An Introduction To:

Brains, Behavior & Design

Tools to understand and influence decision making

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Chocolate cake or fruit salad?

Participants in an experiment were asked to memorize numbers. One group memorized a two digit number while the other memorized a seven digit number. They were told to repeat the number to a researcher in another room, but on their way to the room, each person was offered a choice of either chocolate cake or fruit salad as a thank you gift for participating. Those who carried a greater cognitive load (i.e., remembering seven digits) were more likely to choose cake while those who only had two digits to remember were likely to choose fruit.[1]

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How is behavioral economics being used today?

Today the value of behavioral economics is becoming increasingly recognized. We are beginning to see a growing number of concepts being taken out of the lab and into everyday life to encourage changes in people's current behaviors. The following pages highlight a few case studies that apply concepts from behavioral economics in a variety of domains.

These include:

- Opt-out programs that leverage default options to increase organ donation rates. Several governments around the world have adopted this.
- Save to Win, a program in Michigan that uses lotteries to encourage people to save.
- Volkswagen's Fun Theory, an initiative dedicated to changing behavior through fun and surprise, thereby translating long-term benefits into immediate enjoyment.

Opt-Out Organ Donation:
How can we help save more lives?

Strategy
Make organ donation the default option.

Results
In Germany, people must actively sign up to donate their organs. Only 12% of citizens consent to donate. There is a 99% consent rate in Austria, where people are automatically enrolled unless they actively opt-out of the program.[1]

Leveraging Behavioral Economics

People tend to rely on the default option, so make it the desired outcome.
Although the vast majority of adults express willingness to be an organ donor, many don't get around to giving official consent. Making organ donation the default option has significantly increased the consent rate compared to programs where opt-out policies are used.

People tend to weigh their immediate interests more heavily than their future needs, so provide opportunities for people to pre-commit.
In some places, legal issues around presumed consent challenge opt-out programs. Mandated choice policies require people to decide whether or not to donate when renewing official documents such as driver's licenses, avoiding confusion about a persons's desire to donate in the future.[2]

Save to Win: How can we help people save more money?

Strategy
Use people's attraction to lotteries to encourage them to save.

Results
Save to Win gained $3.1 million new deposits in 25 weeks across Michigan.[3]

Leveraging Behavioral Economics

People tend to weigh their immediate interests more heavily than future needs, so introduce or increase present gains.
People are eligible for monthly cash prizes of up to $400 and an annual $100,000 when they put $25 into a one-year CD (certificate of deposit).[4] A lottery introduces the possibility of a concrete gain in the present.

People tend to pay attention to surprises, so use surprise to make gains more pleasurable.
Lotteries are appealing incentives because they introduce the element of surprise.

People tend to relate information to examples at hand, so highlight colorful and personal stories.
Announcing monthly winners increases people's optimism about the possibility of winning and increases motivation.

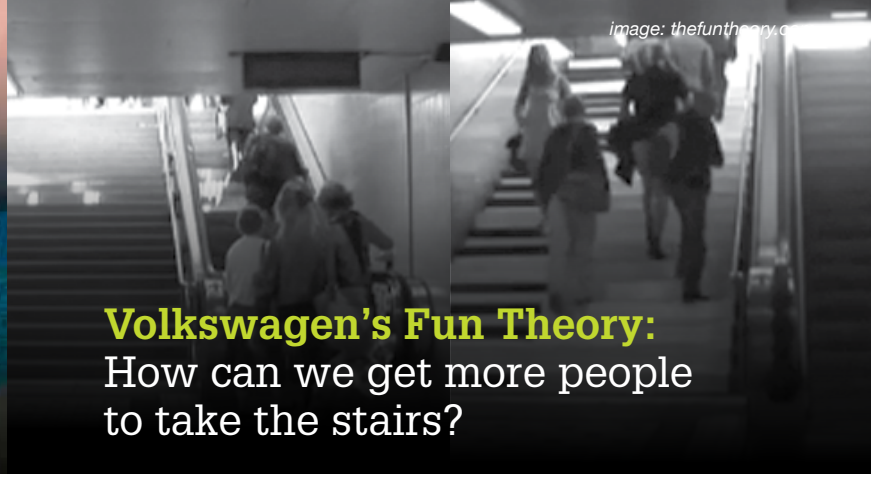


image: thefuntheory.com

Volkswagen's Fun Theory: How can we get more people to take the stairs?

Strategy
Make walking fun by having each step of the subway stairs play a musical note when stepped on.

Results
66% more people took the stairs.[5]

Leveraging Behavioral Economics

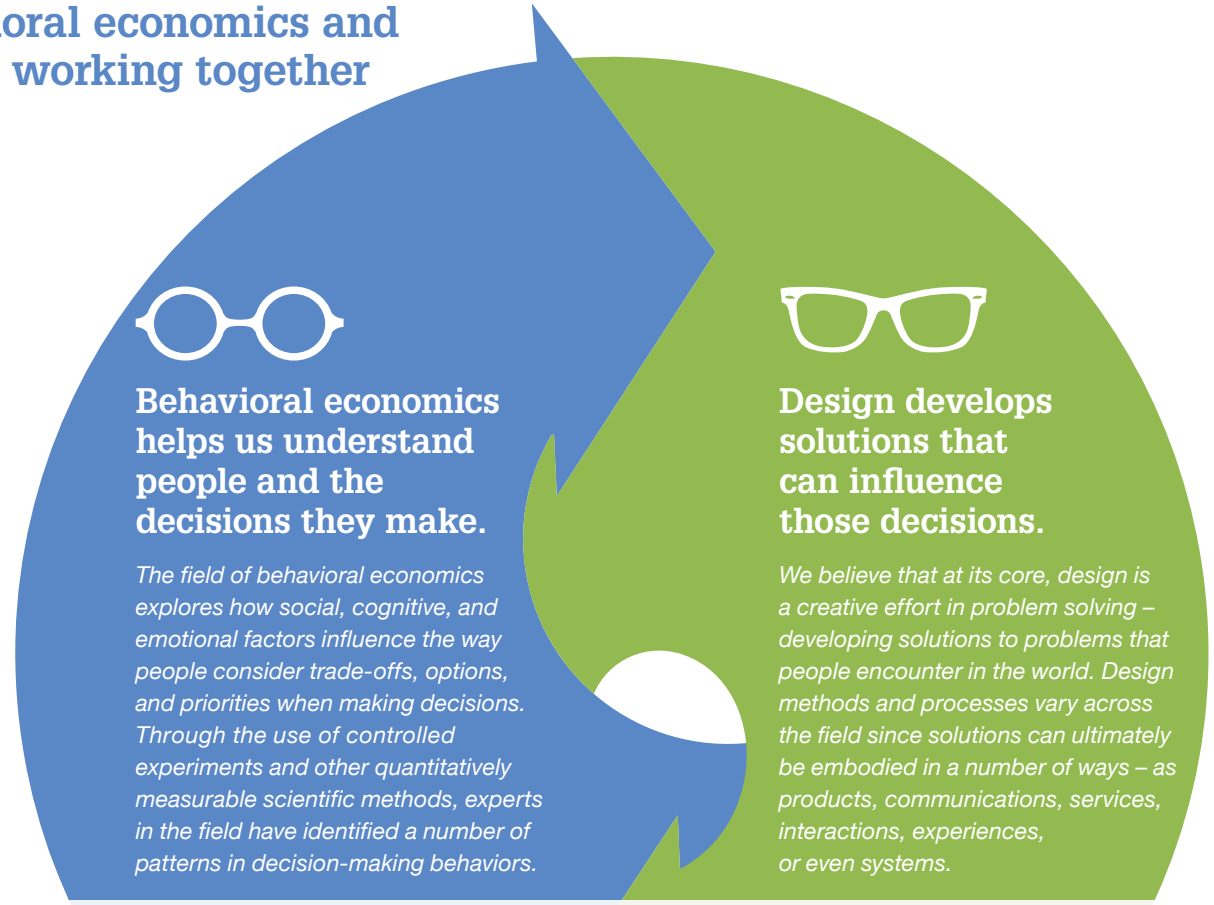
People tend to weigh their immediate interests more heavily than future needs, so introduce present gains.
By turning the stairs into a fun activity, people make a choice that they can both enjoy now and benefit from in the future.

People tend to pay attention to surprises, so use surprise to make gains more pleasurable.
Musical stairs initially draw people's attention, and turn an everyday activity into something interesting and novel. However, this introduces a new challenge: *How can we prevent the novelty from wearing off over time?*

Solving problems for people: the convergence of behavioral economics and design

The field of behavioral economics recognizes that social, cognitive, and emotional factors yield significant differences between theoretical rational decisions and the actual decisions that human beings make every day. Findings and principles from behavioral economics have significant implications for design. With the assumption that designers can influence decision-making processes comes a point of view that designers also have a certain degree of responsibility to understand and deliberately design with those principles in mind.

Behavioral economics and design working together



Behavioral economics helps us understand people and the decisions they make.

The field of behavioral economics explores how social, cognitive, and emotional factors influence the way people consider trade-offs, options, and priorities when making decisions. Through the use of controlled experiments and other quantitatively measurable scientific methods, experts in the field have identified a number of patterns in decision-making behaviors.

What can behavioral economics do for design?

- help design researchers develop informed hypotheses to identify and understand problems better and faster
- help designers examine relationships between what they see and what might be going on in people's heads
- help designers anticipate problems with new solutions
- help designers reconsider the solution space with a new lens
- check and validate a designer's intuition

Design develops solutions that can influence those decisions.

We believe that at its core, design is a creative effort in problem solving – developing solutions to problems that people encounter in the world. Design methods and processes vary across the field since solutions can ultimately be embodied in a number of ways – as products, communications, services, interactions, experiences, or even systems.

What can design do for behavioral economics?

- take behavioral economics findings out of the lab and apply them to develop robust and effective solutions in the world
- apply behavioral economics concepts to solutions not only in finance, but nearly any context where human beings are making decisions (including healthcare, education, and sustainability, to name a few)

Behavioral economics isn't just about money

(a brief history)

If people are irrational, what's an economist to do?

Traditional economics is built upon the assumption that people are selfish, rational creatures – and that these qualities entirely dictate our behavior and decision making processes. Yet in reality people often act in ways that aren't selfish and logical: they volunteer to do work for free, they smoke cigarettes, or they fail to take advantage of 401(k) plans. In other words, people are often irrational. Behavioral economics recognizes this, and combines knowledge from economics and psychology to study the way people make decisions in real life.[1]

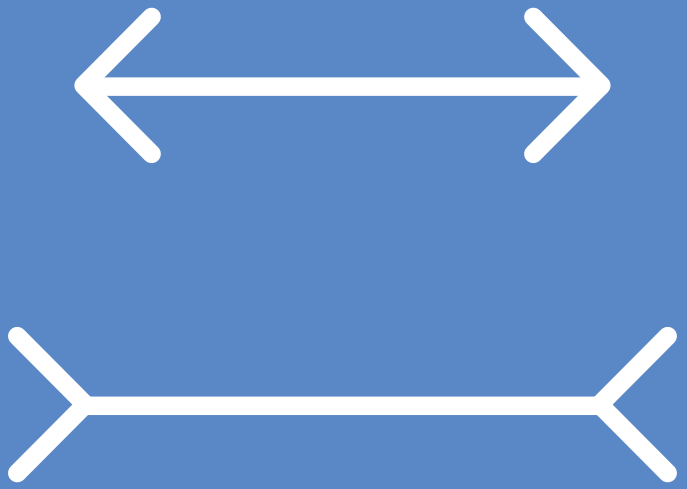
Research in behavioral economics

Today, research in behavioral economics often follows a common recipe:[2]

- "Identify normative assumptions or models that are ubiquitously used by economists"
- "Identify anomalies – i.e., demonstrate clear violations of the assumption or model, and painstakingly rule out alternative explanations"
- "Use the anomalies as inspiration to create alternative theories that generalize existing models"
- "Construct economic models of behavior using the behavioral assumptions from the third step, derive fresh implications, and test them"

"...in behavioral economics, the choice depends on how the decision-maker describes the [alternatives] to himself. Any psychologist knows this, but it is revolutionary when imported into economics."[3]

– Eric Wanner
Russell Sage Foundation



Which segment is longer?

These segments are actually the same length. But by using different arrow heads, the perception of length changes.[4]

Heuristics and Biases

Many of the principles in behavioral economics are based on the idea that people use mental shortcuts, or heuristics, to assist in processing information.

In 1974, Tvesrky and Kahneman identified three heuristics:[5]

- Anchoring and Adjustment: starting from a familiar point of reference, then making adjustments.
- Availability: using familiar examples that readily come to mind, especially those that are accessible (vivid, easily imagined) and salient (relevant, as seen in recent events), to assess risk and make decisions.
- Representativeness: assuming a limited sample or stereotype is representative of a larger trend or population.

These heuristics can cause biased, or "irrational," decision making. For example, the availability heuristic contributes to:[6]

- Hindsight bias: overestimating the probability "previously attached to events which later happened."
- Curse of knowledge: difficulty understanding and empathizing with people who don't know as much as you.

And the representativeness heuristic contributes to:

- Gambler's fallacy: expectation that, after flipping a coin has resulted in several heads in a row, a tails flip is "due."[7]

Initially, psychologists contributed to the identification of anomalies in Expected Utility Theory.

Throughout the 1980s, early adopters of behavioral economics still faced resistance.

1950 1960 1970 1980 1990 2000

1947 – Economist and psychologist Herbert Simon (Carnegie Mellon) proposes the notion of bounded rationality: "rational choice that takes into account the cognitive limitations of the decision-maker."[8]

1979 – Psychologists Daniel Kahneman (Princeton) and Amos Tversky (Stanford) publish "Prospect Theory: An Analysis of Decision under Risk" – proposing the notion that the framing of alternatives affects decision making.[9]

1980s – The Alfred P. Sloan Foundation starts a program in behavioral economics. And at Cornell University Richard Thaler begins to champion the field in his regular feature in the Journal of Economic Perspectives. [10]

1986 – The Russell Sage Foundation and Alfred P. Sloan Foundation work together and begin offering grants for the study of behavioral economics.[11]

2000s – Books like Predictably Irrational (Ariely) and Nudge (Thaler & Sunstein) have popularized the field and brought it into the mainstream.

Glossary

Actor-Observer Bias
Tendency to attribute others' behaviors to personality more than situation, but to attribute one's own behaviors to situation more than personality.

Ambiguity Effect
Tendency to avoid options where incomplete information makes the choice feel risky.

Anchoring
Tendency to base decisions on previously introduced information, even if that information is not relevant to the decision. Tendency to anchor to a familiar point of reference, then make adjustments.

Anticipation of Rewards
Tendency to be more excited by the prospect of a reward than the reward itself.

Attentional Collapse
Tendency not to recall past reference points or accurately estimate future reference points; tendency for the relative point from which gains and losses are measured to change over time.

Availability
Tendency to estimate what is more likely based on what is available in memory. This is biased toward vivid, unusual, or emotionally charged examples.

Bandwagon Effect
Tendency to base actions and beliefs on what other people are doing or believing.

Business v. Social Norms
Tendency to discount people and organizations when they act in ways that violate expectations about social or business morays.

Certainty Bias
Tendency to value smaller changes in probability that lead to certainty (reducing a low probability to 0 or a high probability to 1) over larger changes in probabilities (e.g., reducing a 50% chance to 40% chance) that would result in a larger overall impact.

Choice Bracketing
Tendency to fail to assess consequences of many choices taken together (broad bracketing) and to instead assess consequences of fewer or individual choices (narrow bracketing).

Clustering Illusion
Tendency to identify patterns when none are present.

Commitment
Tendency to have trouble letting go of something when time and/or effort have been invested.

Decoupling
Tendency to view the relationship between action/decision and consequence/outcome as less direct or weaker the farther apart in time they are; over time the cost and outcome/value become disassociated.

Diagnosis Bias
Tendency to label people, objects, etc. based on our initial assessment of them, and then have an inability to reconsider those judgments later on. We are often swayed by irrelevant factors when making a diagnosis (e.g., physical appearance), and later ignore objective information that conflicts with our initial diagnosis.

Endowment Effect
Tendency to value things you own more than things you don't, and to demand much more to give up an object than others are willing to pay to acquire it.

Framing
Tendency to draw different conclusions based on how the data is presented; source of information, context, and primary identity at the time affects perception and decision-making.

Hedonic Framing
Tendency to view two gains occurring separately as having more value than one large gain of equal value. However, two losses occurring separately are more painful than one large loss. Small gains/losses attached to larger gains/losses are less noticeable.

Hyperbolic Discounting
Tendency to value present gains over future gains, even if the future gains are larger. The tendency diminishes the further in the future the options are.

Information Avoidance
Tendency to avoid information when faced with extreme cases of vivid stories and images; an assumption that one can avoid undesirable outcomes by ignoring them.

Identity
Although people tend to view themselves (their feelings, mind sets, thoughts, behaviors, values, and priorities) as internally consistent, they have several different identities throughout the course of a day. Context and the way options are positioned relative to those identities can radically affect how people behave.

Impact Bias
Tendency to overestimate the future degree of joy or grief due to gains or losses. The effect is magnified for negative outcomes and near misses. This results in dissatisfaction setting in sooner than expected, or heightened expectations (high or low) about an upcoming situation. Also known as Affective Forecasting Error.

Intertemporal Choice
Tendency to focus on the immediate result of a decision over a future result. The immediate situation is vivid, specific, and deals with more visceral responses, whereas a future situation is hard to envision. There is often a disconnect between current (known) self and future (unknown) self.

Loss Aversion
Tendency to avoid losses, and to view the cost of giving up an object or entity as greater than cost of acquiring it.

Mental Accounting
Tendency to think about the world in terms of specific accounts, where value isn't interchangeable.

Optimism Bias
Tendency to be overly confident that plans will be successful.

Placebo Effect
Tendency to have an experience aligned with prior expectations.

Planning Fallacy
Tendency to assume tasks will take less time to complete than they actually will.

Representativeness
Tendency to judge the probability or frequency of an occurrence based on how closely it aligns with one's existing understanding, and to assume that things with some similarities are more similar than they really are.

Resolving Cognitive Dissonance
Tendency to rationalize or discount evidence that doesn't support the choices made.

Status Quo Bias
Tendency for people to want things to stay the same, and to select a default option when one is present.

Surprise & Adaptation
Tendency to receive three to four times more excitement from surprise than from predictable events, and to get less satisfaction out of consuming or interacting with something the more you do it.

Notes

Chocolate cake or fruit salad?

1. Shiv and Fedorikhin (1999)

How is behavioral economics being used today?

1. Thaler & Sunstein (2008), 180–181
2. Thaler (2009)
3. Zweig (2009)
4. michigansavingsraffle.org
5. thefuntheory.com

Behavioral economics isn't just about money: a brief history

1. Lambert (2006)
2. Camerer and Loewenstein (2003), 6
3. Lambert (2006)
4. "Müller-Lyer Illusion," wikipedia.org
5. Thaler and Sunstein (2008), 23–26
6. Camerer and Loewenstein (2003), 10
7. Camerer and Loewenstein (2003), 11
8. Simon (1990), 15
9. Lambert (2006)
10. Lambert (2006)
11. Lambert (2006)

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About us

We're a group of six Masters of Design students from IIT Institute of Design working on an independent research project. We are exploring how insights from the fields of cognitive psychology and behavioral economics can be used to design better products, services, experiences, and business strategies.

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