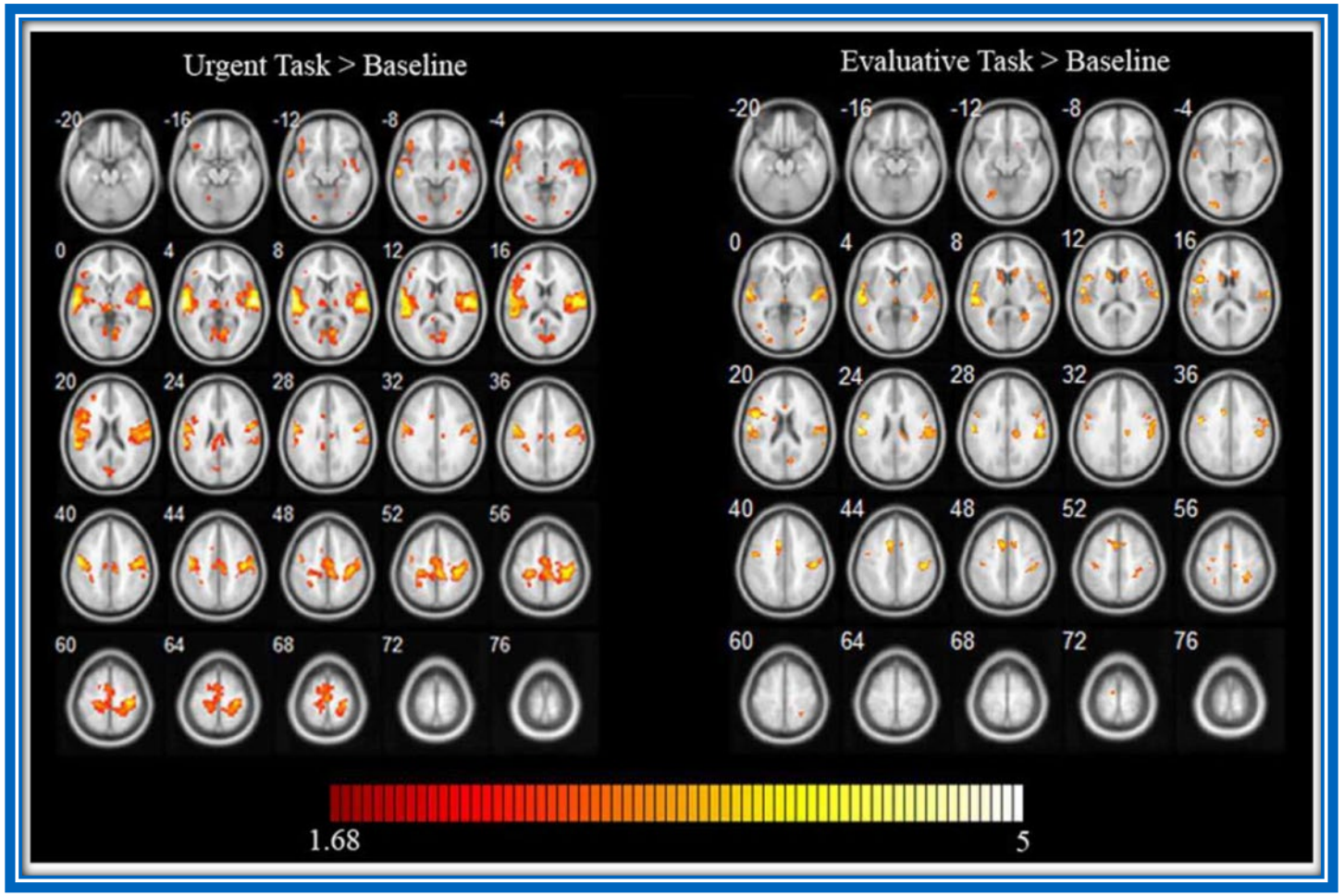
REDESIGNING PROJECT MANAGEMENT AROUND THE BRAIN

Josh Ramirez
President, Institute for Neuro & Behavior Project Management
2020 Project Management Symposium

Definition of a Project: a Temporary Endeavor



Megías, A., Navas, J. F., Petrova, D., Cándido, A., Maldonado, A., Garcia-Retamero, R., & Catena, A. (August 01, 2015). Neural mechanisms underlying urgent and evaluative behaviors: An fMRI study on the interaction of automatic and controlled processes. *Human Brain Mapping, 36,* 8, 2853-2864.

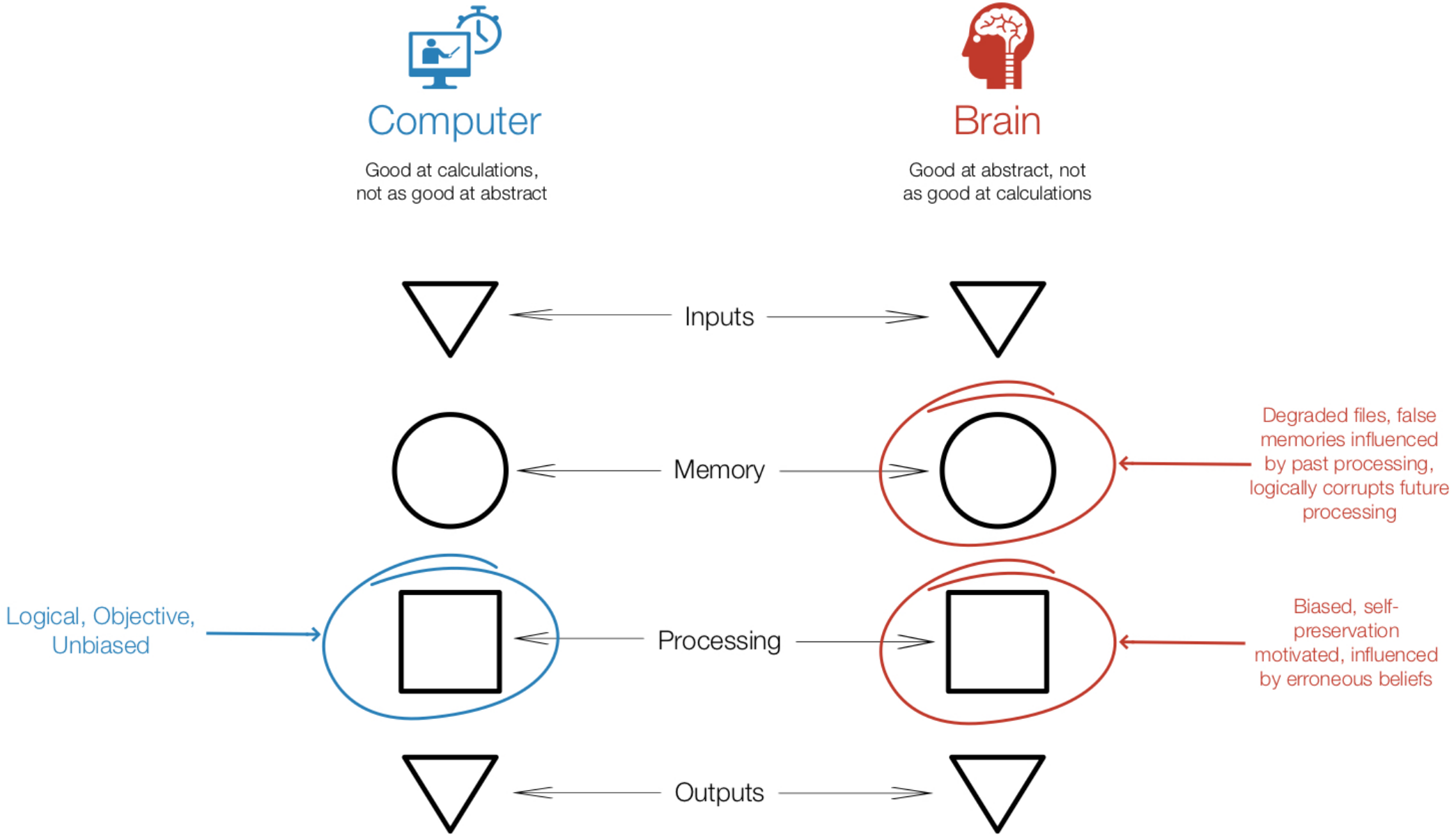
The Need for Redesign

- Over $15 trillion a year in global GDP is projects
- Between $5 and $7 trillion a year in failed schedule and cost objectives is due to human factors
- No more time for anecdote and guessing, we have to bring science and discipline to project management

There's only one way to increase project performance:

start with the source of information processing - the computer between your ears.

(Side note: relying on AI or data alone will not solve it. Computers give us data, humans make decisions.)

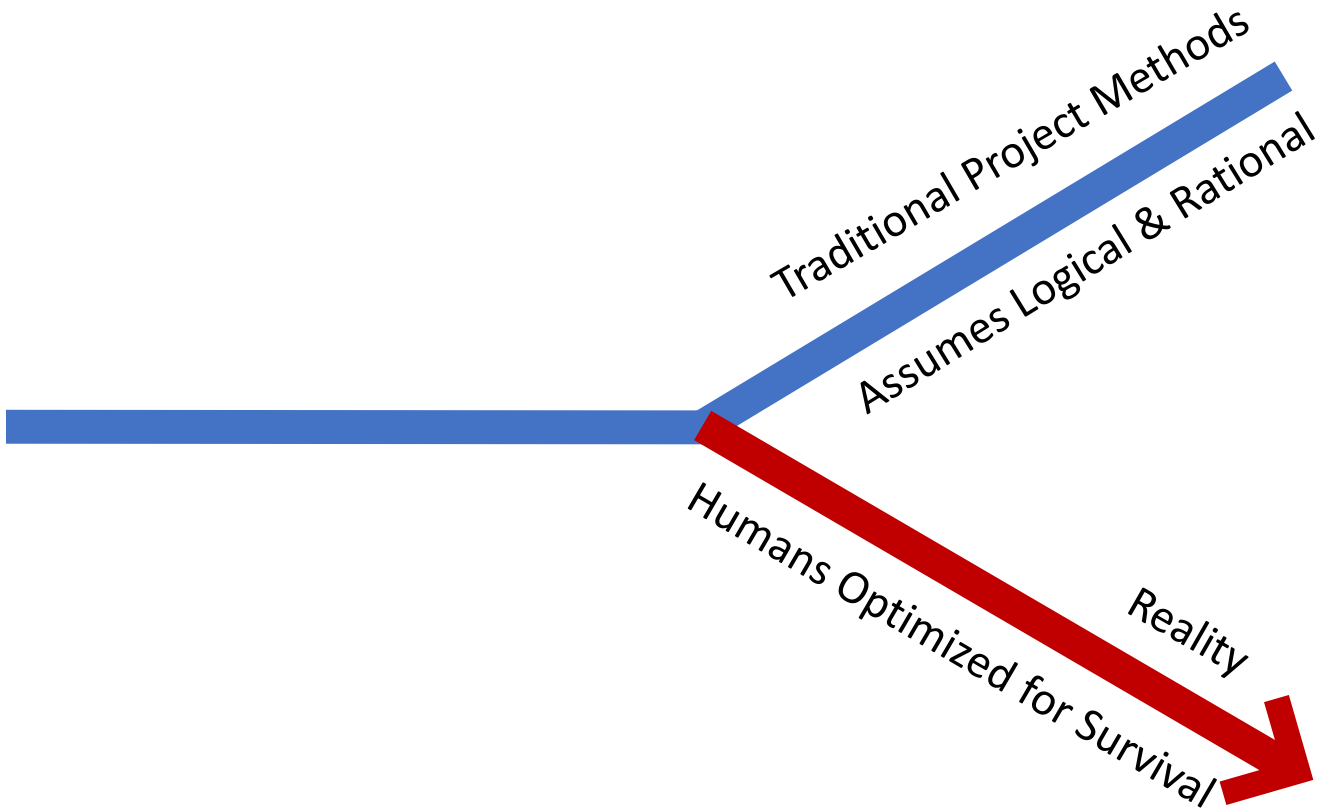

Computer
Good at calculations, not as good at abstract
Brain
Good at abstract, not as good at calculations
Inputs
Memory
Degraded files, false memories influenced by past processing, logically corrupts future processing
Logical, Objective, Unbiased
Processing
Biased, self-preservation motivated, influenced by erroneous beliefs
Outputs

Brain Facts

- Around 100 billion neurons
- Processes information between neurons at speeds up to 250 MPH
- Uses 20% of your body's oxygen
- Up to 2,500 terabytes of storage, or 5,000 standard computers

That's a lot of power!

One Issue: Humans are Optimized for Survival Not Always Logic



From the AI computer in the movie *2001: A Space Odyssey*

"I am completely operational, all my circuits are functioning perfectly"

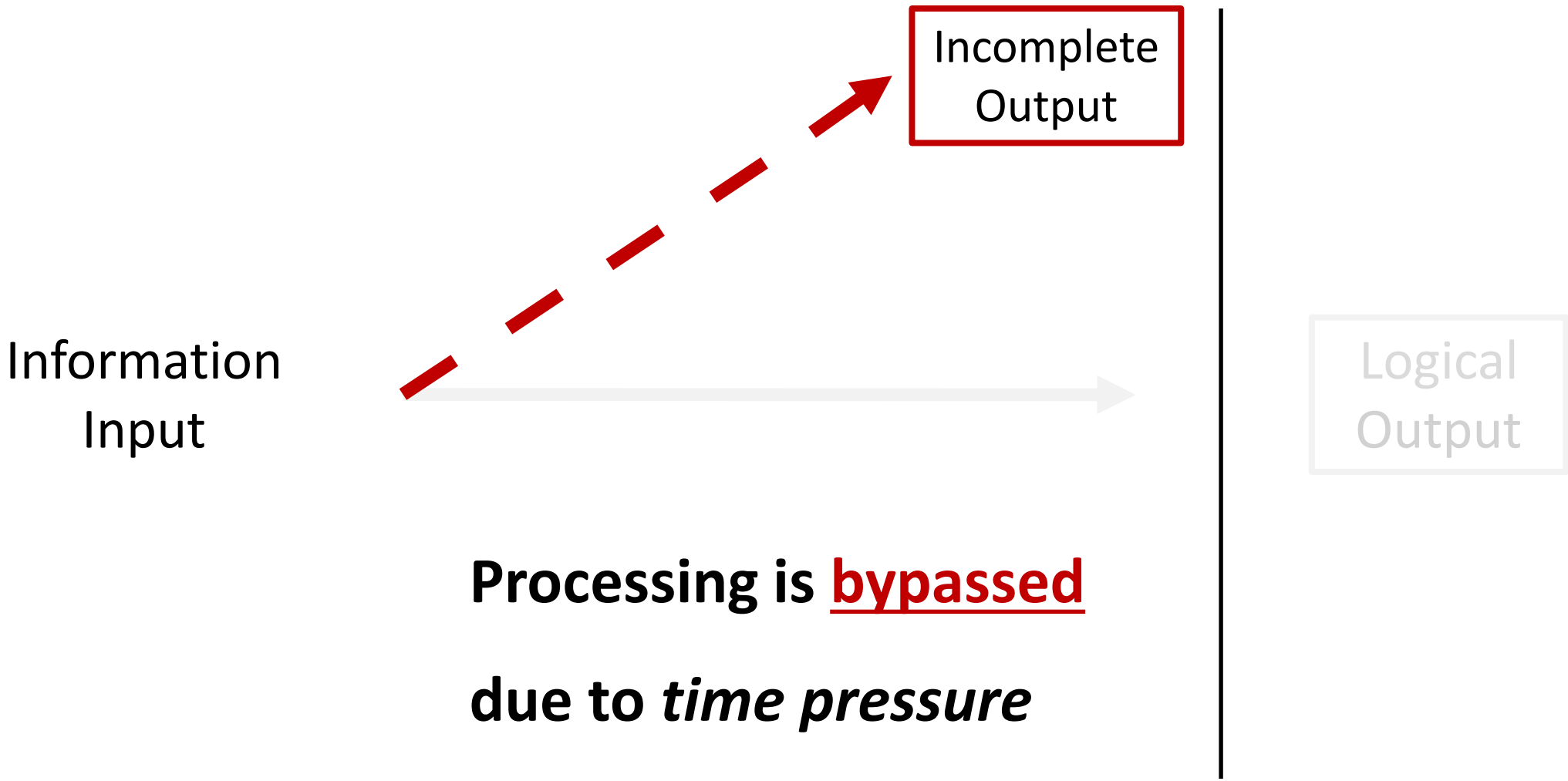
Can we trust our brain to tell us it's functioning perfectly?

Computer processing is <u>logical and rational</u>

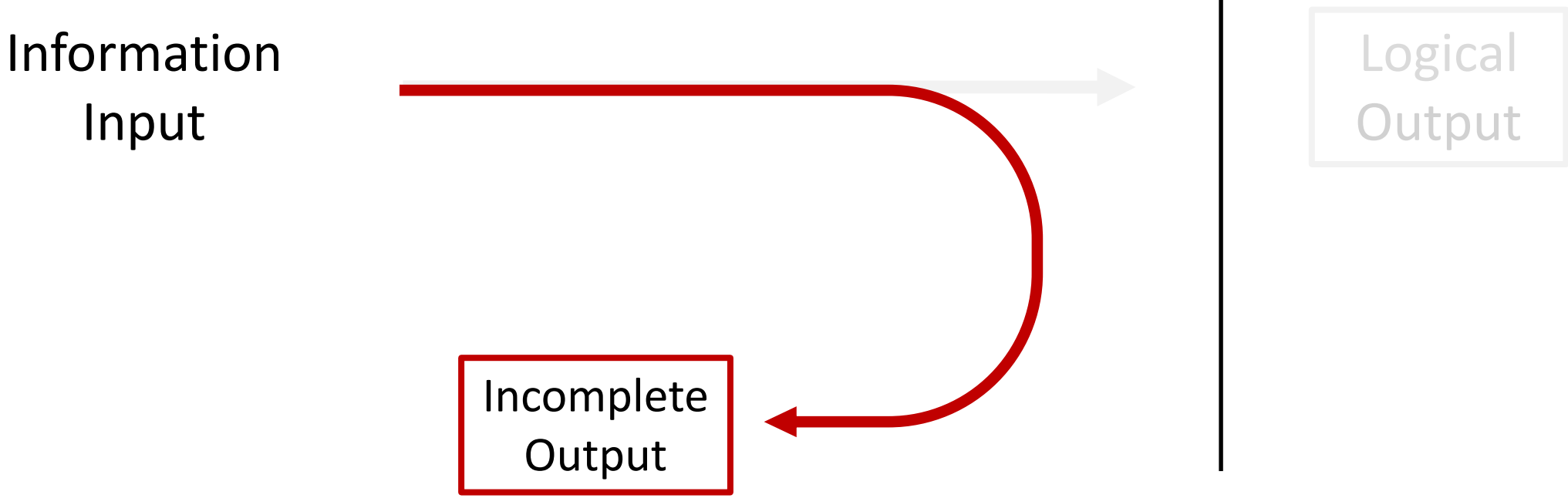
yielding an *accurate and consistent output*

Information Input

Logical Output

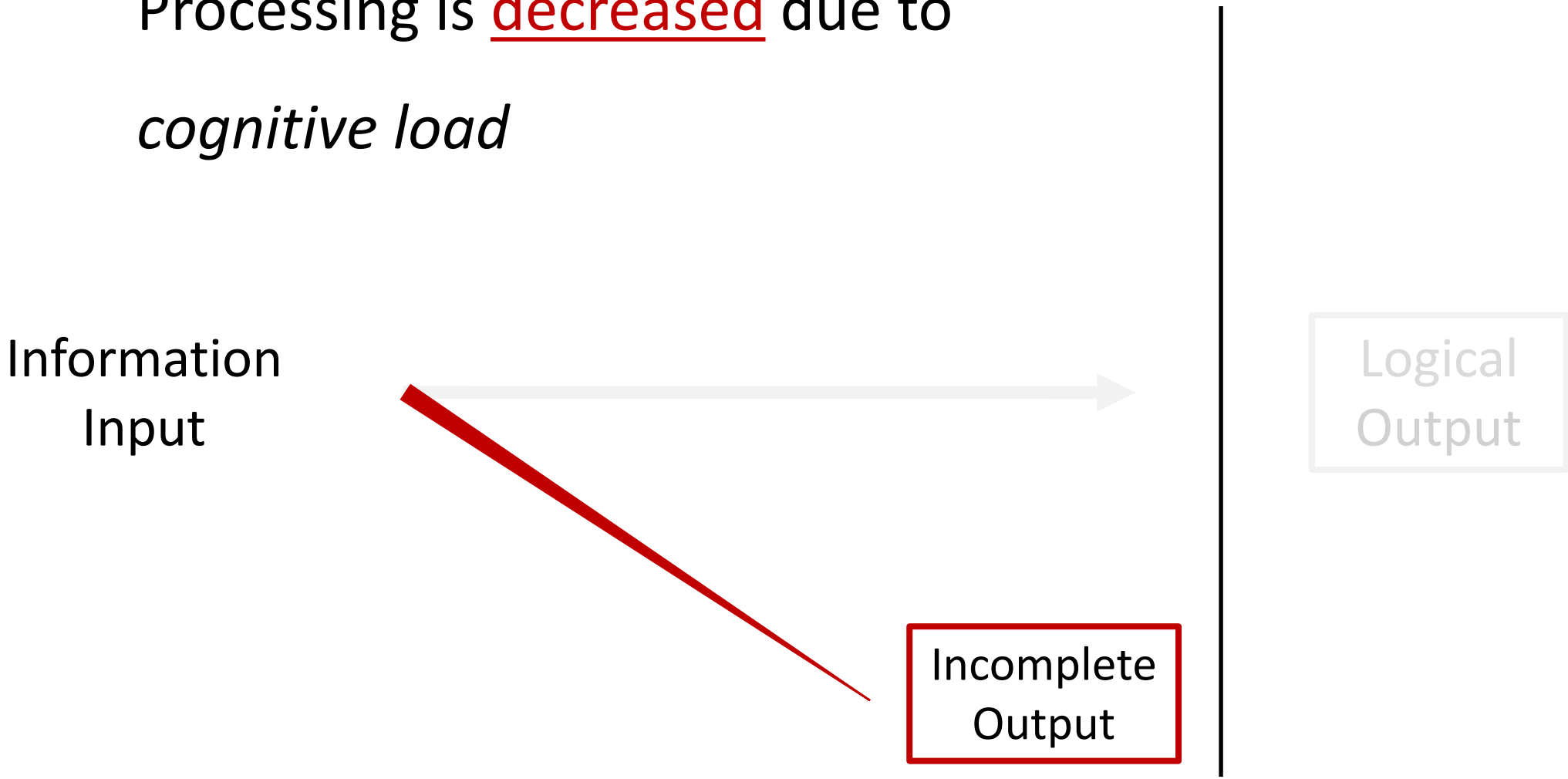

Incomplete Output
Information Input
Logical Output
Processing is bypassed
due to *time pressure*

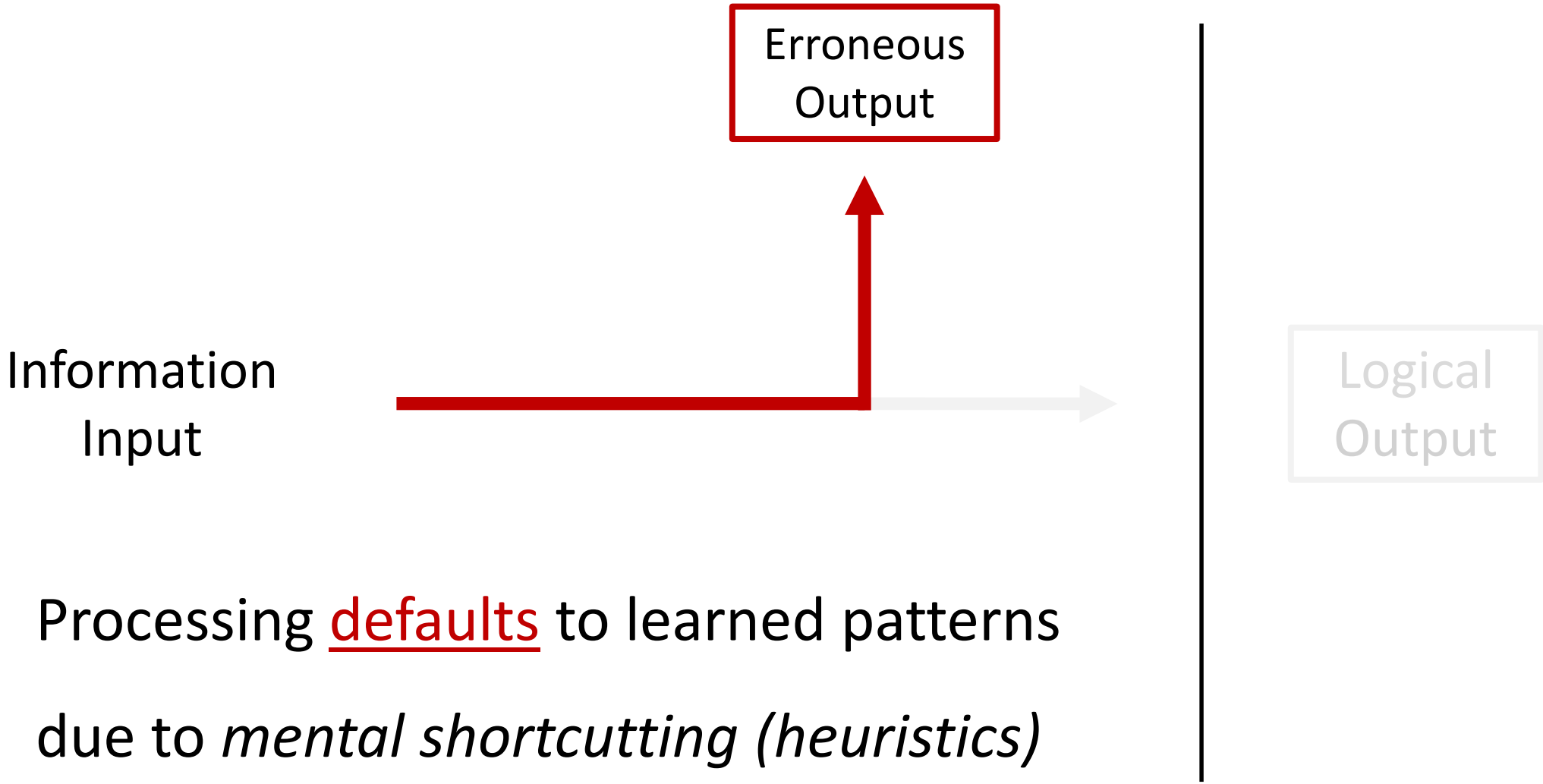
Processing is avoided due to *mental discomfort (cognitive dissonance)*



Processing is decreased due to

cognitive load





Processing defaults to learned patterns

due to *mental shortcutting (heuristics)*

What does this mean?

All our project management methods, which are based on the rational model of human behavior, are missing the human element and are not designed for optimal performance.

Thus, we need to redesign project management around the brain

from Project Management to

Project Science

Applying Science to Project Management

Pergamon

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A THEORY OF THE TEMPORARY ORGANIZATION

ROLF A. LUNDIN and ANDERS SÖDERHOLM

Department of Business Administration, Umeå Univer:

(*First received May* 1994; *accepted in revised form October*

Abstract — The idea of the firm as an eternal entity possibly came in with the case, the practical consequences of this idea contrast sharply with many ideas at organizations. Mainstream organization theory is based upon the assumption that be permanent; theories on temporary organizational settings (e.g., projects) are article, we address the need for a theory of temporary organizations, thus seekir project management wisdom. We also suggest some components of such a theo ideas about projects. "Action", as opposed to "decision", is one such component of the temporary organization. In some respects we are thus dealing with antip concepts similar to those in established mainstream organizational theory. The different as compared to its role in the temporary organization. The differen implications and we are able to suggest a coherent outline of a theory which we which also covers several important aspects of temporary organizations.

Key words: Temporary organization, project, action, sequencing, bracketing.

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No project is an island: linking projects to history and context

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Abstract

Psychological Review

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Extensional Versus Intuitive Reasoning: The Conjunction Fallacy in Probability Judgme

Amos Tversky
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Daniel Kahneman
University of British Columbia, Vancouver, British Columbia, Canada

Perhaps the simplest and the most basic qualitative law of probability is the conjunction rule: The probability of a conjunction, $P(A\&B)$, cannot exceed the probabilities of its constituents, $P(A)$ and $P(B)$, because the extension (or the possibility set) of the conjunction is included in the extension of its constituents. Judgments under uncertainty, however, are often mediated by intuitive heuristics that are not

Striatum and pre-SMA faci under time pressure

Birte U. Forstmann[a,1], Gilles Dutilh[b], Scott Brown[c], Jane Ne and Eric-Jan Wagenmakers[b]

[a]Department of Psychology, Amsterdam Center for the Study of Adaptive C University of Amsterdam, 1018 WB, Amsterdam, The Netherlands; [b]School o [c]Department of Cognitive Neurology, Max Planck Institute for Human Cogn

Edited by Richard M. Shiffrin, Indiana University, Bloomington, IN, and appr

Human decision-making almost always takes place under time pressure. When people are engaged in activities such as shopping, driving, or playing chess, they have to continually balance the demands for fast decisions against the demands for accurate decisions. In the cognitive sciences, this balance is thought to be modulated by a response threshold, the neural substrate of which is currently subject to speculation. In a speed decision-making experiment, we presented participants with cues that indicated different requirements for response speed. Application of a mathematical model for the behavioral data confirmed that cueing for speed lowered the response threshold. Functional neuroimaging showed that cueing for speed activates the striatum and the pre-supplementary motor area (pre-SMA), brain structures that are part of a closed-loop motor circuit involved in the preparation of voluntary action plans. Moreover, activation in the striatum is known to release the motor system from global inhibition, thereby facilitating faster but possibly premature actions. Finally, the data show that individual variation in the activation of striatum and pre-SMA is selectively associated with individual variation in the amplitude of the adjustments in the response threshold estimated by the mathematical model. These results demonstrate that when people have to make decisions under time pressure their striatum and pre-SMA show increased levels of activation.

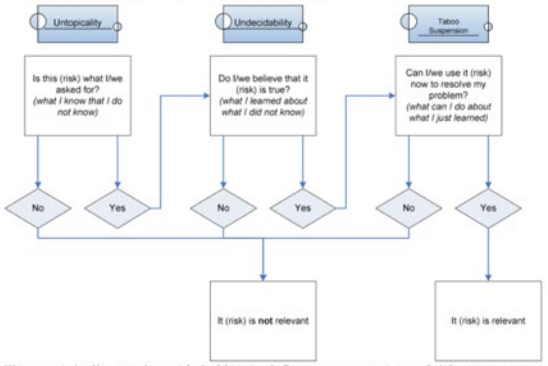
basal ganglia | fMRI | linear ballistic accumulator model | speed-accuracy tradeoff

Whether buying new shoes, participating in traffic, playing chess, or shooting basketball, one invariably faces the dilemma of when to stop deliberating and make a decision. In many situations, it is maladaptive to ponder over alternative courses of action for a very long time. In basketball, for instance, one has to shoot the ball before a defender can block the shot. However, decisions taken without sufficient thought may lead to poor results; a shot that is taken too hastily may not go in.

The foregoing example shows that decision-making involves a delicate balance between the competing demands of response speed and choice accuracy, a balance that is usually referred to as the speed-accuracy tradeoff (1). In the cognitive sciences, this tradeoff is thought to be modulated by a response threshold that determines the amount of diagnostic information that is required to make a decision and initiate an action (2, 3). Because the accumulation of diagnostic information takes time, high response thresholds lead to accurate, yet slow, decisions, and low response thresholds lead to fast yet error-prone decisions.

The behavioral consequences of the speed-accuracy tradeoff are both profound and predictable, and the tradeoff therefore constitutes one of the most important benchmark findings for formal models of decision-making (4, 5). In light of its ubiquity and impact, it is surprising that relatively little is known about the neural underpinnings of the speed-accuracy tradeoff (but see refs. 6 and 7). Despite a lack of empirical research, there is a lot of speculation that the basal ganglia may be critical to the

Figure 2: A multi stage process of relevance evaluation [30]



First, untopicality requires stakeholders to define a common scope of risk management. This may include the mindfulness of being able to only process tame risks and that wicked messes are to be excluded. Defining a common nominator for what type of threats stakeholders are looking for prevents risks being 'off-topic' and therefore irrelevant.

24

Results

In an experiment that consisted of a fMRI session, 19 participants perfor dots task" (16). This task requires a m whether a cloud of moving dots appe the right. Before each stimulus, a pseud indicated the level of speed stress: fast, 1). After each response, participants tent with the previously presented cue conditions, participants saw the messa they exceeded a response time crite respectively. In the neutral and accurac saw the message "incorrect" whenev response. This feedback procedure pro

Author contributions: B.U.F., G.D., and E.-J.W. designed E.-J.W. performed research; B.U.F., S.B., and E.-J.W. tools; B.U.F., G.D., S.B., J.N., D.Y.-C., and E.-J.W. anal K.R.R., and E.-J.W. wrote the paper.

The authors declare no conflict of interest.

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This article contains supporting information online (0809039105/DCSupplemental.

1. Introduction

Business forecasters use both unaided judgmental forecasting and forecasting aided by formal statistical forecasts (Sanders & Manrodt, 2003). The latter approach may become increasingly common as users become more familiar with the sorts of software that provide forecasting

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The effect of fast and slow decisions on risk taking

Michael Kirchler[1,2] · David Andersson[3] · Caroline Bonn[1] · Magnus Johannesson[3,4] · Erik Ø. Sørensen[5] · Matthias Stefan[1] · Gustav Tinghög[3,6] · Daniel Västfjäll[7,8]

Published online: 7 June 2017

Abstract We experimentally compare fast and slow decisions in a seri in financial risk taking in three countries involving over 1700 subjects. and slow decisions, subjects were randomly allocated to responding time pressure) or waiting for at least 7 or 20 seconds (time delay) befo control for different effects of time pressure and time delay on measu estimate separate parameters for noise and risk preferences within framework. We find that time pressure increases risk aversion for gai for losses compared to time delay, implying that time pressure increa effect of Prospect Theory. The results for gains are weaker and less robu

imentary
entary mat
chler

Multilevel Social Dynamics Considerations for Project Management Decision Makers: Antecedents and Implications of Group ent

imation Work

e compared the estimates to those of the 46 outsourcing companies in Table 3. As can be seen, the differences are not very large, which work of the participants in Study 2.

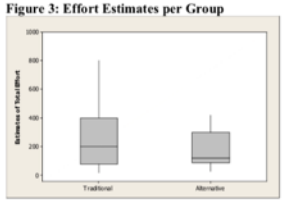
d Study and the Current Study

	n	Q1	Md	Q3	M	SD
	46	119	190	339	273	229
Current study (traditional format)	35	80	200	400	343	460

3.2.2 Effects of Format

The median estimate of those in the Traditional group was 200 work-hours compared to 120 work-hours in the Alternative group, i.e., the difference between the group medians is only slightly smaller than in Study 1. A boxplot of the estimates per competence groups is displayed in Figure 3.

Figure 3: Effort Estimates per Group



Since Study 2 is a replication of Study 1 and we already had hypothesized the direction of the effect, we used a one-tailed instead of a two-tailed Kruskal-Wallis Test of significance. The statistical significance of the difference was, $\chi^2 = .81$, $p = .19$. When including only the participants with self-assessed competence "Acceptable", "Good" or "Very good" in the analysis, we get $\chi^2 =$

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lmination of management skills, planning, n operations management, such strengths erspective of skill base. However, it has l traits associated with individuals play a g, role in the effectiveness of certain group o how certain individual attributes viewed d to social networking decisions that have . Such insights are likely to prove valuable as well. We employ a controlled 4-month h we are able to consider both objective, ct data. Our results demonstrate that the conscientiousness are relevant not only in f within-group interactions, and hence the ltimately relevant in helping to drive higher

t Management, and Team Effective-

Neural mechanisms mediating optimism bias

Tali Sharot[1,2], Alison M. Riccardi[1], Candace M. Raio[1] & Elizabeth A. Phelps[1]

Bendoly, Thomas, and Capra 475

Table 2: Results of hierarchical linear modeling analysis predicting group member valuations of interpersonal tie strength.

	Models for Various Dependent Variable Operationalizations					
	BDM-based[c] Differential Valuation		Ranking-based Differential Valuation		Subjective Scale Assessment	
Independent Variables[b]	γ	t	γ	t	γ	t
Individual-level Predictors						
Gender	0.06	0.76	0.16	2.04*	0.09	1.15
GMAT score	0.17	2.17*	0.02	0.25	−0.01	−0.13
	.23	2.93**	0.28	3.57***	0.19	2.42*
	.19	2.42*	0.16	2.04*	0.09	1.15
	.29	3.70***	0.25	3.19**	0.26	3.31**

biological basis of optimism we collected nance imaging (fMRI) data while partici- graphical events related to a description of a 'winning an award' or 'the end of a roman- rd 'past' or 'future' indicated if they should urred in the past or one that might occur in assified into positive, negative and neutral ratings. The mean number of trials rated as d thus all contrasts of interest were con- and negative trials only.

pants rated their memories and projections heir subjective experience. The mean scores ritical analysis are presented in Table 1 and Finally, participants completed the LOT-R vised) scale that measures trait optimism[23]

r 1 and Supplementary Table 1, future posi- more positive than past positive events, and re in temporal proximity then future nega- ents (Fig. 1a). Negative future events were r subjective sense of pre-experiencing, and nagined from an outsider viewing in, than l all past events (Fig. 1b). The more optim- indicated by the LOT-R scores, the more ct positive events to happen closer in the nts, and to experience them with a greater (Fig. 1c, d).

fMRI data to identify the underlying neural regions of interest (ROIs) were identified by fixation ($P < 0.00005$, uncorrected). The d this threshold (Fig. 2a, b) included the e cortex (mOFC; Fig. 2b), extending into ontal cortex at a more lenient threshold erior cingulate cortex (PCC, Fig. 2b), and tal cortex (Fig. 2b), all of which have been

Availability: A Heuristic for Judging Frequency and Probability[1,2]

AMOS TVERSKY AND DANIEL KAHNEMAN
The Hebrew University of Jerusalem and the Oregon Research Institute

This paper explores a judgmental heuristic in which a person evaluates the frequency of classes or the probability of events by availability, i.e., by the ease with which relevant instances come to mind. In general, availability is correlated with ecological frequency, but it is also affected by other factors. Consequently, the reliance on the availability heuristic leads to systematic biases. Such biases are demonstrated in the judged frequency of classes of words, of combinatorial outcomes, and of repeated events. The phenomenon of illusory correlation is explained as an availability bias. The effects of the availability of incidents and scenarios on subjective probability are discussed.

I. INTRODUCTION

Much recent research has been concerned with the validity and consistency of frequency and probability judgments. Little is known, however, about the psychological mechanisms by which people evaluate the frequency of classes or the likelihood of events.

We propose that when faced with the difficult task of judging probability or frequency, people employ a limited number of heuristics which reduce these judgments to simpler ones. Elsewhere we have analyzed in detail one such heuristic—representativeness. By this heuristic, an event is judged probable to the extent that it represents the essential features of its parent population or generating process. Evidence for representativeness was obtained in several studies. For example, a large majority of naive respondents believe that the sequence of coin tosses

Behavioral Economics & Behavioral Finance…

…Now **Behavioral Project Management**

Behavioural Insights and Public Policy

Institutions applying BI to public policy around the world

Source: OECD Research (2018)

Meet Some of the Scientists

Daniel Kahneman

Nobel Prize Laureate and Cognitive Psychologist

Tali Sharot

Neuroscientist

Dan Ariely

Behavioral Economist

Roger Buehler

Social Psychologist

Richard Thaler

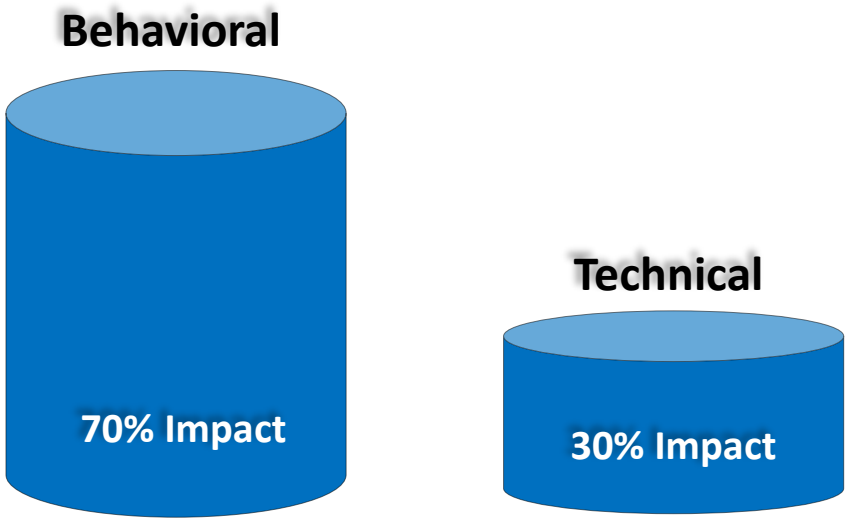
Nobel Prize winner

Wait! Who's this guy?

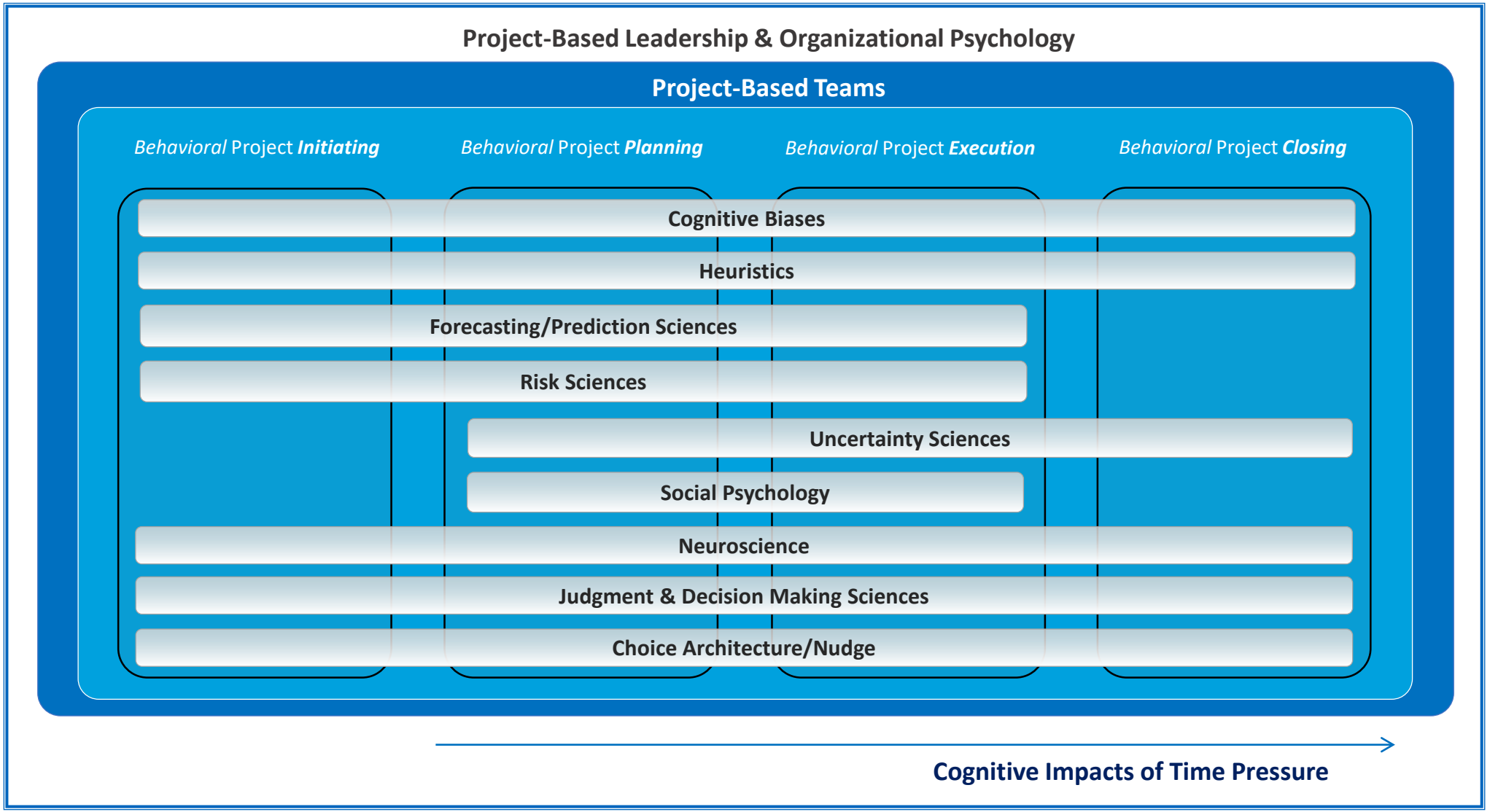
Some Behavioral Results

- 18 percent change in human decisions due to reframing
- 35 percent increase in employees following procedures
- 80 percent increase in prediction accuracy
- 25 percent increase in monthly schedule forecast accuracy

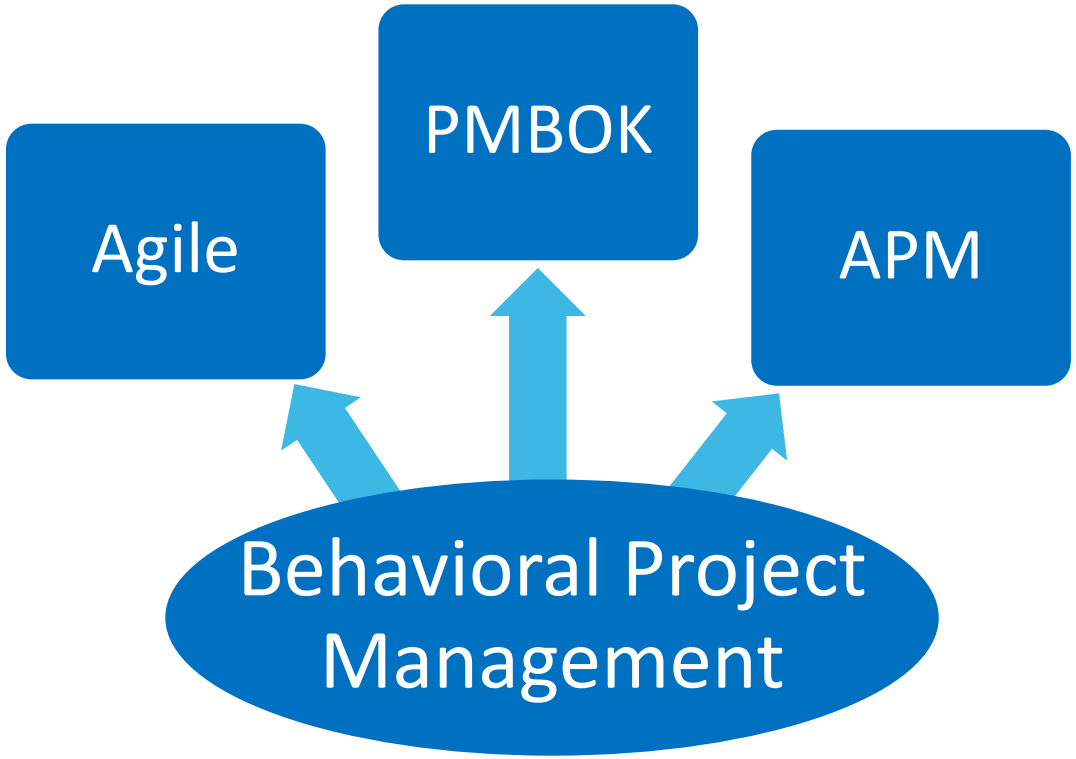
The Human Factor Impacts Projects More



The Neuro/Behavioral Domains Across Project Phases



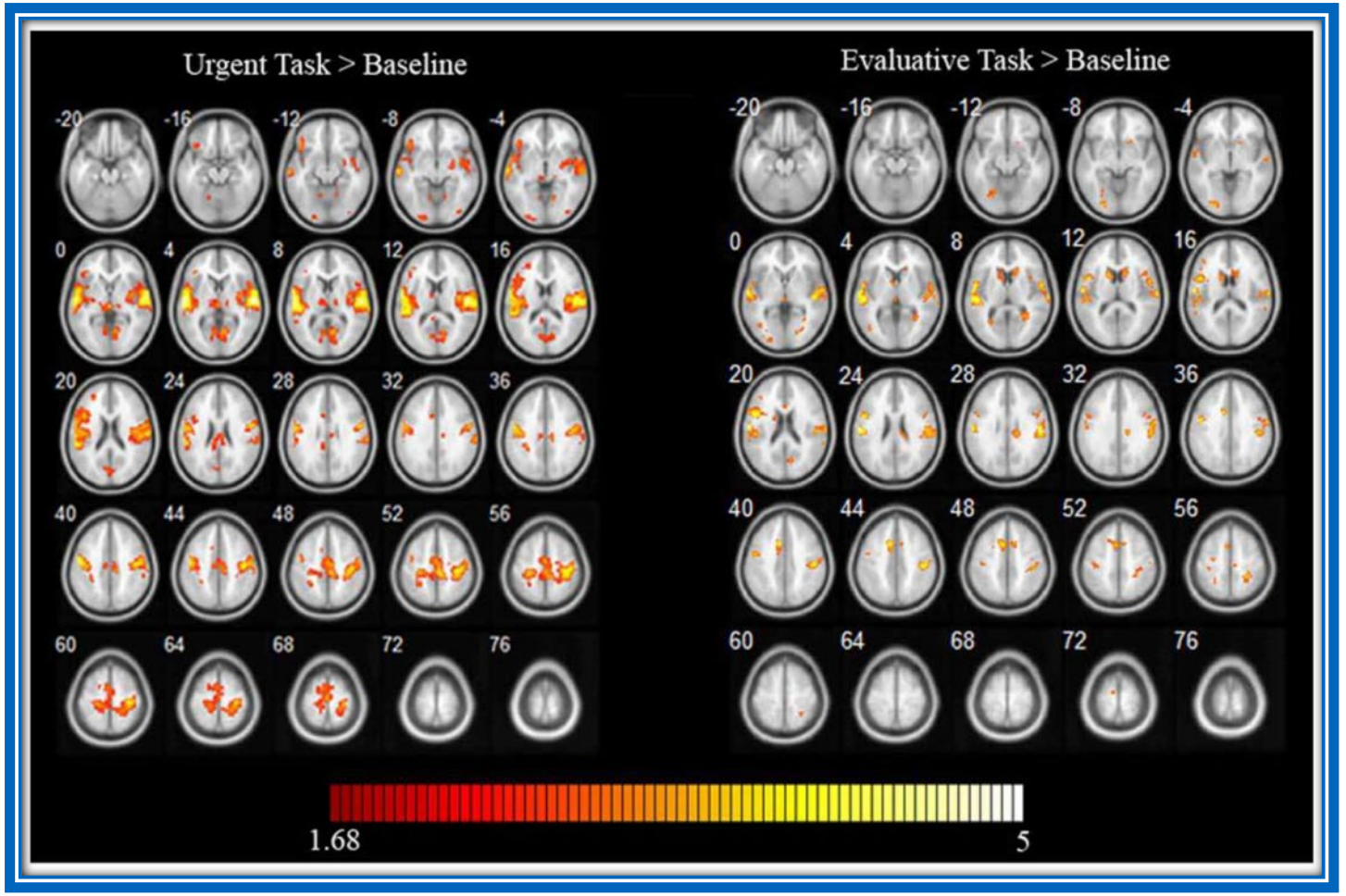
The New Foundation of Popular Methods – Project Science



Your Brain on Projects

What's time have to do with it?

- Time constraints activate an area of the brain releasing the motor system from inhibition, causing faster and premature decisions.
- Time pressure reduces creativity, and thus innovation.



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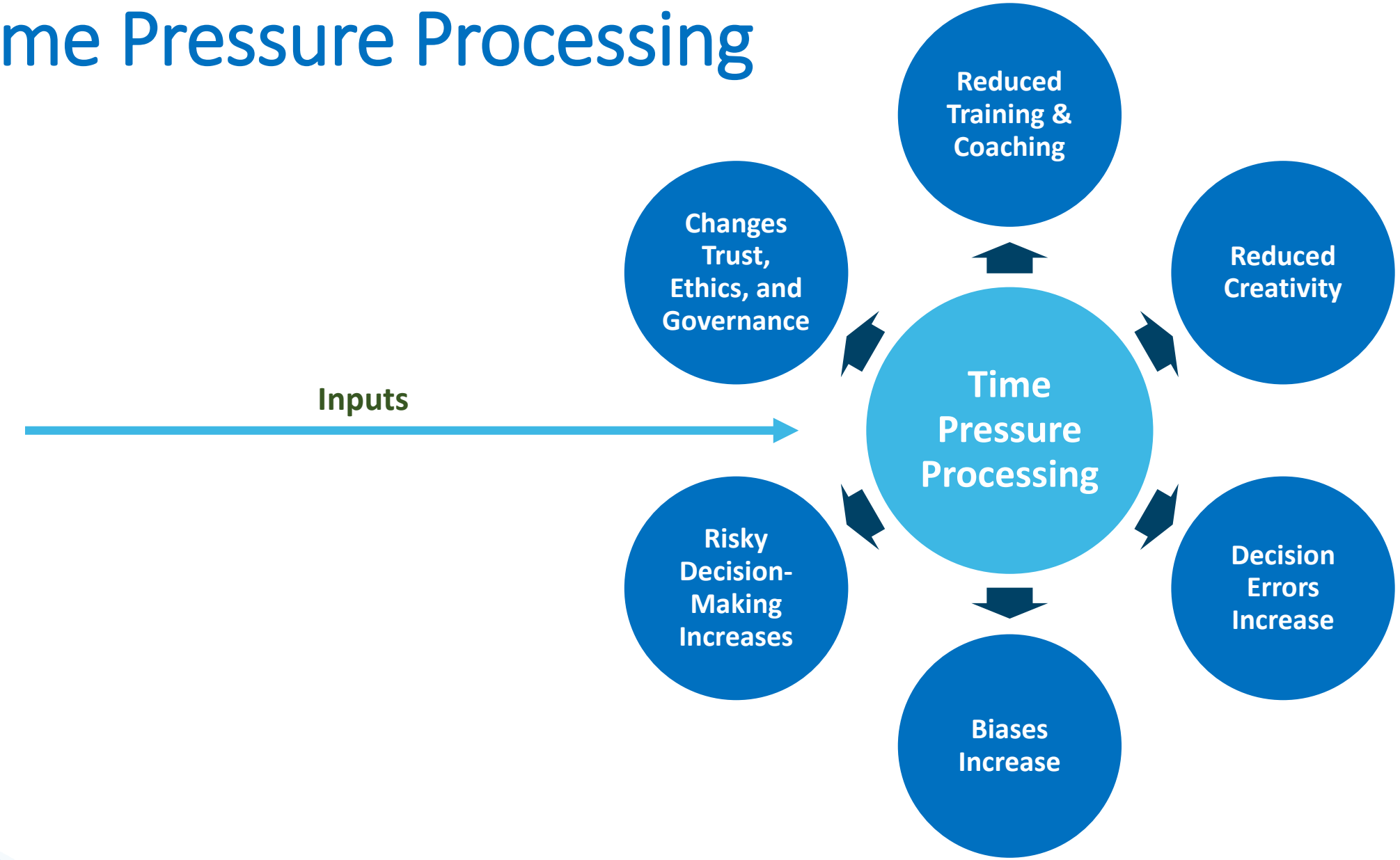
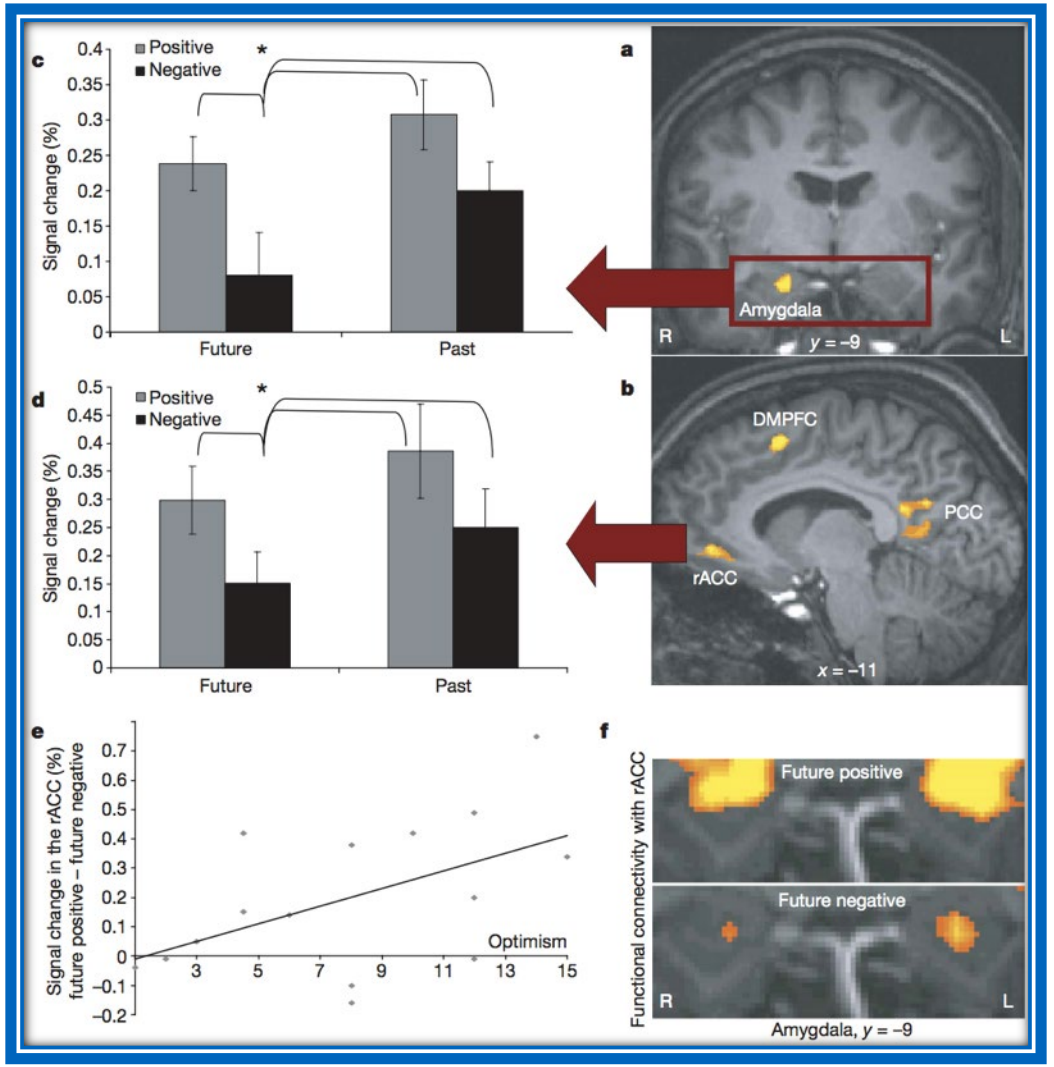
Time Pressure Processing



Your Brain on Optimistic Planning

- We are more optimistic than pessimistic, resulting in unrealistic:
  - Risk analysis (Risk KA)
  - Schedule duration estimation (Time KA)
  - Cost estimation (Cost KA)
- Note that future events are more heavily weighted toward optimism.



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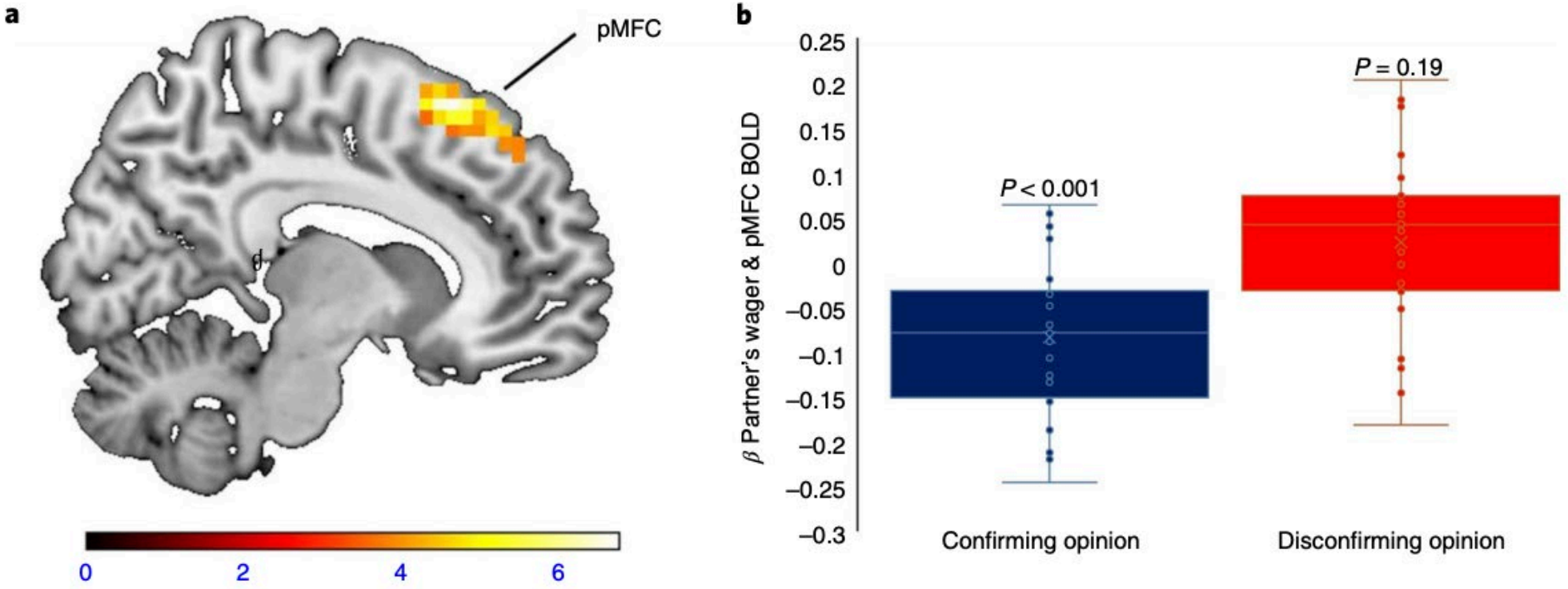
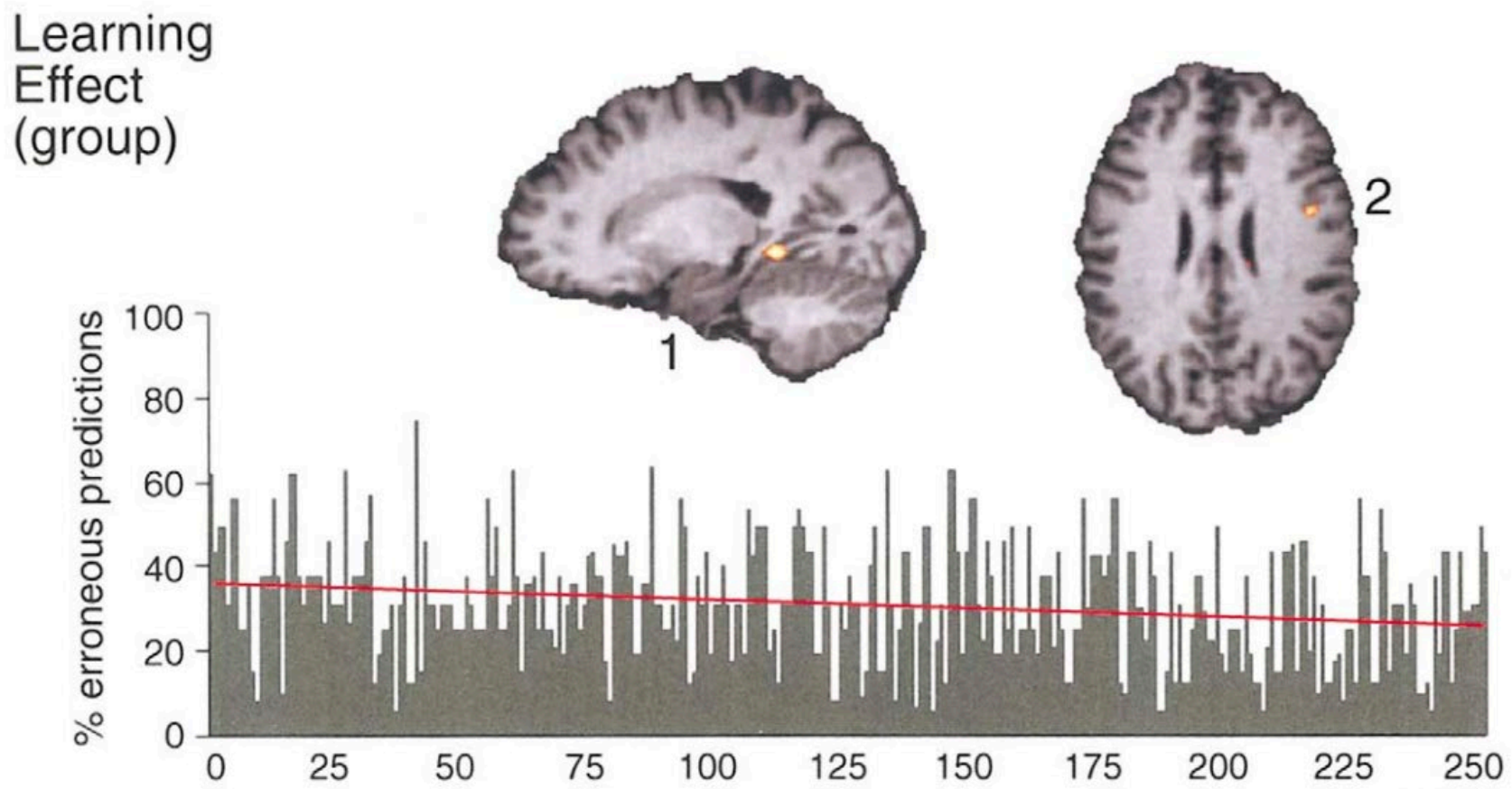
Confirmation Bias in the Brain



Prediction in the Brain



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The Redesign Part

Applying Science to Project Management

Pergamon

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No project is an island: linking projects to history and context

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Abstract

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Extensional Versus Intuitive Reasoning: The Conjunction Fallacy in Probability Judgme

Amos Tversky
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Striatum and pre-SMA faci under time pressure

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basal ganglia | fMRI | linear ballistic accumulator model | speed-accuracy tradeoff

Whether buying new shoes, participating in traffic, playing chess, or shooting basketball, one invariably faces the dilemma of when to stop deliberating and make a decision. In many situations, it is maladaptive to ponder over alternative courses of action for a very long time. In basketball, for instance, one has to shoot the ball before a defender can block the shot. However, decisions taken without sufficient thought may lead to poor results; a shot that is taken too hastily may not go in.

The foregoing example shows that decision-making involves a delicate balance between the competing demands of response speed and choice accuracy, a balance that is usually referred to as the speed-accuracy tradeoff (1). In the cognitive sciences, this tradeoff is thought to be modulated by a response threshold that determines the amount of diagnostic information that is required to make a decision and initiate an action (2, 3). Because the accumulation of diagnostic information takes time, high response thresholds lead to accurate, yet slow, decisions, and low response thresholds lead to fast yet error-prone decisions.

The behavioral consequences of the speed-accuracy tradeoff are both profound and predictable, and the tradeoff therefore constitutes one of the most important benchmark findings for formal models of decision-making (4, 5). In light of its ubiquity and impact, it is surprising that relatively little is known about the neural underpinnings of the speed-accuracy tradeoff (but see refs. 6 and 7). Despite a lack of empirical research, there is a lot of speculation that the basal ganglia may be critical to the

Author contributions: B.U.F., G.D., and E.-J.W. designed E.-J.W. performed research; B.U.F., S.B., and E.-J.W. tools; B.U.F., G.D., S.B., J.N., D.Y.-C., and E.-J.W. ana K.R.R., and E.-J.W. wrote the paper.

The authors declare no conflict of interest.

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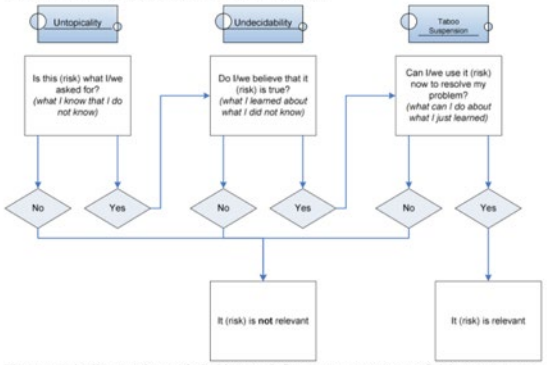
This article contains supporting information online (0809039105/DCSupplemental.

Figure 2: A multi stage process of relevance evaluation [30]



First, untopicality requires stakeholders to define a common scope of risk management. This may include the mindfulness of being able to only process tame risks and that wicked messes are to be excluded. Defining a common nominator for what type of threats stakeholders are looking for prevents risks being 'off-topic' and therefore irrelevant.

24

Results

In an experiment that consisted of a fMRI session, 19 participants perfor dots task" (16). This task requires a m whether a cloud of moving dots appe the right. Before each stimulus, a pseud indicated the level of speed stress: fast, 1). After each response, participants tent with the previously presented cue conditions, participants saw the messa they exceeded a response time crite respectively. In the neutral and accurac saw the message "incorrect" whenev response. This feedback procedure pro

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1. Introduction

Business forecasters use both unaided judgmental forecasting and forecasting aided by formal statistical forecasts (Sanders & Manrodt, 2003). The latter approach may become increasingly common as users become more familiar with the sorts of software that provide forecasting

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The effect of fast and slow decisions on risk taking

Michael Kirchler[1,2] · David Andersson[3] · Caroline Bonn[1] · Magnus Johannesson[3,4] · Erik Ø. Sørensen[5] · Matthias Stefan[1] · Gustav Tinghög[3,6] · Daniel Västfjäll[7,8]

Published online: 7 June 2017

Abstract We experimentally compare fast and slow decisions in a seri in financial risk taking in three countries involving over 1700 subjects. and slow decisions, subjects were randomly allocated to responding time pressure) or waiting for at least 7 or 20 seconds (time delay) befo control for different effects of time pressure and time delay on measu estimate separate parameters for noise and risk preferences within framework. We find that time pressure increases risk aversion for gai for losses compared to time delay, implying that time pressure increa effect of Prospect Theory. The results for gains are weaker and less robu

Multilevel Social Dynamics Considerations for Project Management Decision Makers: Antecedents and Implications of Group

imation Work
e compared the estimates to those of the 46 outsourcing companies in Table 3. As can be seen, the differences are not very large, which work of the participants in Study 2.

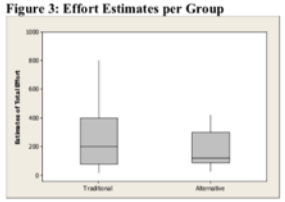
d Study and the Current Study

	n	Q1	Md	Q3	M	SD
	46	119	190	339	273	229
Current study (traditional format)	35	80	200	400	343	460

3.2.2 Effects of Format

The median estimate of those in the Traditional group was 200 work-hours compared to 120 work-hours in the Alternative group, i.e., the difference between the group medians is only slightly smaller than in Study 1. A boxplot of the estimates per competence groups is displayed in Figure 3.

Figure 3: Effort Estimates per Group



Since Study 2 is a replication of Study 1 and we already had hypothesized the direction of the effect, we used a one-tailed instead of a two-tailed Kruskal-Wallis Test of significance. The statistical significance of the difference was, $\chi^2 = .81$, $p = .19$. When including only the participants with self-assessed competence "Acceptable", "Good" or "Very good" in the analysis, we get $\chi^2 =$

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lumination of management skills, planning, n operations management, such strengths erspective of skill base. However, it has l traits associated with individuals play a g, role in the effectiveness of certain group o how certain individual attributes viewed d to social networking decisions that have . Such insights are likely to prove valuable as well. We employ a controlled 4-month h we are able to consider both objective, ct data. Our results demonstrate that the conscientiousness are relevant not only in f within-group interactions, and hence the ltimately relevant in helping to drive higher

t Management, and Team Effective-

Neural mechanisms mediating optimism bias

Tali Sharot[1,2], Alison M. Riccardi[1], Candace M. Raio[1] & Elizabeth A. Phelps[1]

Table 2: Results of hierarchical linear modeling analysis predicting group member valuations of interpersonal tie strength.

	Models for Various Dependent Variable Operationalizations					
	BDM-based[c] Differential Valuation		Ranking-based Differential Valuation		Subjective Scale Assessment	
Independent Variables[b]	γ	t	γ	t	γ	t
Individual-level Predictors						
Gender	0.06	0.76	0.16	2.04*	0.09	1.15
GMAT score	0.17	2.17*	0.02	0.25	−0.01	−0.13
	.23	2.93**	0.28	3.57***	0.19	2.42*
	.19	2.42*	0.16	2.04*	0.09	1.15
	.29	3.70***	0.25	3.19**	0.26	3.31**

biological basis of optimism we collected nance imaging (fMRI) data while partici- graphical events related to a description of a 'winning an award' or 'the end of a roman- rd 'past' or 'future' indicated if they should urred in the past or one that might occur in assified into positive, negative and neutral ratings. The mean number of trials rated as nd thus all contrasts of interest were con- and negative trials only.

pants rated their memories and projections heir subjective experience. The mean scores ritical analysis are presented in Table 1 and Finally, participants completed the LOT-R vised) scale that measures trait optimism[23]

r 1 and Supplementary Table 1, future posi- more positive than past positive events, and re in temporal proximity then future nega- ents (Fig. 1a). Negative future events were r subjective sense of pre-experiencing, and nagined from an outsider viewing in, than l all past events (Fig. 1b). The more optim- s indicated by the LOT-R scores, the more ct positive events to happen closer in the nts, and to experience them with a greater (Fig. 1c, d).

fMRI data to identify the underlying neural regions of interest (ROIs) were identified by fixation ($P < 0.00005$, uncorrected). The d this threshold (Fig. 2a, b) included the e cortex (mCC; Fig. 2b), extending into ontal cortex at a more lenient threshold erior cingulate cortex (PCC, Fig. 2b), and tal cortex (Fig. 2b), all of which have been

Availability: A Heuristic for Judging Frequency and Probability[1,2]

AMOS TVERSKY AND DANIEL KAHNEMAN
The Hebrew University of Jerusalem and the Oregon Research Institute

This paper explores a judgmental heuristic in which a person evaluates the frequency of classes or the probability of events by availability, i.e., by the ease with which relevant instances come to mind. In general, availability is correlated with ecological frequency, but it is also affected by other factors. Consequently, the reliance on the availability heuristic leads to systematic biases. Such biases are demonstrated in the judged frequency of classes of words, of combinatorial outcomes, and of repeated events. The phenomenon of illusory correlation is explained as an availability bias. The effects of the availability of incidents and scenarios on subjective probability are discussed.

I. INTRODUCTION

Much recent research has been concerned with the validity and consistency of frequency and probability judgments. Little is known, however, about the psychological mechanisms by which people evaluate the frequency of classes or the likelihood of events.

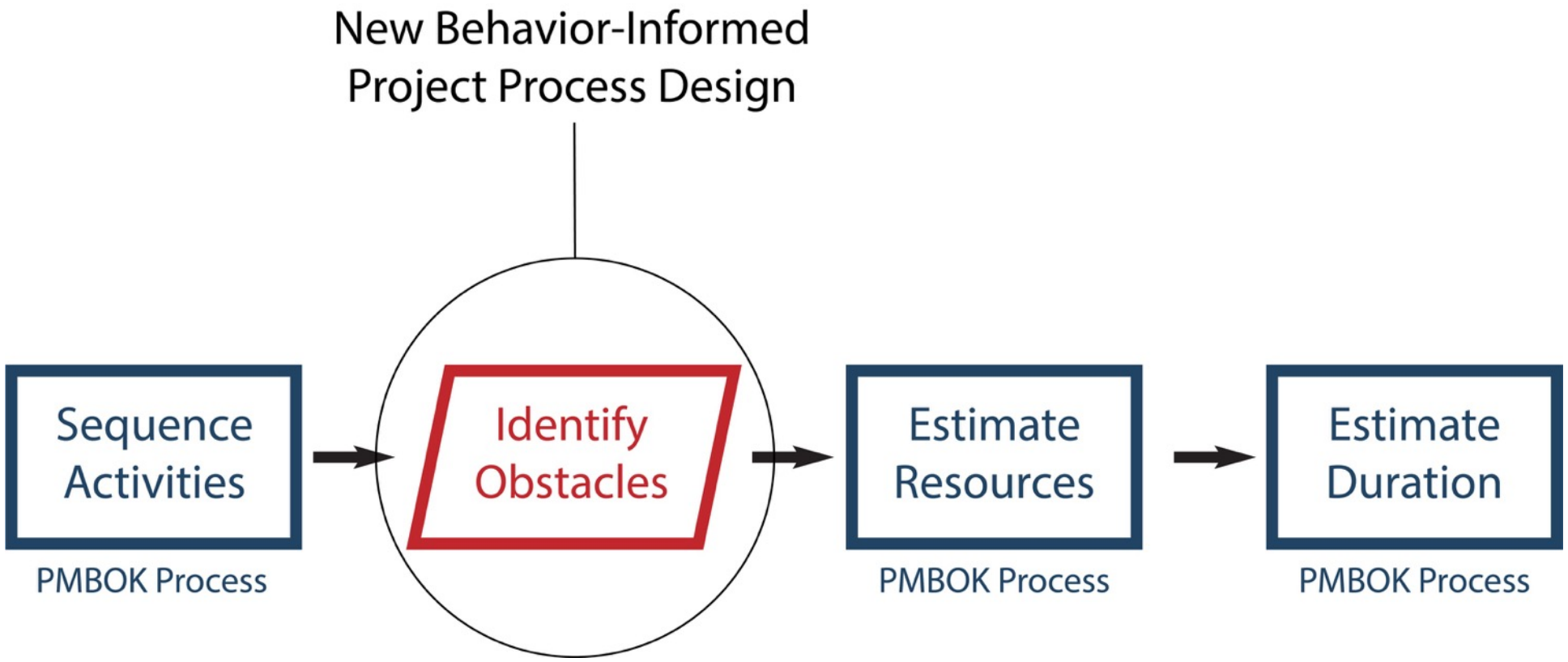
We propose that when faced with the difficult task of judging probability or frequency, people employ a limited number of heuristics which reduce these judgments to simpler ones. Elsewhere we have analyzed in detail one such heuristic—representativeness. By this heuristic, an event is judged probable to the extent that it represents the essential features of its parent population or generating process. Evidence for representativeness was obtained in several studies. For example, a large majority of naive respondents believe that the sequence of coin tosses

Project Science > New Process

New Process

Identify Obstacles

Designing Processes Around the Brain



4 Major Modalities

Processes

Design processes to account for how the brain operates

Metrics

Formulate metrics that measure human factors with project factors

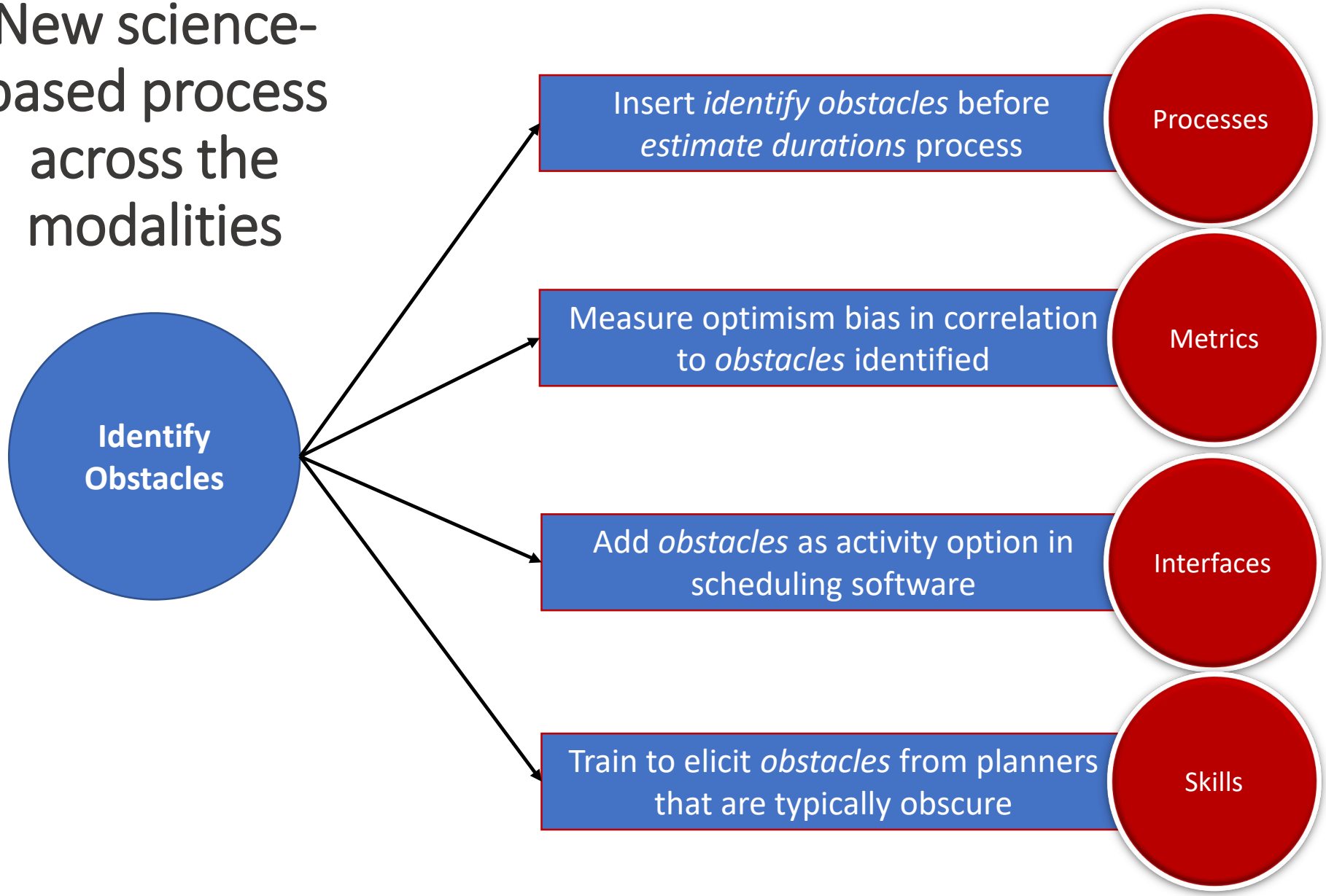
Interfaces

Design human interfaces around the way humans think

Skills

Train employees in debiasing methods when using processes, interfaces, and metrics

New science-based process across the modalities



Increasing Your Value

- Increased on-time project delivery (Time KA).
- Higher project management organizational competency.
- Reduced risk for your client (Risk KA).
- Increased customer trust in project outcomes.
- Being a leader in advanced project management.

The next big steps for innovative organizations

- Developing a ***College of Project Science*** at a university
- Full adoption of Behavioral Project Management in a PMO – a Behavioral PMO
- Government agencies implementing Project Science
- Adopting science-based planning, designed around the brain

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Some of Our Scientists

Josh Ramirez (PhD Cand.)

Shari De Baets, PhD

Michael Barbera, PhD

Jodi Wilson, PhD

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Dr. Shari De Baets

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Josh Ramirez and Jodi Wilson

Josh Ramirez: Founder & President
Behavioral Project Management
Jodi Wilson: Founder & CEO, Busin
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Presentation Title: Redesigning Pro
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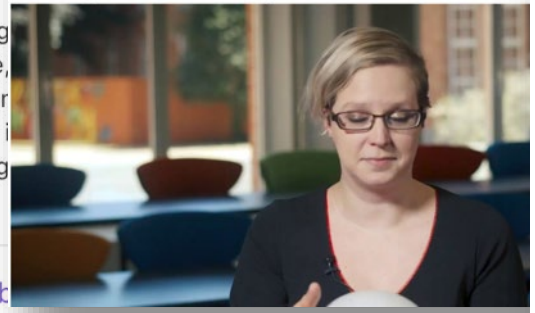

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Shari De Baets

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SAFETY, RISK, AND ACCIDENT PREVENTION

PROJECTS ARE INHERENTLY MORE RISKY

Because projects are time-pressured environments, this time constraint causes the brain to make decisions that are usually more error-prone th
operations environment where time pressure may be lower (see image of your brain on time pressure, below).

Time pressure:

- Causes more use of cognitive biases
- Causes reliance on old habits and defaulting to mental rules of thumb, known as heuristics
- May impact ethical behavior
- Can increase risk-taking
- Decreases prediction accuracy in forward-looking activities and behaviors

RELATED VIDEOS

Here are a list of video resources on various behavioral concepts, for your browsing pleasure!

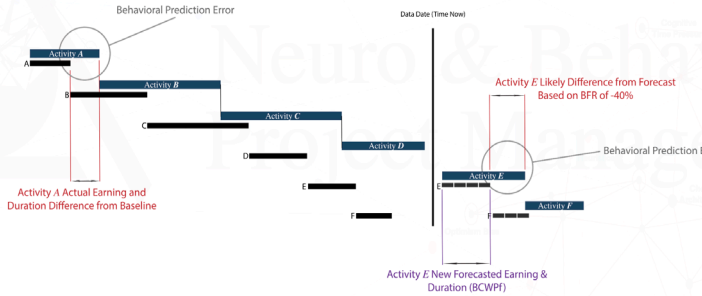
WHY WE ARE WRONG WHEN WE THINK WE ARE RIGHT

Dr. Chaehan So

Let's take it a step further. If we had measured Forecast P and its performance for the past 3 or 4 months we would have an average optimistic (or pessimistic) rate for the forecasting personnel over those periods (this is where we can actually start to pull the strings on what's going on and where we can make improvements). To measure the monthly forecast against the performance we take the earned value minus the forecasted value, and then divide this number by the earned value, giving us a Behavioral Forecast Rate (BFR). It might look something like this: (BCWP-BCWPf)/BCWP = BFR, or (12,850-18,000)/12,850 = -0.40078.

THE BEHAVIORAL PART

Now that we have a consistent average measurement, we can look for potential causes by individual, project, organization, department, etc. Some behavioral concepts that could then be considered might be optimism bias, overconfidence effect, deliberate ignorance, information avoidance, courtesy bias, or authority bias. Once mitigations have been applied, we can then remeasure on a monthly basis to see if there are improvements and start to improve prediction accuracy in both planning and monthly forecasting. Because of the underlying inherent nature and cause of some of these behavioral issues, the project may also see other positive residual outcomes from using these methods, such as reduced risk realization and greater project safety.



BEHAVIORAL-PMO

Science-Based *Project Management Office*

BEHAVIORALPMO

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WELCOME TO THE INSTITUTE FOR NEURO & BEHAVIORAL PROJECT MANAGEMENT

The profession of project management is entering a new level of maturity. Project management processes are well-known, highly developed, and widely used. Organizations are committed to a project-based approach to implementing change. It is time for project managers, PMOs, professional associations, project professionals of all specializations, and organizations worldwide to look forward to a new phase in project management, one that focuses on behavioral factors.

We at the Institute of Neuro and Behavioral Project Management believe that this is the way to take project management into the 21st Century and beyond, and create a practice that will result in better project outcomes, and more flexible approaches to change in all types of organization.

f the impacts of human factors on the project lifecycle and to offer solutions to the challenges of creating
next phase in project management, integrates the learnings of the behavioral sciences and neuroscience with
ent.

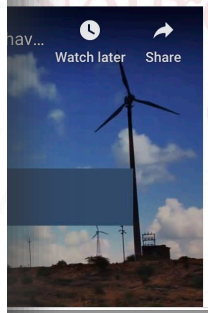
GRADUATE RESEARCHERS

Ryan Stalker, MBA

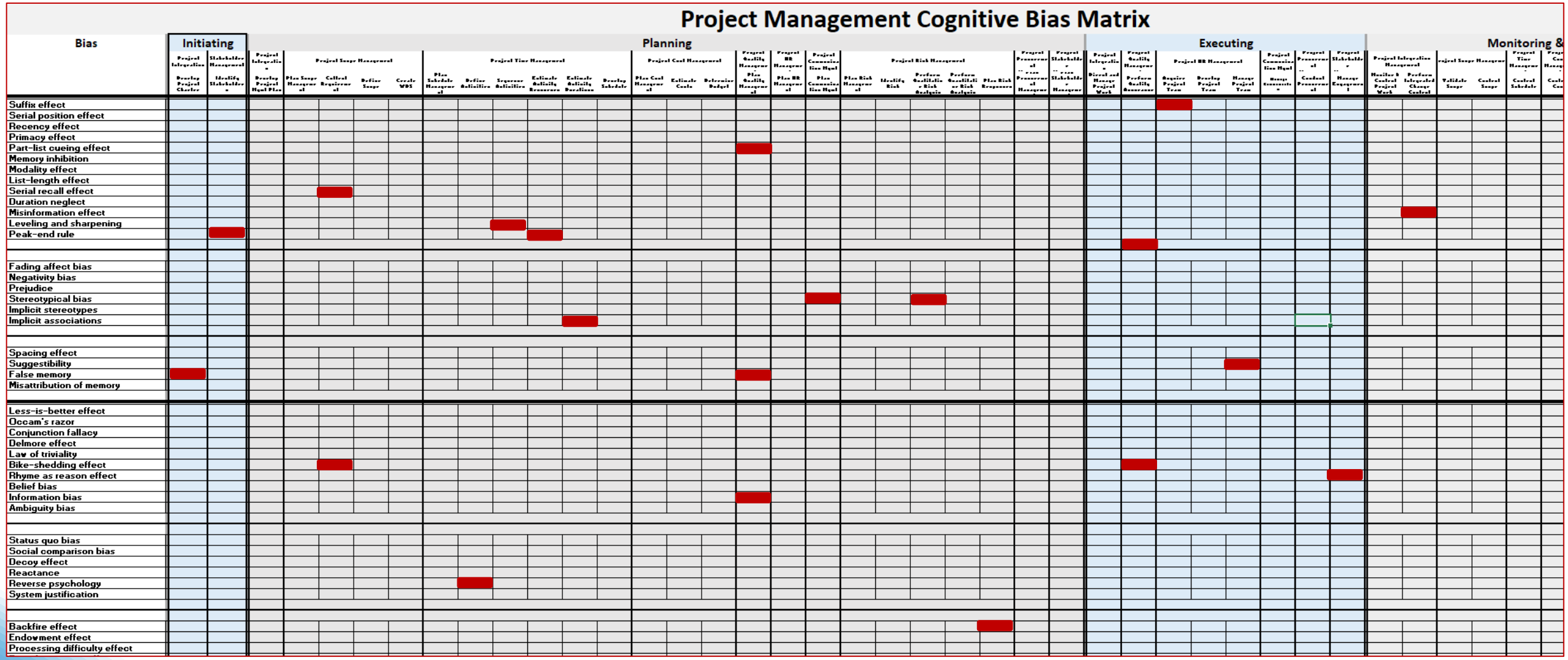
Facility Optimization Manager

PhD student in Business Psychology, Chicago School of Professional Psychology

Current research: Loss Aversion in project selection



Mapping the Biases to PMBOK and Other Methodologies



Mapping Example for *Uncertainty Aversion Bias*

In PMBoK, may present itself in:

- Initiating Process Group
- Planning Process Group
- Following processes:
  - Develop Project Charter (Section 4.1)
  - Estimate Activity Durations (Section 6.4)
  - Estimate Costs (Section 7.2)
  - Estimate Activity Resources (Section 9.2)
  - Identify Risks (Section 11.2)
  - Perform Qualitative Risk Analysis (Section 11.3)
  - Plan Risk Responses (Section 11.5)
  - Control Schedule (Section 6.6)
  - Control Cost (Section 7.4)
  - Monitor Risks (Section 11.7)

In Agile (PMI), may present itself in:

- Higher uncertainty, both *technical* and *requirements* domains (Section 2.4)
- Flow-based Agile (Section 3.1.4)
- Predominantly predictive approaches (Section 3.1.8)
- While under time-pressure during stand-ups (Section 5.2.4)
- The following *Pain Points* (Section 5.1)
  - Unclear purpose or mission for the team
  - Unclear working agreements for the team
  - Unclear team context
  - Unclear requirements
  - Inaccurate estimation
  - Unclear work assignments or work progress
- Backlog preparation (Section 5.2.2)
- Sprint planning

In APMBoK, may present itself in:

- Concept phase of project lifecycle
- More predictive lifecycles, versus evolutionary
- During project justification and closure
- More urgent tasks in task prioritization
- Projects that are higher in the hierarchy of legal and regulatory influences
- Contingency planning
- Provisions for known and unknown risk
- Progress reporting
- Forecasting
- Estimating

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Science-Based *Planning, Forecast & Risk*

NEURALPLAN™

Designed Around the Brain

DATA science

- We put tons of effort into this
- We spend billions on this
- We keep our data processors updated
- We design organizations around this
- We have QA on this
- We write processes for this

This only *shows* performance

DECISION science

- How much effort do we put into this?
- What percentage of our budget is here?
- Do we keep our decision processors updated?
- Do we design organizations around this?
- Do we have QA on this?
- Do we write processes for this?

This *changes* performance

Behavioral Project Management…

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