

How do we really build financial capability?

10 principles for financial interventions

March 2019



The better the question. The better the answer.
The better the world works.

Executive summary

Recent years have seen an explosion in interventions designed to improve financial outcomes of participants. Yet on-the-ground evidence suggests that not all financial education programs are equally successful at achieving this aim.

Indeed, whilst some outstanding education programs exist in isolated pockets, reviews of outcomes show, in general, the reach and impact of programs is far more limited than we would like.

This paper examines the difference between interventions that work, and those that do not. It attempts to answer the question: "How do you actually build financial capability?"

In doing so, we aim to help interested parties enhance the effectiveness of their programs and policies by providing them with evidence-based recommendations to drive positive outcomes in participants.

In general, our findings are that many financial capability programs place an over-emphasis on knowledge. They also fail to account for the cognitive, affective and behavioural biases that are inevitable contributors to real-world decision making. These factors limit their effectiveness.

The first section of the paper explores the many factors that contribute to financial decision making - informed by insights from behavioural economics and neuroscience - and compares them to the logic that underlies many financial capability programs.

The second section explores the ways that understanding the drivers of financial decisions can influence intervention design.

The third section of the paper explores and unpacks the 10 principles themselves, using real-world case studies and robust academic evidence.

10 principles

EY work reveals 10 principles which should underpin financial education interventions to maximise their reach and impact. They are:

01

Use rules-of-thumb

Focus on teaching people the most simple and practical behaviours possible.

06

Make the invisible visible

Find ways to make money physical, visible and tangible to help people keep track of their money and make good decisions.

02

Make good behaviours easy

Make the right decision the easy one.

07

Keep it real

Help people learn by modelling real life behaviours using real life scenarios.

03

Intervene 'just-in-time'

To change behaviour, deliver targeted information as close as possible to the financial decision.

08

Support practice with product

Complement the provision of financial education with direction to products that help people follow through on making good financial decisions.

04

Strengthen self-control

Give people the willpower to make the right decision.

09

Build soft skills

Teach people to ask for help, resolve issues, and have conversations about money.

05

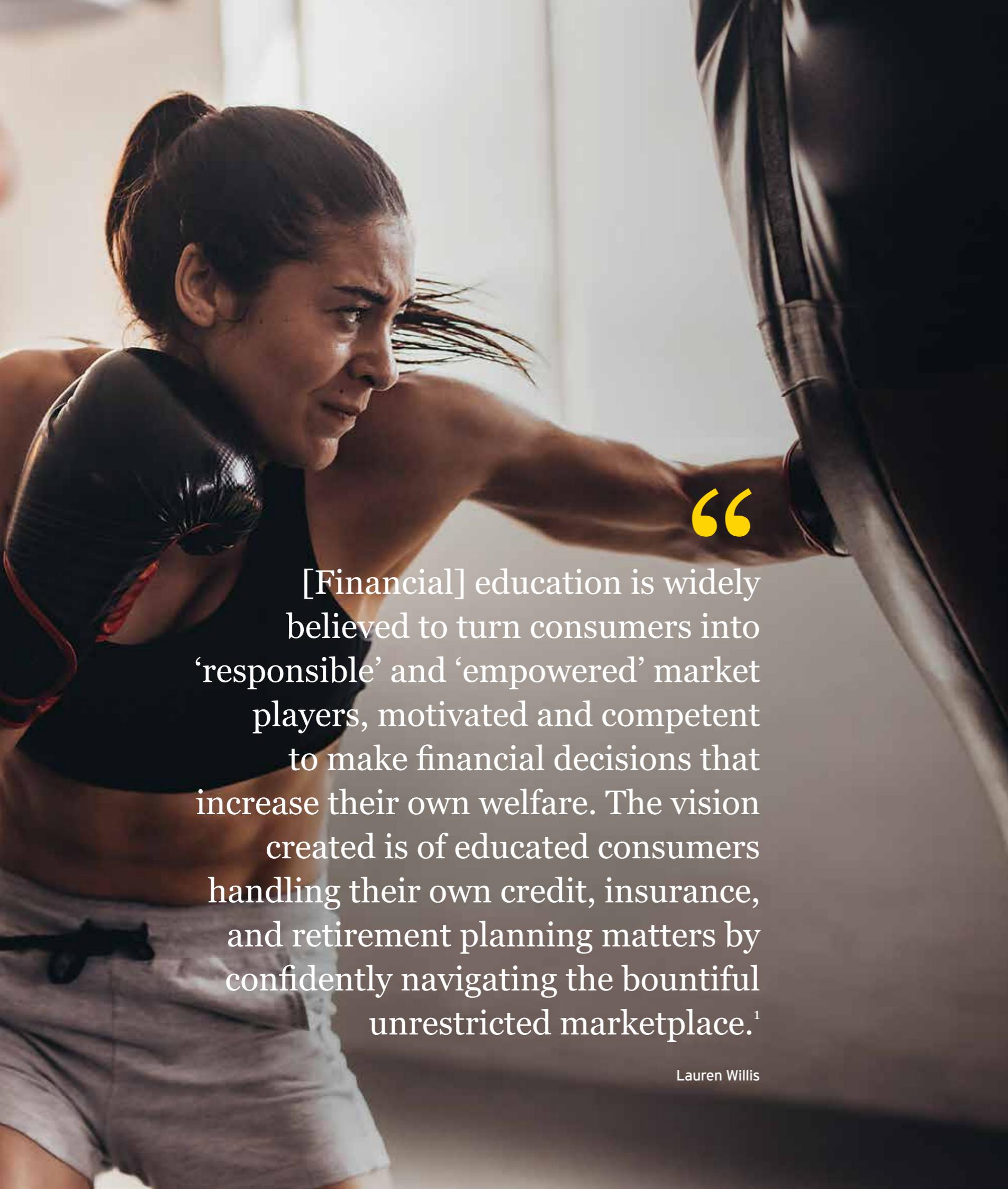
Build personal human connections

Develop relationships with participants and tailor advice to individual needs.

10

Take it to the people

Design with activation in mind.



Contents

What drives financial behaviour?

The hard truths about financial education	4
Why knowledge isn't enough	6
Using the model to make change	14

The 10 principles

Effective intervention design	30
01 Use rules-of-thumb	31
02 Make good behaviour easy	38
03 Intervene 'just-in-time'	44
04 Strengthen self-control	48
05 Build personal human connections	53
06 Make the invisible visible	62
07 Keep it real	67
08 Support practice with product	71
09 Build soft skills	76
10 Take it to the peoples	79
Conclusion	88

“ [Financial] education is widely believed to turn consumers into ‘responsible’ and ‘empowered’ market players, motivated and competent to make financial decisions that increase their own welfare. The vision created is of educated consumers handling their own credit, insurance, and retirement planning matters by confidently navigating the bountiful unrestricted marketplace.¹

Lauren Willis

Financial capability in Australia

“

Financial systems have grown in complexity and sophistication, often outpacing the capacity of individuals and families to make informed financial choices.²



Only **1 in 10 students** who sat the PISA 2015 financial literacy assessment could tackle the hardest financial literacy tasks measured.³



60%

of students **do not show an understanding of inflation.**⁵

“

The current economic climate is one in which individuals now shoulder greater personal financial responsibility in the face of increasingly complicated financial products.⁷

\$4,232.83

The **average** credit card holder's debt.⁸

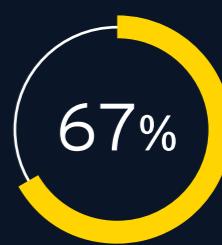
3
times

Average household debt has **increased over the past 25 years.**⁹

minus
26%



Individuals surveyed reported that **winning the lottery** was “the most practical strategy for accumulating several hundred thousand dollars” of wealth for their own retirement.⁶



University students think they **have a high understanding** of saving.⁵



Were able to **correctly answer a simple savings question.**⁵



What drives financial behaviour?

The hard truths about financial education

Financial education is often touted as the panacea for the financial challenges facing 21st century consumers; challenges such as an increasingly complex marketplace, higher levels of personal responsibility to plan for retirement, easy access to credit and increased capacity to over spend.

Unfortunately, while some outstanding financial education programs exist in isolated pockets, reviews of financial education programs demonstrate that the reach and impact of programs generally is far more limited than we would like.

Our research reveals several 'hard truths' about financial education programs and interventions that are often overlooked.

These truths include:

- ▶ While there are some outstanding programs, most interventions don't work
- ▶ People overestimate their financial knowledge
- ▶ Most people don't want our help (at least not enough to sit through a seminar!)
- ▶ No single intervention is the solution to all problems
- ▶ No single program can possibly hope to teach everything
- ▶ People don't 'arrive' at interventions equally - the playing-field is not balanced
- ▶ Financial decisions are influenced by many complex factors

But perhaps the most important 'truth' about interventions is that, contrary to the design principles that guide most traditional financial education programs, more knowledge doesn't always mean better behaviour.

This paper answers the central question: Why do some interventions work where others fail, and what sets these successful interventions apart?

“

We shouldn't fool ourselves into thinking that adding a household finance class to a high school curriculum will in itself create knowledgeable consumers who can understand today's wide array of financial products.¹¹

Richard Thaler

The 'theory' of traditional financial education programs:



Why knowledge isn't enough

The logic of a 'typical' financial education program

Knowing and doing are two very different processes. We all recognise that there is a difference between knowing that exercise is good for you and actually going to the gym; or knowing that healthy eating is key to weight loss and actually sticking to a diet.

Why should we think that financial behaviour is any different? Of course, we should not.

Yet many financial education programs are, either implicitly or explicitly, built on this overly simplistic logic model: financial education increases financial knowledge, increased financial knowledge leads to better financial behaviour, and better financial behaviour drives improved financial outcomes.¹²

While this model might intuitively feel correct, the causal links in this theoretical chain are largely untested,¹² and recent research casts doubts on the validity of the model at each step of the causal chain.

At the very first step of the model, several studies have demonstrated remarkably little impact of financial education programs on knowledge. For instance, analysis of students' scores on the Jump\$tart Financial Literacy surveys showed that students who have taken a high school course on money management and personal finances were no more financially literate than those who had not.¹³

This was also borne out by a 2014 meta-analysis of 90 financial education programs, which found that such programs account for only 0.44 per cent of the variance in financial knowledge.¹⁴

As one review of financial education programs put it, the evidence "that financial education actually increases financial literacy... is more limited and not as encouraging as one might expect."⁷



Researchers have also extensively investigated the second step of the model (that better financial knowledge predicts better financial behaviours).

While it is true that a lot of evidence has been found that shows a positive correlation between financial knowledge and better financial outcomes,¹⁵⁻¹⁸ when the magnitude of this correlation over multiple studies was tested, researchers found that the effect of financial literacy on financial behaviours was small: financial knowledge accounts for only 1.8 per cent of the variance in financial behaviours.¹⁴

Importantly also, most studies that suggest financial literacy improves financial outcomes demonstrate correlation, not causation. That is, typically people with high financial literacy also have good financial outcomes, but high financial literacy does not necessarily cause those outcomes.

Finally, when considering the model overall, the 2014 meta-analysis revealed that while interventions to improve financial literacy did improve financial behaviours, their effect was 'minuscule'. On average, they accounted for only 0.1 per cent of the variance in financial behaviour.

Based on this evidence, it might be tempting to assume that no programs work, or work well. We argue that is not the case at all. These data simply mean that on average most programs do little to increase knowledge, and the knowledge gained in those programs does little to drive better behaviour.

Meta-analyses and many reviews don't assess the quality of the programs or program delivery. The financial literacy space has been characterised by a proliferation of programs unified by both their positive intent and poor design. Many programs do not control the quality of their facilitator, for instance, using untrained volunteers; they consist of relatively dry information packs and resources; and they are designed by financial experts rather than behaviour change and education experts who know how to change the way people think, act and buy.

“

High financial literacy does not necessarily cause good financial outcomes.

So, can financial education programs ever work?

The short answer is yes.

Throughout the rest of this paper, we will be unpacking a number of interventions that have demonstrably worked to improve the financial knowledge, behaviour and outcomes of their participants. Our argument is not that financial education programs (or 'financial capability interventions' more broadly) cannot work. In fact, we are big believers and investors in financial education programs.

We believe that the above data demonstrate that financial education programs designed to increase only knowledge do not drive good outcomes, particularly when taking into account the costs (time, financial, opportunity) associated with delivering them.

This paper will go beyond a simple analysis of whether an intervention has worked or not, and begin to unpack the why.

Financial knowledge accounts for only 1.8 per cent of the variance in financial behaviours

A new model for financial decision making

Fields as diverse as behavioural economics, cognitive psychology and behavioural neuroscience now suggest that knowledge plays only a small part in driving the decisions and behaviour of an individual.

For instance, in one study, four traits – numeracy, propensity to plan for the use of money, confidence in searching for information and willingness to take prudent investment risks – were found to be more predictive of financial behaviour than knowledge.¹⁴

Experts suggest that the types of behaviours that can be modified by financial education (knowledge-driven behaviours) account for only 15 per cent of over-indebtedness cases.¹⁹ Other studies have found that personality traits like impatience,²⁰ values like materialism,²¹ and differences in cognitive ability²² all predict financial outcomes and behaviours, often far better than financial understanding can.

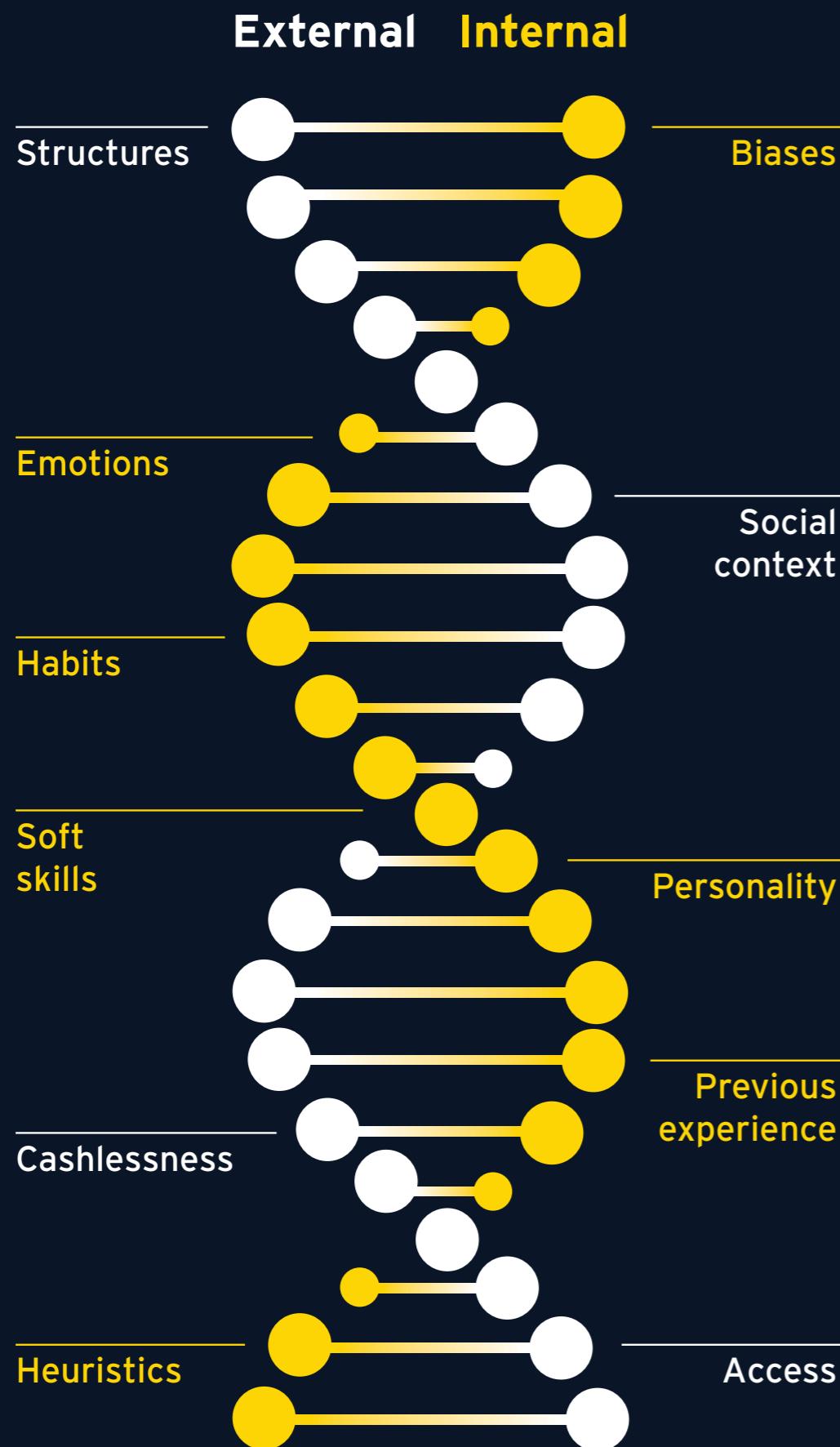
Although not part of the 2015 PISA study, the 2012 PISA financial literacy assessment (administered to approximately 29,000 students in 18 different countries) found that students' attitudes to learning, such as perseverance and openness to problem solving correlated with higher financial literacy.

For instance, on average, students who agreed with the statement 'I like to solve complex problems' scored 31 points higher on the financial literacy assessment than students who disagreed.²³

While it is important to note that just because something predicts an outcome it doesn't necessarily cause it, it seems probable that interventions designed to alter these factors have a higher likelihood of changing behaviours than those that target knowledge alone.



At the heart of traditional financial literacy programs is a model based on a bad assumption: that knowledge alone can drive positive financial outcomes.



The DNA of a financial decision

We propose a new model for financial decision making. This model, the *DNA of a Financial Decision*, will help to inform the design of more effective financial capability interventions.

In the same way that organisms have DNA that is the blueprint for that organism, this 'DNA' is a complex blueprint that drives a person's financial behaviour.

Just like the DNA of an organism is made up of many genes, each of which contributes a small part to the overall organism, financial decisions are influenced by several elements, each of which contributes a small part to each financial decision. These 'genes' can be both internal and external, and each represents an influence point for interventions to change behaviour.

When we conceptualise financial decision making in this way, it is apparent that knowledge-only interventions are attempting to influence only a tiny fraction of the factors that drive a financial decision.

There are some important nuances to this model.

Firstly, while the 'genes' listed here do not form a comprehensive list of all influences on decision making, they are the major ones identified as influences on financial decision making by the literature.

Indeed, our understanding of the factors that determine any decision is rapidly growing. For instance, it has now been shown that financial behaviour has a genetic component: a gene (the MAOA gene) has been identified that predicts the likelihood of reporting credit card debt.²⁴ Perhaps more counterintuitively, financial behaviour is also modified by the weather – a phenomenon we will discuss more below. In 2016, researchers published an in-depth review of our understanding of psychological and neuroscientific drivers of financial decisions.²⁵

Secondly, the degree to which each of these 'genes' contributes to behaviour will vary depending on both the individual and the type of decision being made. A decision about how much an individual will save for retirement might be primarily driven by structures, knowledge and individual biases, whereas a decision about whether to buy a chocolate bar when grocery shopping might be strongly driven by habits and emotions (and, interestingly, cashlessness, which we will also discuss in greater detail below).

Thirdly, the degree to which each of these 'genes' can be influenced or changed will differ greatly.

We believe that successful interventions recognise and manipulate multiple factors that influence financial decisions across an individual's lifetime. In general, the more 'genes' that an intervention targets, the larger its likelihood of success and the larger its effects.

Knowledge-only interventions are attempting to influence only a tiny fraction of the factors that drive a financial decision.



Using the model to make change

The DNA of a decision highlights both the internal and external factors that drive decision making, and finding ways to influence as many factors as possible is key to driving better outcomes.

Changing the landscape - external factors affecting decisions

Improving financial outcomes requires cross-sectoral collaboration, and no one party can realistically provide the entire solution. We all have a role to play in creating meaningful change. In Australia, such collaboration is well and truly underway with initiatives across government, academia, education, the community sector and the private sector (especially banks and other financial service providers) already a key part of the landscape.

We hope such collaboration will continue, as bridging the gap between good intentions and real impact requires efforts spanning access and inclusion, education and regulation. This means governments, community and not-for-profit organisations, education institutions and private sector organisations continuing to work together towards a common goal.

We recognise that banks have a unique part to play in this journey.

This unique role is created partly by banks' responsibility to society as a core provider of financial services; but it's also created because banks possess unique access to people that other groups do not have, which represents an exciting opportunity to affect positive change.

Thinking about the DNA of a decision, the more 'touchpoints' an organisation has with an individual, the more opportunity that organisation has to influence their behaviour for the better. Banks reach their customers at more points on their financial journey than any other; from opening their first bank account to making their retirement plans (and at almost every point-of-purchase where they use their bank card in between) banks are present at the crucial moment of financial decision making, in one way or another.

The depth of understanding gathered about people and their financial behaviours, coupled with this remarkable level of access to people leading up to, and at the point of, decision making means banks have the potential to have a more positive influence over the way an individual thinks about, and spends, their money than any other organisation.

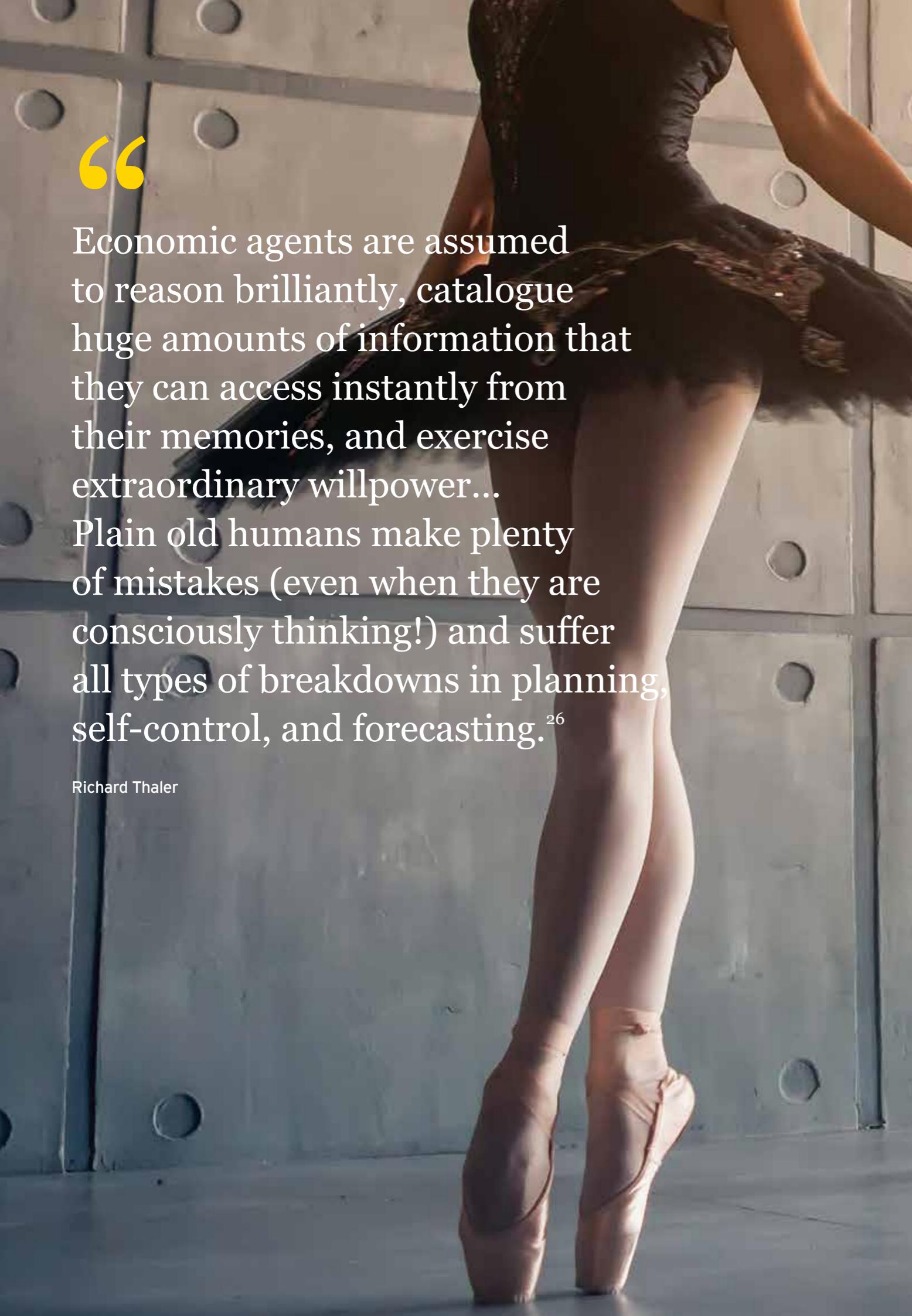
We hope that the research in this paper can be a blueprint for using that access to enhance the financial wellbeing of people and the community.

“

Economic agents are assumed to reason brilliantly, catalogue huge amounts of information that they can access instantly from their memories, and exercise extraordinary willpower...

Plain old humans make plenty of mistakes (even when they are consciously thinking!) and suffer all types of breakdowns in planning, self-control, and forecasting.²⁶

Richard Thaler



The brain beyond knowledge - internal factors affecting decisions

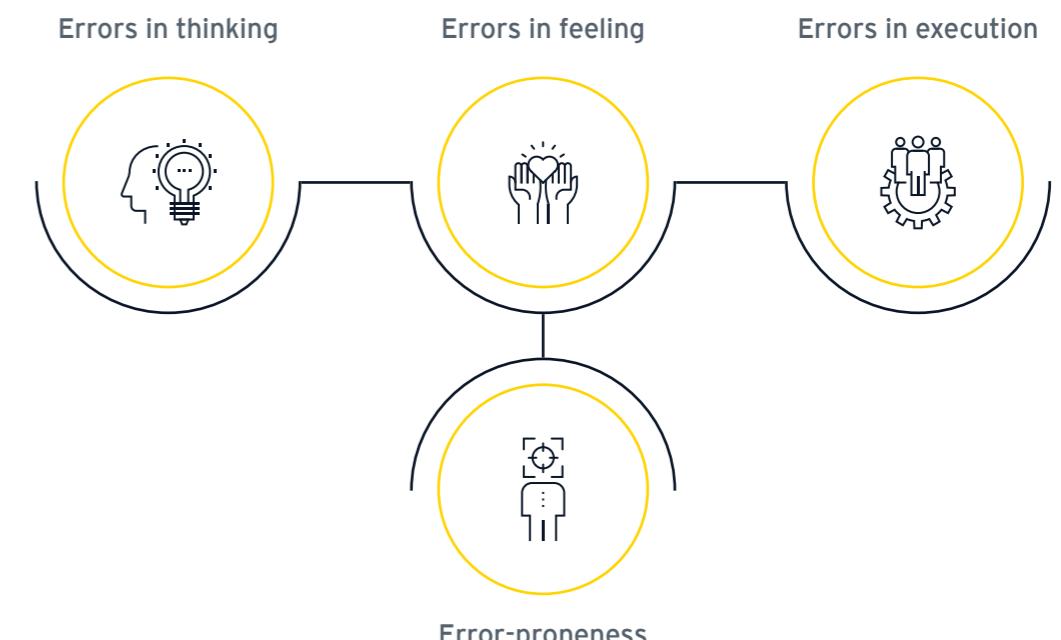
While the human brain is perhaps the most remarkably evolved machine in the known universe, it is far from perfect. And it is most definitely not engineered for making complex financial decisions in stressful environments with incomplete information.

As you read the ten principles of effective interventions later in this paper, you will notice that they are unified by pragmatism. They are chosen knowing that humans are not purely rational, and that we are generally bad at weighing up differences in short and long-term rewards and at navigating an intricate and frequently changing financial environment.

Failure to account for these limitations results in interventions that may change people's understanding of what they *should* do, but not what they *will* do.

This is so important that it's worth a brief consideration of some of the most significant psychological influencers of financial decision making and how the best interventions design for them. Below we briefly outline some of the most critically important internal influencers of financial decision making.

Sources of financial mistakes:



Errors in thinking - cognitive biases

Cognitive biases are predictable, universal mistakes in our thinking. They're mistakes that our brains are programmed to make. And because they're mistakes that are built into the programming of the brain they are incredibly difficult to correct. Here we discuss just a few of the cognitive biases that can shape financial decision making.

Present bias

We want it now

Present bias is the tendency to weigh benefits we can get 'right now' much higher than benefits in the future. This means that future pay-offs typically need to be large for people to be willing to sacrifice something they currently have.^{27,28}

One classic demonstration of present bias occurs when psychologists offer people a choice between two amounts of money at different times. If this decision is set in the future (receiving \$150 after 48 weeks, or \$160 after 52 weeks) many people choose to receive more money later. However, if this decision is moved to the present (receiving \$150 right now, or \$160 in a month) many of those same people reverse their choice. Even though the equation is basically the same (ie wait four weeks for an extra \$10) people choose differently when 'now' is involved.

Present bias also means that people often dramatically overestimate the self-control of their future self. For instance, people who know they are going to receive a lump sum in a six-month period (say, from a tax return) might believe that their future self will be disciplined enough to put that money into savings, but when they receive the money find that this is not the case. This failure has been described in a recent review as an 'empathy gap' between our current and future selves.²⁹

Interestingly, new research has suggested that making the future more salient can help to overcome present bias. In one study, participants who were shown digitally aged images of themselves showed less present bias, a greater willingness to delay payment to receive larger monetary rewards, and a willingness to contribute more to savings accounts.³⁰

Loss aversion

We value what we have

Loss aversion is the tendency to value something more when we have it in our possession than when we don't. In fact, we weigh losses about twice as much as gains. This was demonstrated in a study which found that students who were given a free mug (worth \$6) were unwilling to part with it for less than \$5.25, almost twice as much as a second group of students were willing to pay for it (\$2.25-\$2.75).³¹

That we find losses more painful than gains accounts, in part, for why building a savings habit can be so difficult. People feel the loss of disposable income more than the gain of money in a savings account.

People feel the loss of disposable income more than the gain of money in a savings account.

\$40m

The amount a European railroad added to their annual sales as a result of 'default bias'.

Default bias

When in doubt, we choose the default

Default bias is the tendency to choose the default option, that is, the option that occurs when the chooser does nothing. People gravitate towards the default option for multiple reasons. Firstly, the default is easy. Cognitive overload, distraction and laziness all conspire to make choosing the path of least resistance desirable. Secondly, defaults often come with the implicit or explicit suggestion that they represent the recommended or 'correct' choice. For instance, if the default rate for superannuation is 9.5 per cent of your income, it might be assumed that this is the 'right' individual contribution.

You can often profoundly change behaviour by changing the default choice. For instance, when a large national railroad in Europe changed its online booking process so that seat reservations (which cost one to two euros) were included with the ticket purchase unless a customer opted-out by checking a box on the online booking form, seat reservations jumped from 9 per cent to 47 per cent, and earned the railroad an additional \$40 million annually.³² This is true even of choices that we assume to be emotionally charged and matters of strong personal preference, for example, organ donor rates are on average 60 percentage points higher in countries where you must opt-out of being an organ donor than in countries where you must opt-in.³³

Status quo bias

We overvalue our current state

Status quo bias is the tendency for individuals to prefer the current state of affairs, and to continue with their current or previous decisions. Status quo bias has a profound effect on financial outcomes when people stick with sub-optimal products and services rather than seeking out better options. Failure to change mortgages, phone plans, credit cards, and investment and savings options all have real costs associated with them, which can add up over the course of a lifetime.

There is evidence that status quo bias is a major driver of people's financial behaviour – for instance, one study of a retirement plan found that the median number of changes in asset allocation over a person's lifetime was zero. In other words, more than half of the participants retired with the same asset allocation they chose on the day they signed up for the plan.³⁴



Errors in feeling - affective biases

Cognitive biases can negatively impact our financial decision making because of errors in thinking, but we can also make poor financial choices as a result of our emotions - errors in our feeling. These errors in feeling, or affective biases, often occur at a subconscious level making them harder to target.

One of the ways that emotions can lead us astray is in our difficulty distinguishing between emotions elicited by the choice at hand - integral emotions - and emotions that have carried over from other situations and are unrelated to the decision - incidental emotions. Carryover of incidental emotions often occurs without awareness, and the effects of these emotions on financial decisions can be profound.

For instance, in an analysis of stock markets from 26 countries, researchers have demonstrated that the stock market performs markedly better on sunny days, which are known to improve mood, than on cloudy ones.³⁵ Conversely, stock market returns decline the day after a country's team has been eliminated from the soccer world cup.^{36, 37} At an individual level, it has been found that incidental emotions like disgust and sadness differentially influence the prices that we are willing to buy or sell various items at, with sadness in particular causing us to undervalue things we already have and overvalue things we don't (an effect opposite to loss aversion discussed above).³⁸

“

Knowledge and reasoning alone are usually not sufficient for making advantageous decisions... the role of emotion in decision-making has been underestimated.³⁹

Antoine Bechara

Integral emotions that is, emotions about the decisions at hand, can also create bias and affect our decision making. For example, our emotional calculation of risk - how risky a decision feels - can be drastically different both from reality and our cognitive understanding of risk. This is clearly demonstrated in the case of phobias - someone who is afraid of heights may be too afraid to approach a window when standing on the top floor of a high-rise building, even though they cognitively understand that the likelihood they will fall is effectively zero.

In this case, not only are their emotional and cognitive assessments of risk different, their emotional reaction is typically the stronger of the two.

A number of factors may influence our emotional evaluation of risk, and lead to it being over or underestimated; factors such as how vividly consequences can be imagined, personal experience, and how easy it is to recall various consequences.

This incorrect estimation of risk can have large financial consequences. For instance, winner of the Nobel prize in Economics, Harry Markowitz (who pioneered the notion of diversification in investing) admitted that he was unable to make investment decisions based on what he knew to be best practice because of how vividly he could imagine the pain of making the wrong decision: "I visualized my grief if the stock market went way up and I wasn't in it - or if it went way down and I was completely in it."⁴⁰

This conflict between emotions and rationality can now be observed using MRI (magnetic resonance imaging) scans of the brain. In one experiment, individuals were given an unfair offer (they were offered less money than other participants) and forced to make either a rational choice (accept free money) or an emotional one (reject an unfair offer). This choice activated both an area of the brain associated with negative emotions and one associated with cognition.

When activation was greater in the emotional region, unfair offers were rejected; when activation was greater in the cognitive region, the offers were accepted.⁴¹ Simply put, scientists could visualise the competition between emotion and rationality in the brain and observe emotions overwhelm rationality to drive irrational financial behaviour.

The role of emotions in decision making is not exclusively negative. In fact, emotions are critical for good decision making. Studies have repeatedly demonstrated that the 'gut instinct' individuals develop when learning often precedes conscious, explicit knowledge of the correct decision.³⁹

Unsurprisingly, scientists have found that people with damage to emotional regions of their brain in some cases have an impaired financial decision making ability, and an inability to learn from their mistakes.^{39, 42} The feeling that you get from considering, making or repeating bad decisions is an important part of the learning and decision-making process.

Scientists could visualise the competition between emotion and rationality in the brain and observe emotions overwhelm rationality to drive irrational financial behaviour.

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The budget is tight, the price is too high, the item is not desperately needed, and so the shopper should not buy it. Ranged against these sensible concerns is a murky alliance of wants, impulses and emotions.⁴³

Roy Baumeister

Individuals who report self-control problems:

↓20%

Accumulate on average 20 per cent less wealth than those who do not.



Are 70 per cent more likely to be one month behind on at least one debt.

Errors in execution – failures of self-control

Even when we don't suffer from cognitive or affective biases, when we know and want the best option we can still fail to make good financial decisions because of errors in execution. That is failure to properly implement our intentions.

One of the largest predictors of a person's financial outcomes is self-control, that is, the ability to control one's emotions, impulses and behaviours in the face of temptation. Failures of self-control have been characterised in a number of ways, though perhaps most simply put they occur when people favour behaviours that feel good immediately or that are easy even when they carry long-term costs. Many studies have linked low self-control with poor financial outcomes.

For instance, individuals who report self-control problems accumulate on average 20 per cent less wealth than those who do not.⁴⁴ Individuals who report self-control problems are also 70 per cent more likely to be one month behind on at least one debt, and low self-control is a better predictor of overindebtedness than financial literacy.⁴⁵

Low self-control individuals are more likely to be using products that give them quick-access to credit such as payday loans, in-store credit cards and mail order catalogues.⁴⁵

Studies have also demonstrated a causal relationship between self-control and spending – depleting a participant's self-control led to stronger urges to buy, willingness to pay more and spending more money.⁴⁶

Related to the issue of self-control problems is the rise of 'compulsive buying' – a dysfunctional consumer behaviour that occurs when consumers engage in uncontrolled and excessive buying behaviour that results in psychological distress and other negative consequences, including serious debt.⁴⁷ At its worst, compulsive buying is a clinical disorder, with sufferers experiencing irresistible buying urges and loss of control over buying behaviours.⁴⁸

Many studies have linked low self-control with poor financial outcomes.

Becoming more error-prone - the effects of stress

Everyone is susceptible to mistakes in *thinking, feeling* and *execution*. But we now know that stressed individuals - including individuals experiencing financial stress - are far more error-prone than their non-stressed counterparts.

This effect is so large, that researchers have characterised poverty (along with other forms of stress) as a 'tax' on people's minds, which makes them more likely to make bad decisions.⁴⁹ In one experiment, researchers got rich and poor participants to consider a large financial decision and then take an IQ test. Although the decision was wholly hypothetical, the IQs of poor individuals dropped on average 14 points - a drop large enough to take someone from an 'average' IQ score to 'borderline deficient'. This deficit is larger than that incurred when someone stays awake for 24 hours. In contrast, the scores of rich people (who would presumably be less affected by the negative consequences of their financial decision) did not change.⁴⁹

Stress changes behaviour in a number of ways. Not only does it deplete cognitive performance (as described above), it also causes individuals to make decisions without considering all the alternatives;⁵⁰ makes individuals more likely to make disadvantageous, risky decisions;⁵¹ interferes with emotional processing of risk;⁵² depletes self-control;⁵³ and makes individuals more likely to rely on automatic, inflexible behavioural systems and thought processes rather than flexible goal-directed ones.^{54, 55}

Scientists have also found evidence that stress changes the brain. Acute stress changes the metabolism of multiple brain regions associated with both cognitive and emotional processing and decision making.⁵² Even more worrying, chronic stress has been shown to drive profound and long-term changes in the brain, particularly neuronal atrophy and a loss of neuronal density in a number of regions associated with decision making, memory and cognition.⁵⁴

Put simply, stress changes our brain and makes us more prone to mistakes of thinking, feeling and execution. This is likely to have large effects on financial decision making. Firstly, many financial decisions are inherently stressful for most individuals, such as investing in the stock market; contemplating your death or illness when taking out insurance; and taking out a large home loan, to name just a few.

Secondly, given that financial scarcity can be a huge stressor, people can become trapped in cycles of poverty as their stress leads them to make bad decisions, which in turn increases their stress. As Sendhil Mullainathan, a researcher in the psychology of scarcity, argues, people aren't poor because they make bad decisions, they make bad decisions because they are poor.⁴⁹

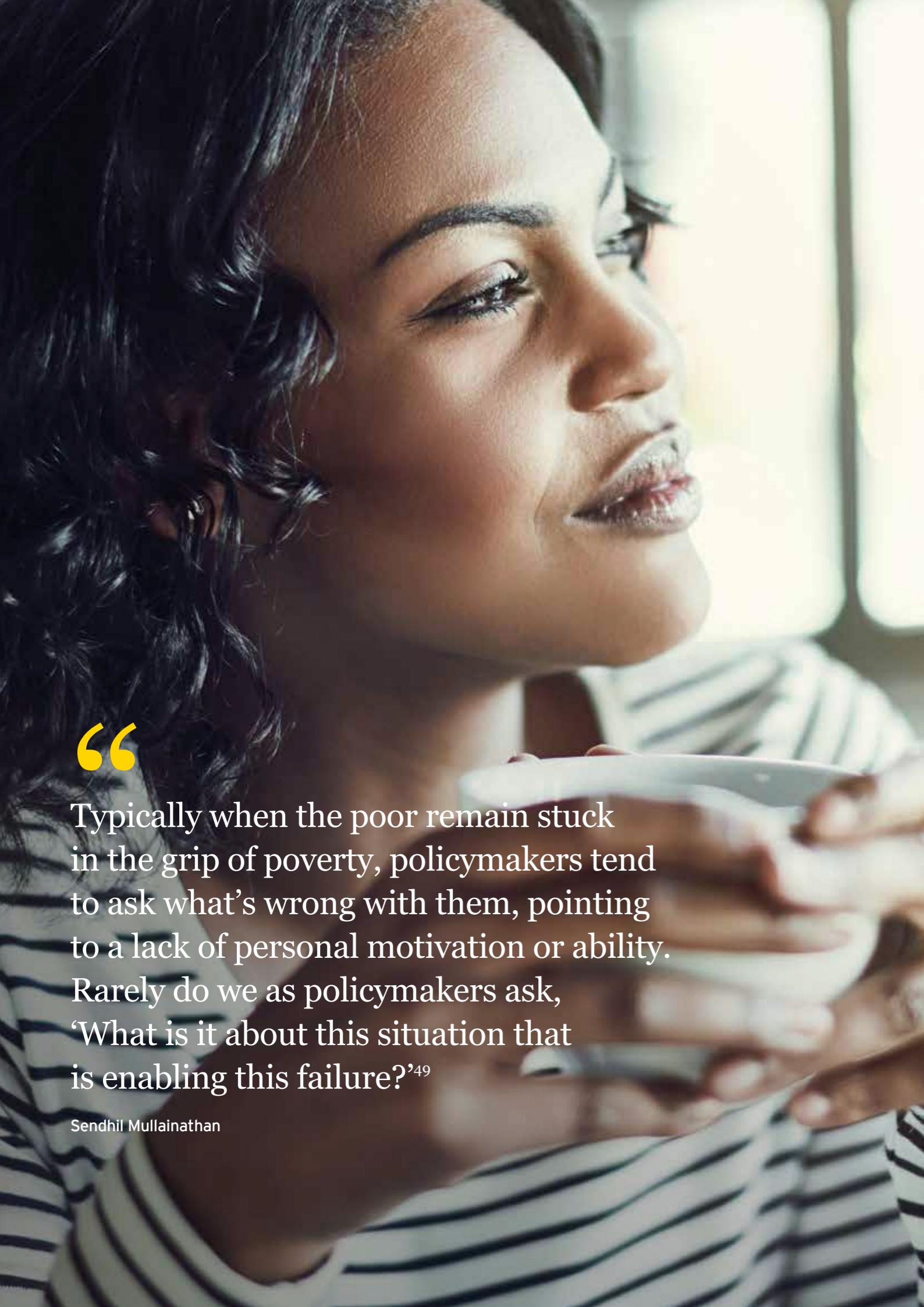
Stress changes our brain and makes us more prone to mistakes of thinking, feeling and execution.

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People aren't poor because they make bad decisions, they make bad decisions because they are poor.⁴⁹

Sendhil Mullainathan





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Typically when the poor remain stuck in the grip of poverty, policymakers tend to ask what's wrong with them, pointing to a lack of personal motivation or ability. Rarely do we as policymakers ask, 'What is it about this situation that is enabling this failure?'⁴⁹

Sendhil Mullainathan

Building with our limitations in mind

An example of the way that we can use our understanding of people's cognitive and emotional limitations to drive better financial behaviours comes from research into the most effective strategies for individuals to get out of debt. Rationally, the order in which people pay off their debts follows a simple formula - pay off the debts with the highest interest rates first to minimise interest costs. But indebted individuals typically don't do this - instead, they pay off their smallest debts first, regardless of interest rate, even when interests rates differ by a large amount (for example, 12 per cent versus 18 per cent).^{56, 57}

While the debtors are not minimising their costs, they are increasing their feeling of achievement - paying \$200 off a \$250 debt feels like a bigger achievement than paying \$200 off a \$2,500 debt. Researchers have called this difference in feeling 'the illusion of goal progress'.⁵⁸

But what is even more interesting is that individuals who create this 'illusion' actually do better at paying off their debts than those who behave in a more 'rational' way.

Researchers analysed the financial behaviour of nearly 6,000 HelloWallet customers over a three-year period to compare the effectiveness of different credit card debt repayment strategies. They found that individuals who concentrated their repayment strategy (focusing on paying off one debt first, rather than paying off multiple debts simultaneously) made greater debt repayments than those who did not.⁵⁹ In follow-up lab experiments where individuals worked to pay off their debts, researchers found that individuals who were assigned to a concentrated debt repayment strategy repaid their debt 15 per cent faster than those who repaid multiple debts at once.⁵⁸ In other words, the feeling of progress (however illusory) motivated people to work harder to reduce their debts.

This effect is enhanced when people pay off their smallest debts first, because doing so creates the greatest sense of progress. Another implication of this research is that consolidating debt into one large account might actually be demotivating.

Understanding the contribution that emotions and feelings make to behaviour allows for the design of the most effective (although not always the most rational) way to achieve financial goals. As one researcher put it: "Pay the smallest debt first" is a straightforward strategy that can be easily communicated and easily applied."⁵⁹

Understanding the contribution that emotions and feelings make to behaviour allows for the design of the most effective way to achieve financial goals.

Case study

The SMarT Program

While people are inherently error-prone - leading to irrational and sub-optimal financial choices - our irrational behavioural tendencies can also be powerfully exploited to promote good decisions. This is perhaps best illustrated by the SMarT (Save More Tomorrow) savings program designed by Richard Thaler, widely considered to be the father of behavioural economics, and Shlomo Benartzi.³⁴ The SMarT program is simple in its design: employees that received scheduled pay increases annually commit in advance to allocating a portion of their raise towards retirement savings. The plan capitalises on the psychological and cognitive tendencies described above.

- ▶ **Present bias** - because people are deciding how to allocate money far in the future, the choice to commit money to savings is more attractive than it would be when choosing how to spend in the present.
- ▶ **Status quo bias** - once people are enrolled in the program, they're unlikely to drop out, so energy and resources were spent on getting people to sign up in the first place.
- ▶ **Loss aversion** - once people get used to a level of income, asking them to save part of it is seen as a loss. Taking the money out of a pay increase is less likely to trigger loss aversion.
- ▶ **Limited self-control** - increased contributions occurred automatically, so there was no need for participants to expend their willpower or self-control to engage in positive financial behaviours.

The SMarT program was remarkably successful at changing and maintaining individuals' savings behaviours. When implemented in a mid-size manufacturing company, 78 per cent of employees who were offered the plan signed up. Of those employees, 80 per cent remained in the plan for the four years of the trial, that is, through four pay rises.

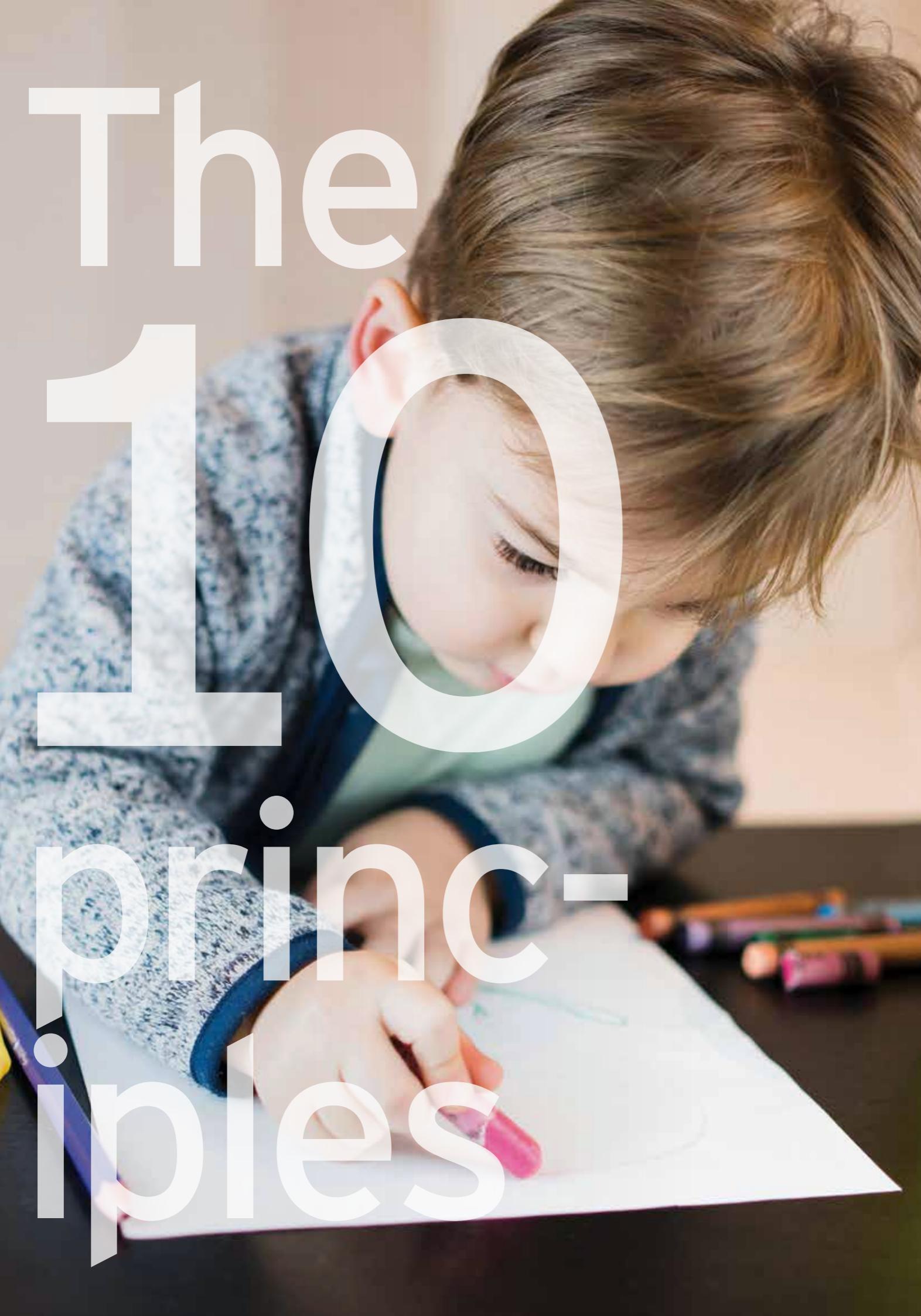
Participants in the SMarT program committed to quite an aggressive increase in their savings rates - they agreed to increase their savings rates by 3 per cent each year, even though their pay rises were only slightly higher than this (3.25 - 3.5 per cent).

After 40 months, the average savings rate of participants in the program increased from 3.5 per cent to 13.6 per cent - that is, it almost quadrupled savings rates. The SMarT program takes many of the behavioural tendencies that typically cause individuals to postpone saving indefinitely and flips them to drive good behaviours.

The success of the SMarT program suggests that recognising inherent cognitive biases and behavioural tendencies, and designing financial interventions with them in mind can drive strong positive outcomes. And this is particularly the case when those biases themselves are used to drive good behaviours.



The 10 princ- iples



Effective intervention design

The 10 principles are:

01	Use rules-of-thumb	How do we design financial interventions that have a genuine and significant impact on the behaviour of participants?
02	Make good behaviours easy	After conducting a thorough review of financial interventions, we have identified ten evidence-based principles that we believe should guide the design and implementation of future programs.
03	Intervene just in time	While it may not be possible to implement every strategy in every program, the best interventions will be those that 'tick the most boxes'.
04	Strengthen self-control	For this reason, you may notice as you read the principles that some of the case studies we use to illustrate a principle could just as easily be used to illustrate another principle. This is because the best case studies and most effective programs tend to embody multiple principles.
05	Build personal human connections	
06	Make the invisible visible	
07	Keep it real	
08	Support practice with product	
09	Build soft skills	
10	Take it to the people	

Use rules-of-thumb

Focus on teaching people the most simple and practical behaviours possible.

When designing financial education programs there is often tension between making content comprehensive (particularly in increasingly complex financial environments) and making it easy to understand and implement. In 2012, researchers ran a randomised control study to determine which approach was the most effective at changing behaviour.⁶⁰

They delivered two financial literacy programs to small business owners in the Dominican Republic. The first program was a traditional, principles-based small business training program. Participants were given lessons on a number of things including double entry accounting, inventory management, daily record keeping, aggregation of records into weekly and monthly reports, profit calculating and investment planning. The second program was far simpler and only gave participants financial rules-of-thumb that were easy to implement.

For example, while the traditional training program taught participants to separate their business and personal accounts by instructing them how to calculate business profits, the rule-of-thumb training simply taught participants to keep their money in two separate drawers (or purses) and to only transfer money from one drawer to the other with an explicit 'IOU' note between the business and the household.

The study overwhelmingly found that the rule-of-thumb training improved participants' financial behaviour in a number of domains. Participants in the program were significantly more likely to keep accounting records, to separate their business and personal accounts, and to calculate their monthly revenues. On the other hand, the authors found that participants in the traditional program did not significantly change their behaviour in these areas. Moreover, only the participants in the rule-of-thumb program made less errors overall in their financial reporting, with the standard accounting training actually increasing errors in businesses that were in the lowest quartile of baseline business practices, while reducing errors for high-skilled individuals.

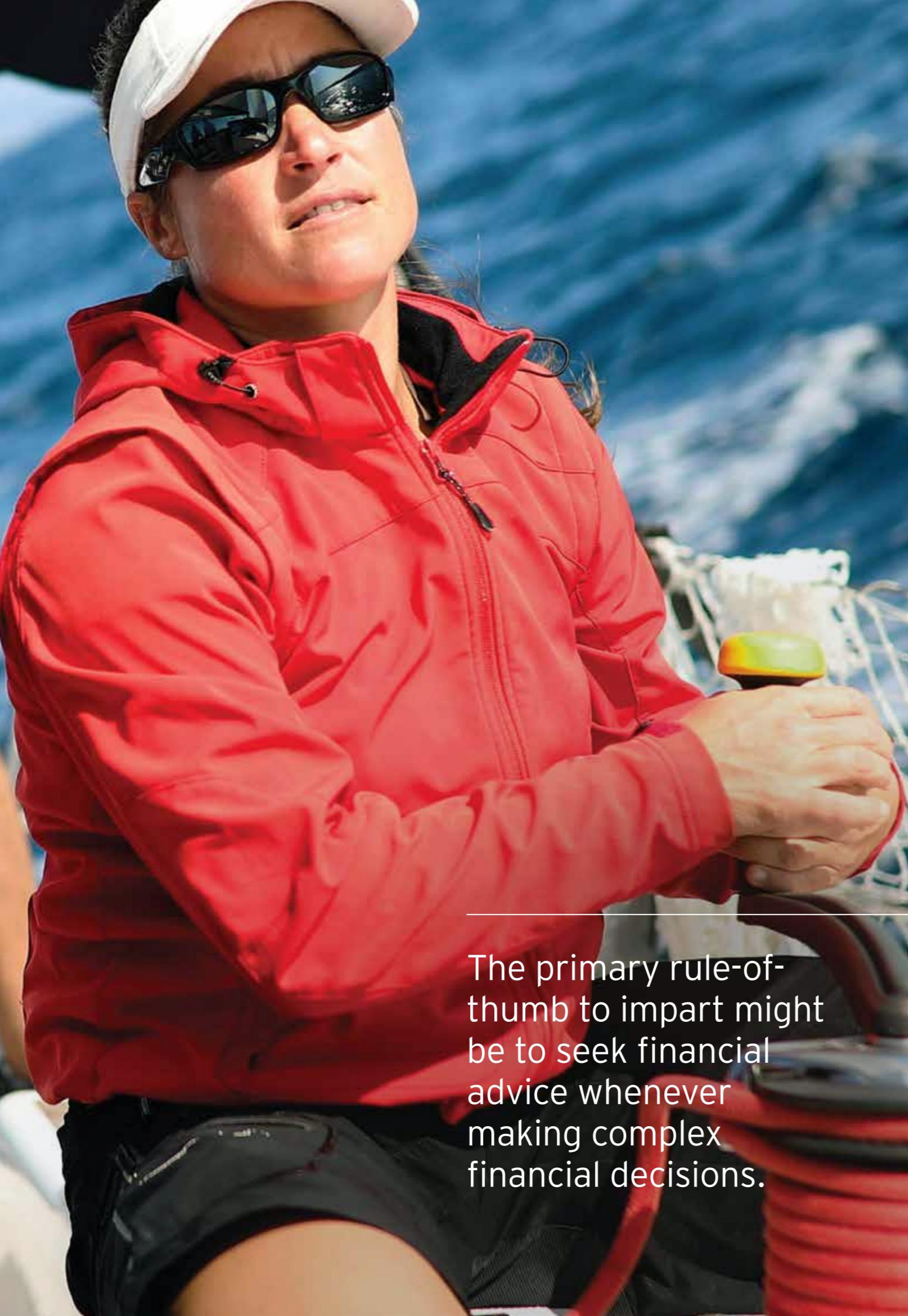
Lower-skilled or disinterested clients in the accounting training also reported substantial drops in their revenues and sales. This suggests that traditional, comprehensive-but-complex financial education programs can actually lead to worse outcomes for vulnerable individuals. On the other hand, the authors of the study found that rule-of-thumb programs had the largest effect on the least sophisticated participants.

This study makes a clear point – if you want to change behaviour, simplicity is key.

Interestingly, the study is not the only one to demonstrate that traditional financial literacy programs can drive worse outcomes for their participants. One study found that individuals who had taken a financial course were less likely to pay off their credit card in full every month than those who had not.⁶¹ Another found that low-income participants who were assigned to a 12-month mandatory financial literacy program held more debt and had lower net worth than those who did not participate.⁶² An analysis of investment fraud victims found that they scored higher on financial literacy tests than non-victims.⁶³ While little has been done to analyse the cause of this effect, it may be that providing complex information drives confusion and overconfidence in participants, which in turn worsens their financial capability.



If you want to change behaviour, simplicity is key.



The primary rule-of-thumb to impart might be to seek financial advice whenever making complex financial decisions.

The more complex the environment, the more important the rules-of-thumb

Behavioural economists have found that when facing complex decisions, individuals resort to heuristics or mental shortcuts to make the decision simpler. For instance, when choosing between products that differ on a large number of features, people tend to make decisions based on just one or two attributes of the product rather than carefully weighing each of the options.⁶⁴ So when choosing between credit cards, for example, individuals might look only at the respective interest rates and ignore any other features of the cards. One common way that we simplify our decisions is through the use of financial rules-of-thumb, some which help make good decisions (ensure you have at least a 20 per cent deposit when buying a house), and some which do not (spend one month's salary on an engagement ring).

The more people use and rely on rules-of-thumb, the more important it is for them to use the right rules. Designing financial capability programs that simplify complex decisions and behaviours down to rules-of-thumb gives people tools that they will actually use.

Balancing simplicity with accuracy

While it may be tempting to condense all financial capability training into easy to follow rules-of-thumb, the reality is that there are some financial situations that cannot be reduced to simple rules or that have different rules for different individuals, a reality that has been discussed at length by some practitioners.¹

For instance, telling individuals never to buy any financial product they do not fully understand "would mean some consumers would not buy insurance, invest, or borrow at all,"¹ and a simple rule-of-thumb might not be sufficient to teach consumers how to invest their money wisely. For this reason, financial interventions need to be designed with the goal of balancing simplicity with accuracy, and the primary rule-of-thumb to impart to individuals might be to seek financial advice whenever making complex financial decisions rather than attempting to navigate the financial world alone.

01

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04

05

06

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08

09

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Case study

You Need a Budget: Rules-of thumb for budgeting

You Need a Budget (YNAB) is a popular budgeting tool that is centred around four simple and easy to implement rules:

1

Give every
dollar a job

2

Embrace your
true expenses

3

Roll with
the punches

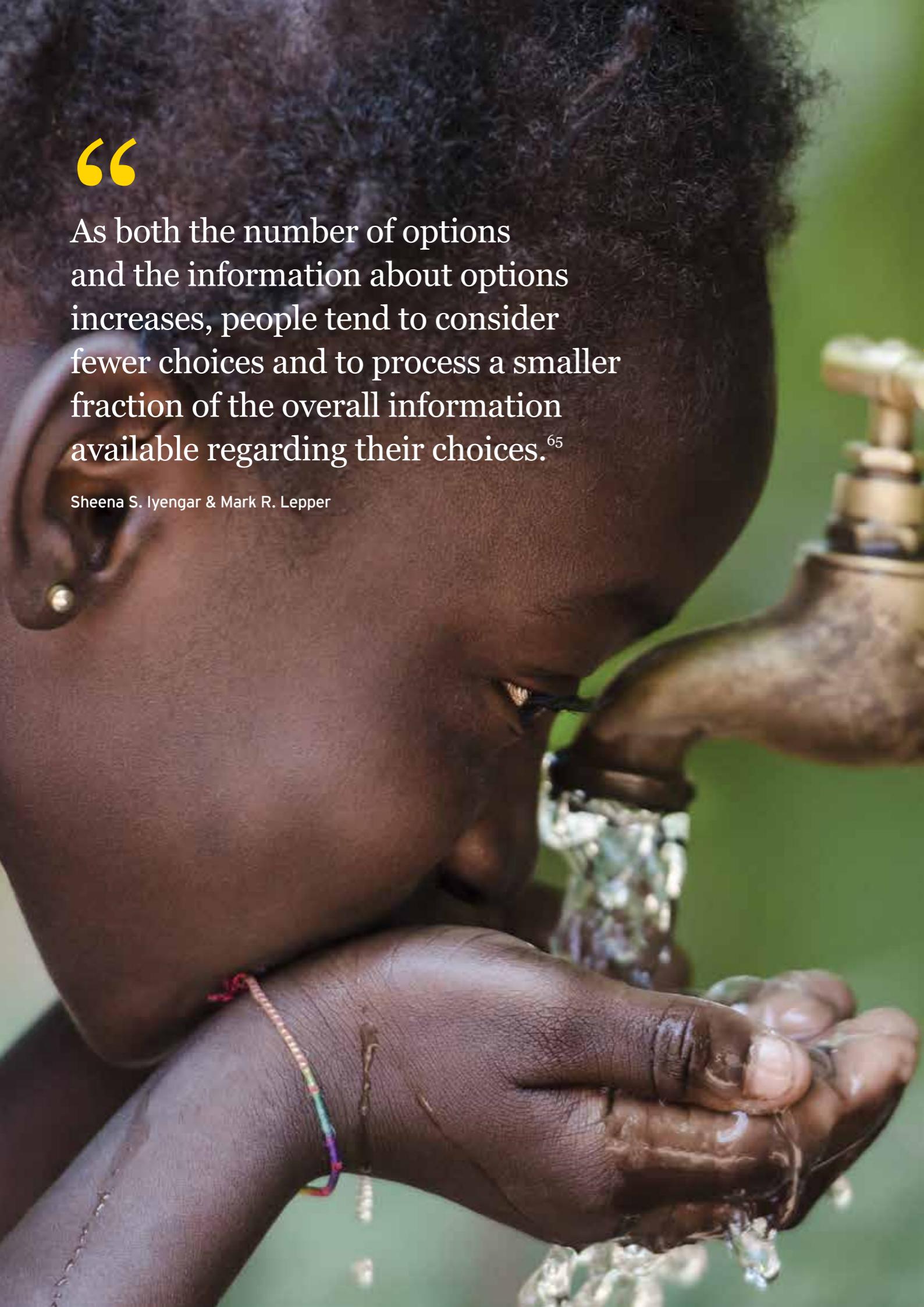
4

Age your
money

These rules comprise YNAB's budgeting methodology, though like many budgeting tools, YNAB also allows users to sync the app with their bank accounts, track their spending, set savings goals, and automatically transfer money between their accounts.

The four rules of YNAB replace traditional training on how to create and balance a budget (a process which is automated by the app), thereby lowering the barrier for people to start financial planning. YNAB complements these four rules by giving individuals real-time feedback about their spending via the app, as well as online classes that users can access as and when needed. This rule-of-thumb approach to budgeting works - on average, users save \$200 the first month and accumulate more than \$3,300 by the ninth month.

The four rules of YNAB replace traditional training on how to create and balance a budget.



“

As both the number of options and the information about options increases, people tend to consider fewer choices and to process a smaller fraction of the overall information available regarding their choices.⁶⁵

Sheena S. Iyengar & Mark R. Lepper

Make good behaviour easy

Make the right decision the easy one.

The easier it is for people to make good financial decisions, the more likely they are to do so. On the flip side, complexity and too much choice promotes poor decision making and behavioural inertia, that is, the choice to do nothing at all. In an increasingly complex financial environment, consumers are less likely to start saving, investing or planning for retirement.

Our tendency to choose the path of least resistance when it comes to financial decisions is so ingrained that, in the face of even small barriers, we will knowingly make bad decisions rather than change our behaviour. A survey of participants in US defined contribution retirement plans (401(k)) found that two thirds of employees believe they are saving too little; of these employees, one-third say that they intend to raise their savings rate in the next two months. But almost none of them do so.⁶⁶

In the UK, retirement plans in which all contributions are paid by the employer but which require employees to actively sign up for them have participation rates of only 51 per cent⁶⁷ – in other words, merely asking people to opt-in to receive free money is too much of a barrier for half of the workforce.

Making the right decision easy can profoundly change people's financial behaviour. In 2009, a group of researchers attempted to increase participation in employee retirement plans by simplifying the plan selection process. They made each step simpler and more concrete, provided clear information (such as minimum and maximum savings amounts), and even highlighted how little time each step would take. After this intervention the number of employees who signed up for a retirement plan in the first 30 days of their employment tripled.⁶⁸

Making it even simpler has even larger effects. Another study increased participation rates from 9 to 34 per cent by making it possible for employees to sign up to a retirement plan by simply checking a 'yes' box during their orientation.⁶⁷ Conversely, increasing choice in retirement plans decreases enrolment.⁶⁹

Finally, the easiest decision is no decision at all. So one of the most effective ways to promote good financial behaviour is to make the right choice the default. For instance, in one company, switching from an opt-in to opt-out retirement plan changed participation in that plan from 20 to 90 per cent, with 76 per cent of plan participants choosing the default plan options provided by their company.⁷⁰

In Australia, it is mandatory for employers to pay the superannuation guarantee to eligible employees. While most employees have a choice of fund, the majority (an estimated two-thirds) stay in the default fund offered by their employer.⁷⁰

The flipside

- make the wrong decision hard

It is now easier to spend money than ever before. Access to easy credit means that we can spend what we don't have. Online shopping means that we can spend money without leaving the house (or with apps that remember our credit card details, without even reaching for our wallet). Services like Apple Pay, PayPass and payWave reduce purchasing to the tap of a card or a phone, which psychologists argue spare us from feeling the pain of parting with cash. In Australia, 86 per cent of consumers are now using contactless payments when shopping.

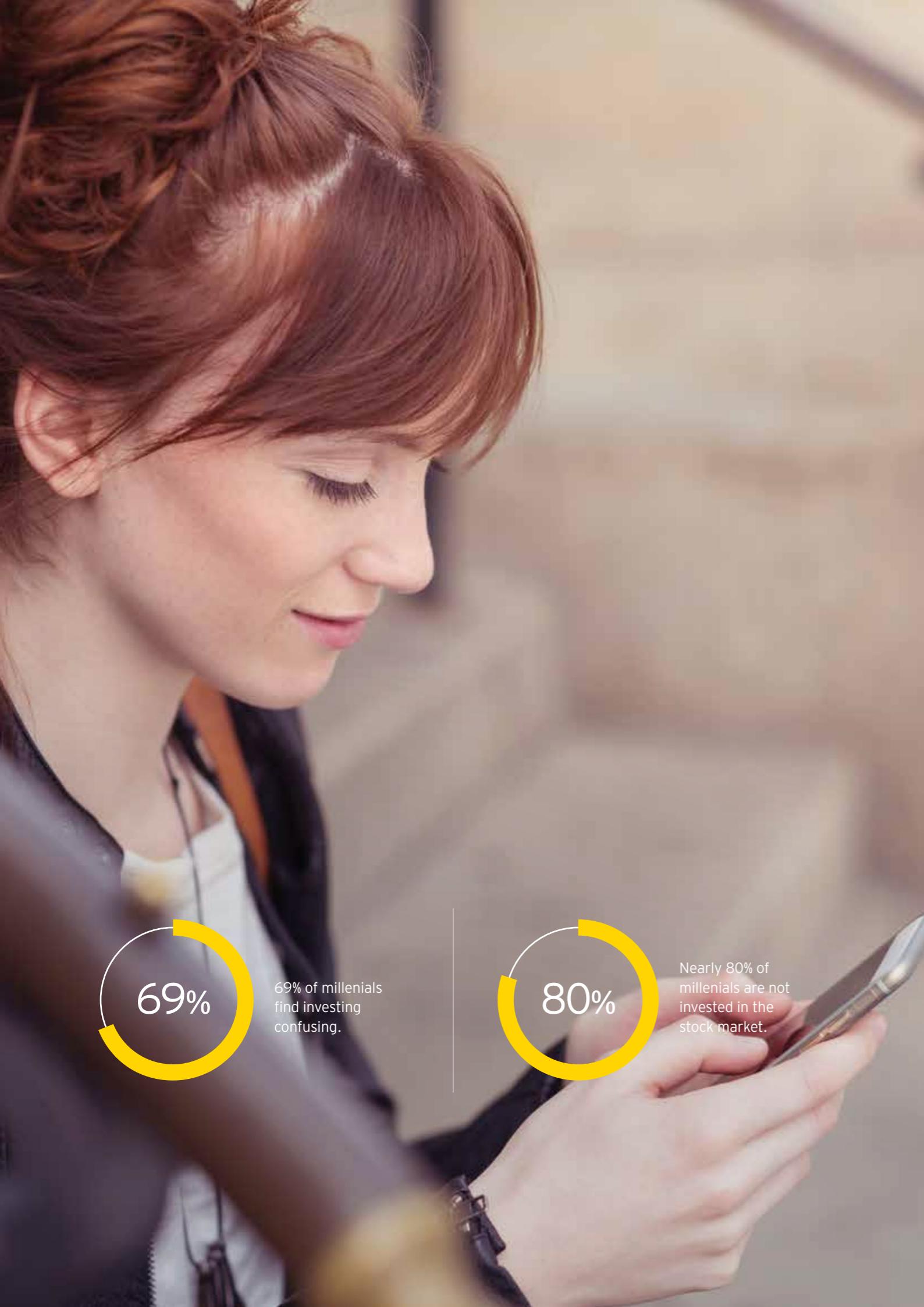
Moreover, we are exposed to this phenomenon earlier and earlier. In-app purchases make it so easy to spend money that a child with a tablet can spend with the push of a button - sometimes without even realising they are doing so. In the UK, 28 per cent of parents report that their children had made in-app purchases without their knowledge. And this is an even bigger problem with very young children - 36 per cent of parents have paid for content bought accidentally by children under four years of age.⁷¹

There is a cost to this convenience. The principle of simplicity suggests that the easier it is to spend money, the more people will do it. One way to change people's financial behaviour could be to develop products that make it harder for people to impulse spend. There is evidence that people are choosing this option already. A 2015 survey by Chime has found that seven out of 10 millennials would prefer to use a debit card rather than a credit card - presumably to stop themselves from accidentally overspending.⁷² A common piece of advice for people who have problems with compulsive shopping is for them to freeze their credit cards, creating a physical obstacle to using the cards.

HSBC is taking advantage of its access to data on their customers' spending habits to create a new banking app called Nudge, designed to change long-term spending habits. The app, which HSBC began trialling in January 2016, sends users personalised notifications about their day-to-day spending, including how their spending compares to other people's in the same demographic. For instance, the app might notify a user that they spend much more on eating out than most people in their income bracket and suggest that they eat in more, or it could let users know that if they spend a certain amount on coffee then they will not reach their savings goal. The app makes it harder for individuals to ignore the consequences of their spending behaviour, including by sending messages that trigger loss aversion.



Merely asking people to opt-in to receive free money is too much of a barrier for half of the workforce.



Case study

Raiz: Making investing simple

Choosing how to invest can be overwhelming and confusing, especially for young people. A recent survey conducted by Harris Poll, commissioned by the investment app Stash, found that 69 per cent of millennials find investing confusing, with 40 per cent saying that they would rather help an elderly person set up a social media profile than begin investing.⁷³ It is perhaps unsurprising then that nearly 80 per cent of millennials are not invested in the stock market.⁷³

Raiz is an app that applies the principle of simplicity to encourage people to invest their money. Firstly, it makes choosing an investment plan effortless. Users choose from just six diversified investment portfolios - designed in consultation with the Nobel prize winning economist Dr Harry Markowitz - that are differentiated only by how risky they are, ranging from conservative to moderate to aggressive.

But even more powerfully, Raiz makes the process of investing automatic. Once people sign up, the default option is to invest. Raiz does this by linking with customers' bank accounts and rounding up each of their purchases to the nearest dollar. The spare change from every purchase gets invested in the customers' chosen portfolio. The average new user invests \$33 to \$35 a month, or more than \$400 a year. The majority of Raiz' users are millennials, and in Australia alone, over 100,000 users signed up to use the app in the six months since its launch.

Raiz success can be linked to a number of factors. For instance, by taking such small amounts from a user's account at any time, people are less likely to feel the pain of lost income. But at its heart, Raiz' appeal is its simplicity. For this reason, Raiz is known as 'the Tinder of investing' - just as Tinder made dating as simple as swiping right, Raiz has made investing as simple as installing an app on your phone.

69%

69% of millennials
find investing
confusing.

80%

Nearly 80%
of
millenials
are not
invested in the
stock market.



A one-hour long program delivered with no delay has a larger effect than a six-hour program delivered with a six-month wait before the financial decision.

Intervene 'just-in-time'

Deliver targeted information as close as possible to the financial decision.

There are few more powerful predictors of whether an intervention will be successful than whether it is delivered at just the right moment for the intended audience. In general, the effects of an intervention are greater the closer they are to the decision being made.^{12, 14, 74} A one-hour long program delivered with no delay has a larger effect than a six-hour program delivered with a six-month wait before the financial decision.¹⁴

Remarkably, this finding holds true almost regardless of the duration of the intervention - for instance, even intensive interventions (24 hours of instruction) if left unsupported and not followed up tend to show almost no independent effect less than two years after the intervention.¹⁴

03



We now have the means to deliver personalised financial feedback to individuals instantly and at times that are most helpful.

Financial institutions are well positioned to give people just-in-time interventions

One of the benefits of increasing digitisation is that we now have the means to deliver personalised financial feedback to individuals instantly and at times that are most helpful. For instance, Level Money, an app launched in 2013, links with users' bank accounts and is designed to give them one simple piece of information that they can access before any purchase: their 'Spendable' or how much they can spend that day (or week, or month) and still meet their savings goals and commitments like recurring bills (which it can predict based on your financial history).

Level Money, which has been described by its cofounder Jake Fuentes as "the digital equivalent of opening up your wallet and seeing how much you have left", does not require complex planning or budgeting. Rather, it gives users the information required to easily

answer the pre-purchase question "Can I afford it?". While Level Money has other features - such as the ability to automatically pay bills and the ability to generate spending histories by category - at its core, it is a recurring 'just-in-time' intervention that helps its users make better decisions.

A weakness of Level Money is that it is not based on real-time data. According to the site, it updates transaction history up to four times a day. This means that between updates, users who are spending frequently run the risk that their 'Spendable' does not accurately represent how much they can actually spend. We would argue that banks - with real-time access to their customers' accounts and detailed information about their spending and income histories - are in the position to give this sort of feedback better and faster.

Content still matters

Just-in-time interventions succeed when they provide the right information at the right time. General financial information just doesn't cut it. For example, a US Federal Reserve study of a general financial literacy program delivered to young soldiers at the US Army post at Fort Bliss in El Paso, Texas found that the course did not change the ability of soldiers to manage their checking accounts and credit cards or increase savings for retirement, or their likelihood of comparison shopping. It did, however, have a clear effect on their decisions around buying a car, despite the fact that car purchasing made up only a small part of the course.

Participants in the course had smaller loan amounts, higher down payments, and a higher down payment-to-loan ratio. The study concluded that the information about buying a car stuck because "purchasing a means of transportation was, or would soon be, a high priority."⁷⁵

The take-home message from this study is that relevance doesn't transfer. Financial education that has immediate relevance to individuals will have an effect while other information, even if presented at the same time, will not.

01

02

03

04

05

06

07

08

09

10



Low levels of self-control in childhood predict unemployment in adulthood, even decades later at age 50.

Strengthen self-control

Give people the willpower to make the right decision.

The famous Stanford Marshmallow Experiment found that the ability to resist eating a marshmallow at age seven to nine for the promise of two marshmallows in the future - that is, the ability to delay gratification - predicted a number of later life events, such as higher SAT scores, higher educational attainment and lower BMIs. Other studies have shown that low levels of self-control in childhood predict unemployment in adulthood, even decades later at age 50.⁷⁶ These findings suggest that self-control tends to be a relatively stable personality trait across a person's lifetime.

But even though self-control is fairly constant across a lifetime, it isn't completely fixed. At any given time, a person's self-control will go up or down based on a number of factors.

Self-control is perhaps best characterised as a pool that people can draw on. Different people might start with a bigger or smaller pool, but if someone's pool of self-control is 'full' they will be better able to make better decisions than if their pool is 'empty'. Fatigue, negative emotions, low blood sugar, cognitive complexity, losing track of one's behaviour and using self-control for other decisions drain the pool, while things like rest, increased time between uses, and increasing blood glucose help to refill the pool.^{43, 77}

04

Strategy one

- make sure the pool is full

Interventions that increase self-control could be as simple as giving people rules-of-thumb to increase the likelihood that they are making purchasing decisions with a full pool of self-control. Rules like 'never go shopping hungry', 'don't shop when you're upset', 'shop early in the day before you get tired' and 'don't make two big purchase decisions on the same day' might be enough to shift people's financial behaviour.

A second strategy to increase people's levels of self control may be to teach them to forgive their mistakes. Many studies have demonstrated that when people fail to exercise self-control once, they abandon all attempts at continuing to exercise restraint.

For instance, when people exceed their monthly budget, they are more likely to spend on unnecessary purchases than when they are within their budget.⁷⁸ Researchers refer to this as 'what the hell' thinking. The effect is amplified by how hard people were working to avoid the temptation in the first place, often leading to counterintuitive behaviours. For instance, researchers have found that when carrying no debt on their credit cards, high self-control individuals spend less on purchases than low self-control individuals. But, if those same individuals are carrying debt on their cards and there is low available credit, they will spend more money than individuals with low self-control.⁷⁹ The authors of the study argue that reducing the psychological impact of failures reduces the 'what the hell' effect, and so may prevent future breaks in control.

A final strategy to keep the self-control pool full may be to encourage individuals to use budgeting software to track their expenses. Research suggests that when people lose track of their behaviour, self-control breaks down, whereas refocusing attention on the behaviour increases control. In one study, dieters given candy to eat ate significantly less if their attention was drawn to how much they were eating (for instance, by making the candy wrappers clearly visible so that the subjects could easily see how much they had eaten).⁸⁰ The implication of this research is that monitoring and tracking expenses makes impulse purchasing less likely.⁴³

We all have a pool of self-control

Some people's pool is
BIGGER
than others'.

Some things
drain our pool:

- ▶ Alcohol
- ▶ Emotional distress
- ▶ Low blood sugar
- ▶ Fatigue

Some things
fill it:

- ▶ Normal blood sugar
- ▶ Rest

The more self-control in our pool, the better we are at resisting impulses.

To change behaviour we can
fill people's pools or
give them a bigger pool



“

When people fail to exercise self-control once, they abandon all attempts at continuing to exercise restraint.

Strategy two - increase the size of the pool

Innovative new research has begun to investigate the way that we can increase the size of the pool of self-control that individuals begin with. Just like regularly exercising a muscle at the gym will make it stronger, it now seems that exercising parts of the brain responsible for regulating cravings and self-control (regions of the prefrontal cortex such as the anterior cingulate cortex) makes them stronger too. Neuroscientist David Eagleman refers to such training as a 'prefrontal workout'.

Scientists are using a technique known as real-time neurofeedback to teach people to strengthen areas of the brain involved in impulse control. The technique uses functional magnetic resonance imaging (fMRI) to measure activity levels in various regions in the brain. Imagine that you are trying to help someone stop smoking. You put them in an fMRI machine and show them pictures of cigarettes to induce a craving to smoke.

At the same time, you measure the activity in regions of the brain that are associated with craving and show participants how that activity changes by using a thermometer or bar on the screen. If the activity in the region increases, the bar goes up and vice versa. In other words, the participants can see in real-time how the activity in their brain is changing.

The aim of the exercise is for participants to make the bar go down. When participants first get into the machine and see the cigarettes, the bar goes up - their craving or impulses are high. As they learn to make the bar go down, what they're actually learning is how to suppress the areas of the brain that are inducing craving - they are actively reducing the strength of their impulses. Researchers have found that not only can people learn to suppress the region of their brain responsible for craving, but also that as they do, their feelings of craving go down as well.⁸¹⁻⁸³ Strengthening this 'muscle' might help people make better decisions.

This research is still in its infancy, but it represents an exciting new tool to strengthen an ability that was previously thought to be relatively fixed. And although fMRI machines are costly and difficult to use, research is also being done into finding simpler ways to give people the feedback they need. For instance, the biofeedback game Play Attention trains children with ADHD to pay attention using a similar prefrontal workout to the one discussed above for smokers, but it uses an armband rather than an fMRI machine to detect biological markers that indicate whether or not children are paying attention. There is evidence that this training is more effective than simple cognitive training at improving ADHD symptoms, and to have an effect even six months after the final treatment.^{84, 85}

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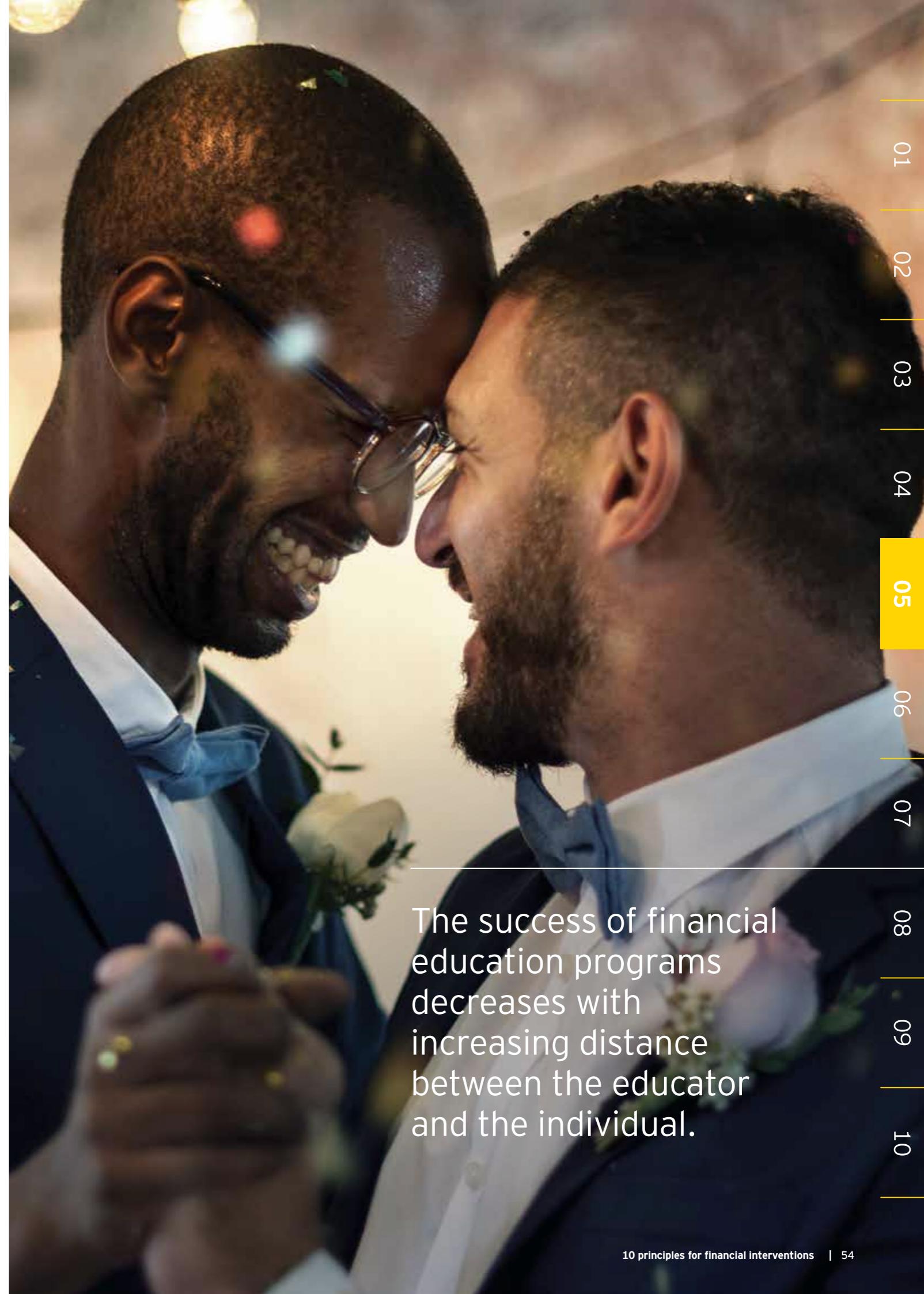
Build personal human connections

Develop relationships with participants and tailor advice to individual needs.

One of the biggest influencers of people's financial behaviour is the advice and behaviour of people that the individual has a personal connection with. Researchers have reported "clear evidence that individuals learn attitudes and behaviour through the observation and imitation of those role models who come into frequent contact with them - most notably parents."⁸⁶

For instance, one study found that 58 per cent of millennials report that their parents had the greatest impact on the way they managed their finances. Millennials learned from the provision of financial advice (23 per cent); from seeing how their parents effectively managed their own finances (19 per cent); and from observing the way that their parents handled their financial mistakes (16 per cent).⁸⁷

Another survey of young people found that 68.8 per cent of participants indicated that they had learned everything, or almost everything, about the management of their finances from their parents.⁸⁶



The success of financial education programs decreases with increasing distance between the educator and the individual.

Deliver face-to-face interventions

This phenomenon has a number of implications. The first is, that efforts to change financial behaviour are the most effective when the influencer (or educator) is able to form a personal, human connection with the person they are trying to influence. It is unsurprising then that generally the success of financial education programs decreases with increasing distance between the educator and the individual. A 2010 evaluation of the Money Guidance Pathfinder – a UK-based financial advice program run by the FSA's Financial Capability Division that provided financial advice via the internet, telephone and face-to-face sessions – measured the impact of the intervention on five domains of financial capability. They were making ends meet, keeping track, planning ahead, choosing products, and staying informed.

Users of the face-to-face channel were more likely to improve their financial capability across all five domains. Users of the telephone service only showed improvement in their ability to make ends meet and staying informed. Provision of the web-based intervention had the lowest impact – users only showed an increase in their ability to stay informed. Further, the review found that 90 per cent of the people using the face-to-face service were satisfied, this dropped to 75 per cent when people used the telephone service, and to 74 per cent when people used the web service.⁸⁸

Table adapted from The Money Guidance Pathfinder: key findings and lessons learned, 2010.

Financial capability domains	Face-to-face	Telephone	Web
Making ends meet	✓	✓	
Keeping track	✓		
Planning ahead	✓		
Choosing products	✓		
Staying informed	✓	✓	✓

✓ Statistically significant improvements

Another example of the importance of building personal connections to change financial behaviour comes from Good Shepherd Microfinance No Interest Loan Scheme (NILS). This program is the largest microfinance program in Australia, and offers people on low incomes small interest- and fee-free loans to pay for essential expenses.

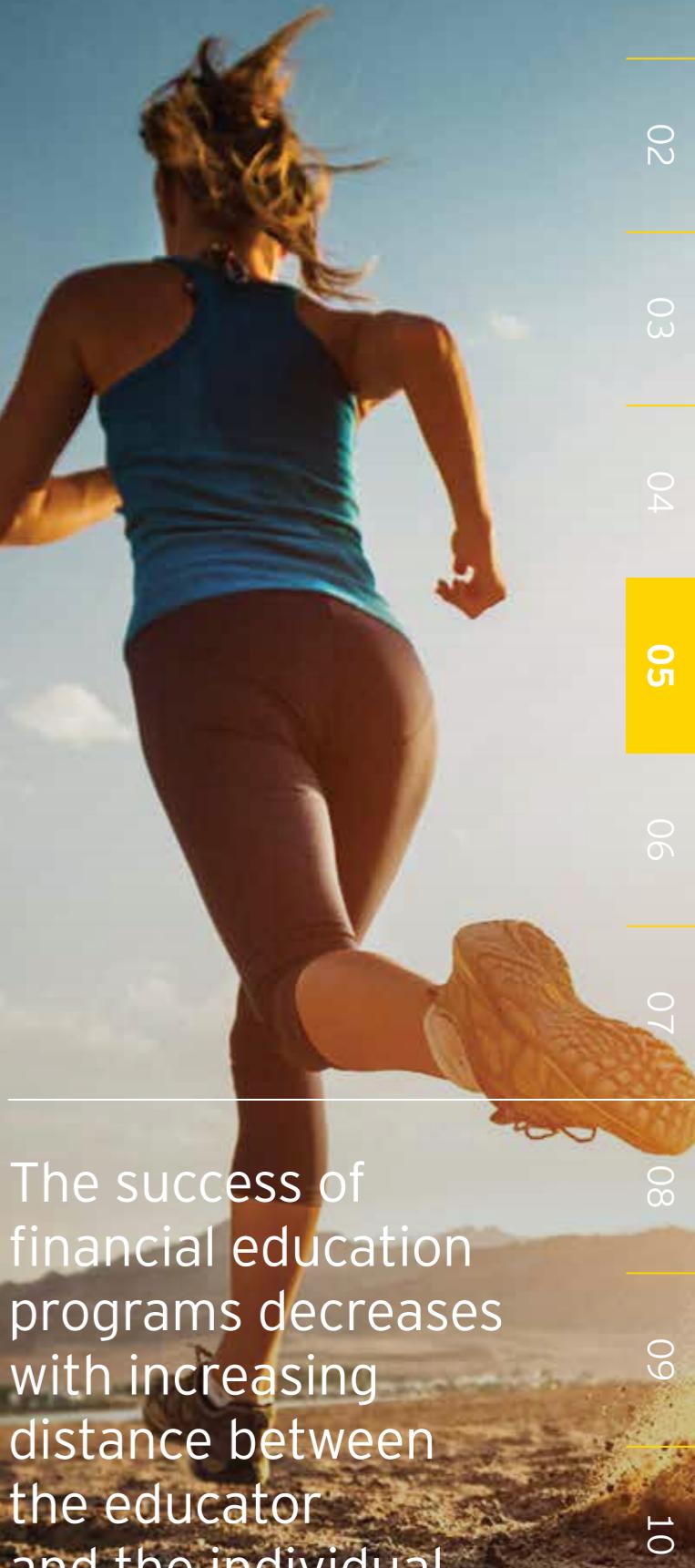
As part of the application process, participants must have a conversation with a microfinance worker or volunteer, which is designed to provide support, information and positive reinforcement. While many elements of the program were shown to have a positive impact on applicants' knowledge and behaviour, researchers found that the program's impact peaked at the point of the financial conversation, and that benefits of the conversation could be observed before the loan was even granted. For instance, immediately after a financial conversation the number of applicants who felt they had no money left over after a payment period fell by 45 per cent.

Many positive changes driven by the conversation also persisted over time. For example, three months after the conversation over a quarter (27 per cent) of applicants report changing their spending habits.⁸⁹

There is evidence that even relatively weak personal connections can change people's financial behaviour. One financial intervention conducted in the Philippines attempted to change people's behaviour by sending them SMS reminders to make loan repayments. Analysis of the intervention found that the SMS reminders were only effective if they included the name of the person's loan officer, and that person had been serviced by that loan officer before.

In those cases, the SMS drove a 41 per cent reduction in the likelihood that a loan was unpaid 20 days after maturity.

In other words, simply having met their loan officer in the past, and being reminded of that connection was enough to significantly change financial behaviour.



The success of financial education programs decreases with increasing distance between the educator and the individual.



3.7 x more

Being part of a peer-support group caused participants to deposit 3.7 times more frequently than the control group, and to save almost double the amount the control group saved.

Exert social pressure

Another way to change people's behaviour is to design interventions that exert social pressure on people to encourage them to make good decisions. The strength of social pressure has been evidenced in a number of domains. Getting people to publicly commit to a certain behaviour has been shown to have longer lasting and greater effects than private commitments,⁹⁰ and the same is true for group commitments.⁹¹

A randomised control study conducted among 2,700 micro-entrepreneurs in Chile compared the effect of peer-group support - with participants assigned to groups where they set and publicly announced their savings goals, met weekly to monitor their progress, and were rewarded with non-monetary recognition - with a 'high interest' group who were offered a 5 per cent interest rate on their savings account (compared to the 0.3 per cent interest rate typically offered). The researchers found that being part of a peer-support group caused participants to deposit 3.7 times more frequently than the control group, and to save almost double the amount the control group saved.

On the other hand, researchers found that offering participants a high rate of interest had a small effect on behaviour, with the majority of participants in this group appearing not to respond to the increased interest rate at all.⁹²

In a follow-up experiment, the same researchers found that using SMS messages to create peer influence also improved the savings behaviour of individuals. Both giving people a 'savings buddy' who is informed about the participant's savings progress via SMS, and giving people 'peer information' about the savings behaviour of other people in their savings group improved the savings behaviour of participants almost as much as the weekly meetings did. Importantly, because people had to opt-out of receiving the messages rather than actively deciding to continue participating in the weekly peer-group meetings, researchers found that the SMS interventions could maintain improvements in savings behaviour for months after the inception of the program.⁹²

Getting people to publicly commit to a certain behaviour has been shown to have longer-lasting and greater effects than private commitments.

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Use story to build personal connections

Using story as a tool to drive behaviour change can be an effective way to increase the reach of financial interventions while still leveraging the power of personal connections. Compelling stories can create characters that participants connect and relate to, even if they are fictional.

In South Africa, researchers from the World Bank harnessed the popularity of *Scandal!* – an established soap opera – to tell a compelling story designed to change the financial behaviour of viewers. The story consisted of a 26-episode arc focusing on Maletsatsi, one of the soap's main characters, whose poor financial choices led her into trouble with instalment plans, gambling and borrowing; she eventually sought the help of a credit counsellor from the South African National Debt Mediation Association (NDMA). At the end of several episodes the toll-free NDMA helpline number was also broadcast.

Researchers found that the show had a significant effect on the behaviour of viewers. Compared to viewers who watched a soap opera without any financial content, viewers of *Scandal!* were 9 per cent more likely to borrow primarily from a formal institution, 7.5 per cent more likely to borrow for investment purposes, 5 per cent less likely to gamble, 4 per cent less likely to use hire purchase, and 10 per cent more likely to state that they would seek financial advice from a formal source if it was needed. Moreover, on the day that the NDMA was introduced into the storyline the call volume on their helpline jumped more than 300 per cent.⁹³

A final interesting note from the study is that when researchers conducted follow-up interviews four months after the storyline concluded, they found that participants were able to "easily and fondly" recall elements of the show that were delivered by Maletsatsi, but not those delivered by the NDMA agent. Crucially they determined that "lack of emotional connections" to the NDMA agent (who was external to the soap opera and not welldeveloped) was a leading cause for the erosion of the participants' memory.⁹³ In other words, only when participants cared about a character did the lessons they taught stick.

The ripple effect of personal interventions

Interventions that change the behaviour, attitudes or knowledge of an individuals' social group are likely to change that individual's behaviour as well. Good financial behaviour can be contagious and can 'trickle up or down' to people in a participant's social group.

In one large-scale financial intervention, researchers delivered an in-depth, long-term financial literacy program to students in Brazilian schools. This included a number of take-home exercises designed to be completed with students' parents.

Not only did parents whose children participated in the intervention report that the students were more likely to talk to them about financial matters at home and to participate in organising the household budget, the researchers also found that the intervention changed the behaviour of the parents.

The percentage of parents who saved more than zero increased by 2 per cent, the average percentage of income saved increased by 1 per cent, and the likelihood of keeping a budget increased by 2 per cent.² This effect on behaviour also occurred in reverse: by getting parents to attend a single financial literacy workshop, the students increased their savings rate by 2.5 per cent.² While these effect sizes may seem relatively small, it is important to note that they are indirect, secondary effects of a financial intervention.

When interventions are specifically designed to influence peer-groups as well as participants, the effect sizes get even larger. In one study of an Indonesian financial literacy program designed for individuals who emigrated for higher-paying jobs and sent money back to their families, researchers found that delivering an intervention to both the migrants and the family members of migrants had a large and significant effect on knowledge, behaviour and savings. For instance, participants were 10 per cent more likely to have saved in the last six months, and had almost twice the savings as the control group. Training family members alone had a smaller effect, while training the migrant alone had no impact at all.⁹⁴

The take-home rule for financial interventions is that designing programs that encourage participants to share and discuss their behaviour and knowledge with other members of their social group, or that target information to multiple sections of a social group, can spread their impact beyond their primary participants.

Programs that encourage participants to share and discuss their behaviour and knowledge with other members of their social group... can spread their impact beyond their primary participants.



People who use credit cards, pre-paid cards, gift cards and debit cards feel less pain than those who pay with cash or cheques, and tend to spend more money more readily.

Make the invisible visible

Find ways to make money physical, visible and tangible.

One of the biggest changes to the financial environment in the 21st century is rapidly increasing 'cashlessness'. In a cashless society, consumers are not limited to spending the money that they physically have at any given time. Instead, they can make payments over the internet, spend money with the tap of a card or phone, directly transfer money to one another using apps, and pay for public transport and tolls automatically using Near Field Communications (NFC) technology. Billions in transactions are now processed instantly and invisibly.

In Australia and North America, more than half of transactions are conducted without cash. The trend of increasing cashlessness is so pronounced that Professor Rabee Tourkey, director of the Australian National University Research School of Economics, has claimed that by 2025 Australia will no longer be printing physical cash.

Making monetary transactions increasingly invisible has profound implications for people's financial behaviour and financial literacy. When physical money changed hands, people got instant, physical, sensory feedback about the amount they had gained or parted with. At the point-of-sale, the pleasure of gaining the goods or services purchased was coupled with the pain caused by a tangible loss of money.

Researchers have demonstrated this using fMRI, which measures changes in blood flow to regions of the brain. They found that products that people wanted activated a region of the brain known as the nucleus accumbens - a region associated with reward and motivation. High prices activated a region known as the insula - a region that is associated with the anticipation of physical pain.

The authors found that they could predict whether or not people would decide to purchase an item based on how active their nucleus accumbens was when they saw the product, and how inactive their insula was while making the decision. In other words, people bought when the pleasure of getting something outweighed the pain of payment. The authors of the paper argued that credit cards, which reduce the salience of payments, "anaesthetise consumers against the pain of paying."⁹⁵

In a cashless transaction, people get the positive feeling of 'getting' something without having to part with anything. The pain of parting with their money is delayed until they get a bank statement or check their account balances. And even then, their loss is reduced to changing numbers on a screen or piece of paper. A wealth of research suggests that financial decision making is changed without this direct feedback.

People who use credit cards, pre-paid cards, gift cards and debit cards feel less pain than those who pay with cash or cheques, and tend to spend more money more readily. This phenomenon was first observed in 1986 by Richard Feinberg, an associate professor at Purdue University. Feinberg found that people using a credit card were willing to spend 50-200 per cent more for items than people using cash. Perhaps even more startling, Feinberg also found that simply seeing credit card logos increased the amount people say they would spend for an item, and also caused people to make faster decisions about spending.⁹⁶

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While the majority of similar experiments are conducted on credit card payments - which are confounded by the fact that the transaction isn't cashless, but also involve spending 'credit' rather than money the participants actually have - these data have also been replicated with a number of other cashless transactions. For instance, in 2014, researchers at the Copenhagen Business School found that using debit cards also increases the amount that people are willing to spend on items.⁹⁷

There is also evidence that cashless transactions change the types of purchase decisions that people make. A 2011 study found that people who paid for groceries with credit and debit cards bought more impulsive and unhealthy foods - what the authors called 'vice products' - than people who paid with cash.⁹⁸ The researchers found that one of the drivers of this behaviour was that pain of payment, which can curb impulsive spending, is significantly less with cashless transactions. So cashless transactions don't just cause people to spend more, they also cause them to make more impulsive purchases and ultimately different purchasing decisions.

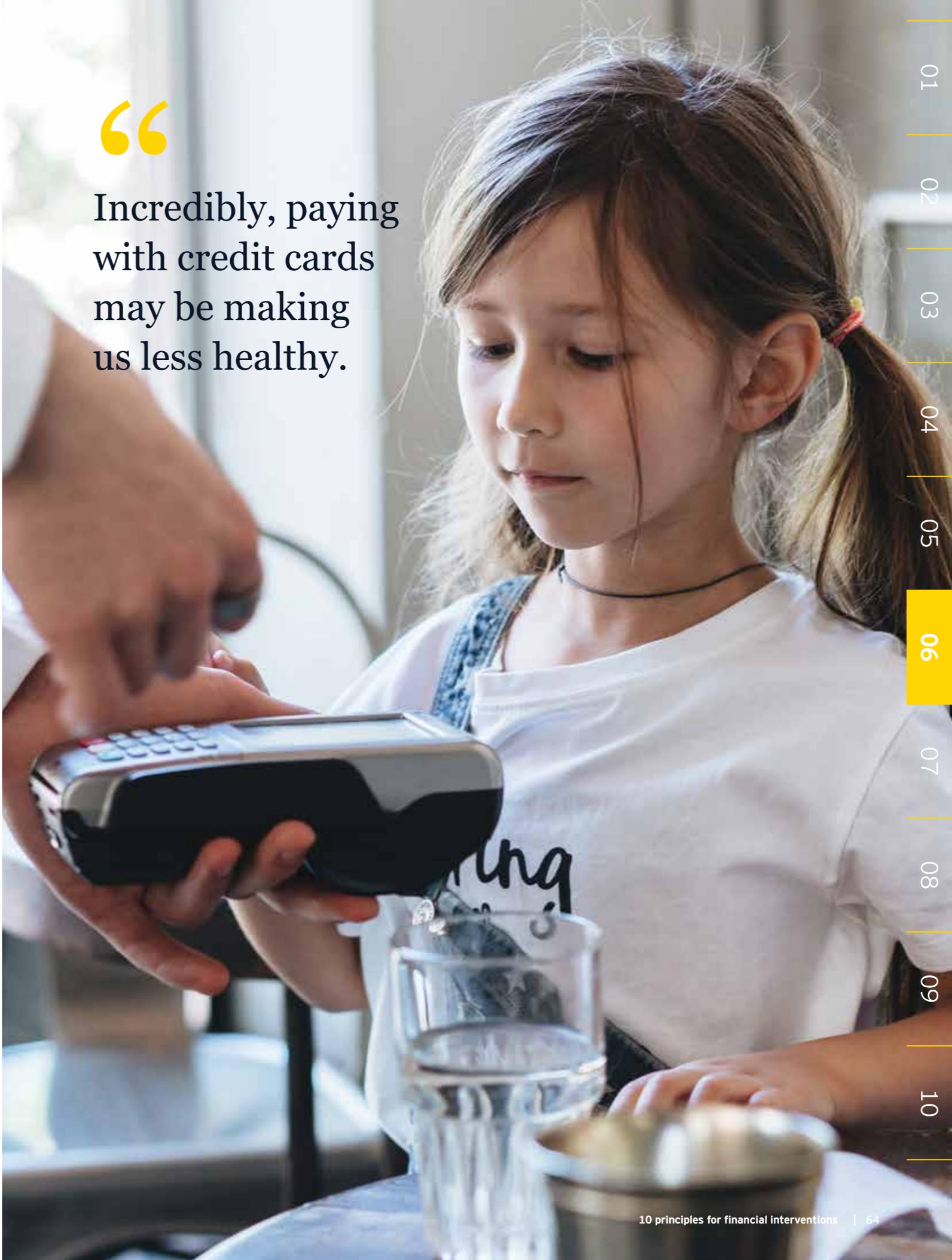
There is also research that in a cashless society, children learn about money differently. Many parents teach their children financial skills when 'teachable moments' arise in their day-to-day lives, rather than in a planned way. As money becomes invisible, the number and frequency of events that trigger conversations about financial behaviours is decreasing. Using cash can also be a powerful way for children to begin to understand the abstract concept of money. Children can see, feel and experience the fact that cash has intrinsic value, can be exchanged for goods and services and can be earned by working.

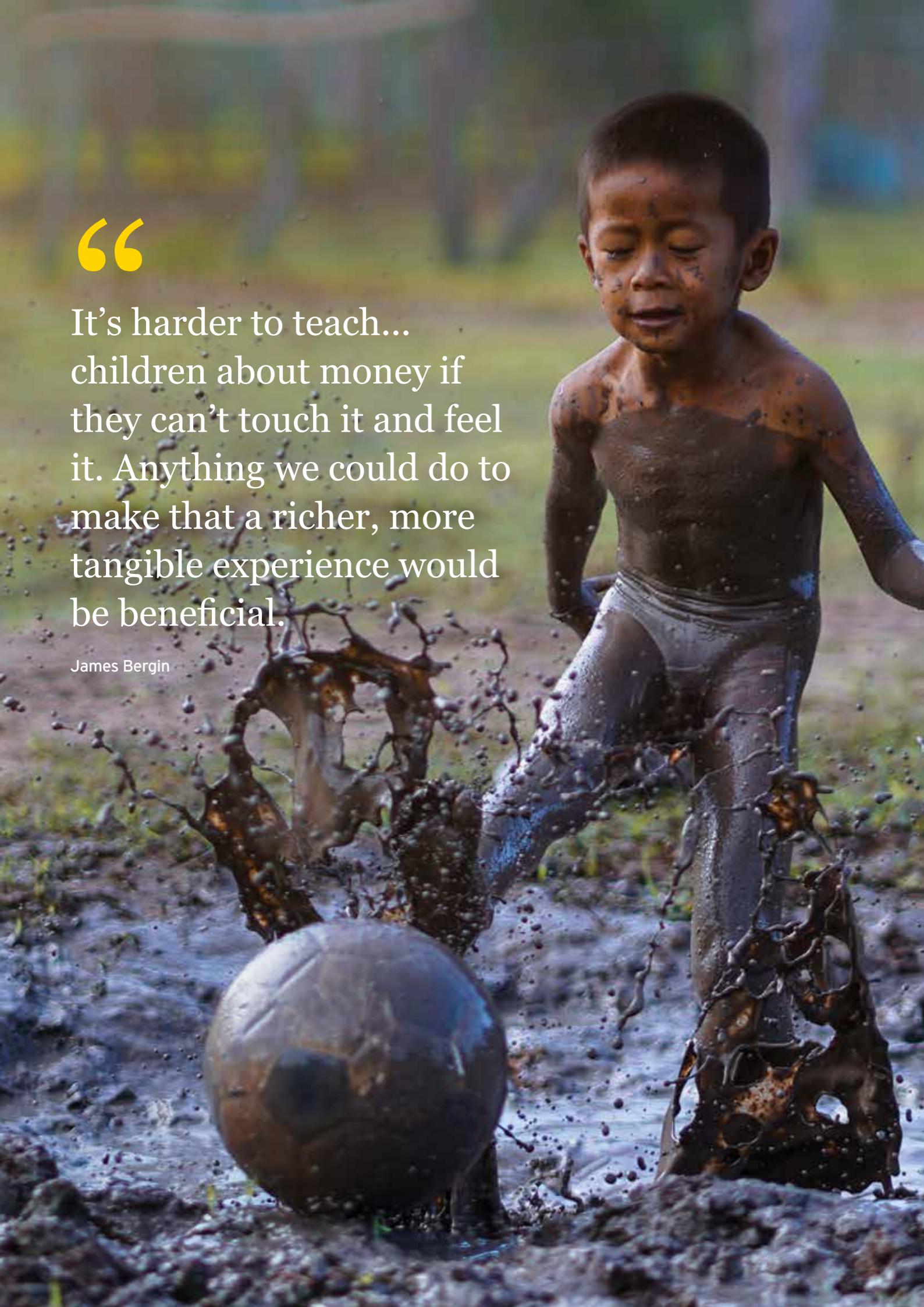
As James Bergin, Chief Architect at ASB Bank, put it in a 2014 TedX talk, "cash forms a tangible bridge to an intangible concept - money." The move to cashless transactions can therefore hinder the development of children's understanding of money.

In the UK, 34 per cent of parents pay their child's pocket money into a digital bank account, so children don't see money changing hands.⁹⁹ The 2014 US Parents, Kids and Money Survey found that 73 per cent of parents agree that because digital transaction are so common, children think of currency differently to how they did when growing up.¹⁰⁰ In Australia, one in three parents believe that digital transactions make it harder for their children to understand the value of money, and the same number believe that children don't know how digital purchases are paid.¹⁰¹

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Incredibly, paying with credit cards may be making us less healthy.





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It's harder to teach... children about money if they can't touch it and feel it. Anything we could do to make that a richer, more tangible experience would be beneficial.

James Bergin

Case study

Clever Kash makes invisible money visible for children

To help children learn about money in a cashless society, ASB has developed a 'cashless moneybox' called Clever Kash that makes invisible cashless transactions visible to children. Clever Kash is a cute yellow elephant that is electronically linked to children's savings accounts and paired with ASB's mobile banking app.

This digital moneybox is designed to let children easily see money move and accumulate. When children shake him - just like they would a traditional piggy bank - the elephant's belly displays the amount that they have in their savings account, and how close they are to their savings goals. When money is transferred into their account, children can experience this deposit by swiping virtual coins and notes from the app towards Clever Kash, and watching the amount on his belly go up in real-time.

For instance, if a child receives \$2 in pocket money, they can swipe two one-dollar coins from the app into Clever Kash, and watch their balance increase by a dollar each time. Describing the rationale behind Clever Kash, James Bergin commented, "it's harder to teach their children about money if they can't touch it and feel it and see it. Anything we could do to make that a richer, more tangible experience would be beneficial."

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Keep it real

Help people learn by modelling real life behaviours using real life scenarios.

Good financial capability interventions minimise the barrier between learning skills in a classroom and applying those skills to everyday life.

Experiential or hands-on learning situations where participants model real financial decisions allow people to practice and receive feedback on the exact behaviours they will need to make good decisions in the real world. Conversely, more traditional concept-based interventions require participants to go through the often cognitively demanding task of taking an abstract concept (like compound interest or diversification) and independently attempting to apply it later on when faced with decisions in the real world.

A financial skills assessment conducted by Citigroup found that while Australian students aged 10 to 12 understood financial concepts like saving and reducing spending, they struggled with translating mathematical concepts into financial domains, such as the ability to calculate change or mobile phone charges.¹⁰² Similarly, researchers found that when faced with 'real world' financial situations, students find it difficult to use mathematics to solve the problem, to combine their social and mathematical understandings of the world, or even to understand that the financial problem they were asked to solve was a mathematical one.¹⁰³

On the other hand, the PISA 2015 assessment of financial literacy, which was administered over 15 countries, found that on average, students in the Organisation for Economic Co-operation and Development (OECD) countries who hold a bank account score on average 23 points higher than students who do not, after accounting for socioeconomic status.³

It should be unsurprising then that one common consistent predictor of the success of financial education programs is their applicability to the real world.

Analysis of the Jump\$tart financial literacy surveys, which have been conducted since 1997, found that high school students who have participated in a financial education intervention are in general no more financially literate or financially capable than students who have not, even when those interventions are given over the course of an entire semester.^{104, 105} However, students who have played a stock market game score significantly and consistently higher in financial literacy tests.^{104, 105}

Indeed, because solving real world problems is one of the most effective ways to develop financial skills, one of the biggest sources of financial capability is personal experience. One study found that in the first three years of having a credit card, the fees paid by account holders drop by 75 per cent due to negative feedback in the form of fees and charges. Being charged a fee in one month reduces the likelihood that a user will incur a fee the next month by 40 per cent. Users learn by experience how to avoid fees in the future.¹⁰⁶

A University of Michigan Survey of Consumers found that when people are asked the most important way they learned about personal finance, half cited personal experience – more than four times the number who credited formal financial education programs.¹⁰⁷ Similarly, a report by Bank of America found that one in three millennials indicated that lessons learned from their own financial mistakes had the greatest impact on their handling of their finances.⁶⁷

It follows that financial education programs that give people experience with 'real world' problems would provide similar opportunities for them to learn, without the costly real world consequences of financial mistakes. Such environments would also provide feedback faster than in the real world, where poor financial decisions can have costly effects that only become apparent many years in the future.



One of the most consistent predictors of success of financial education programs is their applicability to the real world.



Case studies

Banger: A simulated economy

Banger is a New Zealand-based start-up designed to teach students financial skills in an interactive and experiential way. Banger is an online platform that introduces a 'virtual currency' and online bank to the classroom, and it realistically simulates a number of financial concepts. Students earn money by completing tasks around the classroom, can go in and out of debt, earn interest on their money if it is left in a savings account, pay tax on their income, buy virtual goods and much more. This allows them to not only learn

about money management concepts, but to experience the way those concepts work in real life, experiment with strategies to earn more money, and receive real-time feedback about the consequences of their financial decisions.

Teachers who use Banger report children learning unexpected lessons as well, such as noticing the inflation that occurs as more and more currency is earned throughout the school term.

Thrive 'n' Shine: Gamified financial education

Created by Mindblown Labs, Thrive 'n' Shine is an experiential financial education game for teens and young adults. Players design a customised avatar and navigate their way through a simulated game world making financial decisions. Among other things, students earn money, pay taxes, budget, use financial services like credit and debit cards, take out loans and get credit scores. Students also have to make their avatars happy - their avatars need to eat, sleep and socialise, each of which has a financial price. Thrive 'n' Shine applies principles of gamification to keep users engaged and learning. As players level up in the app they unlock quests that introduce them to financial concepts, and which gradually increase the complexity of the game. They also unlock new things to buy. Some products help them save time or meet their avatar's needs, while others are simply in-game collectibles - temptation items that have no utility besides being 'wanted'. Students have to balance their spending and make other financial decisions in this increasingly complex environment.

Thrive 'n' Shine doesn't just make learning fun, it embeds financial education in every facet of game play, rewards players with progress and bonuses for making good decisions, and provides rapid feedback about the consequences of bad ones. As Jason Young, co-founder of the game, put it, "The beauty of [financial education] games is you have accelerated time. So you get to, first of all, see the consequence of your actions. Instead of having to wait, say, 30 years you get to see it in a few hours."

Support practice with product

Compliment financial education with direction to products that help people follow through.

There is a reason why financial inclusion is front and centre in most public policy agendas aimed at improving financial outcomes.¹⁰⁸ It is because without access to the right products, exhibiting the right behaviour is virtually impossible. There is often a large gap between knowing and doing. Good financial education programs make people aware of their financial shortcomings and inspire them to change their financial situation. But there is ample evidence that sustained behaviour change often requires structures, products and environments that provide ongoing support to facilitate good decisions. Put simply, no matter how much knowledge you have, you can't make good choices without the right tools.

This is borne out by a multitude of research that highlights how often behaviour is driven by our environments, not by rational decision-making processes. Social psychologists have shown that context can have a profound effect on an individual's behaviour, while behavioural psychologists have suggested that up to 40 per cent of the actions performed each day are automatic, cue-driven habits, rather than conscious decisions.¹⁰⁹

We've explained that financial interventions must be simple, timely, engaging and practical. It follows that interventions that direct people to useful products that support good decisions, that can be accessed immediately, and that are easy to use can drive powerful behavioural change and positive financial outcomes. Such interventions don't just give people the desire to act, they give them the opportunity to act as well.

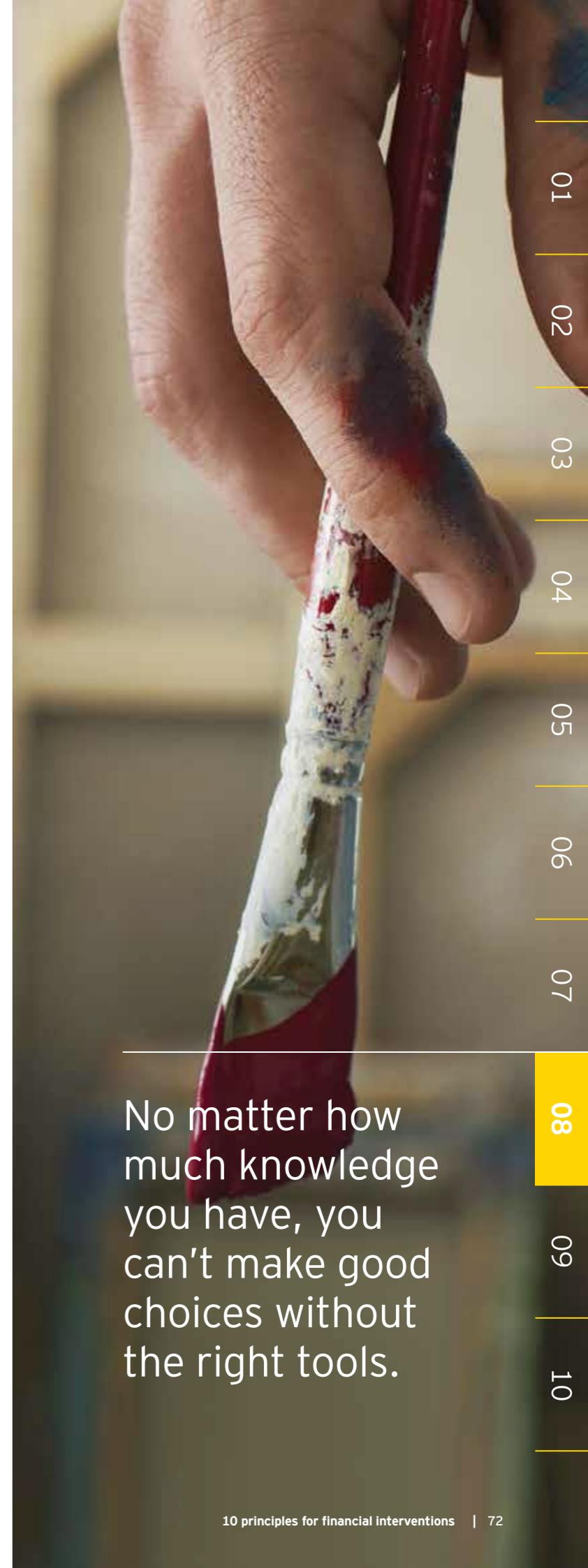
For instance, a review of the effects of an eight-hour financial literacy course conducted by the US military found that the intervention had limited effects on most financial outcomes studied: credit card balances, auto loan balances, unpaid debts and adverse legal actions (foreclosures, liens, judgments and repossessions). However, the course roughly doubled participation in and contributions to the Federal Thrift Savings Plan – a retirement plan similar to a 401(k) that is offered to army personnel. This effect persisted for at least two years.⁷ Importantly, soldiers who sat through the course had a product immediately available to them that allowed them to take advantage of the knowledge they had gained.

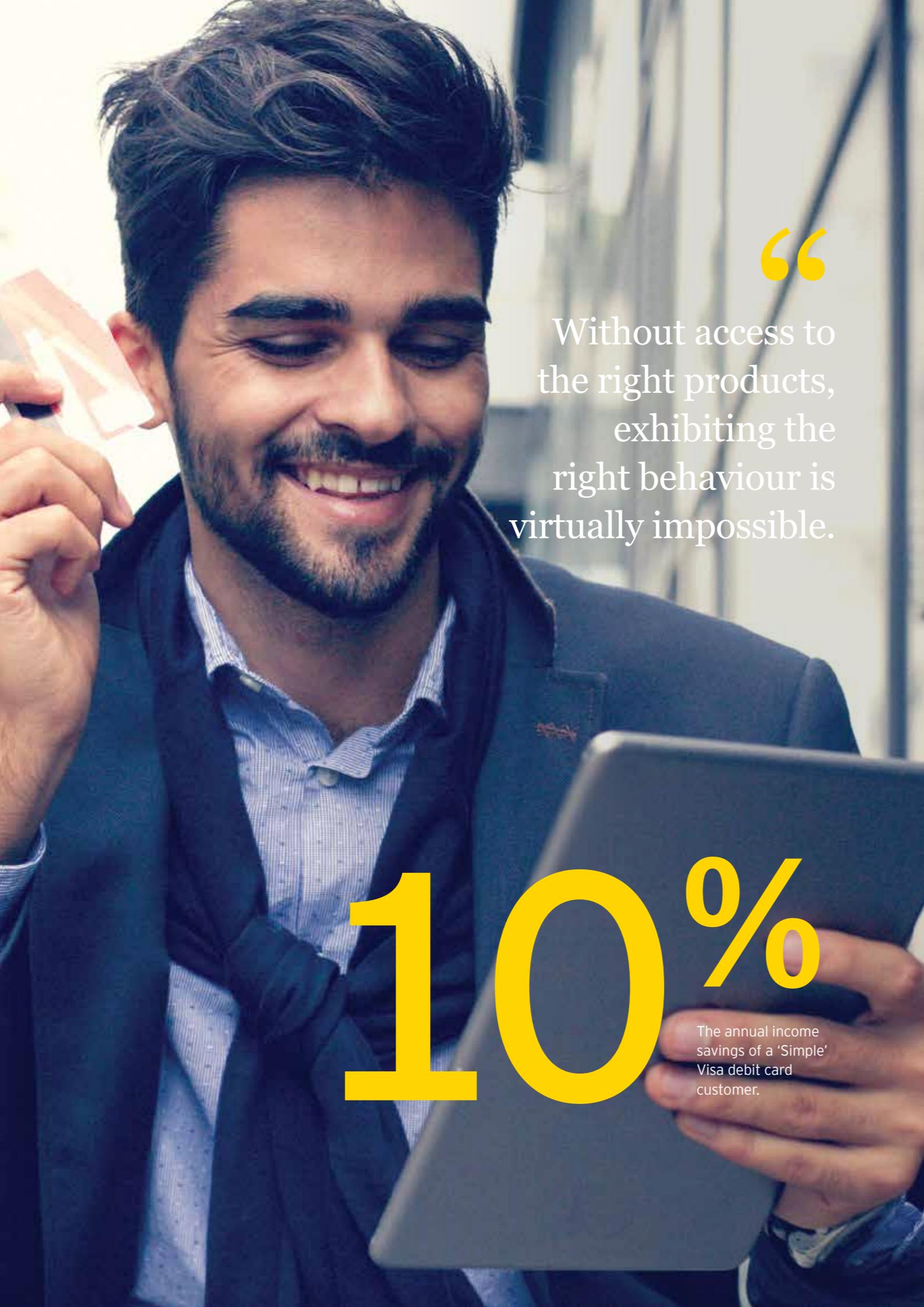
The effect of coupling a financial intervention with a financial product designed to support good behaviour was recently investigated by researchers who conducted a large-scale financial intervention in the Philippines, Bolivia and Peru. The study, which investigated the behaviour of over 13,500 account holders, coupled a simple intervention that regularly reminded people via SMS to save with a bank account that rewarded them for saving.

In each of the countries the intervention was slightly different, but in all instances researchers worked with banks to develop an account that incentivised saving by offering higher interest and other benefits if customers made minimum monthly deposits into the account. The researchers found that the monthly SMS reminder to make deposits was most effective when they mentioned both people's savings goals and the bonus interest that they would earn from the specially designed savings accounts. People who received this double reminder saved 10-11 per cent more than those in the control group, as well as those who were reminded only of their savings goal or the increased interest.¹¹⁰

Coupling the intervention with specific and clear benefits provided by a financial product (and mentioning those benefits during the intervention) was more effective than an intervention that only reminded people of the benefits of saving.

No matter how much knowledge you have, you can't make good choices without the right tools.





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Without access to the right products, exhibiting the right behaviour is virtually impossible.

10%

The annual income savings of a 'Simple' Visa debit card customer.

Use access for impact

Certain types of institutions are better positioned than others to access people with financial interventions. For example, banks and other providers of financial services are uniquely positioned to deliver products that support good financial behaviour.

Banks have frequent and regular access to their customers, for instance, in the form of bank statements, in-branch interactions and banking apps. This access provides multiple opportunities for banks to integrate financial education with their products. There is evidence that these types of financial education programs might be particularly useful at changing behaviour, with some researchers arguing that, similar to advertising, financial education might be cumulative. That is, multiple interventions over time could be the most effective at changing behaviour.¹⁴ This is particularly important because research suggests that most people won't voluntarily attend financial education workshops and interventions. Banks have an audience that they are already talking to.

Banks also have access to real-time data about their customers' spending and savings habits allowing them to tailor advice and feedback to their individual needs. Kiviat and Morduch, researchers at the Financial Access Initiative at New York University's Robert F. Wagner Graduate School of Public Service, have argued that a key factor in people's ability to take action to improve their financial situation is selfawareness, including the ability to understand one's own financial behaviour.¹¹¹

This might include knowing how much you spend and where, or to predict what your future expenses might be.

Researchers in the US have found that when seniors using Medicare Part D were sent information about plan prices based on their own medical history (specifically, their prior use of prescription drugs), the rate of plan switching increased by 20 per cent, and that after switching the amount the seniors spent went down by at least 14 per cent.¹¹¹

A number of financial institutions are already building products that help customers make good financial decisions. For example, Visa has developed Simple, a Visa debit card linked to a phone app and website that provides real-time information for users to help them make spending and saving decisions. The app gives users a regularly updated 'Safe-to-Spend' amount, which is calculated by deducting upcoming expenses to reflect how much actual spending money is in their account at any one time. According to the Simple website, the average Simple customer saves 10 per cent of their yearly income, while the average person under 35 spends more than they earn, saving -2 per cent of their annual income.

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One of the 'hard truths' of any financial intervention is that we cannot teach everything.

Build soft skills

Teach people to ask for help, resolve issues, and have conversations about money.

One of the 'hard truths' of any financial intervention is that we cannot teach everything. The financial environment of the 21st century is one characterised by increasing complexity. In 2006, the US National Strategy for Financial Literacy described the financial marketplace as "constantly changing, with new products, services, and providers emerging to meet consumer demand... the range of topics and issues that consumers must evaluate is vast and ever-growing."

There is increasing choice among financial products, so that consumers have to comprehend, analyse and compare a snowballing number of options when making decisions. In almost every state of the US, seniors are offered over fifty Medicare drug plans, some so complex that they require over thirty pages to explain annual changes in costs and benefits.

A 2008 survey of Australian consumers found that of the respondents, 42 per cent experienced too much choice when making a financial decision, 46 per cent believed that financial investments were too complicated to understand, and 44 per cent believed that superannuation was too complicated to understand.¹¹² Further, financial understanding needs to be constantly updated; financial laws change regularly, as do features of financial products.

There is also evidence that giving the average consumer an understanding of financial jargon and concepts is not enough to help them comprehend the complex financial documents they will encounter across their lifetime. For instance, while more than half of US adults cannot read beyond an eighth-grade level, a 1982 study of life insurance policies found that their readability sat somewhere between *The Wall Street Journal* and Einstein's *Meaning of Relativity*. Another found that credit card holder agreements were written at a fifteenth-grade level.¹

Expecting a consumer to acquire all of the knowledge, insight and comprehension required to manage and maintain their financial decisions is like expecting a patient to perform surgery on themselves - unrealistic and rife with the possibility for harm. In a field as complex as healthcare we might expect individuals to be able to treat a simple cold or to understand simple tips to avoid getting sick (for example, wash your hands regularly, eat healthy food), but for the majority of issues we give just one piece of advice - see a doctor. Financial interventions should be no different.

While we can give consumers rules-of-thumb and simple behavioural skills to deal with everyday minor decisions (practise comparative shopping, avoid high levels of consumer debt), sometimes the most financially literate behaviour is to seek financial advice from qualified experts.

Being able to get good, unbiased financial help requires a number of soft skills - the confidence and capability to ask questions, to critically evaluate the quality of advice given, to ask for clarification if advice isn't clear or understood, and to raise concerns. As described in one report, "knowing what to ask and how to get more information is a major, almost invisible prerequisite for making and executing good financial decisions."¹¹¹ Yet there is evidence that many consumers do not possess these skills. An OECD study of financial literacy found that in general, individuals accept financial advice without question.¹¹³

A study by The Centre for the Study of Financial Innovation found that when over-indebted borrowers were asked what would have made a difference for them, they overwhelmingly requested a credit helpdesk that would have allowed them to understand the repayments they were committing to in the context of their budgets.¹¹⁴ The same study made the provision of independent financial help the number one recommendation for lenders to combat over-indebtedness. A 2005 study of Australian consumers found that 60 per cent did not recognise that an adviser who works only for fees is more likely to give impartial financial advice than one that works for commissions.¹¹²

Equipping consumers with soft skills is also important in helping them deal appropriately with financial institutions. Financially capable individuals may need to talk to financial service providers to deal with mistakes, to raise complaints, to assert their rights, to negotiate products and to solve financial problems. For instance, one of the most helpful actions that over-indebted consumers can take is to contact creditors, explain their situation and negotiate a repayment plan. This requires both confidence and communication skills.

Expecting a consumer to acquire all of the knowledge, insight and comprehension required to manage and maintain their financial decisions is like expecting a patient to perform surgery on themselves.

Case study

The iff School projects: Learning inside a bank

The Institute for Financial Services (Institut Für Finanzdienstleistungen or 'iff') is a German not-for-profit association that runs research in the field of sustainable financial services and advice.

One of its initiatives is the SchülerBanking project, a financial education program designed to develop the skills of students to confidently and competently navigate interactions with financial service providers. A core pedagogical principle of the SchülerBanking project is the notion that students should learn from bankers, in banks. Students are given a scenario designed to be relevant to their everyday lives and needs (such as needing to plan for an extended trip to another country), and then they visit a bank and speak to a banker to determine how to solve the problem. One of the design principles of the program is that the pupils must ask questions, while the bankers can only answer them. As such, students must learn to ask good questions, to critically analyse the answers and to actively consider their own needs and interests and work to find products that meet them.

The program is designed to build three types of competence: financial competence - students learn about concepts such as interest and risk management as well as specific financial products and how to choose between them; human competence - students learn to identify and practice working to meet their individual needs and interests; and social competence - students practice asking questions, describing their needs and participating in the advice sessions to ensure that they are best able to solve the given case study.

Importantly, by holding sessions inside of a bank, students practise these skills in a setting they will likely encounter later in life. Not only does this increase the likelihood that the skills they practice will be transferable (this is a great example of 'keep it real'), it also helps to demystify the often imposing world of financial services and builds the expectation that consumers can engage proactively with banks and other service providers as equals advocating to have their needs met.

Analysis of the SchülerBanking project has found that conducting education programs inside banks has a number of benefits for the bank as well. As discussed in a report on the program, bank personnel who participate in the program learn a number of lessons through their interactions with the students. Firstly, they learn to listen and respond to the students rather than simply suggesting 'off the shelf' products for them. Secondly, they develop an understanding of the interests and needs of students and young customers. Thirdly, the bankers learn to communicate with the students using language that the students will understand.¹⁹ These skills are developed not just during the visit. As part of the program, students reflect on the financial advice session in class afterwards. While this serves as an additional learning opportunity for the students as they discuss strategies to get good financial advice and reflect on the advice they received, this follow-up also generates feedback for the bankers. Bankers quickly learn, for instance, whether or not they have communicated in a way that the students understood.¹⁹

Take it to the people

Design with activation in mind.

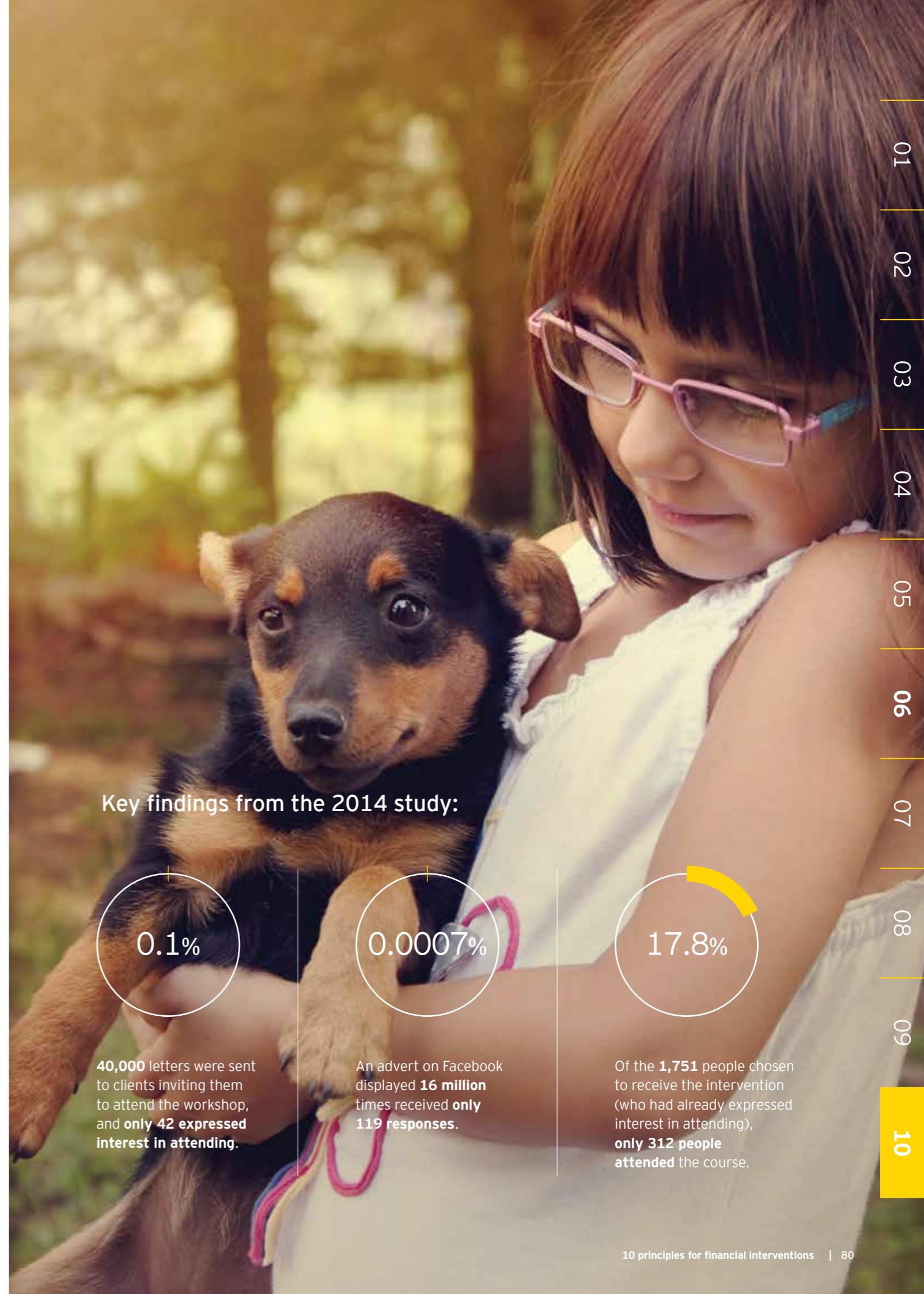
The previous nine principles combined lay the foundation for great programs, products and platforms that have an impact on the people they touch. But it doesn't matter how well you build a program if no one uses it.

No matter how good an intervention, you can't change the behaviour of someone who is not 'in the room' - and when it comes to financial education, it's hard to get people in the room.

In a 2014 study, researchers tried to determine the most effective methods to get people to attend a free, four-hour financial literacy program conducted in Mexico City.

The only thing that boosted attendance rates among people who expressed interest in the program was offering them money. Offering participants \$36 or \$72 boosted attendance rates, but only from 17.8 per cent to 27 per cent and 33 per cent respectively. That is, while participation was nearly doubled by the higher incentive, still less than one in three people who were already interested in the course would go, even if you paid them to.

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Key findings from the 2014 study:

0.1%

40,000 letters were sent to clients inviting them to attend the workshop, and only 42 expressed interest in attending.

0.0007%

An advert on Facebook displayed 16 million times received only 119 responses.

17.8%

Of the 1,751 people chosen to receive the intervention (who had already expressed interest in attending), only 312 people attended the course.



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Basically no one wakes up in the morning thinking ‘Gee, today I really need a financial literacy program’.

Peter Sheahan

This challenge of adoption and activation is even more evident in the crowded world of digital delivery. In 2003, Target offered 6,400 customers identified as being on the verge of credit card delinquency an online course in credit management. This group should have been highly motivated to change their financial behaviour, but only 684 people agreed to receive an email about the course, and only 28 logged onto the education site.

That's an uptake of less than 0.5 per cent.

The authors of the study in Mexico above suggested that part of the reason for the lack of attendance is that the course didn't have any effects on long-term financial outcomes. In other words, the choice to not attend might have been a rational one - participants would have to give up four hours of their time (plus mental energy and attention) to achieve nothing (or at most, \$72).

This is the pre-eminent challenge of creating effective financial capability programs: build it, and they may not come.

We need to take our programs and interventions to the people and find ways to drive personal engagement and relevance. It is unlikely that people will come to our offers of their own volition, particularly if they are dull, irrelevant or inconvenient.

This is the pre-eminent challenge of creating effective financial capability programs: build it, and they may not come.

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The case for face - harnessing captive audiences

One strategy beginning to show promise in driving adoption is using face-to-face programs to target 'captive audiences' - that is, groups who are opted-in to a program, rather than actively choosing to attend.

Schools, for example, represent an attractive location for programs because access to large numbers of students can be granted by a relatively small group of gatekeepers - principals and teachers. Programs can be delivered to large numbers, and content can be targeted to the most relevant needs of the group.

Here in Australia, Commonwealth Bank's Start Smart program uses this approach (combined with a system of providing curriculum-aligned workshops, delivered free of charge by trained facilitators) and engages over 500,000 students a year. Importantly, a survey of over 4,500 teachers found that roughly two-thirds would not commit to teaching financial education independently of the program.

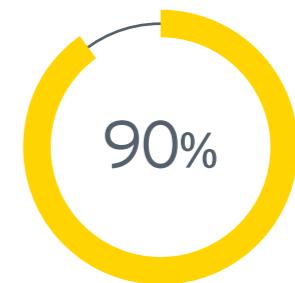
Based on the same logic, there is a proliferation of programs in other areas where audiences are captive, such as army bases (enlisted people), sports clubs (athletes), immigration centres (new arrivals) and prisons.

When delivered well, some of these programs not only show how face-to-face models targeting captive audiences drive adoption, but also demonstrate some interesting secondary effects.

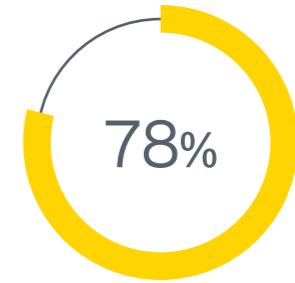
For instance, researchers at the New Zealand Council of Education Research investigated the effects of a largescale financial education program aimed at primary school students, where trained facilitators entered classrooms and ran interactive, applied-theatre based financial capability workshops for students.

Researchers found that, in addition to the direct effects on students, workshops also inspired teachers to extend the workshop content with their classes. 90 per cent of teachers whose class had participated in workshops agreed or strongly agreed that they were more motivated to teach financial literacy as a result of the workshop; 79 per cent of teachers reported being more confident teaching financial literacy as a result of the workshop. Analysis of why the program was increasing teachers' confidence revealed that the workshops served as models of financial education 'done well', giving them ideas on how to make financial content fun, engaging and simple.¹¹⁵

Insights to the workshop:



Teachers were more motivated to teach financial literacy as a result of the workshop.



Teachers reported being more confident teaching financial literacy as a result of the workshop.



Case study

Better Money Habits: Doing digital better

While there is relatively little evidence that online-only financial interventions work, when used well technology can play an important role in delivering content to difficult to reach audiences. Although the rule tends to be that digital resources go under-accessed, there are exceptions that suggest good execution of digital content strategies can drive people to access resources.

As an example, Bank of America runs a free, open access online financial education program called Better Money Habits, in partnership with the Khan Academy. The site provides entertaining, easy to understand videos and infographics that are designed for people at multiple life stages including college students, families, low-income individuals and retirees. It covers topics such as getting out of debt, buying a car and paying taxes.

The bank has worked hard to ensure content is relevant to individuals. For instance, in 2015 the bank partnered with several not-for-profit partners in order to understand the needs of families and individuals that struggle to make ends meet to develop an online learning module called Paycheck-to-paycheck that specifically addresses their needs.

The bank also placed tablets in over 2000 financial centres, so that customers can be walked through the information by bank staff in real-time. For instance, if a customer has applied for a credit card but has a poor credit history, bank staff can show them information on how to improve their credit score.

Better Money Habits has overcome the access issues that many financial interventions face; between its launch in 2013 and December 2015, 11 million people visited the site and content had been viewed 92 million times. In 2015 alone the site received 3.1 million on-site video views, five million unique visits, 5.7 million on-site content views and 68.1 million total content views. When surveyed, eight out of ten customers using Better Money Habits felt more confident about achieving their financial goals.

The design principles that seem to have underpinned the success of Better Money Habits are as simple as keeping their content very short, engaging and relevant. But more importantly, their content has been supported by an activation strategy that sees humans point other humans towards the content when it's most relevant to them, and the creation of multiple access points (both online and in-branch, for instance) that make access easier.

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Conclusion

Interventions are not created equal. In recent years, many studies have called into question the effectiveness of financial education programs at changing participants' financial outcomes.^{7, 13, 14} Indeed, recent research indicates that the traditional assumptions underpinning (implicitly or explicitly) most financial education programs are flawed. In particular, increasing financial literacy alone has only a tiny effect on people's financial outcomes.

But, as we presented in this paper, many interventions can and do have profound effects on participants' behaviours: almost quadrupling savings frequency⁹² and savings rates,⁶⁷ drastically increasing participation in retirement savings plans;⁶⁹ increasing the rate of debt repayment by 15 per cent;⁵⁸ and driving a 300% increase in financial advice seeking.⁹³

Clearly, there is a significant difference between programs that work, and those that don't.

Programs that work draw on an understanding of human decision making, and influence the factors that really drive changes in behaviour. We believe that embracing a broader conceptualisation of the drivers of financial decision making (our DNA of a Financial Decision model), and building programs and products with the 10 Principles from this paper in mind, is the first step towards more effective, worthwhile and impactful financial education.

The 10 principles discussed in this paper represent insights gathered from a review of financial interventions, research on human decision making and cognition, and multiple theories of behaviour change. As such, they are firmly rooted in empirical evidence, and we have strong reason to believe that programs designed with them in mind are likely to drive increased impact. Testing this hypothesis now represents a promising and exciting area for future research.

Recent research is beginning to settle on a consensus in this regard. For instance, one recent literature review concluded "we have reason to believe that interventions that teach heuristics, with a learning-by-doing approach, reinforced just-in-time before a change in circumstance are likely to have a beneficial impact on participants' financial outcomes. To find out for sure, we call for targeted further research to be carried out."²⁹

This paper was inspired by our experiences over the last 13 years delivering some of the world's largest financial education programs. Our intention was to make a contribution back to the space that we feel so strongly and passionately about. Our hope is that the actors in this space will be able to use the 10 principles to refine and enhance their programs.

About the author



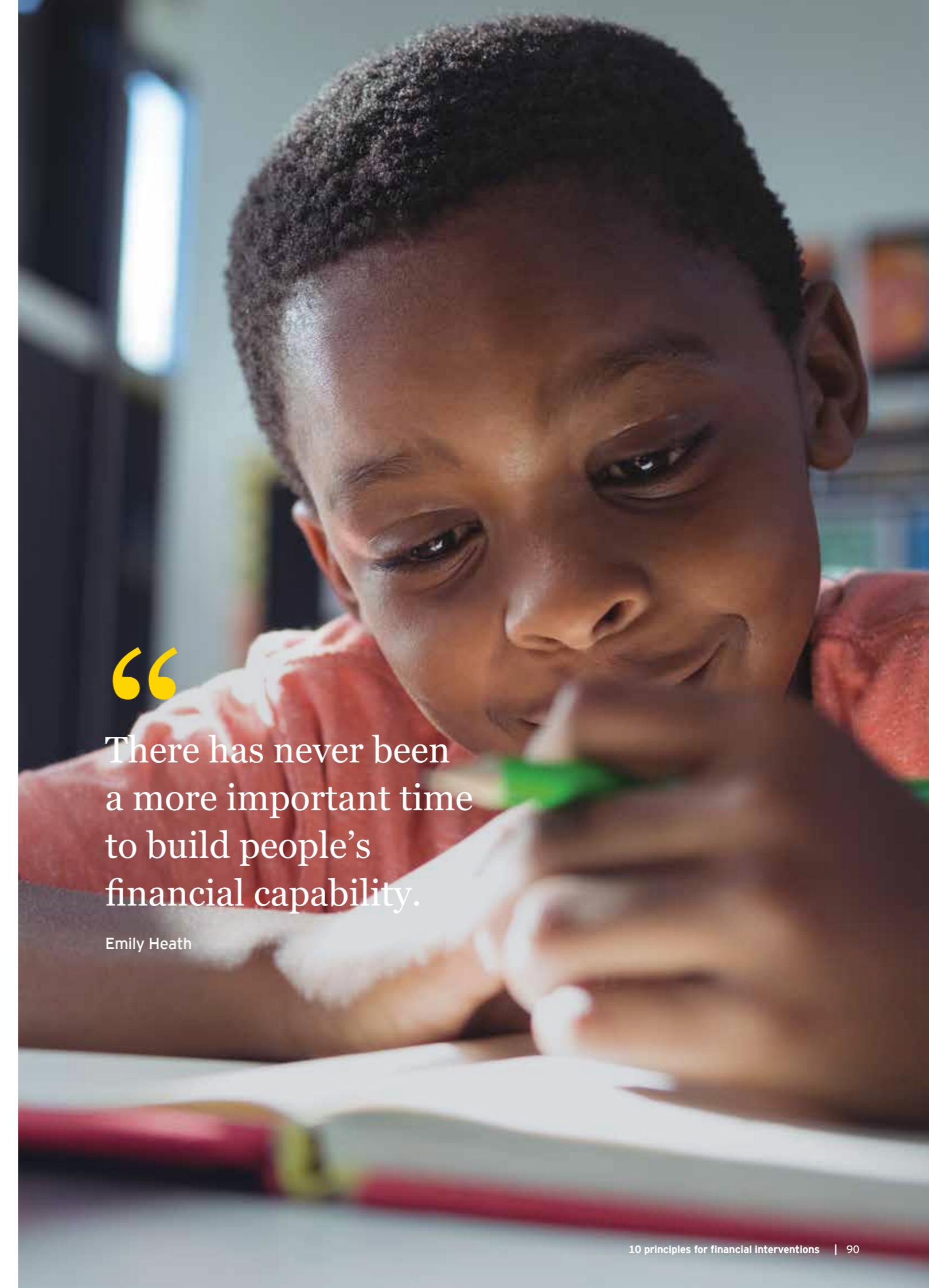
Dr Emily Heath

Thought Leadership and Solutions Manager

Dr Emily Heath is a neuroscientist, researcher and Thought Leadership & Solutions Manager in the Climate Change and Sustainability Services team at EY Australia. Emily holds a PhD in behavioural neuroscience from the University of Sydney's Brain and Mind Centre, and an honours degree in biochemistry.

Dr Heath has been architect of multiple award-winning behaviour change programs for youth and young adults, and has led research and evaluation projects across diverse areas such as financial education, cyber safety and novice driver education. She is co-author of the white paper 'Game On: How Video Games are Changing Education' as well as several peer-reviewed articles in academic journals.

Her research has been presented globally at conferences including the annual meeting of the Society for Neuroscience, the meeting of the Australian Neuroscience Society and the International Narcotics Research Conference. Her PhD focused on the molecular mechanisms of decision making and learning.



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There has never been a more important time to build people's financial capability.

Emily Heath

References

- 1 Willis, L., "Against financial literacy education", *Iowa Law Review*, 2008, 94, pp. 8-10.
- 2 Bruhn, M., et al., "Financial Education and Behavior Formation: Large-Scale Experimental Evidence from Brazil", *World Bank*, 2013, accessed 31 August 2016 from http://siteresources.worldbank.org/ezproxy1.library.usyd.edu.au/INTPOVRES/Resources/477227-1359402884744/BilalZia_Paper_20Feb13.pdf.
- 3 "PISA 2015 Results: Students' Financial Literacy (Volume IV)", *OECD*, 2017.
- 4 Muir, K., et al., "Financial Resilience in Australia 2015", *Centre for Social Impact (CSI) - University of New South Wales, for National Australia Bank*, 2016.
- 5 de Zwaan, L., "Students' low financial literacy makes understanding fees, loans, debt difficult", *The Conversation*, 4 August 2015, accessed 12 March 2017 from <https://theconversation.com/students-low-financial-literacy-makes-understanding-fees-loans-debt-difficult-45088>.
- 6 "How Americans view personal wealth vs. how financial planners view this wealth", *Consumer Federation of America and The Financial Planning Association*, 2006.
- 7 Hastings, J.S., Madrian, B.C. and Skimmyhorn, W.L., "Financial Literacy, Financial Education and Economic Outcomes", *Annual Review of Economics*, 2013, 5, pp. 347-373, accessed from doi:10.1146/annurev-economics-082312-125807
- 8 "Credit card debt clock", *ASIC website*, <https://www.moneysmart.gov.au/borrowing-and-credit/credit-cards/credit-card-debt-clock>, accessed 24 July, 2017.
- 9 Diss, K. "Australian household debt has tripled in 25 years, new study finds", *ABC*, 8 June 2015, accessed 9 February 2017 from <http://www.abc.net.au/news/2015-06-17/australian-household-debt-triples/6551352>.
- 10 Finlay, R. and Price, F., "Research Discussion Paper: Household Saving in Australia", *Reserve Bank of Australia*, 2014.
- 11 Thaler, R.H., "Financial Literacy, Beyond the Classroom", *New York Times*, 2013.
- 12 Hathaway, I. and Shatiwada, S., "Do Financial Education Programs Work?", *FRB of Cleveland Working Paper*, 2008, accessed from <http://dx.doi.org/10.2139/ssrn.1118485>.
- 13 Mandell, L. and Klein, L.S., "The Impact of Financial Literacy Education on Subsequent Financial Behavior", *Journal of Financial Counseling and Planning*, 2009, 20(1), pp. 15-24.
- 14 Fernandes, D., Lynch Jr, J.G., and Netemeyer, R.G., "Financial literacy, financial education, and downstream financial behaviors", *Management Science*, 2014, 60(8), pp. 1861-1883.
- 15 Allgood, S. and Walstad, W., "The effects of perceived and actual financial knowledge on credit card behavior", *Networks Financial Institute Working Paper No. 15*, 11 June 2011.
- 16 Lusardi, A. and Mitchell, O.S., "How ordinary consumers make complex economic decisions: Financial literacy and retirement readiness", *National Bureau of Economic Research*, 2009.
- 17 Lusardi, A. and Mitchell, O.S., "Financial literacy and retirement preparedness: Evidence and implications for financial education", *Business economics*, 2007, 42(1), pp. 35-44.
- 18 Van Rooij, M.C., Lusardi, A. and Alessie, R.J., "Financial literacy, retirement planning and household wealth", *The Economic Journal*, 2012, 122(560), pp. 449-478.
- 19 Reifner, U. and Schelhowe, A., "Financial Education", *Journal of Social Science Education*, 2010, 9(2), pp. 32-42.
- 20 Hastings, J.S. and Mitchell, O.S., "How financial literacy and impatience shape retirement wealth and investment behaviors", *National Bureau of Economic Research*, 2011.
- 21 Garðarsdóttir, R.B. and Dittmar, H., "The relationship of materialism to debt and financial well-being: The case of Iceland's perceived prosperity", *Journal of Economic Psychology*, 2012, 33(3), pp. 471-481, accessed from <http://dx.doi.org/10.1016/j.jeop.2011.12.008>.
- 22 Cole, S.A. and Shastry, G.K., "Smart money: The effect of education, cognitive ability, and financial literacy on financial market participation", *Harvard Business School*, 2009.
- 23 "PISA 2012 Results: Students and Money: Financial Literacy Skills for the 21st Century (Volume VI)", *OECD Publishing*, 2012.
- 24 De Neve, J.-E. and Fowler, J.H., "Credit card borrowing and the monoamine oxidase A (MAOA) gene", *Journal of Economic Behavior & Organization*, 2014, 107, pp. 428-439.
- 25 Frydman, C. and Camerer, C.F., "The psychology and neuroscience of financial decision making", *Trends in cognitive sciences*, 2016, 20(9), pp. 661-675.
- 26 Thaler, R.H., Sunstein, C.R. and Balz, J.P., "Choice architecture", 2014.
- 27 Hardisty, D.J., Appelt, K.C. and Weber, E.U., "Good or bad, we want it now: Fixedcost present bias for gains and losses explains magnitude asymmetries in intertemporal choice", *Journal of Behavioral Decision Making*, 2013, 26(4), pp. 348-361.
- 28 O'Donoghue, T. and Rabin, M., "Doing it now or later", *American Economic Review*, 1999, pp. 103-124.
- 29 Spencer, N., Nieboer, J. and Elliott, A., "Wired for Imprudence: Behavioural hurdles to financial capability and challenges for financial education", *RSA Action and Research Centre*, 2015.
- 30 Hershfield, H.E., et al., "Increasing saving behavior through age-progressed renderings of the future self", *Journal of Marketing Research*, 2011, 48(SPL), pp. S23-S37.
- 31 Kahneman, D., Knetsch, J.L. and Thaler, R.H., "Anomalies: The Endowment Effect, Loss Aversion, and Status Quo Bias", *The Journal of Economic Perspectives*, 1991, 5(1), pp. 193-206.
- 32 Goldstein, D.G., et al., "Nudge your customers toward better choices", *Harvard Business Review*, 2008, 86(12), pp. 99-105.
- 33 Johnson, E.J. and Goldstein, D., "Do defaults save lives?", *Science*, 2003, 302(5649), pp. 1338-1339.
- 34 Thaler, R.H. and Benartzi, S., "Save more tomorrow™: Using behavioral economics to increase employee saving", *Journal of Political Economy*, 2004, 112(S1), pp. S164-S187.
- 35 Hirshleifer, D. and Shumway, T., "Good day sunshine: Stock returns and the weather", *The Journal of Finance*, 2003, 58(3), pp. 1009-1032.
- 36 Edmans, A., Garcia, D. and Norli, Ø., "Sports sentiment and stock returns", *The Journal of Finance*, 2007, 62(4), pp. 1967-1998.
- 37 Ashton, J., Gerrard, B. and Hudson, R., "Do national soccer results really impact on the stock market?", *Applied Economics*, 2011, 43(26), pp. 3709-3717.
- 38 Lerner, J.S., Small, D.A., and Loewenstein, G., "Heart strings and purse strings carryover effects of emotions on economic decisions", *Psychological Science*, 2004, 15(5), pp. 337-341.
- 39 Bechara, A. and Damasio, A.R., "The somatic marker hypothesis: A neural theory of economic decision", *Games and Economic Behavior*, 2005, 52(2), pp. 336-372.
- 40 Zweig, J., "Five Investing Lessons from America's Top Pension Fund", *Money*, 1998, 27, pp. 115-118.

41 Sanfey, A.G., et al., "The neural basis of economic decision-making in the ultimatum game", *Science*, 2003, 300(5626), pp. 1755-1758.

42 Naqvi, N., Shiv, B. and Bechara, A., "The role of emotion in decision making a cognitive neuroscience perspective", *Current Directions in Psychological Science*, 2006, 15(5), pp. 260-264.

43 Baumeister, R.F., "Yielding to temptation: Self-control failure, impulsive purchasing, and consumer behavior", *Journal of Consumer Research*, 2002, 28(4), pp. 670-676.

44 Ameriks, J., et al., "Measuring self-control problems", *The American Economic Review*, 2007, 97(3), pp. 966-972.

45 Gathergood, J., "Self-control, financial literacy and consumer over-indebtedness", *Journal of Economic Psychology*, 2012, 33(3), pp. 590-602, accessed from <http://dx.doi.org/10.1016/j.jeop.2011.11.006>.

46 Vohs, K.D. and Faber, R.J., "Spent resources: Self-regulatory resource availability affects impulse buying", *Journal of Consumer Research*, 2007, 33(4), pp. 537-547.

47 Dittmar, H., "A new look at 'compulsive buying': Self-discrepancies and materialistic values as predictors of compulsive buying tendency", *Journal of Social and Clinical Psychology*, 2005, 24(6), pp. 832.

48 Dittmar, H., Long, K. and Bond, R., "When a better self is only a button click away: associations between materialistic values, emotional and identity-related buying motives, and compulsive buying tendency online", *Journal of Social and Clinical Psychology*, 2007, 26(3), pp. 334.

49 Feinberg, C., "The Science of Scarcity", *Harvard Business Review*, 2015.

50 Keinan, G., "Decision making under stress: Scanning of alternatives under controllable and uncontrollable threats", *Journal of Personality and Social Psychology*, 1987, 52(3), pp. 639.

51 Starcke, K., et al., "Anticipatory stress influences decision making under explicit risk conditions", *Behavioral Neuroscience*, 2008, 122(6), pp. 1352.

52 Starcke, K. and Brand, M., "Decision making under stress: a selective review", *Neuroscience & Biobehavioral Reviews*, 2012, 36(4), pp. 1228-1248.

53 Muraven, M. and Baumeister, R.F., "Self-regulation and depletion of limited resources: Does self-control resemble a muscle?", *Psychological Bulletin*, 2000, 126(2), pp. 247.

54 Dias-Ferreira, E., et al., "Chronic stress causes frontostriatal reorganization and affects decision-making", *Science*, 2009, 325(5940), pp. 621-625.

55 Porcelli, A.J. and Delgado, M.R., "Acute stress modulates risk taking in financial decision making", *Psychological Science*, 2009, 20(3), pp. 278-283.

56 Besharat, A., Carrillat, F.A. and Ladik, D.M., "When Motivation Is Against Debtors' Best Interest: The Illusion of Goal Progress in Credit Card Debt Repayment", *Journal of Public Policy & Marketing*, 2014, 33(2), pp. 143-158.

57 5Amar, M., et al., "Winning the battle but losing the war: The psychology of debt management", *Journal of Marketing Research*, 2011, 48(SPL), pp. S38-S50.

58 Kettle, K.L., et al., "Repayment Concentration and Consumer Motivation to Get Out of Debt", *Journal of Consumer Research*, 2016, pp. 460-477.

59 Trudel, R., "Research: The Best Strategy for Paying Off Credit Card Debt", *Harvard Business Review*, 2016.

60 Drexler, A., Fischer, G. and Schoar, A., "Keeping it simple: Financial literacy and rules of thumb", *American Economic Journal Applied Economics*, 2014, 6(2), pp. 1-31.

61 "Teacher, leave them kids alone", *The Economist*, 2013, accessed 11 April 2019 from <http://www.economist.com/news/finance-and-economics/21571883-financial-education-has-had-disappointing-results-past-teacher-leave-them>.

62 Collins, J.M., "The impacts of mandatory financial education: Evidence from a randomized field study", *Journal of Economic Behavior & Organization*, 2013, 95, pp. 146-158, accessed from <http://dx.doi.org/10.1016/j.jebo.2012.08.011>.

63 T.C.F.R. Group, "Investor Fraud Study: Final Report", NASD Investor Education Foundation and WISE Senior Services, 2006.

64 Payne, J.W., "Task complexity and contingent processing in decision making: An information search and protocol analysis", *Organizational Behavior and Human Performance*, 1976, 16(2), pp. 366-387.

65 Iyengar, S.S. and Lepper, M.R., "When choice is demotivating: Can one desire too much of a good thing?", *Journal of Personality and Social Psychology*, 2000, 79(6), pp. 995.

66 Choi, J.J., et al., "Saving for retirement on the path of least resistance", *Rodney L White Center for Financial Research Working Papers*, 2005, 9.

67 Benartzi, S. and Thaler, R.H., "Heuristics and biases in retirement savings behavior", *The Journal of Economic Perspectives*, 2007, 21(3), pp. 81-104.

68 Lusardi, A., Keller, P.A., and Keller, A.M., "New Ways to Make People Save: A Social Marketing Approach", *National Bureau of Economic Research Working Paper Series*, 2009.

69 Madrian, B.C. and Shea, D.F., "The power of suggestion: Inertia in 401 (k) participation and savings behavior", *National Bureau of Economic Research*, 2000.

70 "How to Assess the Competitiveness and Efficiency of the Superannuation System", in "Productivity Commission Research Report", Productivity Commission, 2016.

71 Orlando, J., "The app trap: how children spend thousands online", *The Conversation*, 9 February 2014, accessed 21 April from <https://theconversation.com/the-app-trap-how-children-spend-thousands-online-21652>.

72 Steele, S., "2015 Millennial Money Mindset Report: The Banking Barometer", Chime, 2015.

73 Ronick, D. "The 5 Real Reasons Millennials Don't Invest", *Stash*, 1 April 2016, accessed 5 March 2017 from <https://learn.stashinvest.com/millennials-dont-invest>.

74 "The Federal Government's Role in Improving Financial Literacy: Highlights of a GAO Forum", G.A. Office, 2004.

75 Bell, C. and Hogarth, J.M., "Better deals on wheels: The effects of financial education on car buying", *Community Dividend*, 10 April 2010, accessed 11 April 2019 from https://www.minneapolisfed.org/publications/community-dividend/better-deals-on-wheels-the-effects-of-financial-education-on-car-buying?sc_device=Default

76 Daly, M., et al., "Childhood Self-Control and Unemployment Throughout the Life Span: Evidence From Two British Cohort Studies", *Psychological Science*, 2015, 26(6), pp. 709-723, doi:10.1177/0956797615569001

77 Gailliot, M.T. and Baumeister, R.F., "The physiology of willpower: Linking blood glucose to self-control", *Personality and Social Psychology Review*, 2007, 11(4), pp. 303-327.

78 Soman, D. and Cheema, A., "When goals are counterproductive: The effects of violation of a behavioral goal on subsequent performance", *Journal of Consumer Research*, 2004, 31(1), pp. 52-62.

79 Wilcox, K., Block, L. and Eisenstein, E.M., "Leave Home Without It? The Effects of Credit Card Debt and Available Credit on Spending", *Journal of Marketing Research*, 2011, 48(SPL), pp. S78-S90, doi:doi:10.1509/jmkr.48.SPL.S78

80 Polivy, J., et al., "The effects of self-attention and public attention on eating in restrained and unrestrained subjects", *Journal of Personality and Social Psychology*, 1986, 50(6), pp. 1253.

81 Canterbury, M., et al., "Sustained reduction of nicotine craving with real-time neurofeedback: exploring the role of severity of dependence", *Nicotine & Tobacco Research*, 2013, 15(12), pp. 2120-2124.

82 Hanlon, C.A., et al., "Reduction of cue-induced craving through realtime neurofeedback in nicotine users: the role of region of interest selection and multiple visits", *Psychiatry Research: Neuroimaging*, 2013, 213(1), pp. 79-81.

83 Li, X., et al., "Volitional reduction of anterior cingulate cortex activity produces decreased cue craving in smoking cessation: a preliminary realtime fMRI study", *Addiction Biology*, 2013, 18(4), pp. 739-748.

84 Holtmann, M., et al., "Neurofeedback for ADHD: a review of current evidence", *Child and adolescent psychiatric clinics of North America*, 2014, 23(4), pp. 789-806.

85 Steiner, N.J., et al., "In-school neurofeedback training for ADHD: sustained improvements from a randomized control trial", *Pediatrics*, 2014, pp. 2013-2059.

86 Stangl, J. and Matthews, C., "How young New Zealanders learn about personal finance: A Longitudinal study", *The Academy of Financial Services Conference*, 2013.

87 "Better Money Habits Millennial Report: Spring 2015", Bank of America, 2015.

88 "Money Guidance Pathfinder - Key Findings and Lessons Learned", C.F.E.B, 2010.

89 Randrianarisoa, A. and Eccles, K., "Pathways to Resilience: The impact of financial conversations on the financial capability of NILS applicants." Good Shepherd Microfinance, 2016.

90 McKenzie-Mohr, D. and Schultz, P.W., "Choosing effective behavior change tools", *Social Marketing Quarterly*, 2014, 20(1), pp. 35-46.

91 Wang, T.H. and Katzev, R.D., "Group Commitment and Resource Conservation: Two Field Experiments on Promoting Recycling", *Journal of Applied Social Psychology*, 1990, 20(4), pp. 265-275.

92 Kast, F., Meier, S. and Pomeranz, D., "Saving More in Groups: Field Experimental Evidence from Chile", Harvard Business School, 2012.

93 Berg, G. and Zia, B., "Harnessing emotional connections to improve financial decisions: Evaluating the impact of financial education in mainstream media", *World Bank Policy Research Working Paper*, 2013.

94 Doi, Y., McKenzie, D. and Zia, B., "Who you train matters: Identifying combined effects of financial education on migrant households", *Journal of Development Economics*, 2014, 109, pp. 39-55, accessed from <http://dx.doi.org/10.1016/j.jdeveco.2014.03.009>.

95 Knutson, B., et al., "Neural predictors of purchases", *Neuron*, 2007, 53(1), pp. 147-156.

96 Feinberg, R.A., "Credit cards as spending facilitating stimuli: A conditioning interpretation", *Journal of Consumer Research*, 1986, 13(3), pp. 348-356.

97 Runnemark, E., Hedman, J. and Xiao, X., "Do consumers pay more using debit cards than cash?", *Electronic Commerce Research and Applications*, 2015, 14(5), pp. 285-291.

98 Thomas, M., Desai, K.K. and Seenivasan, S., "How credit card payments increase unhealthy food purchases: Visceral regulation of vices", *Journal of Consumer Research*, 2010, 38(1), pp. 126-139.

99 "Death of pocket money - more parents than ever pay children digitally", *Intelligent Environments*, 22 July 2015, accessed 12 November 2016 from <https://www.intelligentenvironments.com/death-of-pocket-money-more-parents-than-ever-pay-children-digitaly/>.

100 "2014 Parents, Kids and Money Survey", T. Rowe Price, 2014.

101 McGrath, L., "Helping kids understand the value of pocket money in the digital age", Commonwealth Bank, 18 February 2015, accessed 7 September 2016 from <https://www.commbank.com.au/guidance/blog/helping-kids-understand-the-value-of-their-pocket-money-in-the-digital-age-201502.html>.

102 "Australian Primary School Students Show It's Not All Doom and Gloom: They Understand How to Save Money", Citigroup website, 9 March 2009, <http://www.citigroup.com/citi/press/2009/090309b.htm>, accessed 11 April 2019.

103 Sawatzki, K., "What financial dilemmas reveal about students' social and mathematical understanding", *Mathematics Education: Yesterday, Today and Tomorrow*, 2013, pp. 602-609.

104 Mandell, L. and Klein, L.S., "Motivation and financial literacy", *Financial Services Review*, 2007, 16(2), pp. 105.

105 Mandell, L., "Financial literacy of high school students", *Handbook of Consumer Finance Research*, 2008, pp. 163-183.

106 Agarwal, S., et al., "Learning in the credit card market". *National Bureau of Economic Research*, 2008.

107 Hilgert, M.A., Hogarth, J.M. and Beverly, S.G., "Household Financial Management: The Connection between Knowledge and Behavior", *Federal Reserve Bulletin*, 2003, 89, pp. 309-322.

108 "2014 Financial Inclusion Action Plan", *Global Partnership for Financial Inclusion*, 2014.

109 Duhigg, C., *The Power of Habit: Why we do what we do and how to change* (Random House, 2013).

110 Karlan, D., et al., "Getting to the top of mind: How reminders increase saving", *Management Science*, 2016, 62(12), pp. 3393-3411.

111 Kiviat, B. and Morduch, J., "From financial literacy to financial action", *Financial Access Initiative*, Robert F. Wagner Graduate School of Public Service (New York University), 2012.

112 Fear, J., "Choice overload: Australians coping with financial decisions", *The Australia Institute*, 2008.

113 "Improving financial literacy: analysis of issues and policies", *OECD*, 2005.

114 Elliott, A., "Not waving but drowning: Over-indebtedness by misjudgement", *Centre for the Study of Financial Innovation (CSFI)*, 2006.

115 Niell, A. and Stevens, L., "Evaluation of the GetWise programme in primary schools: Study commissioned by ASB and ChangeLabs", *New Zealand Council of Education Research*, 2013.



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