



Society of Actuaries in Ireland

**A New Field for Actuaries: Assessing Psychological
Capacity for Risk Taking and Risk Management**

Colm Fitzgerald

24th September 2014

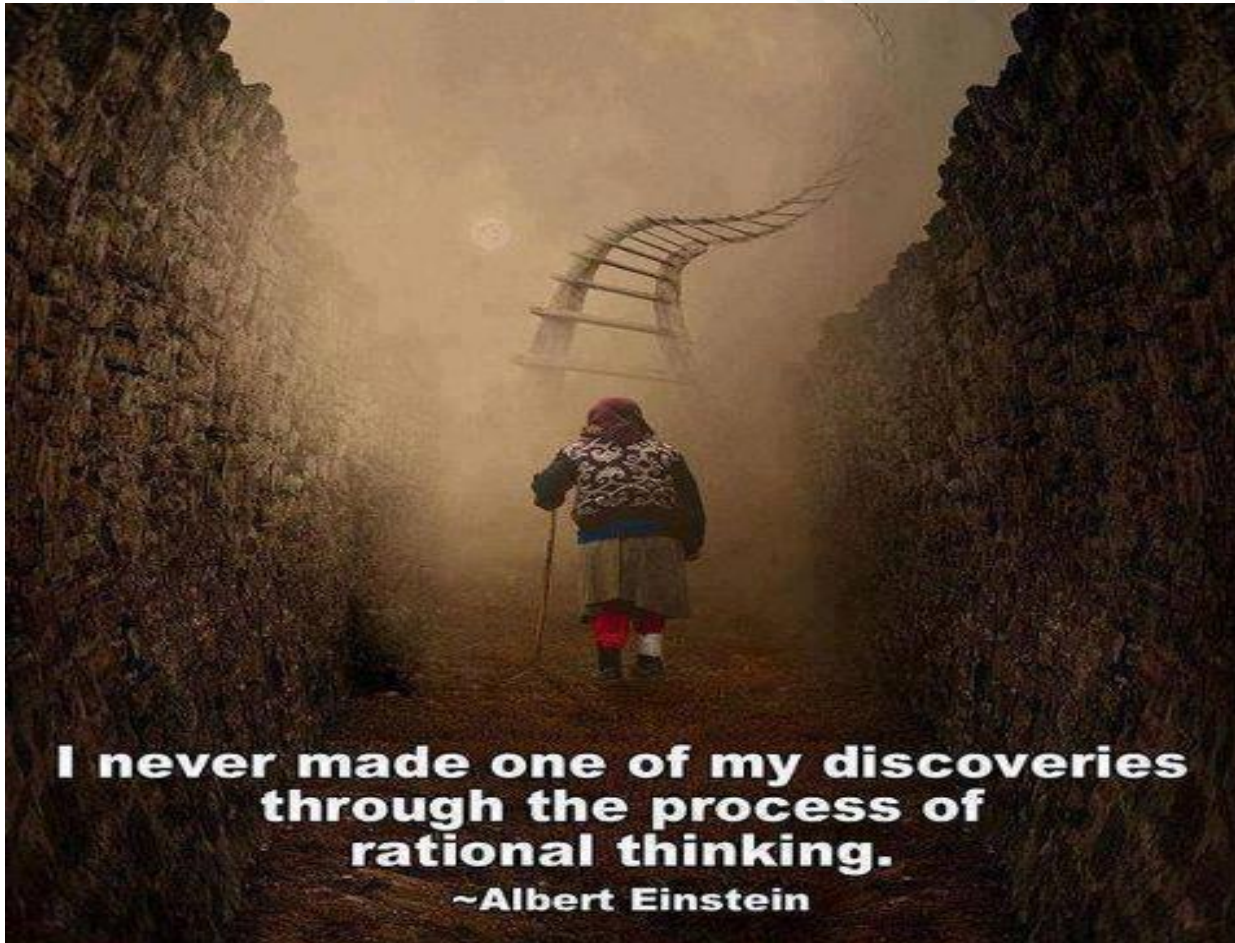
Background

- The only thing that matters in art is the part that can't be explained.
 - In a similar way, the thing that matters most in risk taking and risk management is the part that can't be measured.
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Introduction

- Actuaries and other investment and risk professionals typically assess risk from a logical and rational perspective, and they typically assume that individuals act rationally.
 - An aim of this research was to create assessment tools that can provide quantitative assessments of an individual's or a group's psychological capacity for astute risk taking and for astute risk management.
 - The research takes a psychological perspective and assumes that individual's are all subject to the same '*human condition*'.
 - The tools may not enable assessment of the risk 'X-Factor' - but they should enhance and complement existing risk metrics and enable better risk taking and better risk management.
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Preliminary Concepts



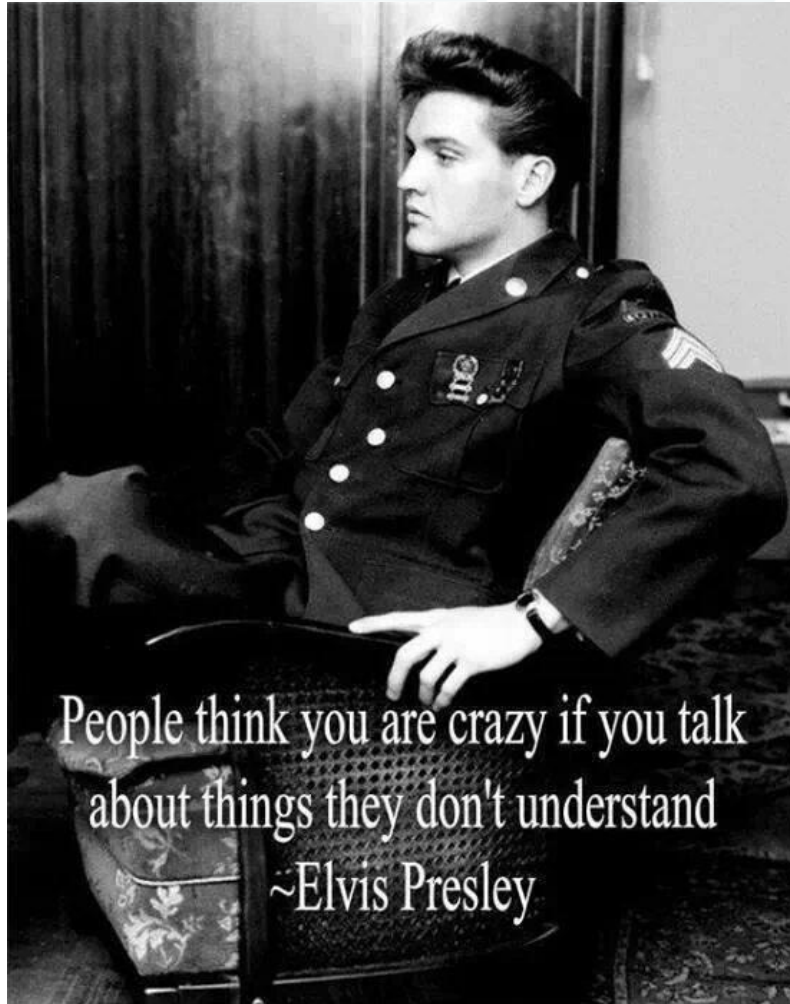
**I never made one of my discoveries
through the process of
rational thinking.**

~Albert Einstein

Risks arising from this research

- *“Most.... shy away from psychological explanations...., partly from an understandable fear of the moralizing rhetoric that flows in their wake, partly from ignorance or distrust of social psychology, but largely because of hardened professional traditions” - M. I. Finley*
 - However, the view was taken that the bigger risk comes from over-prudence and from inaction (regret risk).
 - Acknowledge the similar risks taken by others. Without their research, this research would not have been possible.
 - To deal with this risk, considerable work was put into the language that is used in the research so that it is as politically correct as possible.
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Risks arising from this research



Overview of the Research

- The research involved a review of
 - a substantial review of material from the field of psychology,
 - existing research that looked at the psychological aspects related to risk taking, along with discussions with actuaries and other professionals
 - a substantial review of material from classical literature,
 - along with a review of the theory and methods of psychological and personality assessment.
 - The research necessitated the creation of a theoretical framework.
 - this framework is quite deep! Would it be credible otherwise?
 - This was followed by the design, construction, and testing of the assessment tools.
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Potential Uses

Examples:

- The Risk Personality Questionnaire (RPQ) could be used as part of an assessment process when hiring an investment manager or a risk manager. It could also be used as part of a performance enhancement programme for existing investment or risk managers.
 - The Group Risk Personality Questionnaire (Group RPQ) could be used to assess the psychological functioning of a board of directors or a risk committee and to facilitate enhancing the psychological functioning of a board of directors or a risk committee.
 - The RPQ and the Group RPQ can be used to assess 'ego risk', 'group ego risk' and other 'psychological' risks as part of a risk management framework.
 - The RPQ or a shorter version of it could be used as a rating factor in insurance.
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Potential Uses



Literature Review

General Psychology – Literature Review

Freud *'The Psychopathology of Everyday Life', 'The Unconscious', 'The Interpretation of Dreams' and 'the Penguin Freud Reader'.*

Jung *'A Very Short Introduction', 'The Essential Jung - Selected writings', 'The Four Archetypes' and 'The Science of Mythology' (with C. Kerenyi)*

Maslow *'Motivation and Personality'*

Fromm *'The Heart of Man', 'Escape from Freedom' and 'The Anatomy of Human Destructiveness'.*

Peck *'The Road Less Travelled' and 'The People of the Lie'*

Literature Review

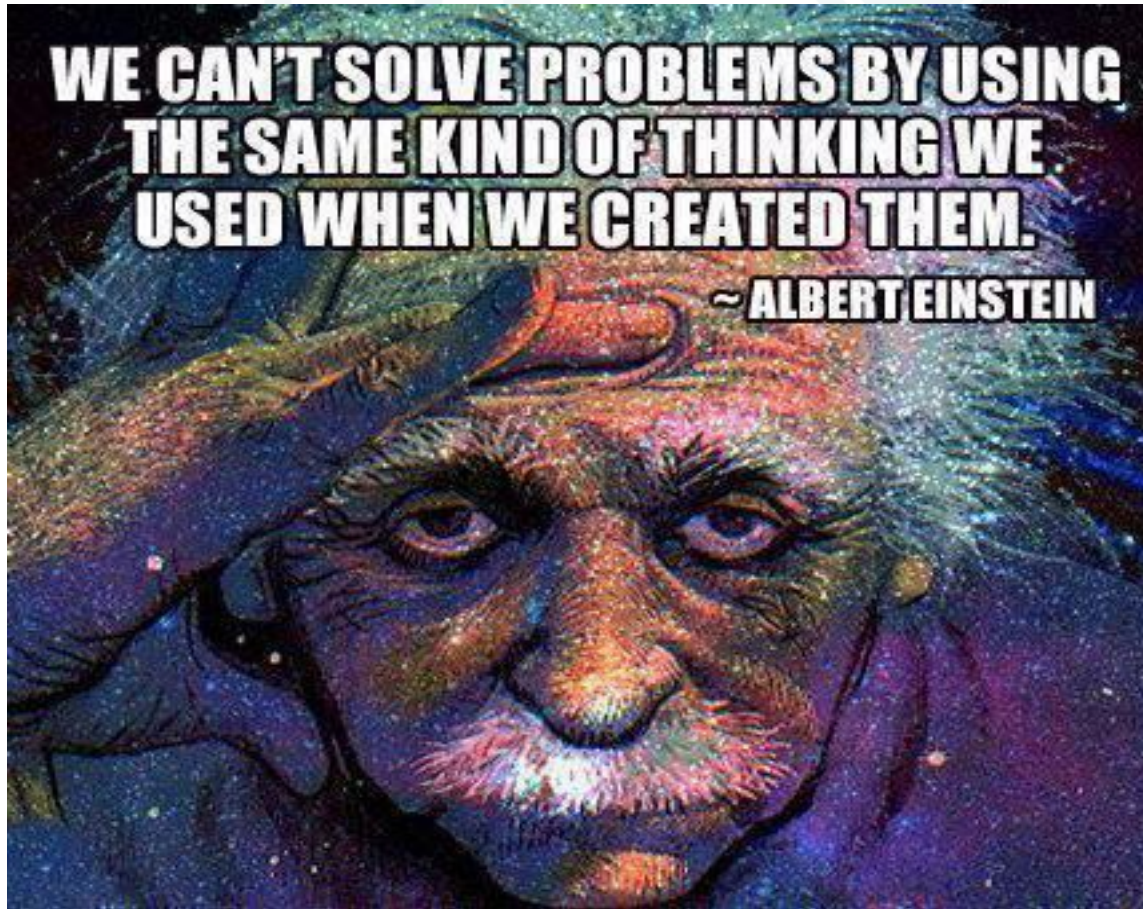
Existing research investigating the psychological aspects of risk taking and risk management

Risk Intelligence — Apgar, Evans, Funston & Wagner, Tilman

Behavioral Finance — Frederick, Allais, Kahenman, Tversky,

Assessment Techniques and the Merits of Different Psychological Traits:
Ceci & Liker, Tetlock, Chamorro-Premuzic....

Literature Review



Literature Review

Classical Literature – Literature Review

Aeschylus, Thucydides, Hesiod, Homer, Sophocles, Euripides
Aristophanes, Artemidorus, Democritus, Anaxagoras and Heraclitus
and to a lesser extent Aristotle, Plato and other Socratic writers.

Greek Mythology, e.g. the Penguin Book of Classical Myths, the
Penguin Dictionary of Classical Mythology and The Greek Myths by
Robert Graves.

Ibsen, Voltaire, Rousseau, Saint-Exupery, Nietzsche, Heidegger,
Goethe, Cervantes, Machiavelli, Tolstoy, Dostoyevsky, Thoreau, Pope
and Adam Smith.

Literature Review

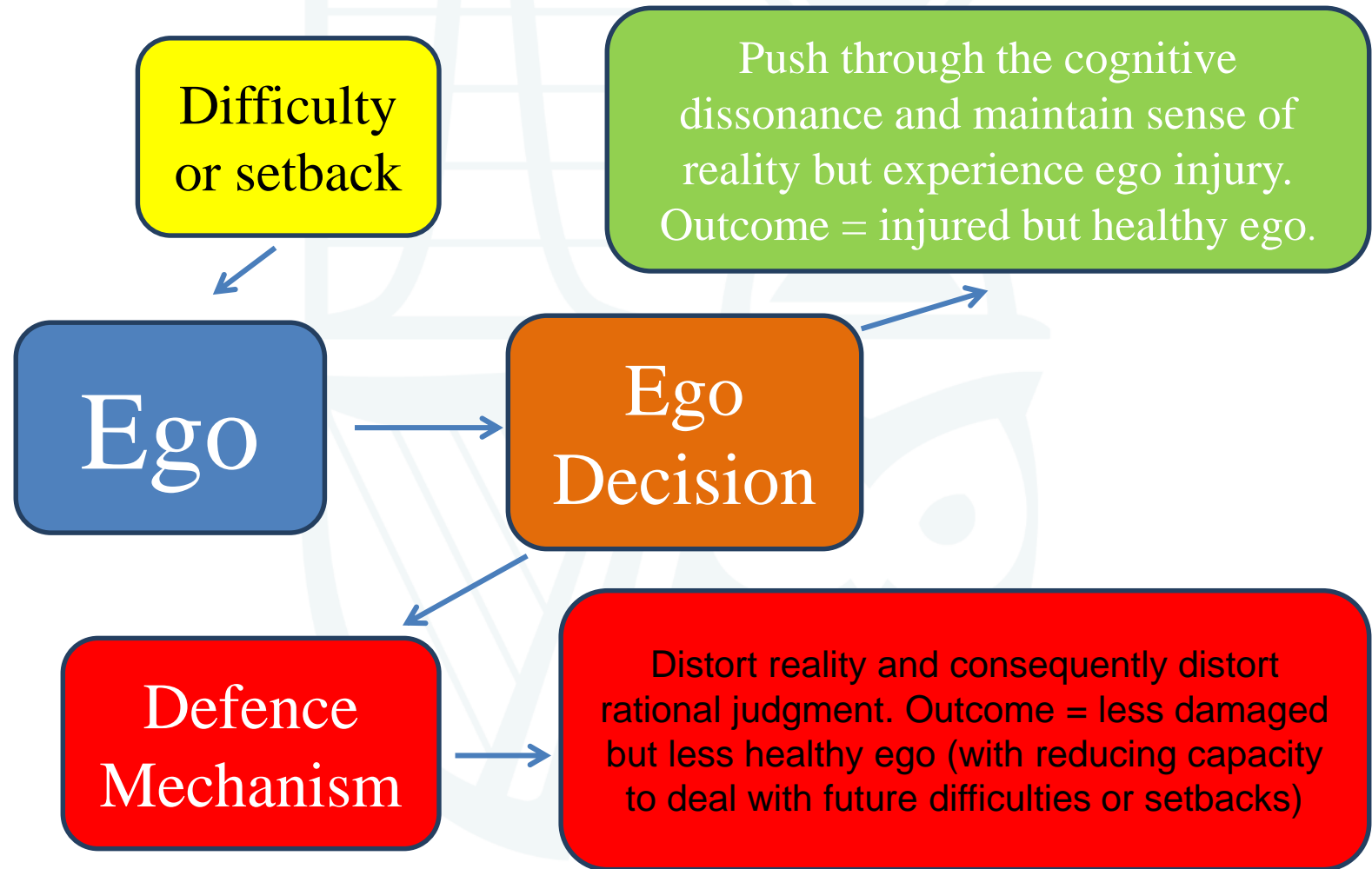
Psychometric and Personality Testing – Literature Review

Anastasi & Urbina	<i>'Psychological Testing'</i>
Wiggins	<i>'Paradigms of Personality Assessment'</i>
Janda	<i>'The Psychologist's Book of Self-Tests'</i>
Myers	<i>'Gifts Differing'</i>
Baron	<i>'What Type am I?'</i>
Kroeger & Thuesen	<i>'Type Talk'</i>
Thaler & Sunstein	<i>'Nudge'</i>
Kahneman	<i>'Thinking, Fast and Slow'</i>

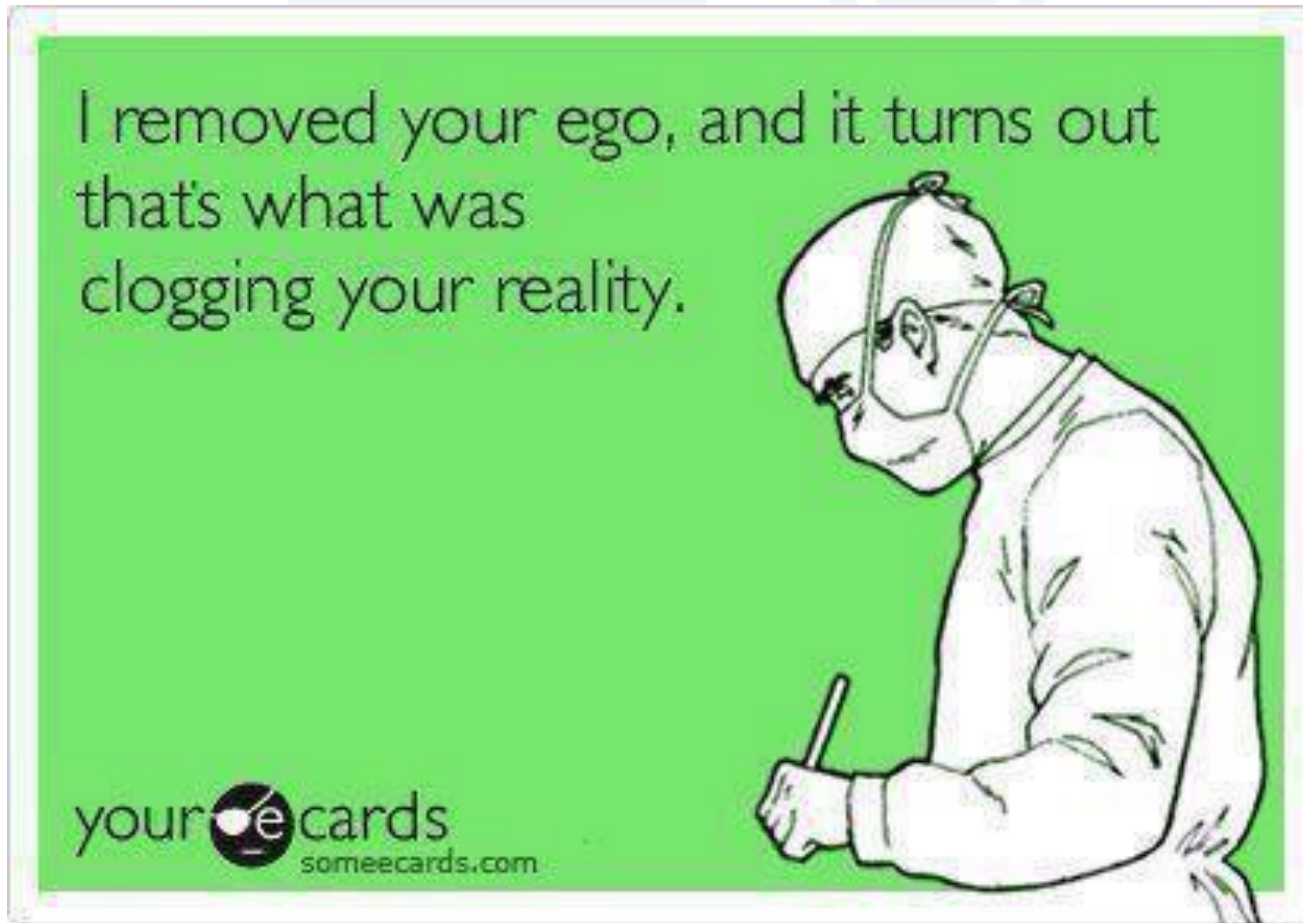
Theoretical Framework: Preliminary Concepts

- 1) *Theory of Non-Optimal Judgment*
 - numerous constraints on the psyche
 - implying the necessity of at least a degree of humility
 - Socrates, Maslow, Lippmann
 - Pseudodoxia
 - 2) *The Ego*
 - the 'self' as distinct from other selves
 - not equal to exaggerated self-importance or appropriate self-esteem
 - ego defense mechanisms
 - alternative layers of 'reality' due to sacrificing a full sense of reality
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Theoretical Framework: Preliminary Concepts



Theoretical Framework: Preliminary Concepts

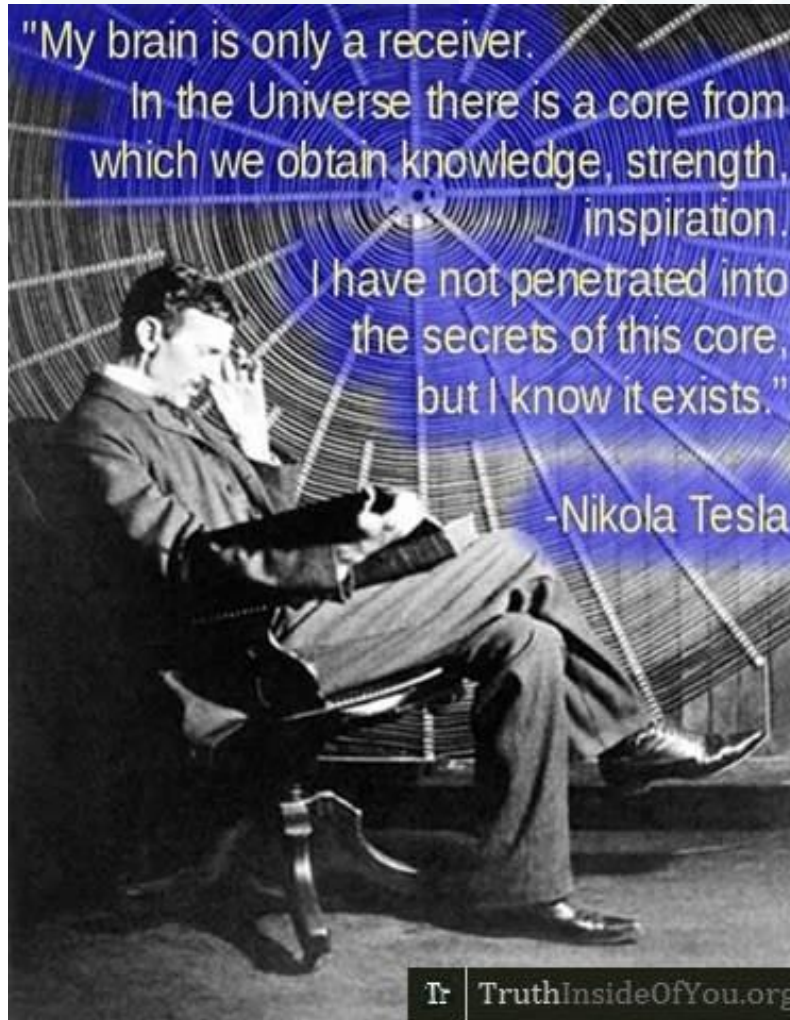


Theoretical Framework: Preliminary Concepts

- 3) The '*Human Condition*'
 - The Hill
 - Implicit 'classical' value system
 - Distinguishing between progressive and regressive forces
 - The ego is typically a regressive force – distorting what is required.

 - 4) Splitting the '*Ego*' into the '*E*' and the '*Go*'
 - The part of the psyche that produces an individual's own thought, their intuition/gut-feelings, and their imagination and ideas. It is referred to as the '*E*', and
 - The part of the psyche that deals with logical and rational thinking – this is referred to as the '*Go*'
 - Einstein, Anaxagoras, Heraclitus, Tolstoy, Taoism,
-

Theoretical Framework: Preliminary Concepts



Theoretical Framework: Preliminary Concepts

*“Thought is something limitless and independent, and it has been mixed with no thing but is alone by itself. For if it were not by itself but had been mixed with some other thing, it would share in all things, if it had been mixed with any. For in everything there is present a portion of everything, as I have said earlier. And what was mingled with it would have prevented it from having power over anything in the way in which it does, being in fact alone by itself. For it is the finest of all things and the purest, and it possesses all knowledge about everything, and it has the greatest strength. And thought has power over all those things, both great and small, which possess soul. And thought has power over the whole revolution, so that it revolved in the first place.” - **Anaxagoras (teacher of Pericles, Euripides and Phidias)***

Theoretical Framework: Preliminary Concepts

- The Dynamics of Accessing our own Thought

The greater the depth of thought, the greater the potential it is considered to have to “*taste the Pierian spring*” - Pope. In Greek Mythology, the Pierian Spring was considered the fountain of all knowledge and to be able to inspire whoever drinks from it. But the shallow waters of the spring were considered to intoxicate the brain – “*There shallow draughts intoxicate the brain, and drinking largely sobers us again*” – Pope. Only deeper drinking from the depths of the spring was considered to bring forth the Muses.

Which do you most agree with?

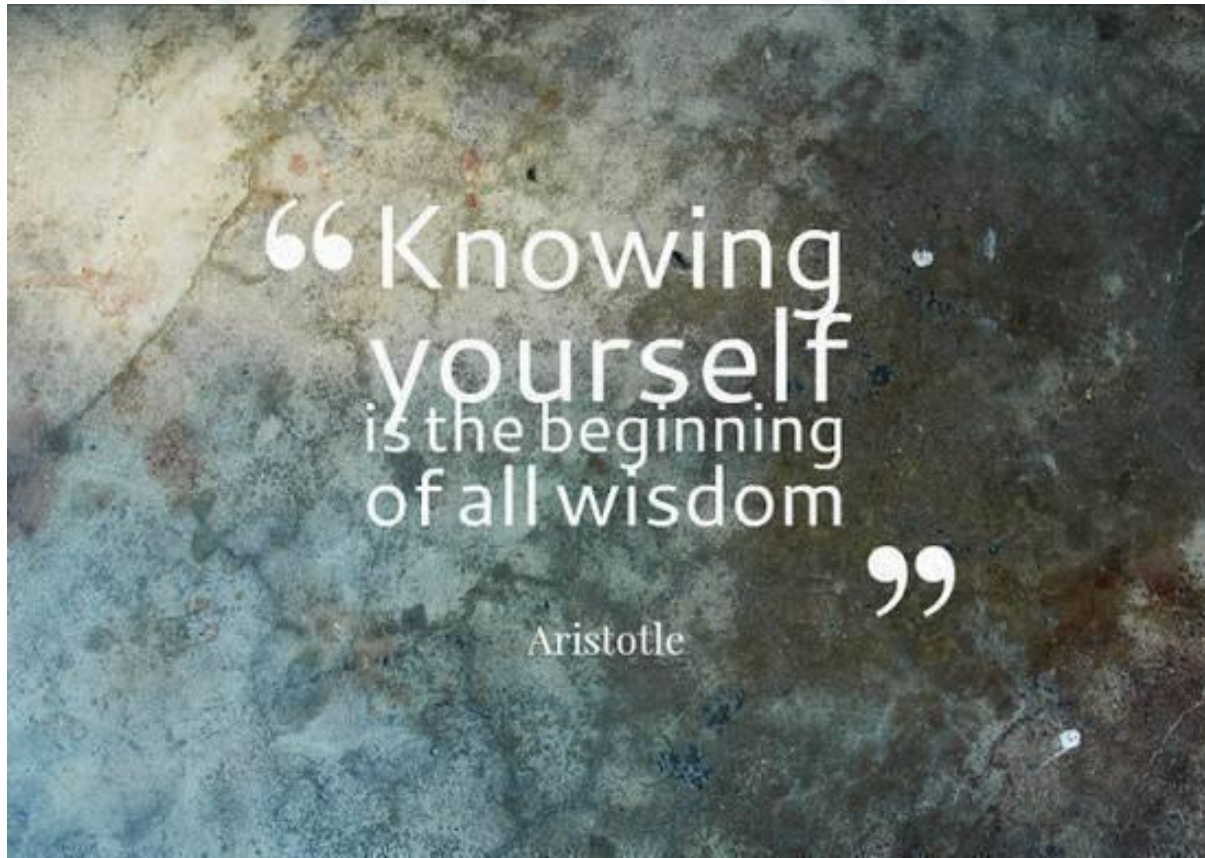
- I think contemplation and deliberation are important.
 - Too much thinking can lead to procrastination.
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Theoretical Framework: Preliminary Concepts

"One's writing is good only when the intelligence and the imagination are in equilibrium. As soon as one of them overbalances the other, it's all up; you may as well throw it away and begin afresh."-Leo Tolstoy



Theoretical Framework: Preliminary Concepts



Theoretical Framework: Preliminary Concepts

- 5) 'Prudence' versus 'Superior Prudence'
 - definition of prudence
 - superior prudence is being prudent along with adhering to one or more of the following principles, courage, strong benevolence and justice
- 6) Heuristics and biases
 - From the field of behavioural finance

Theoretical Framework

- *Psychological Potential*

- The degree to which an individual is reaching their psychological potential - their maximum psychological capacity – is considered to depend on the degree to which the individual's mind is operating in an optimum manner and the degree of vitality in the individual's mind.

- The optimum manner is achieved when the individual has a particular form of humility in their ego - one that arises from a combination of confidence, optimism, courage and patience in their own thought, balanced by a combination of an ego-critical and pessimistic form of logical and rational thinking.

- When an individual's mind is operating in such a manner, the degree to which the individual is reaching their psychological potential is then considered to depend on the degree of vitality in the individual's mind.

Theoretical Framework

- *Psychological Potential*

- Humility of the Ego - which is made up of:

- Confidence, optimism, courage and patience in the 'E', and,
A 'Go' that is critical and pessimistic to balance the confident
and optimistic 'E' to maintain a proportionately humble the ego

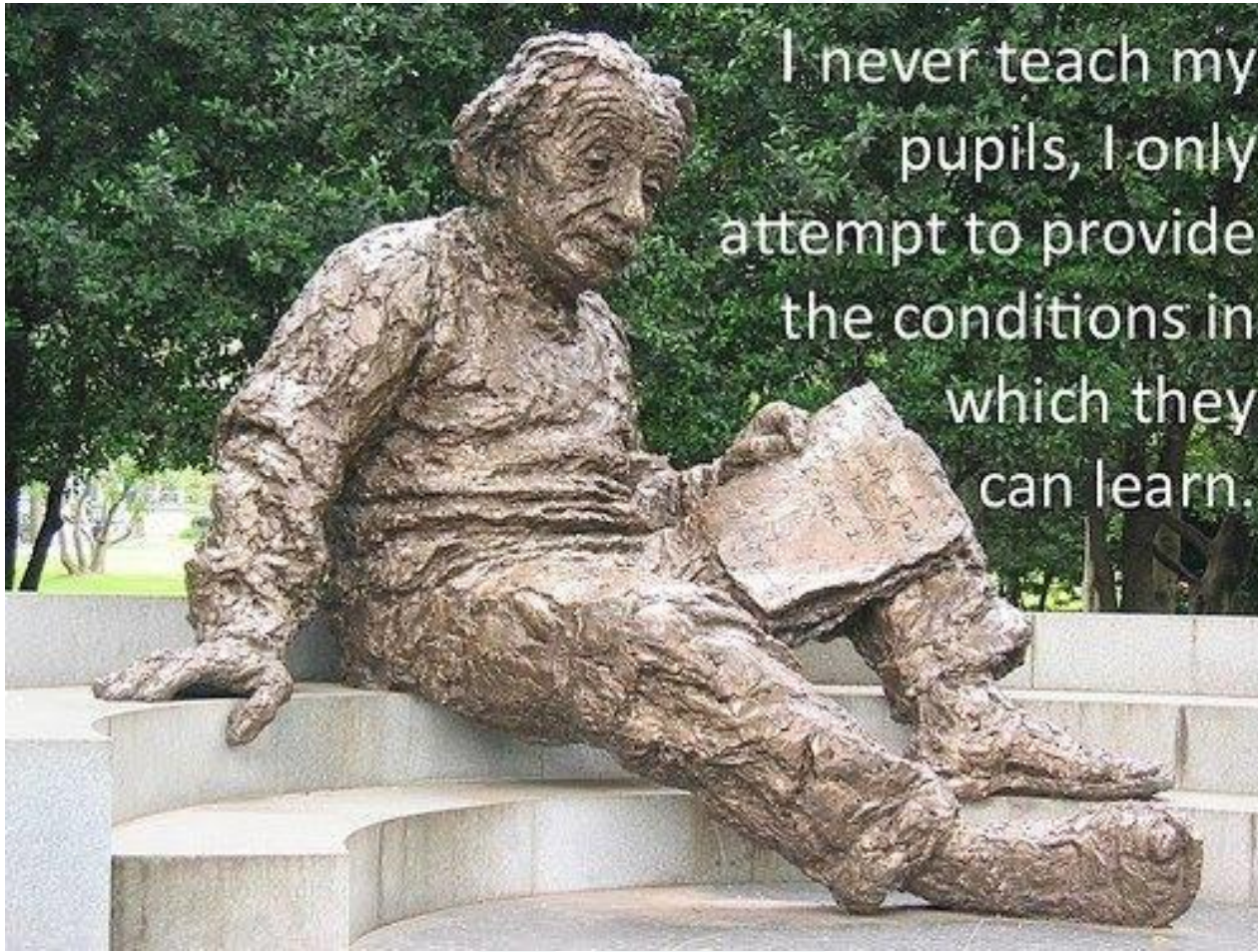
- Justification and comparison - Maslow, Freud, Sophocles, Jung, Fromm, Nietzsche, Heidegger, Keats, Adam Smith, Machiavelli and Socrates

- Comparison with framework in the field of behavioral Finance and the Myers Briggs Type Indicator and other theories in the field of psychology

Theoretical Framework

- *Psychological Potential* of a Group
 - 'Might is Right' versus 'Right is Right'
 - Optimum group dynamics requires participation beyond immediate self-interest
 - '*Idiotes*' get ruled by tyrants
 - Social Pietas
 - Group ego defence mechanisms
 - Comparison with the laws of political economics
 - Optimum environments for enabling access to an individual's '*E*'
 - Ataraxia, Keats, Steinbeck, Goethe, Saint-Exupery, Lao Tzu, Thoreau, Kahneman
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Theoretical Framework



Risk Personality Questionnaire

Aim of the RPQ: to quantitatively measure the degree to which an individual or a group is reaching their *psychological potential*.

Takes 30-40 minutes to complete using a Google Form

Construction

- viewpoints related to reaching psychological potential
 - subset chosen based on potential to differentiate
 - questions designed to assess the degree to which viewpoints held
 - answers designed to appeal to ego defense mechanisms
 - along with other anti-gaming techniques
 - focus groups and volunteer testing
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Risk Personality Questionnaire

Operation

- The RPQ calculates an individual's
 - *Potentiality-Coefficient*
 - *E-Coefficient*
 - *Go-Coefficient*
 - *FAKT-Coefficient*
 - *Prudence-Coefficient*
- Enables feedback to individual to highlight opportunities to improve the extent to which they are reaching their psychological potential

Assumptions

- Usual ones for psychometric and personality tests
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Risk Personality Questionnaire

Sample Question

Which statement do you agree with most? (Honestly)

- *There is no freedom without responsibility.*
- *I accept my responsibilities prudently.*
- *It'd be great to have a few less responsibilities so that I could enjoy life more.*
- *I'd love to win the Lotto and be completely free.*

Explanation:

- John Stuart Mill, Saint-Exupery
 - answers designed to be socially acceptable or socially admirable
 - anti-gaming techniques
 - ego defence mechanism & group ego defence mechanisms
 - answer one, scores 3, two scores 2, three scores 1, four scores 0
-

Group Risk Personality Questionnaire

Aim – to assess the degree to which a group is operating at its psychological potential – in other words the extent to which a group is greater or less than the sum of its parts

Why is the Group RPQ necessary?

The Group RPQ calculates and compares a group's '*Group-Potentiality-Coefficient*' with the sum of each individual member's '*Individual-Potentiality-Coefficient*'.

The Group RPQ enables feedback highlighting opportunities to improve the combined psychological functioning of the group.

Group Risk Personality Questionnaire

Sample Question – Individual Question & Group Question

The group invested a significant amount into a particular investment – albeit less than its peer group. The investment has performed very poorly, losing >50% of its value. Which do you most agree with?

- A) *The group did well to invest less than their peer group.*
- B) *The group made a very bad investment.*

This question aims to test the degree of health of the group ego. The group / individuals have made a very poor investment and are given a choice to either see this reality or to see a sweetened reality.

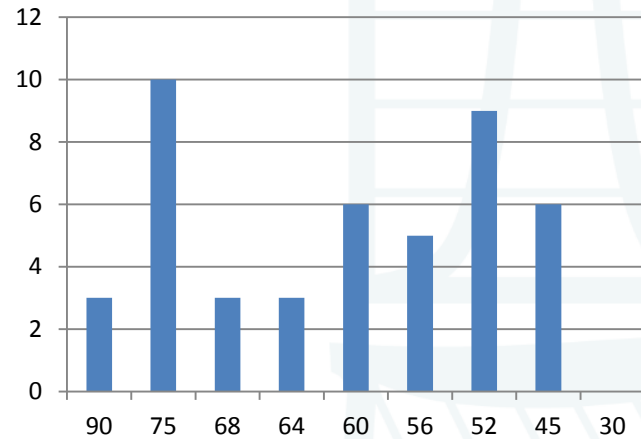
Answer one for both the individual and group questions would score 0 and answer two would score 3.

Results - RPQ

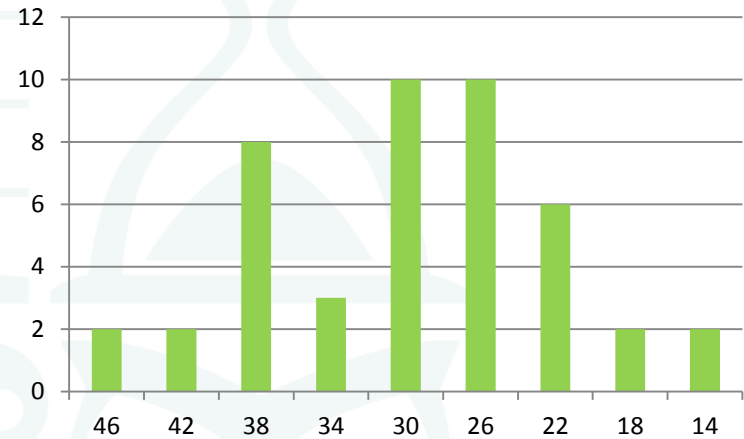
	Potentiality -Coefficient	E- Coefficient	Go- Coefficient	FAKT- Coefficient	Prudence- Coefficient
Highest result	97	45	52	27	19
90 th Percentile	77.6	38.6	41	23.6	16.6
70 th Percentile	66	34	35	20	14
50 th Percentile	58	28	32	18	12
30 th Percentile	53.1	25	28.4	15	11
10 th Percentile	49.2	20.4	23.4	9.4	10
Lowest result	40	13	14	3.5	5
Average	61.63	29.23	32.40	17.04	12.62
Max possible	120	60	60	27	26
Min possible	0	0	0	0	0

Results - RPQ

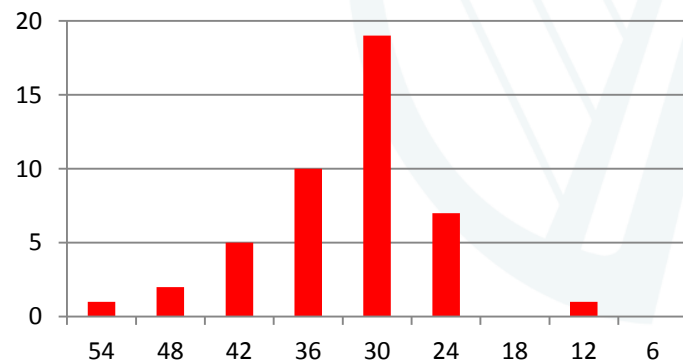
Potentiality-Coefficients



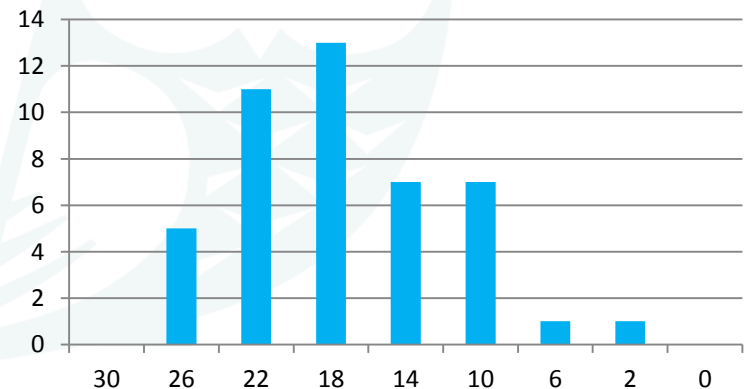
E-Coefficients



Go-Coefficients



FAKT-Coefficients



Testing

Proof of concept analysis – tested using a group of volunteers

Validity Testing

- does the questionnaire actually measure what it is supposed to measure?
- *FAKT-Test* – independent assessment of proneness to heuristics and biases (based on Frederick, Allais, Kahneman & Tversky)
- correlation between *Potentiality-Coefficients* and *FAKT-Coefficients*

Reliability Testing

- if carried out at a future time, would the questionnaire produce the same results?
- tested using the split-half method

Moderate to strong indications of validity and reliability

Further Research

Multi-disciplinary research – hence difficulty with language

Gathering more data

Further refinement of questionnaires

Improved anti-gaming techniques

Refinement of feedback to questionnaire takers

Further research into assessing 'Ego Risk' and 'Psychological Risk'

Next steps

Fostering use of the RPQ and the Group RPQ

Research into Herd Behaviour with IFoA

Publishing the research in a psychology journal

Acknowledgements

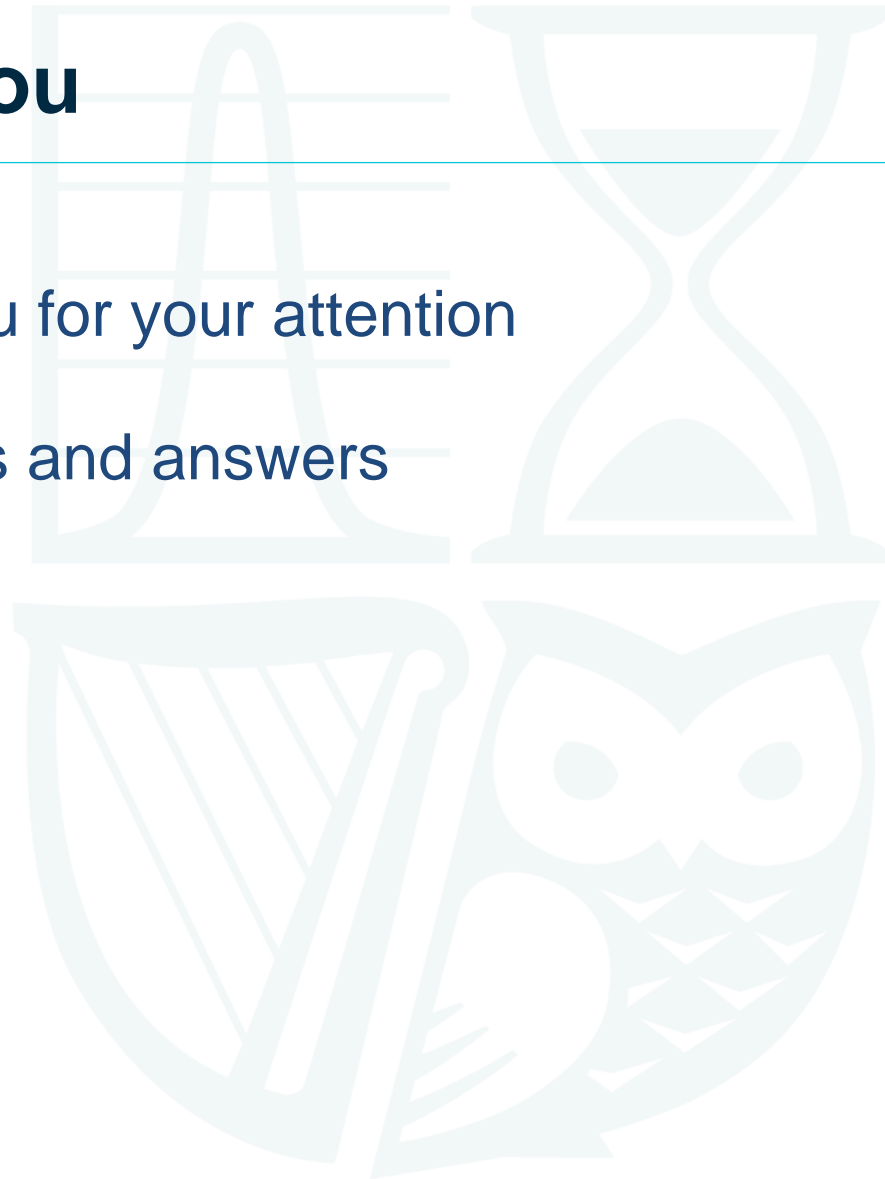
Yvonne Lynch, Tracy Gilbert, Dr. Lorraine Boran, Paul O’Faherty, Eamonn Phelan, Donal Murphy, Aidan Redmond, Ben Deans, Sarah Lynch, Sinead O’Halloran, Colm Fagan, Mike Claffey, Majella McDonnell, Kevin Power, Marian Keane, Jane Glesson, Vincent McCarthy, Richard Irwin, Denis Patterson, Niamh Walsh, Ciara McKeown, Brendan Williamson, Mark Hardy, Gareth Caffrey, Zarak Khan, John Halley, Karl Deeter, Manisha Namah, Prof. Paul Kalligas, Martin White, Natasha Regan, Hemal Popat, Colin O’Hare, Deborah O’Neill, Dave Tilson, Fiona Linnane, Alan Moore, Olenka Hand, Gavin Quirke, Kevin O’Donnell, Puspa O’Donnell, Ian Thompson, Des O’Sullivan, Eimear Duff, Tom Plunkett, Mary Dorcey, Hannelotte Schaeffer, Michelle O’Connell, Sinead Whelan and all those who helped testing the questionnaires on an anonymous basis and everyone else who was willing to participate in any of the discussions related to this research

Wider Fields Member Interest Group

- The group is made up of Student and Fellow members of the Society of Actuaries in Ireland that are interested in getting actively involved in exploring wider fields for actuaries.
 - Aim: to demonstrate the benefit of a professional and astute actuarial approach to areas outside the traditional actuarial fields of insurance and pensions. E.g.
 - Statistical Analysis of Climate Change
 - Costing Public Policy Proposals
 - Email: info@actuaries.ie if you are interested in getting involved?
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Thank you

- Thank you for your attention
- Questions and answers





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Capacity for Risk Taking and Risk Management**

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