AGILE NUDGE UNIVERSITY TOOLKIT



What is NUDGE?

Architecting the

Social, Physical, and Digital Environment

to facilitate certain behaviors WITHOUT forbidding choice.

- Nudge, Thayler and Sunstein, 2008









Definition: Agile science is a **rapidly evolving and adaptive process** for knowledge discovery and acquisition within the dynamic, constantly changing and evolving **real-world**.

Purpose: Agile science integrates insights from behavioral economics, complexity science, and network science to understand, predict, and steer the behaviors of both an individual human and a social organization.

Outcome: Agile science provides insights to design scalable and effective human-centered strategies, processes, and tools, implement them into routine care and subsequently diffuse them across various social networks.





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Waterfall vs. Agile Project Management









The Agile Mindset and its Principles

- Safe Culture
- Feedback
- Sprints of Minimally viable prototypes



- AGILE NUDGE IMPLEMENTATION

Agile *Nudge* Implementation



Planning

Executing

Sprints

MALAZ BOUSTANI, MD, MPH JOSE AZAR, MD CRAIGA, SOLID PHD

- Identify and confirm demand
- 2 Identify evidence-based nudges
- 3 Develop evaluation and termination plans
- 4 Localize the minimally viable solution (MVS)

6 Monitor implementation performance

Perform Implementation

- Monitor system performance
- Develop minimal standardized operating procedure (MSOP)



AGILE NUDGE INNOVATION -

What is Agile Nudge Innovation?



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AGILE NUDGE DIFFUSION

NETWORK SCIENCE

Help you understand, predict, and change the behavior of an organization



Nodes: individuals attached to a network, capable of creating, receiving, or transmitting information over a communication channel

Hubs: high-degree nodes, or those that are the most connected in the network.

Cliques: a set or community of local nodes where each node is connected to every other node.

Links: the route by which two nodes are connected.

Bridges: any link that if cut, disconnects the network.



Agile Nudge Diffusion

Get to know the Complex Adaptive Network deeply where the evidence-based nudge is targeted for diffusion.

- 2 Develop agile feedback loops within the Complex Adaptive Network to constantly record and measure the network's problem and challenges within various communities and hubs.
- 3 Constantly profile the various messengers within the Complex Adaptive Network at the individual, community, and hub levels by specifying their profile, emotion, audience, and communication channel.
 - Create a minimally viable story of the evidence-based nudge by identifying the minimal standard processes and converting them into the essential components of the story. And effective story will clearly describe the villain (the problem), the hero (the evidence-based nudge), the struggle or drama, and the resolution.
 - Start various experiments and sprints to test the story to identify what works within each community, hub, and the entire network.





THE BOTTOM LINE

AGILE NUDGE DIFFUSION PROCESS **1.0 (Minimally Viable STORY) The Story Teller** Information **2.0 (Minimally Viable NUDGE) The Choice Engineer Behaviors**

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AGILE NUDGE CYCLE TOOL

Confirm Demand

Use this list to know if your project really has demand. Not every problem needs to be solved. If there is no demand, then you must create demand

- The project comes as a directive from leadership
- The end user want to solve the problem
- You created buy-in formal all stakeholders
- You know how to create demand
- You confirmed that a problem exists
- You used data to confirm the problem
- The data used to was valid
- You can collect valid data
- You understand the stakeholders in the complex adaptive system
- You understand how the problem affects clinicians
- You understand how the problem affects front-line staff
- You have created a document that defines the current and future state

Map the digital, physical, and social environment surrounding people who are targeted for behavioral changes by answering four questions:

- 1. Who is the person targeted, what is their current behavior that needs to be changed?
- 2. Who are the people interacting with the targeted person, do they have any current behavior that is contributing to the target person's current behavior?
- 3. Is there any existing messenger that could be used as a nudge carrier or a nudge?
- 4. Are there any existing digital, physical and social artifacts (or nudges) that are contributing to the current behavior of the targeted person?

De-Nudge any existing nudges in the **current behavior**. Remember that nudges can exist at any point in a process. See the table below for an example:



★ Potential Nudge ★

Search the cognitive bias library to identify the cognitive bias that might be leveraged to design a **Minimally Viable Nudge** to accomplish the **target** behavior.

Four thinking problems faced by human based on 20 cognitive biases of human:



Need to act fast



Search the Nudge Library to identify existing Minimally Viable Nudge that are based on the cognitive biases that might be leveraged to design a nudge to accomplish the target behavior.

Select the type of nudge (digital, physical, social);

Use the **MINDSPACE** checklist to select the category for designing the **Minimally Viable Nudge** and then;

Check the compatibility of your Minimally Viable Nudge with the EAST checklist.

This checklist is a quick way to know if your nudge is effective enough to use in a real-world setting.

Each of the items in the next slide, represents a type of nudge or intervention.

- Score each item 1-5 by checking the appropriate score.
- The higher the nudge score the more effective the nudge.
- Score items based on your own judgment.

If your score is 35 or higher, your nudge is capable of affecting behavioral change.

The MINDSPACE Checklist



24 or less= Grade F- Make a new plan for the appropriate behavior change.

Salience We are drawn to information perceived to be novel and relevant.

1	2	3	4	5
Poor		Mediocre		Great
Priming We are impacted subconsciously by environmental cues.				
1	2	3	4	5
Poor		Mediocre		Great
Affect We go with our gut feelings; our first; Emotional reaction.				
1	2	3	4	5
Poor		Mediocre		Great
Commitments We seek to follow through on our public promises.				
1	2	3	4	5
Poor		Mediocre		Great
Ego We want to feel good about ourselves.				
1	2	3	4	5
Poor		Mediocre		Great

The **EAST** checklist is a way to **gauge the potential success of your new nudge prior to testing the new nudge** in a series of real-world sprints.

The goal is to make your nudge Easy, Attractive, Social and Timely.

- For each of the following four items, please use your own judgment to score your nudge compatibility with each item from 1-5.
- Sum the scores.
- The higher the total score, the more likely your nudge will be successful.

If you score 15 or higher, your nudge has a good probability of making a behavioral change.

Easy Make the nudge easy for people to do; preset options; less effort; simple messages

1	2	3	4	5
Poor		Mediocre		Great

Social Title the nudge to something others are also doing; part of the norm; inspires commitment



Attractive Make the nudge attractive; something people would want to do; entices



Timely Nudge at the most opportune time for receptiveness; immediate costs or benefits



Define a termination plan for both the selected Minimally Viable Nudge as well as a termination plan to stop working on the targeted behavior.

Run a series of Sprints to test the selected Minimally Viable Nudge.

What is an Agile Sprint?

a. Time and Space (Building Relationships)

b.

Weekly Huddle (To review your Scorecard and Plan, Reflect and Adjust sprint)

С.

- Sprint/ Solving a Problem (Produce a Product. Test Minimum Viable Product)
 - Team Sprint: Every team member must present at the same time (Determine who needs to be in the meeting)
 - Relay Sprint: Hand-off from one person to another

The content of the slides are based on the following books

- Agile Implementation by Malaz Boustani, Jose Azar, and Craig Solid
- Agile Network by Malaz Boustani, Jose Azar, Richard Holden and Craig Solid
- Change by Damon Centola.
- Nudge by Richard Thaler and Cass Sunstein
- Thinking Fast and Slow by Daniel Kahneman.
- Scaling dynamics by .Geoffrey West.
- Deep Learning by John D. Kelleher
- The Social Singularity by Max Borders.
- Signals and Boundaries by John H Holland.
- Infinite Powers by Steven Strogatz.
- The Book of Why by Judea Pearl and Dana Mackenzie.
- Network Science by Albert-László Barabási.

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Boustani M, Azar J, Solid C. Agile ImplementaitonA Model for Implementing Evidence-Based Healthcare Solutions into Real-World Practice to Achieve Sustainable Change. Published in 2020 by Morgan James Publishing. ISBN 978-1-64279-659-9 eBook ISBN 978-1-64279-658-2 hardcover; Library of Congress Control Number: 2019907494.

Boustani M, Holden R, Azar J, Solid C. The Agile Network: A Model to Foster Innovation, Implementation, and Diffusion in Healthcare Settings. Published in 2021 by Beaver's Pond Press. ISBN 13: 978-1-64343-865-8. Library of Congress Catalog Number: 2020912475

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Misattribution of Memory: The ability to remember information correctly, but being wrong about the source of that information. Includes the following three sub-effects: - Source Confusion: Source confusion is an attribute seen in different people's accounts of the same event after hearing people speak about the situation. An example of this would

be a witness who heard a police officer say he had a gun and then that witness later says they saw the gun even though they didn't. The source of the memory is

the police officer's testimony, not actual perception. Cryptomnesia:

Individuals mistakenly believe that they are the original generators of the thought.

- False Memory: False memories occur when a person's identity and interpersonal relationships are strongly centered around a memory of an experience that did not actually take place. False memories are often the result of leading questions in a therapeutic practice termed Recovered Memory Therapy. In this practice, psychiatrists often put their patients under hypnosis to recover repressed memories. This can be detrimental, as the individual may recall memories that never occurred.

Less Is Better Effect: A type of preference reversal that occurs when the lesser or smaller alternative of a proposition is preferred when evaluated separately, but not evaluated together.

Example. A dinnerware set with 24 intact pieces was judged more favourably than one with 31 intact pieces (including the same 24) plus a few broken ones when assessed separately. However the effect disappears when the options are assessed together. Occam's Razor: Among competing hypotheses, the one with the fewest assumptions should be selected. Alternatively, other things being equal, simpler explanations are

generally better than more complex ones. Controversial. This is not a cognitive bias. It is a heuristic, but not one that deviates from rationality in judgment.

Conjunction Fallacy (The Linda Problem): A formal fallacy that occurs when it is assumed that specific conditions are more probable than a single general one. Example. Linda is 31 years old, single, outspoken, and very bright. She majored in philosophy. As a student, she was deeply concerned with issues of discrimination and social justice, and also participated in anti-nuclear demonstrations.

Which is more probable? 1) Linda is a bank teller. 2) Linda is a bank teller and is active in the feminist movement. The majority of those asked chose option 2. However, the probability of two events occurring together (in "conjunction") is always less than or equal to the probability of either one occurring alone.

Our tendency to provide more articulate and explicit goals for lower priority areas of our lives. It appears that the daunting nature of truly important goals may motivate the self to deflect this anxiety by attending to less important, but also less threatening goals.

Bike-Shedding Effect (Parkinson's Law of Triviality): The argument that members of an organization give disproportionate weight to trivial issues. Example. A fictional committee whose job was to approve the plans for a nuclear power plant spending the majority of its time on discussions about relatively minor but easy-to-grasp issues, such as what materials to use for the staff bike shed, while neglecting the proposed design of the plant itself, which is far more important and a far more difficult and complex task. A reactor is so vastly expensive and complicated that an average person cannot understand it, so one assumes that those who work on it understand it. On the other hand, everyone can visualize a cheap simple bicycle shed.

Rhyme as Reason Effect (Eaton-Rosen Phenomenon): A cognitive bias whereupon a saying or aphorism is judged as more accurate or truthful when it is rewritten to rhyme.

Belief Bias:

The tendency to judge the strength of arguments based on the plausibility of their conclusion rather than how strongly they support that conclusion. A person is

Delmore Effect:

more likely to accept arguments that support a conclusion that aligns with their values, beliefs and prior knowledge. Information Bias: The tendency to seek information when it does not affect action. An example of information bias is believing that the more information that can be acquired to

make a decision, the better, even if that extra information is irrelevant for the decision.

Ambiguity Bias (Effect): A cognitive bias where decision making is affected by a lack of information, or "ambiguity". The effect implies that people tend to select options for which the probability of a favorable outcome is known, over an option for which the probability of a favorable outcome is unknown yet potentially better Example. When buying a house, many people choose a fixed rate mortgage, where the interest rate is set in stone, over a variable rate mortgage, where the

interest rate fluctuates with the market. This is the case even though a variable rate mortgage has statistically been shown to save money.

Status Quo Bias:

A preference for the current state of affairs. The current baseline (or status quo) is taken as a reference point, and any change from that baseline is perceived as a loss. Status quo bias should be distinguished from a rational preference for the status quo ante, as when the current state of affairs is objectively superior to

Related. System Justification

Social Comparison Bias: Having feelings of dislike and competitiveness with someone that is seen physically or mentally better than yourself.

the available alternatives, or when imperfect information is a significant problem

Decoy Effect (Asymmetric Dominance Effect):

increase preference for the dominating option

The phenomenon whereby consumers will tend to have a specific change in preference between two options when also presented with a third option that is asymmetrically dominated. An option is asymmetrically dominated when it is inferior in all respects to one option; but, in comparison to the other option, it is inferior in some respects and superior in others. In other words, in terms of specific attributes determining preferability, it is completely dominated by (i.e., inferior to) one option and only partially dominated by the other. When the asymmetrically dominated option is present, a higher percentage of consumers will prefer the dominating option than when the asymmetrically dominated option is absent. The asymmetrically dominated option is therefore a decoy serving to

Reactance:

A motivational reaction to offers, persons, rules, or regulations that threaten or eliminate specific behavioral freedoms. Reactance occurs when a person feels that someone or something is taking away their choices or limiting the range of alternatives. Reactances can occur when someone is heavily pressured to accept a certain view or attitude. Reactance can cause the person to adopt or strengthen a view or attitude that is contrary to what was intended, and also increases

Reverse Psychology:

resistance to persuasion.

A technique involving the advocacy of a belief or behavior that is opposite to the one desired, with the expectation that this approach will encourage the subject of the persuasion to do what actually is desired; the opposite of what is suggested. This technique relies on the psychological phenomenon of reactance, in which a person has a negative emotional reaction to being persuaded, and thus chooses the option which is being advocated against Related. Reactance

System Justification:

A theory within social psychology that system-justifying beliefs serve a psychologically palliative function. People have epistemic, existential, and relational needs that are met by and manifest as ideological support for the prevailing structure of social, economic, and political norms. Need for order and stability, and thus resistance to change or alternatives, for example, can be a motivator for individuals to see the status quo as good, legitimate, and even desirable. Related. Staus Quo Bias

Backfire Effect: Given evidence against their beliefs, people can reject the evidence and believe even more strongly.

results in larger psychological effect when it reduces from certainty vice probable.

Endowment Effect (Divestiture Aversion): People ascribe more value to things merely because they own them.

Processing Difficulty Effect: The relation between processing difficulty and subsequent memory performance, in that processing difficulty has shown to enhance memory. Related. Levels of Processing Effect

Pseudocertainty Effect:

The tendency for people to perceive an outcome as certain while it is actually uncertain. This is mostly observed in multi-stage decision making, in which evaluation of the probability of the outcome in a previous stage of decisions is assumed certain when selecting an option in subsequent stages. Related. Certainty Effect: The psychological effect resulting from the reduction of probability from certainty to probable. Normally a reduction in probability of winning a reward leads to the perception of loss from the original probability thus favoring a risk-aversion decision. However, the same percentage reduction

Disposition Effect:

The tendency of investors to sell shares whose price has increased, while keeping assets that have dropped in value based solely on a psychological feeling. Stock market momentum tends to indicate that stocks that have done well over the past six months tend to keep doing well over the next six months and that stocks that have done poorly over the past six months tend to keep doing poorly over the next six months. This being the case, the generally rational act would be to hold on to stocks that have recently risen in value and to sell stocks that have recently fallen in value; but individual investors tend to do exactly the opposite.

Zero Risk Bias:

A tendency to prefer the complete elimination of a risk even when alternative options produce a greater reduction in overall risk.

The tendency to want to finish a given unit of a task or an item. This has strong effects on the consumption of food in particular.

Loss Aversion:

Unit Bias:

A cognitive bias in which consumers place a disproportionately high value on products they partially created.

People's tendency to prefer avoiding losses to acquiring equivalent gains: it's better to not lose \$5 than to find \$5. Some studies have suggested that losses are

twice as powerful, psychologically, as gains. Related. Negativity Bias

Generation Effect: A phenomenon where information is better remembered if it is generated from one's own mind rather than simply read.

Irrational Escalation (Escalation of Commitment): A human behavior pattern in which an individual or group—when faced with increasingly negative outcomes from some decision, action, or investment—continues the same behavior rather than alter course. They maintain actions that are irrational, but align with previous decisions and actions

Related. Sunk Cost Fallacy Sunk Cost Fallacy:

The Misconception: You make rational decisions based on the future value of objects, investments and experiences. The Truth: Your decisions are tainted by the emotional investments you accumulate, and the more you invest in something the harder it becomes to abandon it Example. R&D costs. Once spent, such costs are sunk and should have no effect on future pricing decisions. So a pharmaceutical company's attempt to justify high prices because of the need to recoup R&D expenses is fallacious. The company will charge market prices whether R&D had cost one dollar or one million dollars. However, R&D costs, and the ability to recoup those costs, are a factor in deciding whether to spend the money on R&D. It's important to distinguish that while justifying high prices on past R&D is a fallacy, raising prices in order to finance future R&D is not.

Counterpoint. It is sometimes not that simple. In a broad range of situations, it is rational for people to condition behavior on sunk costs, because of informational

Identifiable Victim Effect:

Related. Irrational Escalation

content, reputational concerns, or financial and time constraints

The tendency of individuals to offer greater aid when a specific identifiable person ("victim") is observed under hardship, as compared to a large vaguely defined group with the same need. The effect is also observed when subjects administer punishment rather than reward. Research has shown that individuals can be

Example. "A single death is a tragedy; a million deaths is a statistic." - Joseph Stalin

Appeal to Novelty (Argumentum Ad Novitatem): A fallacy in which one prematurely claims that an idea or proposal is correct or superior, exclusively because it is new and modern.

more likely to mete out punishment, even at their own expense, when they are punishing specific, identifiable individuals.

Hyberbolic Discounting Given two similar rewards, humans show a preference for one that arrives sooner rather than later. Humans are said to discount the value of the later reward b

a factor that increases with the length of the delay. According to hyperbolic discounting, valuations fall relatively rapidly for earlier delay periods (as in, from now to one week) but then fall more slowly for longer delay periods (for instance, more than a week). For example, in a study subjects said they would be indifferent between receiving \$15 immediately or \$30 after 3 months, \$60 after 1 year, or \$100 after 3 years.

Peltzman Effect:

he reduction of predicted benefit from regulations that intend to increase safety due to Risk Compensation. Substantial empirical work has found that the effect exists in many contexts but generally offsets less than half of the desired increase of safety benefit. Related. Risk Compensation

Risk Compensation:

A theory which suggests that people typically adjust their behavior in response to the perceived level of risk, becoming more careful where they sense greater risk and less careful if they feel more protected. Example. It is observed that motorists drive faster when wearing seatbelts and closer to the vehicle in front when the vehicles were fitted with anti-lock brakes. Example. Booth's rule#2: "The safer skydiving gear becomes, the more chances skydivers will take, in order to keep the fatality rate constant"

Related. Peltzman Effect Effort Justification:

People's tendency to attribute a greater value (greater than the objective value) to an outcome they had to put effort into acquiring or achieving. With effort justification, there is a dissonance between the amount of effort exerted into achieving a goal or completing a task (high effort equaling high "cost") and the subjective reward for that effort (lower than was expected for such an effort). By adjusting and increasing one's attitude or subjective value of the goal, this dissonance is resolved.

Trait Ascription Bias:

The tendency for people to view themselves as relatively variable in terms of personality, behavior, and mood while viewing others as much more predictable in their personal traits across different situations. Related. Fundamental Attribution Error

Defensive Attribution Hypothesis:

A set of beliefs used as a shield against the fear that one will be the victim or cause of a serious calamity. Attributions of blame to the victim will decrease the more similar the observer is to the person and/or situation involved in the mishap. Assigning responsibility to someone or something other than the victim allows the observer to believe that the mishap wasn't the victim's fault or that it wasn't just pure random chance; neither of which are psychologically palatable conclusions due to the similarity of observer and victim. The use of defensive attributions is considered a cognitive bias because an individual will change their beliefs about a situation based upon their psychological motives rather than the factual characteristics of the situation. Example. Often times, in this case of a woman who has not been raped hearing about the rape of another women, the very commonly heard responses are,

"She must have been wearing provocative clothing," or "She was probably walking in a very sketchy part of town late at night". These attributions of causal factors to something other than the victim or random chance serve to shield the observer from acknowledging they could be a similar victim to a similar calamity.

Fundamental Attribution Error: The claim that in contrast to interpretations of their own behavior, people place undue emphasis on internal characteristics of the agent (character or intention), rather than external factors, in explaining other people's behavior. The effect can be described as "the tendency to believe that what people do reflects who they are". communicated message on themselves. Related. Ultimate Attribution Error, Actor-Observer Bias, Positivity Effect

Illusion of Control: The tendency for people to overestimate their ability to control events that they demonstrably do not influence. Actor-Observer Bias:

When people judge their own behavior, and they are the actor, they are more likely to attribute their actions to the particular situation than to a generalization about their personality. Yet when an observer is explaining the behavior of another person (the actor), they are more likely to attribute this behavior to the actors' overall disposition rather than to situational factors.

Related. Ultimate Attribution Error, Fundamental Attribution Error, Positivity Effect

Self-Serving Bias Any cognitive or perceptual process that is distorted by the need to maintain and enhance self-esteem, or the tendency to perceive oneself in an overly favorable manner. It is the belief that individuals tend to ascribe success to their own abilities and efforts, but ascribe failure to external factors. Example. A student who attributes earning a good grade on an exam to their own intelligence and preparation but attributes earning a poor grade to the teacher's poor teaching ability or unfair test questions.

Leveling and Sharpening: hear or remember something, and emphasize details which do fit cognitive categories and/or assumptions. Peak-End Rule: every moment of the experience. The effect occurs regardless of whether the experience is pleasant or unpleasant. Fading Affect Bias: Negativity Bias:

List Length Effect:

Misinformation Effect:

Related. False Memory, Suggestibility

Related. Loss Aversion Prejudice: An unfavorable opinion or feeling formed beforehand or without knowledge, thought, or reason. Implicit Stereotypes: stereotypes, even without the individuals' intention or awareness. Implicit Associations A person's automatic association between mental representations of objects (concepts) in memory. Controversial. This is not a bias, it is an association algorithm.

Spacing Effect: Suggestibility:

memory of the event conforms to the repeated message. Related. Misinformation Effect, False Memory

we aim to preserve autonomy and group status, and avoid

Need To Act Fast

Forer Effect (Barnum effect): A common psychological phenomenon whereby individuals will give high accurate specifically to them but that are, in fact, vague and general enough to apply to a Related. Subjective Validation (Personal Validation Effect) **Optimism Bias:** A cognitive bias that causes a person to believe that they are at a lesser risk of ex Egocentric Bias: The tendency to rely too heavily on one's own perspective and/or have a higher o

Dunning-Kruger Effect: A cognitive bias, wherein persons of low ability suffer from Illusory Superiority w cognitive bias of **illusory superiority** derives from the metacognitive inability of of metacognition, low-ability people cannot objectively evaluate their actual comp Related. Lake Wobegon Effect Lake Wobegon Effect (Illusory Superiority, Above-Average Effect, Superiority

A cognitive bias whereby a person overestimates his or her own qualities and abil Related. Dunning-Kruger Effect Hard-Easy Effect: A tendency to overestimate the probability of one's success at a task perceived as

as easy. The hard-easy effect takes place, for example, when individuals exhibit a of overconfidence in answering relatively difficult questions. False Consensus Effect (Bias): People tend to overestimate the extent to which their opinions, beliefs, preference

Third-Person Effect:

People tend to perceive that mass media messages have a greater effect on others individual's overestimation of the effect of a mass communicated message on the Social Desirability Bias: A type of response bias that is the tendency of survey respondents to answer ques

of over-reporting "good behavior" or under-reporting "bad", or undesirable behav Over-Confidence Effect: A well-established bias in which a person's subjective confidence in his or her judg especially when confidence is relatively high.

Self-Consistency Bias: The commonly held idea that we are more consistent in our attitudes, opinions, and beliefs than we actually are.

Restraint Bias: The tendency for people to overestimate their ability to control impulsive behavior.



The psychological phenomenon of people sometimes judging the past disproportionately more positively than they judge the present.

Related. Declinism

acy ratings to descriptions of their personality that supposedly are tailored	The tendency to falsely project current preferences onto a future event. When people are trying to estimate their emotional state in the future they attempt to
wide range of people.	give an unbiased estimate. However, people's assessments are contaminated by their current emotional state and thus it may be difficult for them to predict their
	emotional state in the future.
	Related. Empathy Gap
periencing a negative event compared to others.	Pro-Innovation Bias:
	The belief that an innovation should be adopted by whole society without the need of its alteration. The innovation's "champion" has such strong bias in favor of
	the innovation, that he may not see its limitations or weaknesses and continues to promote it nonetheless.
opinion of oneself than reality.	
	Time-Saving Bias:
	People's tendency to mis-estimate the time that could be saved (or lost) when increasing (or decreasing) speed. In general, people underestimate the time that
when they mistakenly assess their cognitive ability as greater than it is. The	could be saved when increasing from a relatively low speed (e.g., 25 mph or 40 km/h) and overestimate the time that could be saved when increasing from a
low-ability persons to recognize their own ineptitude. Without the self-awareness	relatively high speed (e.g., 55 mph or 90 km/h).
npetence or incompetence.	
	Planning Fallacy:
	A phenomenon in which predictions about how much time will be needed to complete a future task display an optimism bias and underestimate the time needed.
y Bias, Leniency Error, Sense of Relative Superiority, Primus Inter Pares Effect):	Related. Optimism Bias
ilities, in relation to the same qualities and abilities of other persons.	
	Pessimism Bias:
	An effect in which people exaggerate the likelihood that negative things will happen to them. It contrasts with optimism bias. The difference is that we are in an
	improbable way worried about our society's future.
s hard, and to underestimate the likelihood of one's success at a task perceived	Related. Optimism Bias
degree of under-confidence in answering relatively easy questions and a degree	
	Impact Bias:
	The tendency for people to overestimate the length or the intensity of future feeling states.
es, values, and habits are normal and typical of those of others (i.e., that others	Declinism:
erception of a consensus that does not exist; a "false consensus".	The belief that a society or institution is tending towards decline. Particularly, it is the predisposition, due rosy retrospection, to view the past favourably and
	future negatively.
	Related. Rosy Retrospection
ers than on themselves. The Third-person effect manifests itself through an	
e generalized other, or an underestimation of the effect of a mass	Moral Luck:
	Moral luck describes circumstances whereby a moral agent is assigned moral blame or praise for an action or its consequences even if it is clear that said agent
	did not have full control over either the action or its consequences.
	Example. There are two people driving cars, Driver A and Driver B. They are alike in every way. Driver A is driving down a road and in a moment of inattention
stions in a manner that will be viewed favorably by others. It can take the form	runs a red light as a child is crossing the street. Driver A slams the brakes, swerves, and does everything to try to avoid hitting the child. Alas, the car hits and
avior.	kills the child. Driver B in the meantime also runs a red light, but since no one is crossing, gets a traffic ticket but nothing more.
	If it is given that moral responsibility should only be relevant when the agent voluntarily performed or failed to perform some action, Drivers A and B should be
	blamed equally, or praised equally, as may be the case. However, due to the effect of Moral Luck, if a bystander were asked to morally evaluate Drivers A and B,
Igements is reliably greater than the objective accuracy of those judgements,	there is very good reason to expect them to say that Driver A is due more moral blame than Driver B.
	Outcome Bias:
	An error made in evaluating the quality of a decision when the outcome of that decision is already known, instead of on the information known at the time of the
	decision. While similar to Hindsight Bias, the two phenomena are markedly different. Hindsight Bias focuses on memory distortion to favor the actor, while
	outcome bias focuses exclusively on weighting the outcome more heavily than other pieces of information in deciding if a past decision was correct.

Hindsight Bias (Knew-It-All-Along Effect, Creeping Determinism): The inclination, after an event has occurred, to see the event as having been predictable, despite there having been little or no objective basis for predicting it.

nd specific information (information pertaining only to a certain case), the mind ons, it is failing to use Bayesian Mathematics to evaluate probabilities.	Focusing Effect: A cognitive bias that occurs when people place too much importance on only one aspect of an evaluation, causing an error in accurately predicting the utility of future outcome. Example. It is suppler in California therefore people must be more happy there. Or a job that pays more money must be better.
even if the new descriptive information was obviously of little or no relevance	Framing Effect: A cognitive bias in which people react to a particular choice in different ways depending on how it is presented; e.g. as a loss or as a gain.
	Money Illusion (Price Illusion): The tendency of people to think of currency in nominal rather than real terms. In other words, the numerical/face value (nominal value) of money is mistaken for
	Weber-Fechner Law: The subjective sensation is proportional to the logarithm of the stimulus intensity. Another way of stating is that the change in a stimulus that will be just
ated the stimulus that differs from the past is more likely to be remembered	noticeable is a constant ratio of the original stimulus. Numerical Cognition Example. Psychological studies show that it becomes increasingly difficult to discriminate between two numbers as the difference between them decreases. This may explain why consumers neglect to shop around to save a small percentage on a large purchase, but will shop around to save a large
than words.	percentage on a small purchase which represents a much smaller absolute donar amount.
oneself in comparison to material that has less personal relevance.	Confirmation Bias (Confirmatory Bias, Myside Bias): The tendency to search for, interpret, favor, and recall information in a way that confirms one's preexisting beliefs or hypotheses.
. unpleasant thoughts, emotions, or social interactions; harmful/traumatic	A type of cognitive bias similar to confirmation bias. Congruence bias occurs due to people's overreliance on directly testing a given hypothesis as well as neglecting indirect testing. Example. In an experiment, a subject will test his own usually naive hypothesis again and again instead of trying to disprove it.
	Post-Purchase Rationalization (Choice-Supportive Bias): The tendency to retroactively ascribe positive attributes to an option one has selected. In cognitive science, one predictable way that memories of choice option
the first piece of information offered (the "anchor") when making decisions.	aspects tend to be remembered as part of rejected options. Selective Perception:
s belief insufficiently when presented with new evidence. Mathematically, evidence when compared to Bayesian belief-revision.	The tendency not to notice and more quickly forget stimuli that cause emotional discomfort and contradict our prior beliefs. Related. Ostrich Effect, Normalcy Bias
elated performance as a result of successive (immediately previous) or	Observer-Expectancy Effect (Experimenter-Expectancy Effect, Expectation Bias, Observer Effect, Experimenter Effect): A form of reactivity in which a researcher's cognitive bias causes them to subconsciously influence the participants of an experiment.
ation when immediately preceded by, or simultaneously compared to,	When experimenter expectancies regarding study results bias the research outcome. Ostrich Effect:
aneously than when evaluating them separately.	Avoiding exposing oneself to information that one fears may cause psychological discomfort. Related. Normalcy Bias, Selective Perception
choice that accurately predicts future experience.	A cognitive bias by which a person will consider a statement or another piece of information to be correct if it has any personal meaning or significance to them In other words, a person whose opinion is affected by subjective validation will perceive two unrelated events (i.e., a coincidence) to be related because their personal belief demands that they be related.
	Example. Belief in a cold reading. Related. Forer Effect: A common psychological phenomenon whereby individuals will give high accuracy ratings to descriptions of their personality that supposedly are tailored specifically to them but that are, in fact, vague and general enough to apply to a wide range of people.
	Continued Influence Effect: (Subset of Conservatism) The tendency to believe previously learned misinformation even after it has been corrected. Misinformation can still influence inferences one generates after a correction has occurred.
	Semmelweis Reflex: The reflex-like tendency to reject new evidence or new knowledge because it contradicts established norms, beliefs or paradigms.
	Rias Blind Snot
uch	The cognitive bias of recognizing the impact of biases on the judgement of others, while failing to see the impact of biases on one's own judgment. Related. Introspection Illusion: A cognitive bias in which people wrongly think they have direct insight into the origins of their mental states, while treating others' introspections as unreliable. Also Actor-Observer Bias, Fundamental Attribution Error, Ultimate Attribution Error, Positivity Effect
ation	Naïve Cynicism: A cognitive bias and form of psychological egoism that occurs when people naïvely expect more egocentric bias in others than actually is the case.
	Naïve Realism: The human tendency to believe that we see the world around us objectively and that people who disagree with us must be uninformed, irrational, or biased. Related. False Consensus Effect, Actor-Observer Bias, Fundamental Attribution Error, Bias Blind Spot, Ultimate Attribution Error
	Contabulation
	A disturbance of memory, defined as the production of fabricated, distorted, or misinterpreted memories about oneself or the world, without the conscious intention to deceive. People who confabulate present incorrect memories ranging from subtle alterations to bizarre fabrications, and are generally very confident about their recollections, despite contradictory evidence.
	Clustering Illusion: The tendency to erroneously consider the inevitable streaks or clusters arising in small samples from random distributions to be non-random. The illusion is
	caused by a human tendency to underpredict the amount of variability likely to appear in a small sample of random or semi-random data. Insensitivity to Sample Size: A cognitive bias that occurs when people judge the probability of obtaining a sample statistic without respect to the sample size. For example, in one study
	subjects assigned the same probability to the likelihood of obtaining a mean height of above six feet in samples of 10, 100, and 1,000 men. In other words, variation is more likely in smaller samples, but people do not expect this.
	Neglect of Probability: The tendency to disregard probability when making a decision under uncertainty. It is one way in which people regularly violate the normative rules for decision making. Small risks are typically either neglected entirely or hugely overrated. The continuum between the extremes is ignored. There are many related ways in which people violate the normative rules of decision making with regard to probability including hindsight bias, the neglect of prior base rates
	effect, and the gambler's fallacy. However, this bias is different in that rather than incorrectly using probability, the actor disregards it. Anecdotal Fallacy:
in others than we	Misuse of anecdotal evidence is an informal fallacy and is sometimes referred to as the "person who" fallacy ("I know a person who"; "I know of a case where" etc.) which places undue weight on experiences of close peers which may not be typical. A common way anecdotal evidence becomes unscientific is through fallacious reasoning such as the Post hoc ergo propter hoc fallacy, the human tendency to assume that if one event happens after another, then the first must be the cause of the second. Another fallacy involves inductive reasoning. For instance, if an
urselves	anecdote illustrates a desired conclusion rather than a logical conclusion, it is considered a faulty or hasty generalization. Illusion of Validity:
	A cognitive bias in which a person overestimates his or her ability to interpret and predict accurately the outcome when analyzing a set of data, in particular when the data analyzed show a very consistent pattern—that is, when the data "tell" a coherent story. This effect persists even when the person is aware of all the factors that limit the accuracy of his or her predictions, that is when the data and/or methods used to judge them lead to highly fallible predictions. Example, Subjects reported higher confidence in a prediction of the final grade point average of a student after seeing a first-year record of consistent B's than
	a first-year record of an even number of A's and C's. Consistent patterns may be observed when input variables are highly redundant or correlated, which may increase subjective confidence. However, a number of highly correlated inputs should not increase confidence much more than only one of the inputs; instead higher confidence should be merited when a number of highly independent inputs show a consistent pattern.
d stories and when looking	Related. WYSIATI (What You See Is All There Is) This is solving a difficult problem by substituting a simpler problem that you know about. One does not solve the other.
	The masked-man fallacy is committed when one makes an illicit use (illicit due to the difference between knowing and being, knowing can be subject to error or incompleteness) of Leibniz's law in an argument. Leibniz's law states that, if one object has a certain property, while another object does not have the same property, the two objects cannot be identical.
	Example. Premise 1: I know who Bob is. Premise 2: I do not know who the masked man is Conclusion: Therefore, Bob is not the masked man.
	The premises may be true and the conclusion false if Bob is the masked man and the speaker does not know that. Thus the argument is a fallacious one. Recency Illusion:
	The belief that things you have noticed only recently are in fact recent. Gambler's Fallacy (Monte Carlo Fallacy, Fallacy of the Maturity of Chances): The mistaken belief that, if something happens more frequently than normal during some period, it will happen less frequently in the future or that if something
s from	happens less frequently than normal during some period, it will happen more frequently in the future (presumably as a means of balancing nature). Hot Hand Fallacy (Hot Hand Phenomenon, Hot Hand):
es,	The sometimes fallacious belief that a person who experiences success with a random event has a greater probability of further success in additional attempts. This is written as "sometimes" because a quasi-random event that involves skill, such as basketball free-throws, may be susceptible to the psychological effect of believing a continued outcome; and therefore an aspect of the "Hot Hand" may be true.
	Illusory Correlation: The phenomenon of perceiving a relationship between variables (typically people, events, or behaviors) even when no such relationship exists. A false associatio may be formed because rare or novel occurrences are more salient and therefore tend to capture one's attention.
	Example. A woman has her purse stolen by a person of a specific demographic. Henceforth, she keeps her close purse each time she sees a similar person. Example. A man holds the belief that people in urban environments tend to be rude. Therefore, when he meets someone who is rude he assumes that the person lives in a city, rather than a rural area.
	Pareidolia (Subset of Apophenia): A psychological phenomenon in which the mind responds to a stimulus, usually an image or a sound, by perceiving a familiar pattern where none exists (e.g., in random data).
	Apophenia: A human tendency to seek patterns in random information. Anthropomorphism: The attribution of human traits, emotions, or intentions to non-human entities
	The attribution of numan traits, emotions, of intentions to non-numan entities.
ough	Group Attribution Error: Refers to people's tendency to believe either (1) that the characteristics of an individual group member are reflective of the group as a whole, or (2) that a group decision outcome must reflect the preferences of individual group members, even when information is available suggesting otherwise.
ng	Ultimate Attribution Error: The tendency to internally attribute negative outgroup and positive ingroup behaviour and to externally attribute positive outgroup and negative ingroup behaviour. Stated specifically, ultimate attribution error arises as a way to explain an outgroup's negative behaviour as flaws in their personality, and to explain
	an outgroup's positive behaviour as a result of chance or circumstance. It is also the belief that positive acts performed by ingroup members are as a result of their personality, whereas, if an ingroup member behaves negatively (which is believed to be rare), it is a result of situational factors. Related. Positivity Effect, Fundamental Attribution Error, Actor-Observer Bias
	Stereotyping (Stereotypical Bias): A stereotype is any thought widely adopted about specific types of individuals or certain ways of behaving intended to represent the entire group of those individuals or behaviors as a whole. These thoughts or beliefs may or may not accurately reflect reality.
· share-alike	Essentialism: The view that all objects have an essential substance that make the thing what it is, and without which it would be not that kind of thing.
	Functional Fixedness: A cognitive bias that limits a person to using an object only in the way it is traditionally used.
of the behaviors of a person they like or prefer, to attribute the person's unding them as the cause of their negative behaviors. The positivity effect is	Moral Credential Effect: A bias that occurs when a person's track record as a good egalitarian establishes in them an unconscious ethical certification, endorsement, or license that
erver Bias	Just-World Hypothesis: The assumption that a person's actions are inherently inclined to bring morally fair and fitting consequences to that person; to the end of all noble actions being
ilture; a form of tribalism.	eventually rewarded and all evil actions eventually punished. In other words, the just-world hypothesis is the tendency to attribute consequences to, or expect consequences as the result of, a universal force that restores moral balance.
fferently depending on their familiarity with the route. Frequently travelled	Argument from Fallacy (Argument to Logic (Argumentum ad Logicam), The Fallacy Fallacy, The Fallacist's Fallacy, and The Bad Reasons Fallacy.): The formal fallacy of analyzing an argument and inferring that, since it contains a fallacy, its conclusion must be false. Authority Bias:
ost salient when subjects are driving, but is still detectable for pedestrians	The tendency to attribute greater accuracy to the opinion of an authority figure (unrelated to its content) and be more influenced by that opinion. Automation Bias: The properties for humans to former and the second se
People may have multiple mental accounts for the same kind of resource. A	The propensity for numbers to lavor suggestions from automated decision-making systems and to ignore contradictory information made without automation even if it is correct. Errors of automation bias tend to occur when decision-making involves a degree of dependence on computers or other automated aids and the human element is largely confined to monitoring the tasks underway. Examples of such situations can involve not only such urgent matters as flying on automatic pilot but also such mundane matters as the use of spell-checking programs.
restaurants, for example, and constrain one kind of purchase when its budget benditures draw on the same fungible resource (income).	Bandwagon Effect: A phenomenon whereby the rate of uptake of beliefs, ideas, fads, and trends increases the more that they have already been adopted by others. In other words,
he case (or might possibly be the case).	Placebo Effect: The psychological phenomenon in which the recipient perceives an improvement in condition due to personal expectations rather than treatment itself.
its possible effects because it causes people to have a bias that things have difficulties reacting to something they have not experienced	Out-Group Homogeneity Bias (Effect): The perception that out-group members are more similar to one another than are in-group members, i.e. "they are alike: we are diverse".

Example. If three of the five students with the best college grades went to the same high school, that can lead one to believe that the high school must offer an

excellent education. This could be true, but the question cannot be answered without looking at the grades of all the other students from that high school, not

just the ones who "survived" the top-five selection process.

Cheerleader Effect: The cognitive bias which causes people to think individuals are more attractive when they are in a group. This effect occurs with male-only, female-only and mixed gender groups; and both small and large groups. The effect occurs to the same extent with groups of four and 16 people. Participants in studies looked more at the attractive people than the unattractive people in the group. The effect does not occur because group photos give the impression that individuals have more social or emotional intelligence. This was shown to be the case by a study which used individual photos grouped together in a single image, rather than photos taken of people in a group. The study generated the same effect.

The tendency to more easily recognize faces of the race that one is most familiar with (which is most often one's own race).

This refers to an observer's overall impression of a person, company, brand, or product influencing the observer's feelings and thoughts about that entity's

toward everything about it. If the observer dislikes one aspect of something, they will have a negative predisposition toward everything about it.

character or properties. The halo effect is a specific type of confirmation bias, wherein positive feelings in one area cause ambiguous or neutral traits to be

viewed positively. The effect works in both positive and negative directions. If the observer likes one aspect of something, they will have a positive predisposition

Cross-Race Effect (Cross-Race Bias, Other-Race Bias, Own-Race Bias):

A pattern of favoring members of one's in-group over out-group members.

Halo Effect (Horns and Halo effect):

In-Group Bias (In-Group Favoritism, In-Group–Out-Group Bias, Intergroup Bias):

A Guide to CHIIS INNOVATION FORUMS

Center for Health Innovation & Implementation Science

Guide to Innovation Forums

- Innovation Forums: A service to CHIIS scientists and scholars
 - Minimally Standard Operating Procedure
 - Benefits
 - Examples
- Q&A



Virtual Innovation Forum MSOP

- 1. Initial meeting with CHIIS to zoom in on your challenge question, identify key stakeholders to invite
- 2. Facilitator is selected
- 3. Invitations sent to network / key stakeholders
- 4. Presentation finalized
- 5. Conduct Forum:
 - Introductions/Networking (30 min.)
 - Presentation (10 min. max)
 - Clarifying Questions (5 min.)
 - Solution Generation (45 min.)
- 6. Presenter receives Solution Tracker document
- 7. Optional: Presenter follows up with engaged participants to discuss specific solutions
- 8. Optional: CHIIS sends 6-month update to network about successful solutions implemented



INNOVATION FORUM RULES



This is a time for **solution generation**, not clarifying questions

There are no constraints so be creative

Everyone will get a turn to provide a solution

Please do not interrupt another person

We are looking for **positive** solutions



Benefits for You

- Generate solutions for your challenge
 - DIVERSE perspectives at the table
- Engage key stakeholders
 - Time and space; Buy-in to the problem
- Mobilize a team
 - Project Teams are often formed out of Innovation Forums
- Get to know your challenge deeply
- Accountability for solving a problem
 - 6 month updates



Examples of Past Innovation Forums

Jan Powers PhD, RN, CCNS, NE-BC (Parkview Health)

How can we standardize a sustainable evidence-based process for oral hygiene at

Parkview?







Examples of Past Innovation Forums

- Jasmine Gonzalvo PharmD, BCPS, BC-ADM, CDCES (Purdue CHEqI) How should we address health equity to improve health outcomes in Indiana?
- Alyson Keen MSN, RN, ACNS-BC (IU Health) How do we create a research-friendly environment in healthcare delivery systems?
- Liesel Delamater MSN, RN, ACNS-MC (IU Health)
 How do we make simulated education for charge nurses work in practice?
- Ashley Overley MD (Eskenazi Health)
 How can we improve the appointment show rate of clients at their 7 day follow-up appointment after in-patient hospital discharge by December 2018? From our review of the literature, we believe that a 10% improvement is a realistic goal.
- Kerri Lanum MS (Northern Illinois University)
 How can we get the non-engaged physician's cooperation and approval for QI initiatives for the practice in a timely manner?
- Cynthia Reynolds LCSW, LCAC and Lana Dbeibo MD (IU Health) How can we bring internal and external resources to launch ICU STAT?





Questions?



Interested in being a Presenter at our monthly Innovation Forums?

- Coaching to prepare your presentation
- Flexible times

If you have questions or would like to present a challenge to the network, please email Andrea Burkhardt at <u>anburkha@iupui.edu</u>.



Thank you for joining us today!

Remember to follow us on social media!





Center for Health Innovation and Implementation Science





Innovation Forum Initial Consult Form

Requester Information

Name of Requester:

Affiliation:

Background Information

- 1. What is your challenge that you would like addressed in our Innovation Forum?
 - a. Can you please describe your current environment and the specific challenges you face related to this topic?
- 2. What is the scope of this challenge? Does it affect just one health system, clinic, or patient type?
- 3. Are there any **resources** you can refer me to that would enable me to better understand the barriers, **stakeholders**, and other factors related to this challenge?
- 4. What do you feel is the **objective** of this Innovation Forum?
- 5. What is the title of your challenge in a question format? Example: *How can we better communicate and implement quality and safety RIEs?*

Challenge Question:

Attendee Information

- 6. Who are the key individuals who could generate the most relevant and effective solutions to this challenge?
 - a. Please identify 20-25 and give name, email, and affiliation OR...
 - b. Let us know which roles or organizations you would like us to investigate to find individuals who could contribute to the Forum.
- 7. After hearing our targeting options (email, hand-delivered, follow up options), which method or combination of methods would you prefer to be used?
 - a. If hand-delivered, who on your team would be willing to distribute?

Other Logistical

8. On what date would you like to hold this event? Please provide the name of your assistant so we can find a date that is accommodating for you.

Time/Date Options:

Request Bio/Pic

