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Behavioral science and pandemic management

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THE CHALLENGE OF PANDEMICS

THERE ARE TWO IMPORTANT CHALLENGES FACING
THE HEALTHCARE COMMUNITY IN TIMES OF PANDEMICS:

THE MEDICAL CHALLENGE

THE BEHAVIORAL CHALLENGE

THE EVOLUTION OF BEHAVIORAL CHALLENGE

Classical economists, such as John Stuart Mills, considered humans to be entirely rational beings, who make decisions on the basis of **optimising utility**, giving rise to the **homo economicus** paradigm[1]. under this paradigm, it was assumed that people were perfectly rational and would make same decisions when provided the same information.

A **psychologist**, BF Skinner considered behavior a function of conditioning and its modification a result of **operant conditioning[2]**. According to Skinner, human behavior is conditioned by the social environment people live in. Skinner is famous for his "Skinner box"[2], used to demonstrate Pavlovian effects which can condition human behavior.

Although **psychologists**, Daniel Kahneman and Amos Tversky created the realm of **behavioral economics**: rejecting the "homo economicus" hypothesis and going deeper than conditioning theories, they examined the "irrational" thought processes people use to make decisions - heuristics and biases[3]

1. Mark Sheskin and Nicolas Baumard, Switching Away from Utilitarianism: The Limited Role of Utility Calculations in Moral Judgment, 10.1371/journal.pone.0160084
2. B. F. Skinner, the behavior of organisms, An Experimental Analysis, APPLETON - CENTURY - CROFTS, INC., 1938
3. Justin Fox , From "Economic Man" to Behavioral Economics, Harvard business review, 2015 (https://hbr.org/2015/05/from-economic-man-to-behavioral-economics)

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B.F SKINNER : CONDITIONING[4]

- Skinner demonstrated that much of our behavior was, like animals, the result of “operant conditioning”.
- We learn that given behavior leads to pleasurable results and this behavior is reinforced
- Behavior that leads to unpleasant results is shunned

4. B. F. Skinner, the behavior of organisms, An Experimental Analysis, APPLETON - CENTURY - CROFTS, INC., 1938

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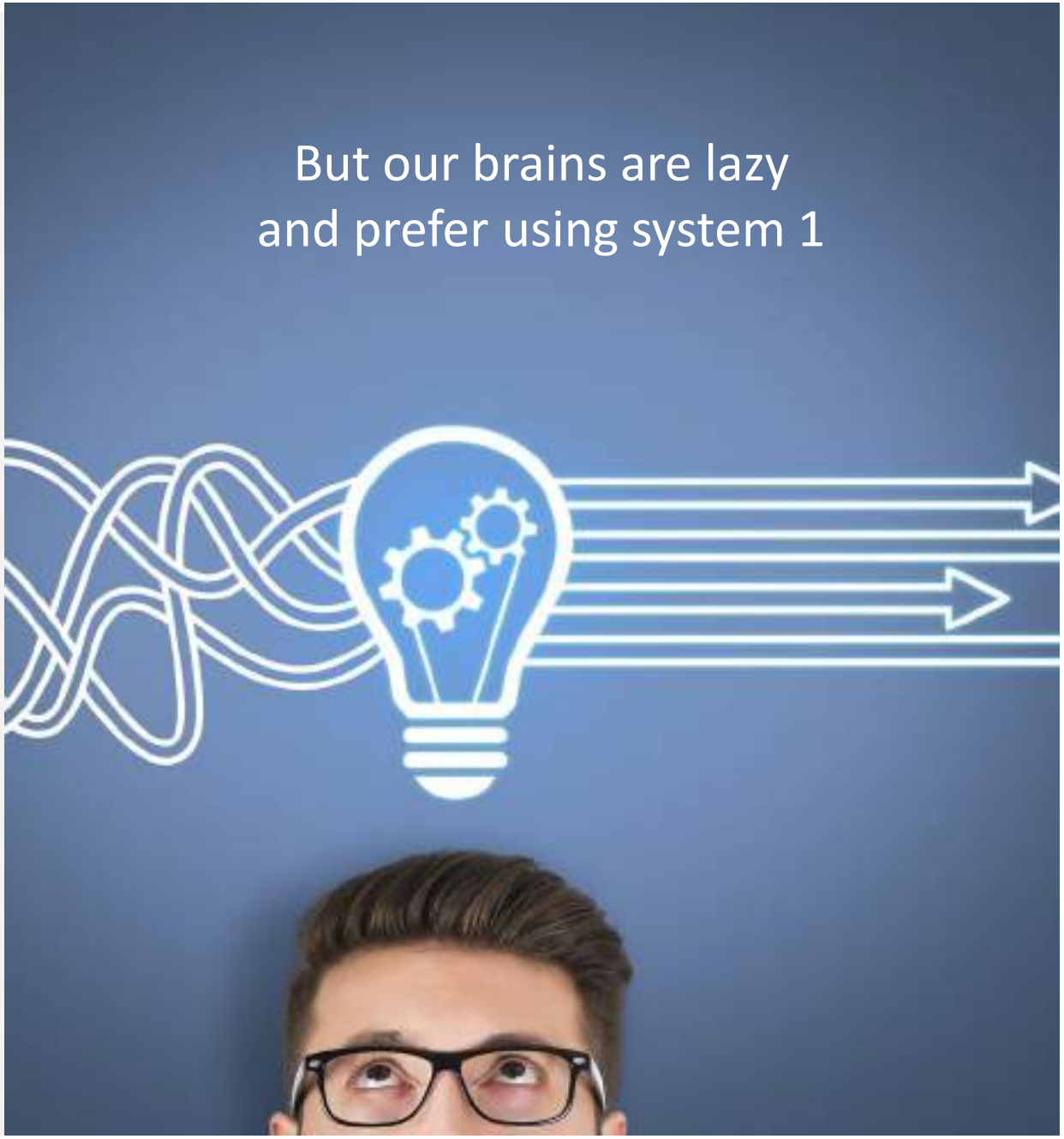
KAHNEMAN & TVERSKY: THINKING SYSTEMS[5]

KAHNEMAN AND TVERSKY UNCOVERED OUR TWO "THINKING SYSTEMS"

- **System 1** makes quick judgements based on instinctual responses. It is usually automatic and covers up 95%+ of decisions people make
- **System 2** employs reason to make judgements. It is often described as being "lazy".



5. Shu Wen Tay, Paul Ryan, Anthony Ryan, **Systems 1 and 2 thinking processes and cognitive reflection testing in medical students,** Canadian Medical Education Journal 2016, 7(2) https://suebehaviouraldesign.com/kahneman-fast-slow-thinking/

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SYSTEM 1: THE SHORTCUT APPROACH

SYSTEM 2 ANALYSES, CALCULATES, AND REASONS[6]. SYSTEM 1 USES "HEURISTICS", OR BEHAVIORAL SHORTCUTS TO DRIVE RAPID BEHAVIORAL DECISIONS. THERE ARE MANY, BUT SOME OF THE MOST IMPORTANT FOR US INCLUDE :

Availability: we assess the likelihood of something not based on facts, but on how easy it is to imagine it [7]

Anchoring: we are strongly influenced by other, even unrelated messages, presented at the same time [7]

Loss aversion: we value what we already have much more than that we might gain [7*]

6. Shu Wen Tay, Paul Ryan, Anthony Ryan, **Systems 1 and 2 thinking processes and cognitive reflection testing in medical students,** Canadian Medical Education Journal 2016, 7(2) https://suebehaviouraldesign.com/kahneman-fast-slow-thinking/
7. **J. van der Pligt, Decision Making, Psychology of, International Encyclopedia of the Social & Behavioral Sciences, 2001 (https://www.sciencedirect.com/topics/computer-science/availability-heuristic)**
7*. Loss aversion - Sendhil Mullainathan, Richard H. Thaler, Behavioral Economics, in International Encyclopedia of the Social & Behavioral Sciences (Second Edition), 2015

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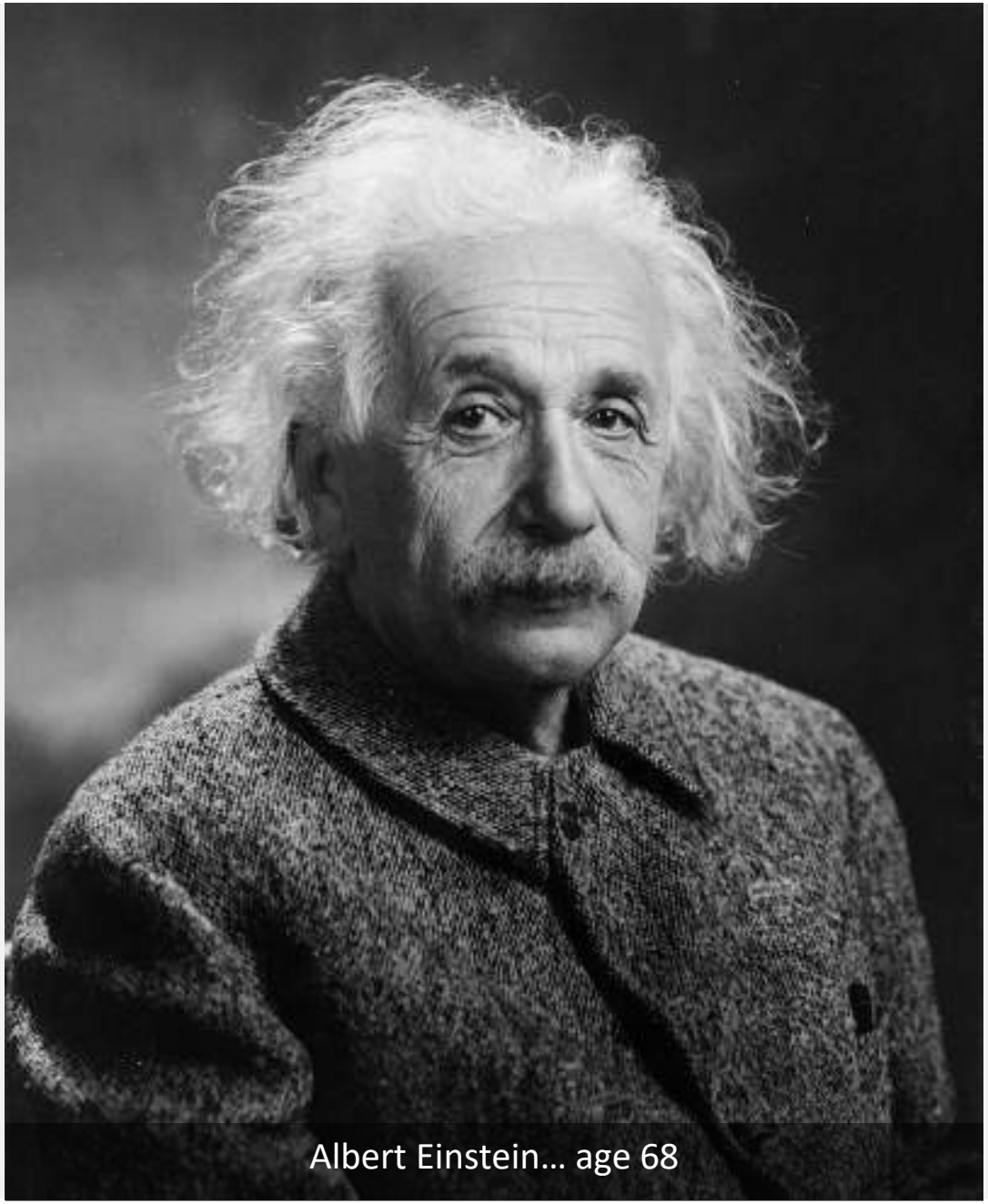
ANCHORING

- How much younger than 100 was Albert Einstein when he died?
- How much older than 50 was Albert Einstein when he died?
- Ask these questions to different groups and you can be sure that the first group will guess a higher age for Albert Einstein.
- Why? Because one group is anchored very high and the other very low, although both know that these ages are far from the reality.


Albert Einstein… age 68

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AVAILABILITY

What is the ratio of deaths caused by the following two animals every year in the united states?[8]

Reality

1:20

We hear much more about people being killed by sharks than by cows, and this skews our assessment of probability

Survey

8:1

8. **LIZ NEPORENT**, Shark Versus Cow: Which Is Deadlier? *Here are five creatures more deadly than sharks,* https://abcnews.go.com/Health/shark-versus-cow-deadlier/story?id=24931705

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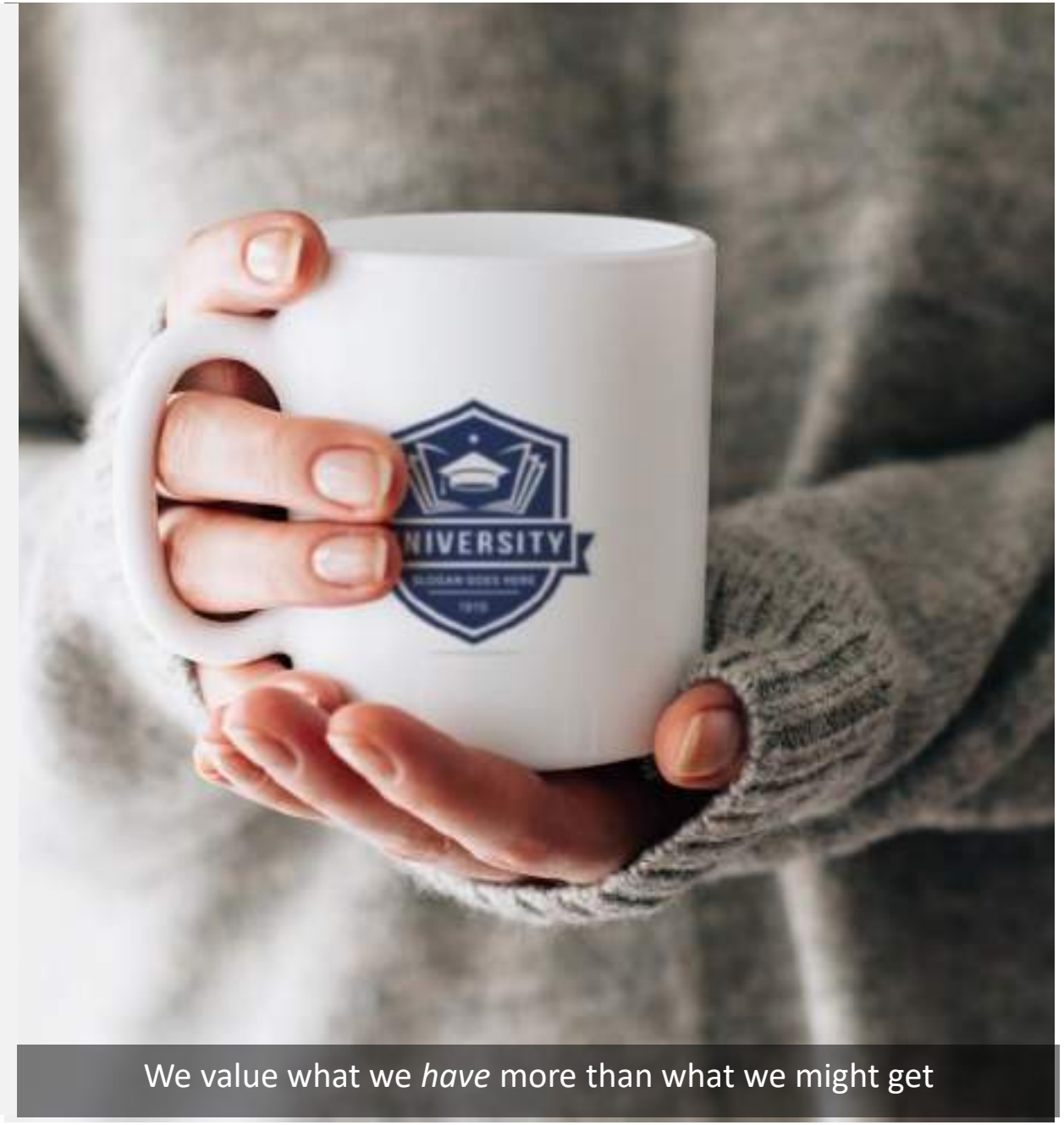
LOSS AVERSION[9]

- Two groups of students were shown university coffee mugs (which could be purchased for $6)
- One group was *given* the mugs, and then asked how much they would sell them for
- The other group was not given the mugs and asked how much they would buy them for
- Traditional economic theory predicts that the prices, representing *value* would be similar
- But those given the mugs on average wouldn't sell them for less than $5.25
- The others wouldn't buy them for more than $2.50



We value what we *have* more than what we might get

9. Kahneman, "Thinking Fast and Slow", *The endowment effect,* 2011

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THE ROOT OF SOCIAL BEHAVIOR

SOCIAL BEHAVIOR IS DEEPLY ROOTED IN US ALL VIA THREE DISTINCT SOURCES:

- Instinct. Like all social beings, we have fundamental social impulses that are "hard-wired" into us
- Social behavior contains many elements that are a function of our culture, as being described by Skinner
- Lastly, we have personal drivers that determine our behavior

The underlying, instinctual flavor of social behavior means that we **almost always use System 1** when making social behavioral decisions [10]

10. Jeremy Braune, **SYSTEM 1 VERSUS SYSTEM 2: START YOUR BRAND THINKING THE WAY YOUR CUSTOMERS THINK,** https://www.brandspeak.co.uk/blog/articles/system-1-versus-system-2-start-your-brand-thinking-the-way-your-customers-think/

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WHY IS SOCIAL BEHAVIOR SO DIFFICULT TO MODIFY ?

INSTINCT:
we are social beings

CONDITIONING:
our cultures teach us social habits

PROCLIVITIES:
each of us is **more or less** driven by social norms

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HOW TO CHANGE DEEP ROOTED HABITS ?

- A pandemic calls for changes in social behavior
- Physicians are rarely trained in behavioral science
- Luckily, “nudging” principles can help guide people towards the desired behavior

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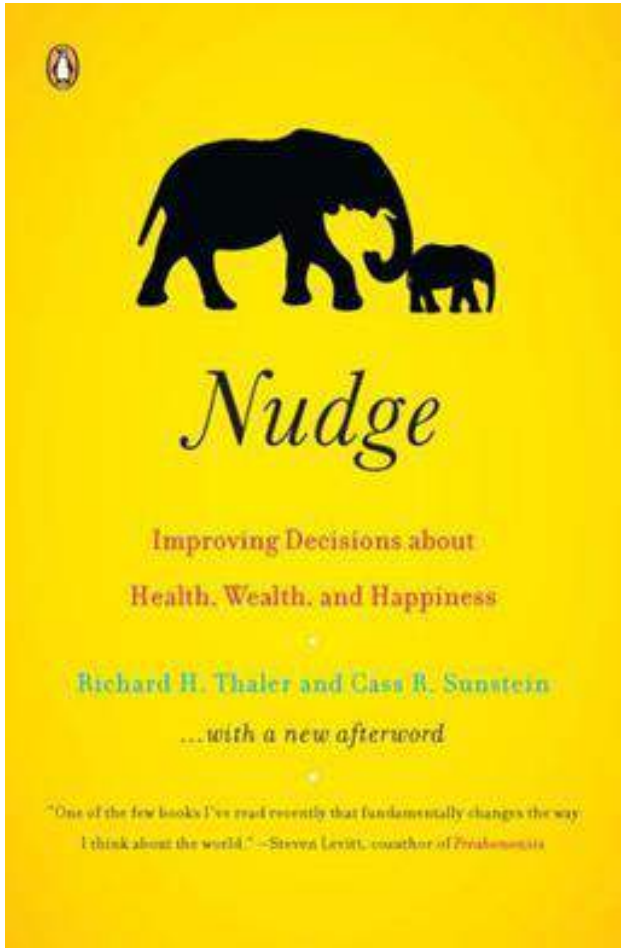

NUDGE

- In 2008, Richard Thaler and Cass Sunstein published “Nudge” building on Kahneman and Tversky’s work, they proposed means to help “nudge” people into beneficial behaviors

- Many of these are designed to activate “System 1” heuristics, in other words, how to use people’s automatic reflexes to make them take the desired actions.

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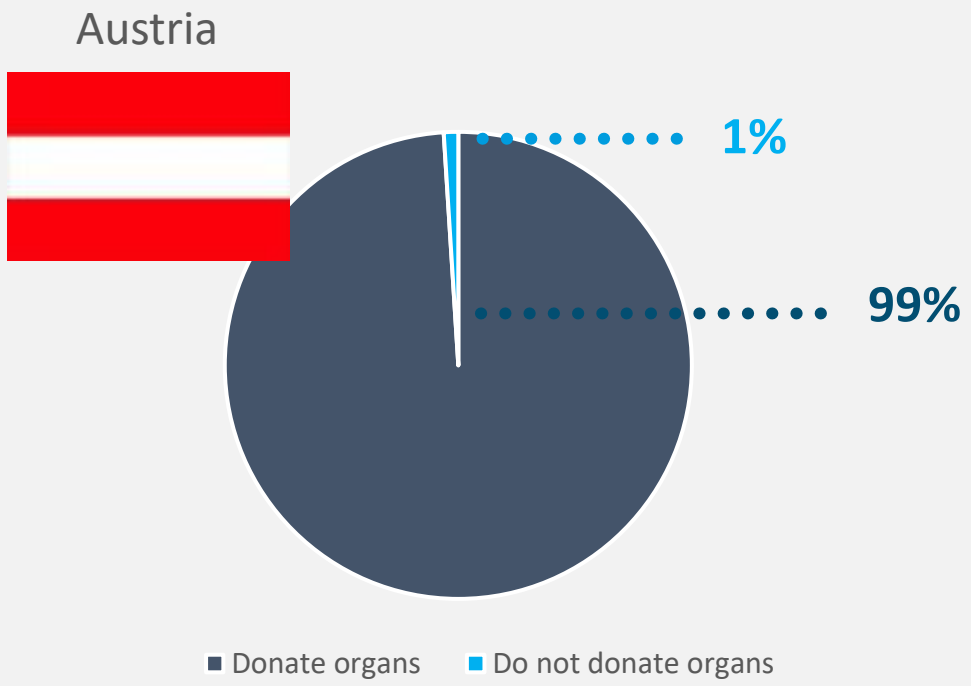
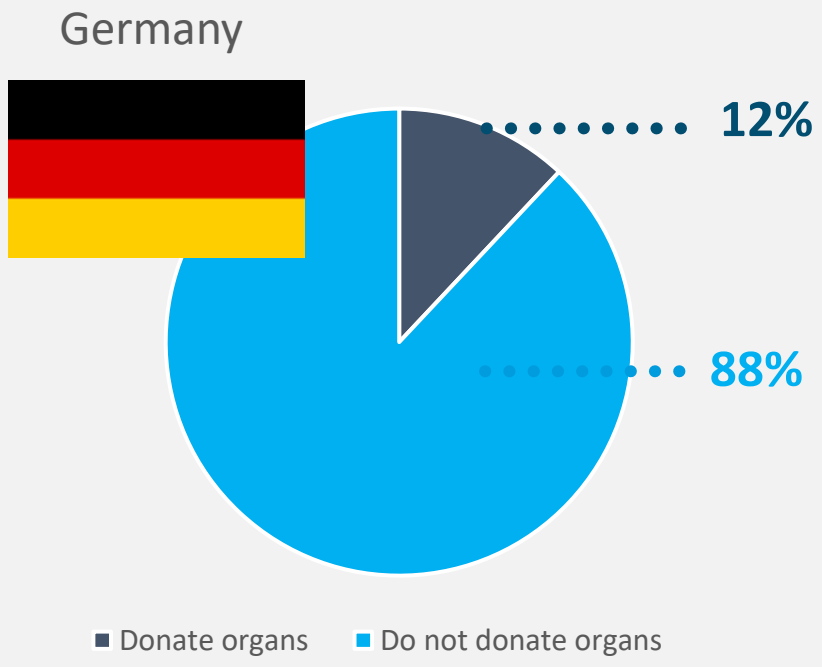
NUDGING CAN HELP CHANGE BEHAVIOURS

ORGAN DONATION RATES[11]



OPT-OUT OPTION



OPT-OUT OPTION

11. Anand Damani, **Why 99% of Austrians donate their organs, 2015** http://www.behaviouraldesign.com/2015/08/11/why-99-of-austrians-donate-their-organs/#sthash.1ESiwL2p.dpbsc

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NUDGING

THERE ARE DOZENS OF NUDGE TECHNIQUES. HERE ARE SOME OF THE MOST IMPORTANT ONES FOR HELPING PEOPLE ADOPT BENEFICIAL HEALTH BEHAVIORS[12]:

DEFAULTS:
Using the “laziness” of System 2

SOCIAL NORMING:
Using “herd behavior”

FRAMING:
Using the anchoring heuristic

ATTRIBUTION:
Using the endowment effect, or “loss aversion”

12. Richard Thaler, Cass Sunstein, “Nudge”, Part I “Humans and econs”, chapter 1 “Biases and blunders”, *Rules of Thumb, Availability*. 2008.

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USING DEFAULTS

- Describe the desired behavior as the norm, and ask what could stop the patient from doing what others are doing.

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USING FRAMING

PLACE THE DESIRED BEHAVIOR IN THE CONTEXT SOMETHING DESIRABLE.

Provide framing, focusing on the outcomes that are more likely to motivate the patient

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USING SOCIAL NORMING

- Describe the behavior as something generally accepted in society

" Many of my diabetic patients keep track of the food they eat to ensure they are monitoring their sugar levels. How are you doing with overall tracking and monitoring of sugar intake? Are you running into any difficulties? Tell me, so that I can help you"

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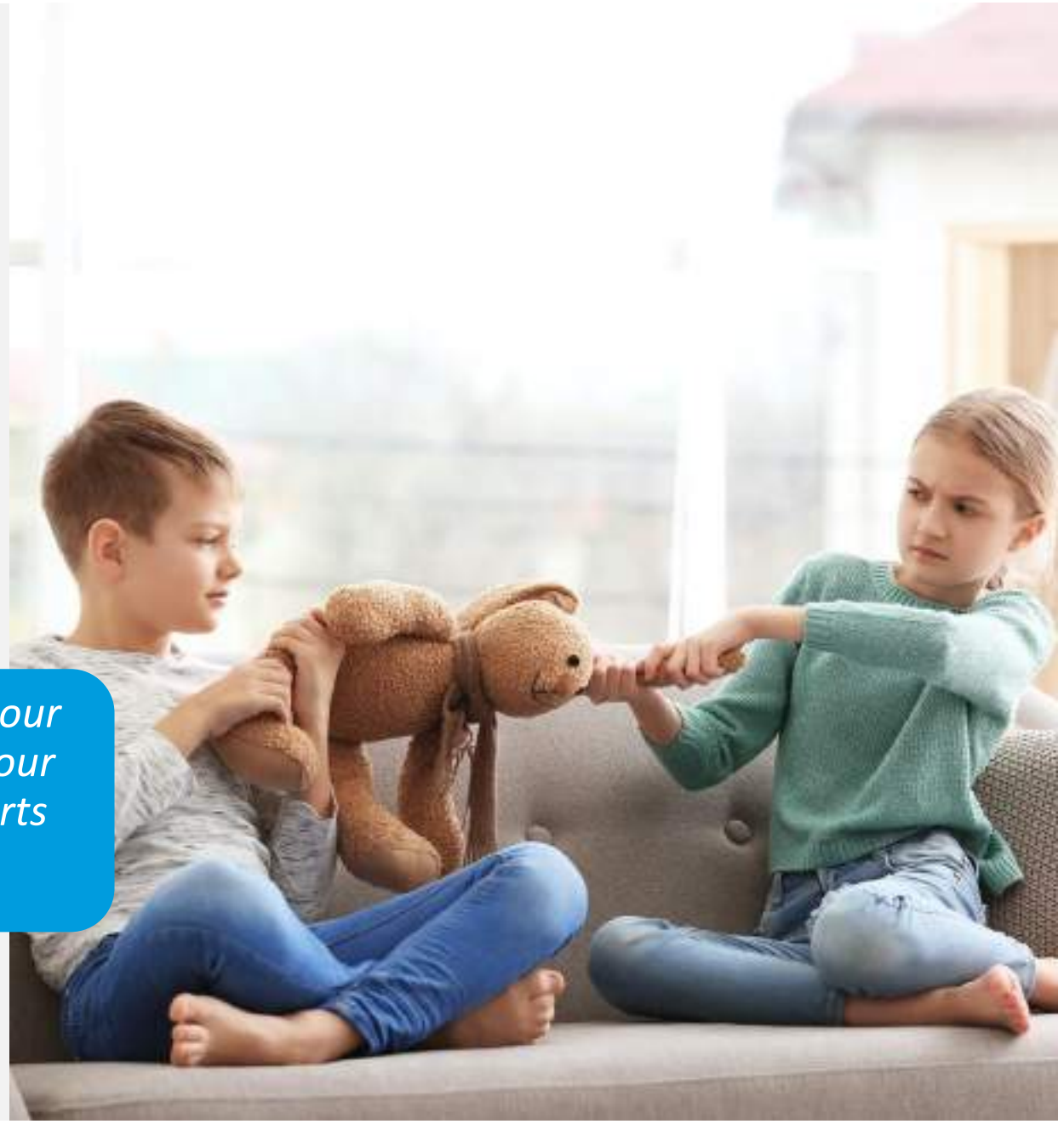
USING ATTRIBUTION

- Describe *undesired* behavior as causing loss

“ If you stop seeing your doctor and taking your treatment because of the current context, your health might degrade in spite of all the efforts you have deployed until now.”

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EXAMPLE WITHOUT NUDGE
PURE INFORMATIVE STRATEGY
“Close contact is a vector for the virus. You should avoid leaving your home, and if you do come into contact with others you should maintain a distance of at least one meter until further notice. This is good for you and for everyone else.”

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EXAMPLE WITH NUDGES

Social Norming

*"**People in your community** have been joining in the effort to fight this virus by remaining at home and maintaining a distance of at least one meter with others. **I'm sure I can count on you** to do the same and help accelerate an end to this crisis. **Every day we do that is another little victory.**"*

Default

Endowment

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NUDGES AND SHOVES

IN THE CASE OF A PANDEMIC, NUDGES HELP ENORMOUSLY, BUT ARE TYPICALLY NOT ENOUGH GIVEN THE REQUIRED IMMEDIACY OF RESULTS

- Healthcare professionals have a crucial role to play to ensure the continuum of care.
- They can also help reinforce health and safety measures.
- Nudge techniques can support their patients in taking care of their health and in:
  - Adhering to government-led health and safety measure
  - Developing good habits in preparation for a “new normal”
  - Learning not to neglect their non-epidemic-related health

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