intervention for a follow-up assessment, and 261 completed this in February 2017 (note that participants did not receive feedback via e-mail messages in the period from November to February). Our analyses of this 3 months' follow-up showed that participants in the extensive feedback condition had attained more of their initial saving goal than those in the control condition (see Table 1.2), a difference that was marginally statistically significant ($p = 0.058$). There was a similar pattern, although not statistically significant, for participants in the feedback condition.

In sum, testing our intervention based on goal progress monitoring did not yield clear evidence for its effectiveness in helping people to attain their saving goal. Although results of our study did not show a statistically significant short-term effect, we did find a marginal statistically significant effect of the extensive feedback condition on a longer term. In hindsight, we can only speculate why we obtained the results we did. A first reason why we found little or no differences between our three conditions might concern the participants included in the study. Remember that they voluntarily signed up for a study on saving. This might have led to a selection of participants who, at the start of the study, were already motivated to put money aside in savings. It could well be that our intervention has little added value for (more) motivated savers as they might already monitor their savings themselves. If our participants were already motivated to save, this did not increase their savings from July to November. Actually, on average, their savings decreased during this period. More research is needed to test whether our intervention is (more) effective when using other samples of participants and perhaps other periods of the year.

A second reason why the intervention was less effective than expected might be that participants in the control condition were also steered toward goal progress monitoring. Although these participants were not provided with additional information via e-mail messages, they did receive monthly questionnaires to indicate their savings. Hence, participants in the control condition were attending to their savings at least once a month, which might have already facilitated goal progress monitoring. This could have reduced the (intended) difference between the control and intervention conditions and makes it harder to detect the effectiveness of our intervention. Future research is needed to test this possibility. One possibility is to conduct an intervention study in collaboration with a bank or another organization that has

[3]We used multilevel modelling to examine the change in percentage of goal attainment over time. This technique can deal with the hierarchical nature of the data (i.e., measurements nested within participants). Condition and the interaction between condition and time were our independent variables. Age, gender, household income, and experienced financial scarcity were added to the model as covariates (results concerning these covariates are discussed in Van der Werf et al., 2019).

dijkwvan@fsw.leidenuniv.nl

access to savings data, which makes it unnecessary to work with questionnaires.

The above two reasons shed some light on why the intervention was not effective during the first 5 months of the study. The findings, however, did suggest that, after 8 months, participants in the extensive feedback condition were more successful at attaining their saving goal. It should again be noted that this result only approached statistical significance and more research is needed to make a stronger argument, but it does raise the question why extensive feedback could be (more) effective on a longer term. Again, we can only speculate on the reasons why. One possibility is related to the goal gradient effect, that is, an increase in motivation to attain a goal when the goal nears completion (Hull, 1934). It could be that the visual illustration ("moneybags") of goal progress makes participants experience coming closer and closer to their saving goal, which might have increased their commitment to the goal and their motivation to attain it. Consequently, it could be that, when after 5 months the e-mail messages with explicit feedback on their goal progress stopped, they continued saving for a longer period than participants in the other two conditions. To test this possibility, more research is also needed.

Conclusion

Putting money aside in savings does not come easy for people. Next to overcoming the necessary financial constraints, it requires jumping several psychological hurdles, such as the optimism bias, self-control, the present bias, loss aversion, and goal progress monitoring, and therefore people could need some help on the road to the piggy bank. Behavioral interventions using insights from social psychology and behavioral economics can provide useful assistance in steering people into the right direction. The possibilities for assistance are many, and designing, testing, and, subsequently, implementing (effective) financial interventions will not only result in increased retirement savings or a €15,000 car but will also help people to become more financially resilient and self-reliant and thereby contributing to happier and more fulfilling lives.

Summary

- People often find it difficult to put money aside in savings. This is, at least partly, because they perceive their financial future too optimistically, lack sufficient self-control, overvalue immediate outcomes, and weigh losses more heavily than gains.
- In the USA, where saving for retirement is not obligatory, the Save More Tomorrow™ (SMarT) program is a highly effective intervention for increasing employees' contribution to their retirement savings plans.
- The crux of SMarT is that it bypasses several psychological hurdles (e.g., the optimism bias, self-control, and loss aversion) and exploits others (e.g., the status quo bias) in order to increase savings for retirement.
- Testing an intervention based on goal progress monitoring did not yield clear evidence for its effectiveness in helping people to attain their saving goal. The results of this study, however, hinted at the possibility of a longer-term effect. Until more research is conducted, the jury is still out.

Recommended Readings

Dolan, P., Hallsworth, M., Halpern, D., King, D., Metcalfe, R. D., & Vlaev, I. (2012). Influencing behaviour: The mindspace way. *Journal of Economic Psychology, 33*, 264–277. https://doi.org/10.1016/j.joep.2011.10.009

Kahneman, D. (2011). *Thinking, Fast and Slow.* London: Allen Lane.

Locke, E. A., & Latham, G. P. (2002). Building a practically useful theory of goal setting and task motivation: A 35-year odyssey. *American Psychologist, 57*, 705–717. https://doi.org/10.1037/0003-066X.57.9.705

Thaler, R. H., & Sunstein, C. (2008). *Nudge—Improving decisions about health, wealth, and*

dijkwvan@fsw.leidenuniv.nl

happiness. New Haven, CT, US: Yale University Press.
The Behavioural Insights Team. (2017). EAST: Four simple ways to apply behavioural insights. *Annual Review of Policy Design, Vol 5*, No 1.

Guiding Answers to Questions in the Chapter

1. Q (With Box 13.1): Have you put aside sufficient money in savings?

   A: How much savings are sufficient is dependent upon your personal situation, and there are online tools available that will give you a personal advice (e.g., see the Money Advice Service's website). Nibud advises to hold also a financial buffer in your savings account to make sure that you can pay unexpected, larger, and necessary expenses directly without having to take out a loan of adjust your lifestyle. To start building a financial buffer, Nibud recommends to put aside, each month, 10% of your income in savings until you reach your advised buffer.

2. Q (With Box 13.2): What are your personal reasons for not saving (more) and how do these reasons relate to the psychological hurdles described in this chapter?

   A: Reasons such as "At the moment, I don't necessarily need savings" or "I'll save more when I'm older and earn more money" are related to the optimism bias. A reason such as "At the start of the month, I always want to save some money, but by the end I just spend it all" is related to self-control. Whereas reasons such as "I really need my money more now than in the future" or "It would mean missing out on a lot of fun things when I have to cut my spending in order to save" are related to the present bias and loss aversion.

3. Q (With Box 13.3): If your friend wants to save more, what would you advise her?

   A: There are a few "smart" ways of putting money aside in savings without feeling it so much directly. For example, transfer automatically, each month, a set amount to your savings account (via your online or mobile banking); transfer additional income (e.g., holiday allowance, 13th month salary, or a financial windfall) to your savings account before you spend (some of) it; save with a specific goal in mind; put (part of) your savings on an account that is not connected to mobile banking—this makes it more difficult to transfer money in your savings account (back) to your checking account.

References

Ashford, S. J., & Cummings, L. L. (1983). Feedback as an individual resource: Personal strategies of creating information. *Organizational Behavior and Human Performance, 32*, 370–398. https://doi.org/10.1016/0030-5073(83)90156-3
Ashraf, N., Karlan, D., & Yin, W. (2016). Tying Odysseus to the mast: Evidence from a commitment savings product in the Philippines. *The Quarterly Journal of Economics, 121*, 635–672. https://doi.org/10.1162/qjec.2006.121.2.635
Carver, C. S., & Scheier, M. F. (1982). Control theory: A useful conceptual framework for personality, social, clinical, and health psychology. *Psychological Bulletin, 92*, 111–135. https://doi.org/10.1037/0033-2909.92.1.111
Chapman, S. J., & Freak, M. (2013). Personal finance. In S. J. Chapman & M. Freak (Eds.), *New concepts in commerce* (pp. 1–351). Australia: Wiley.
Cheema, A., & Bagchi, R. (2011). The effect of goal visualization on goal pursuit: Implications for consumers and managers. *Journal of Marketing, 75*, 109–123. https://doi.org/10.1509/jmkg.75.2.109
Consumer Financial Protection Bureau (2017). *Financial well-being in America*. Retrieved from https://www.consumerfinance.gov/data-research/research-reports/financial-well-being-america/
Drentea, P. (2000). Age, debt, and anxiety. *Journal of Health and Social Behavior, 41*, 437–450. https://doi.org/10.2307/2676296
Drentea, P., & Lavrakas, P. J. (2000). Over the limit: The association among health, race and debt. *Social Science & Medicine, 50*, 517–529. https://doi.org/10.1016/S0277-9536(99)00298-1
Harkin, B., Webb, T. L., Chang, B. P. I., Prestwich, A., Conner, M., Kellar, I., … Sheeran, P. (2016). Does monitoring goal progress promote goal attainment? A meta-analysis of the experimental evidence. *Psychological Bulletin, 142*, 198–229. https://doi.org/10.1037/bul0000025
Hayhoe, C. R., Cho, S. H., DeVaney, S. A., Worthy, S. L., Kim, J., & Gorham, E. (2012). How do distrust and anxiety affect saving behavior? *Family and Consumer*

dijkwvan@fsw.leidenuniv.nl

Sciences Research Journal, 41, 69–85. https://doi.org/10.1111/j.1552-3934.2012.02129.x

Hull, C. L. (1934). The rat's speed-of-locomotion gradient in the approach to food. *Journal of Comparative Psychology, 17*, 393–422. https://doi.org/10.1037/h0071299

Kahneman, D., Knetsch, J. L., & Thaler, R. H. (1991). The endowment effect, loss aversion, and status quo bias. *Journal of Economic Perspectives, 5*, 193–206. https://doi.org/10.1257/jep.5.1.193

Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica, 47*, 263–292. https://doi.org/10.1142/9789814417358_0006

Lane, J. (2016). *A debt effect? How is unmanageable debt related to other problems in people's lives?* London, UK: Citizens Advice.

Lewis, A., & Van Venrooij, M. (1995). A note on the perceptions of loan duration and repayment. *Journal of Economic Psychology, 16*, 161–168. https://doi.org/10.1016/0167-4870(95)00002-6

Locke, E. A., & Latham, G. P. (1990). *A theory of goal setting & task performance*. Englewood Cliffs, NJ: Prentice-Hall, Inc..

Locke, E. A., & Latham, G. P. (2002). Building a practically useful theory of goal setting and task motivation: A 35-year odyssey. *American Psychologist, 57*, 705–717. https://doi.org/10.1037//0003-066X.57.9.705

Loewenstein, G., & Elster, J. (Eds.). (1992). *Choice over time*. New York, NY, US: Russell Sage Foundation.

Money Advice Service. (2016). *Annual report and accounts 2015/2016*. London: Money Advice Service.

Norvilitis, J. M., Merwin, M. M., Osberg, T. M., Roehling, P. V., Young, P., & Kamas, M. M. (2006). Personality factors, money attitudes, financial knowledge, and credit-card debt in college students. *Journal of Applied Social Psychology, 36*, 1395–1413. https://doi.org/10.1111/j.0021-9029.2006.00065.x

Oettingen, G., Pak, H.-j., & Schnetter, K. (2001). Self-regulation of goal-setting: Turning free fantasies about the future into binding goals. *Journal of Personality and Social Psychology, 80*, 736–753. https://doi.org/10.1037//0022-3514.80.5.736

OECD. (2016). *INFE Core competencies framework on financial literacy for adults*. G20/OECD.

OECD. (2017). *INFE report on adult financial literacy in G20 countries*. G20/OECD.

Peetz, J., & Buehler, R. (2009). Is there a budget fallacy? The role of savings goals in the prediction of personal spending. *Personality and Social Psychology Bulletin, 35*, 1579–1591. https://doi.org/10.1177/0146167209345160

Powers, W. T. (1973). *Behavior: The Control of Perception*. Chicago, IL: Aldine.

Rogers, T., Milkman, K. L., & Volpp, K. G. (2014). Commitment Devices: Using Initiatives to Change Behavior. *JAMA, 311*, 2065–2066. https://doi.org/10.1001/jama.2014.3485

Sharot, T. (2011). The optimism bias. *Current Biology, 21*, R941–R945. https://doi.org/10.1016/j.cub.2011.10.030

Sheeran, P., & Webb, T. L. (2011). From goals to action. In H. Aarts & A. Elliott (Eds.), *Frontiers in social psychology: Goal-directed behavior* (pp. 175–202). London, UK: Psychology Press.

Simonse, O., Wilmink, G., & Van der Werf, M. (2017). *Effective ways to advance responsible financial behaviour*. Den Haag/Utrecht, The Netherlands: Money Wise/Nibud.

Thaler, R. H., & Benartzi, S. (2004). Save More Tomorrow™: Using behavioral economics to increase employee saving. *Journal of Political Economy, 112*, 165–187.

Thaler, R. H., & Shefrin, H. M. (1981). An economic theory of self-control. *Journal of Political Economy, 89*, 392–406. https://doi.org/10.1086/260971

Triandis, H. C. (1980). Values, attitudes, and interpersonal behavior. In H. E. Howe Jr. & M. Page (Eds.), *Nebraska symposium of motivation* (Vol. 27, pp. 195–259). Lincoln, NE: University of Nebraska Press.

Van der Swaluw, K., Lambooij, M. S., Mathijsen, J. J. P., Schipper, M., Zeeleberg, M., Berkhout, S., … Prast, H. (2018). Commitment lotteries promote physical activity among overweight adults—A cluster randomized trial. *Annals of Behavioral Medicine, 52*, 342–351. https://doi.org/10.1093/abm/kax017

Van der Werf, M. M. B., Van Dijk, W. W., Van der Schors, A., Wilderjans, T. F., & Van Dillen, L. F. (2019). *Moving forward to saving more: A goal progress monitoring approach to increase liquid savings in the Netherlands*. Manuscript in preparation.

Webb, T. L., Chang, B. P. I., & Benn, Y. (2013). 'The ostrich problem': Motivated avoidance or rejection of information about goal progress. *Social and Personality Psychology Compass, 7*, 794–807. https://doi.org/10.1111/spc3.12071

dijkwvan@fsw.leidenuniv.nl