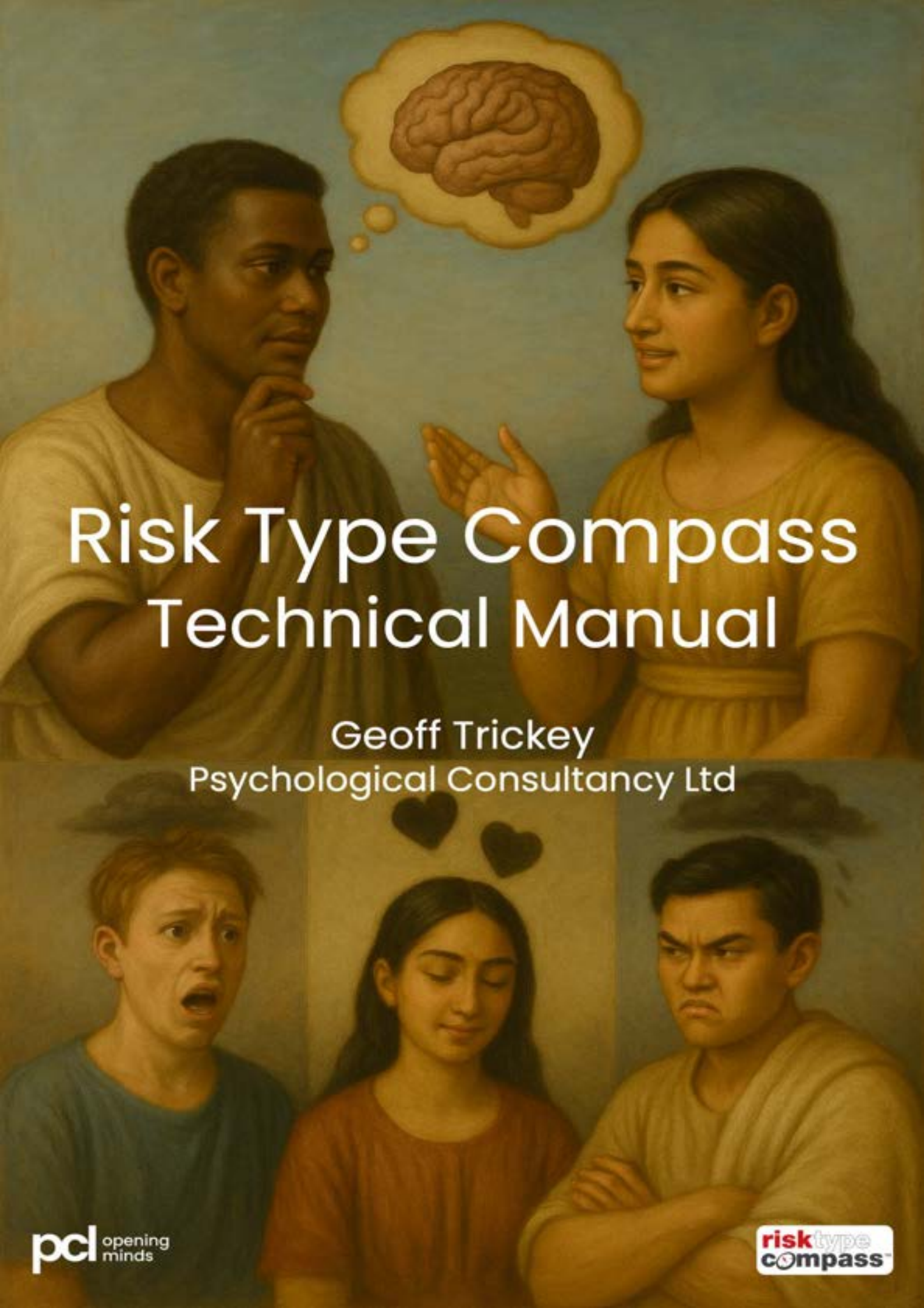

Risk Type Compass Technical Manual

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pcl opening minds

risk type compass™

Published in the United Kingdom in 2025 by
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Printed in the United Kingdom.

Preface to the 5th Edition

The Risk Type Compass was originally created in response to regulatory requirements that Financial Advisors should assess the 'risk appetite' of their clients. It evolved into a specialist questionnaire probing individual differences at the core of decision making, recognising its implicit relevance to opportunity as well as to risk. More than a decade later, it has opened up a fascinating discussion; involving neuroscience, anthropology, linguistics, reasoning, symbolic thought, classical history, philosophy, circumplex modelling, psychometrics and psychology. Below is a brief bullet-point summary of ***where we are now***:

- Until circa 40,000 years ago, without the benefit of language, our ancestors made decisions instinctively; intuitive and immediate reactions to external events.
- 'Feelings or emotions were then (and still are) the neural signals that alert us to danger (gut reactions) or to bodily needs (hunger, thirst, pain)'. *Instinctive Emotional Theory, Grossberg & Levine (1987)*
- Language appeared sometime after the emergence of Homo Sapiens, triggering a dramatic acceleration in technological development
- Language, with its independent neural network, effectively, gave us a second '*thinking*' brain, in parallel with the long established intuitive and emotional '*feelings*' brain.
- In innumerable different proportions, each of us combine:

Emotion (FAST): *intuitive, heuristic, impulsive, largely unconscious*
Originally non-verbal - Increasingly elaborated throughout evolution
with
Cognition (SLOW): *linguistic, logical, symbolistic, conscious*
Rooted in language, reason and symbolic thought

- The resulting combinatorial complexity ensures highly individualistic variability of risk dispositions within our species.
- Tensions between *thinking* and *feeling* occupy our decision making 'mind space'.
- They leave us permanently 'in two minds', fuelling a rich 'dualist' literature in the process.
  'Dualist' theories – from Plato (429 – 347 B.C.E.) to Kahneman (1934 – 2024).
- **EMOTION** and **COGNITION** dualism operationalises diversity of decision-making
- Both scales are exceptionally reliable (r=0.91-0.92), and also, orthogonal (r=0.007)
- The RTC circumplex capitalises on **Emotion** and **Cognition** orthogonality
- This 360° radially incremented space segments into **eight** distinctive **Risk Types.**
- Our instinctive **Risk** dispositions are our most consequential characteristics.
- RTC undercurrents define group dynamics and influence outcomes.
- Personal and group RTC awareness and insight is powerfully enabling.

Follow The Science

When the RTC project started, this was seen as just another project in which the Five Factor Model of personality (FFM) would yield insightful results – as had happened on so many previous occasions. Curiously personality literature seemed to have little coherent to say about RISK. As a variable in research studies, 'risk' seems typically to have been referenced by extreme behaviours such as unprotected sex, smoking, excessive gambling or drinking. But arriving at a consensual definition of the term 'risk' has proved stubbornly challenging. A report on '*Risk Assessment*' by the Royal Society published in 1983 conveying the current consensus was considered 'authoritative and purposeful' (Adams, 1995). By 1992 however the Royal Society members contributing to the second report entitled, *Risk: analysis, perception and management'*, were unable to settle a dispute about the meaning of the word

'risk'. Social scientists and physical scientists simply could not agree. The Society for Risk Analysis also established a committee to define 'risk' terminology in 1987, but they too were unsuccessful. It was 'wound up' after extensive efforts over two years. These failures demonstrated the subjectivity and contextual nature of 'risk'. The late John Adams, author of RISK, ends his very thorough and wide-ranging discussion about RISK by accepting his own limited success and referring to others that had come to similarly disappointing conclusions. Only after wide and extensive study, research, discussion and the writing of many articles and chapters over a 15-year period, have PCL been able to reach conclusions to which Risk Instinct makes an important contribution.

Risk is a much used and abused word. Without a context, it is incoherent. As an abstract entity, it is open to endless speculation. To make sense of this, it is necessary to recognise that *risk* and *opportunity* are components of 'decision making' - and that decision making is a fundamental and inevitable consequence of mortality. Decision making is a transaction required of everything that lives - in order to survive. In essence, life decides its way through existence. Risk is subjective and unmeasurable but is treated as if it were objective and measurable. On the one hand, whether an individual does or doesn't regard something as a risk reflects their nature, and people's natures are highly variable. On the other hand, *everything* is a risk to *something*. Our individual talents in weighing up the odds of threats and opportunities and in responding effectively, differentiates survivors from non survivors.

"So people respond to perceived changes in safety or danger. So people vary in their perceptions of the rewards and costs of risk-taking. So people argue about risk from different premises. So what?"

John Adams, in his book 'RISK'

Strange isn't it, that risk managers focus 100% on risk. Identifying it, monitoring it, estimating its probability and its likely impact? Yet, other than natural disasters, nearly all risk arises from people and their actions. The encouraging message within this RTC Technical Manual is that risk disposition, a natural human characteristic, is reliably measurable. Risk as an abstract entity is not.

1. Just about anything can become a threat or a hazard. Check out 'The Darwin Awards' or Google "Weird ways to die". People have been harmed by everything from an untied shoelace, eating a strawberry to slipping on a wet leaf. It's hard to think of anything that could not, in one circumstance or another, be a hazard of some kind.

2. Amusingly, Roald Dahl illustrates this in "Lamb to the Slaughter", his dark but whimsical short story. *Grabbing a solid frozen leg of lamb from the freezer, a wife creeps up behind her cheating husband, then bludgeons him to death. "I discovered him dead when I got home", she tearfully explained to the police responding to her emergency call. Moved by compassion for their tragically bereaved victim, they were persuaded to stay to lunch, where she served them… roast leg of lamb (*of course*!)*

3. Anything perceived as a potential risk is *always* defined by an endeavour of some kind; something that is a threat to what ever you were hoping to accomplish. The risks of going fishing, of booking a holiday, learning to ski or of investing in bitcoin, are all contextual. The term 'Risk' means nothing without that context. And a risk in one context may actually be an asset, or quite neutral, in another.

4. As you contemplate your next endeavour, whether personal, recreational, political or commercial, each idea will trigger its own array of potential of hazards and vulnerabilities. Even doing nothing - a decision made by default – may be the least best option.

5. Risk is always associated with opportunity - two sides of the same coin. Characterising this process simply as 'risk' is disingenuous. A more accurate reference is to recognise the risk/opportunity combination that is 'decision making'. Decision making always entails

potential risk - in a simple choice, you can always get it wrong. The more complex the decision, the more possibilities for risk.

6. Decision making is always subjective because people have innately different 'risk instincts', or sensitivities. What thrills one, terrifies others; what is boring and tedious to one is comfortingly familiar to another. These personal 'Risk Type' dispositions are our most significant and most consequential personal characteristics - occupationally, inter-personally, financially, recreationally. But, importantly:

7. ***"It's NOT WHAT you do, it's about the WAY that you do it"***

Niki Lauda and James Hunt were both world champion Formula One drivers. James was a passionate 'seat of the pants' driver. He relished the excitement, was flamboyant, reckless, unreliable and might turn up at the track at the last minute. That's what characterised his Risk Type (Carefree?). Niki was very different; calm, prepared carefully, was sure to supervise set-up and put in his practice laps. That's what characterised his Risk Type (Deliberate?). A 'technical' driver, he did everything possible to reduce error. But BOTH made it to the pinnacle of motor racing - in their own way!

8. The simplistic paradigm, lining everyone up along a linear scale of risk taking - from the recklessly fearless at one end to the calmly predictable at the other - just doesn't cut it. Risk Type is a biological function evolved over millennia and, in Homo Sapiens, controlled by dual independent neurological networks. Our understanding about this comes from evolutionary biology, palaeoanthropology, philosophy of mind, neuroscience and psychology. It's a lot more nuanced than just a question of 'how much' risk is characteristic of someone, because Emotion and Cognition combine in innumerable different ways. Decision making can be defensive, controlling, creative, purposeful, easy-going, passionate, explorative, or urgent; and it can be convergent or divergent; and these approaches can manifest as mild or extreme. Human nature is complex.

9. Finally, our approach is not in any way an exhortation to ignore risk but, it *does* highlight the crucial part played by *decision makers* and the deeply rooted differences in risk instinct that they each Risk Type brings to the table. It is important to recognise these realities, to embracing the process as 'decision making', and to recognise where the limits of objectivity in risk management really are and how risk practices need to adapt to align with them.

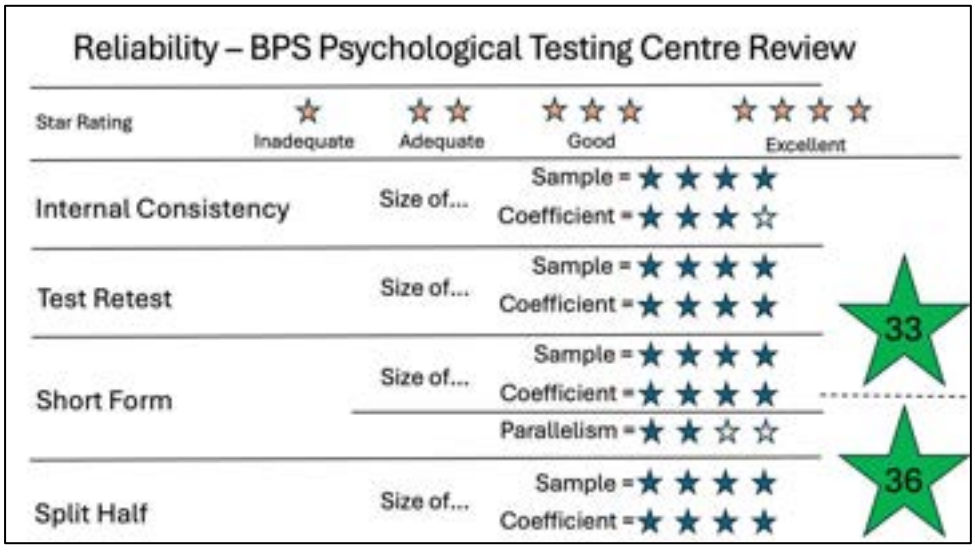
10. Ultimately, decision making is the pivot nexus of risk dynamics. It is intrinsic to all life and survival. Opportunity and Risk are one step down.

"Choices are the hinges of destiny"

Pythagoras (570 BC – 490 BC)

The account of PCL's journey since 2008 financial crisis reflected in the original RTC Manual, is reproduced in chapter one of this volume. It became very clear as time passed that, in the RTC, we had hit on something far more significant than we could have expected. This has been a genuine example of '***follow the science***' bearing fruit.

The most important contributor to this wider significance and explanatory power has undoubtedly been the exceptional reliability of the RTC questionnaire. Two US reviews of the RTC were published in the Mental Measurement Yearbook (BUROS) and a more technical review was undertaken by the British Psychological Society (BPS). The latter awarded star ratings to various features, including test reliability – 33 stars out of possible 36.



The RTC scales (Cognition and Emotion) possess test-retest co-efficients of 0.91 and 0.92 respectively, and the RTC received the highest rating across the reliability criteria of any of the tests reviewed by the BPS under this system (as of June 2025). As a former colleague was fond of pointing out, *'nothing correlates with anything else more than it correlates with itself".* In other words, the reliability of a test sets the limits on any future correlations with other variables. In the studies reported in the body of this Technical Manual, you will readily see these consequences born out in the remarkable numbers of statistically significant correlations in the various tables presented.

The benefits of high reliability quickly began to deliver in terms of the lengthy series of Eureka moments described below. These, better than anything else, characterise our experience at PCL during this fascinating project.

Table of Contents

Eureka Moments

In the course of ongoing development of the RTC there have been many euphoric moments; occasions when yet another piece in the jigsaw seemed to fall neatly into place as the overall picture unravelled itself. Our search for a measures of risk disposition had started with the familiar Five Factor Model; a model that we were very involved with from early in its inception. Our conviction that risk dispositions must be capable of extraction from the comprehensive panorama provided by FFM proved to be wide of the mark. Keeping an open mind and 'following the science', nudged us in a different direction. There were surprises every step of the way, and included many 'Eureka' moments, as follows:

1. **That "It's a compass"**

The original aim had been to create a measure of 'risk comfort zone' for non-psychologists (e.g. Financial Advisors), to ensure that the financial products that they proposed were suited to the risk appetite of their client. Clearly, it was not intended that FAs should acquire skills of personality psychologists. To make responsible use of test results, these needed to be presented in an accessible and intuitive way. The four-factor solution obtained from our data-gathering exercise was immediately recognised as the basis for a user friendly model, a framework that is recognisable, relatable, and very accessible. With implications of 'finding one's way', 'going in the right direction', 'not getting lost', 'avoiding mistakes' and other directional and positional metaphors – a compass model had obvious appeal. The product was duly launched under the 'Risk Type Compass' banner.

2. **Stunning Reliability Ratings – "Top of the Class"**

The RTC was reviewed by the British Psychological Society (BPS) and there are two reviews in the Mental Measurement Yearbook in the USA. The BPS operates a 'star rating' procedure in which RTC was awarded 33 stars out of a possible 36. Based on Cronbach's Alpha, split half reliability, short form reliability and sample size. For both RTC scales, test/re-test reliability ranges from r=0.91-0.92. This is the highest rating of all previous BPS tests reviewed (the next highest being awarded 20 stars).

The significance of this, beyond the immediate accuracy and consistency, is firstly, that *"nothing correlates more with anything else, than it correlates with itself"* i.e., this is a tool that will tease out relationships not picked up by less reliable measures. Secondly, current personality inventories have their roots in the 'Lexical Hypothesis', the view that the best approach to defining personality test content is to focus on all the language and terminology alluding to personal characteristics, Clearly, this is a strategy embracing both Nature and Nurture. The aim is to portray each examinee as they are now; the consequence of both genes and acculturation; upbringing, education and other life experience effects. This is recognised as phenotypic personality (Goldberg, 1993). We question whether these assumptions hold for the term 'Risk'.

3. **That Orthogonality is "ACTUAL"**

Our adoption of a circumplex (circular) model for the RTC was prompted by the advantages of characterising it as a 'compass' (*see above*). We had been comfortable in describing the relationship between Emotion and Cognition as, '*conceptually'* orthogonal. To discover that they were *actually* orthogonal (r=0.007) was totally unexpected. Even to have set out with such an aspiration would have been considered unrealistic. A perfect correlation would be r=1.0 and perfect orthogonality would be r= 0 (zero). Our r= 0.007 falls short of the ideal by just 7 one thousandths – the proverbial 'hair's breadth'. Orthogonality adds very significantly to the precision and symmetry of the RTC model and confidence in interpretation in terms of what is equivalent to what, how meaningful differences may be, and by ensuring symmetry in the data for all RTC measures.

Taking the candidate response options and the possible permutations of sub-theme scores into account, there are more pathways to RTC test completion available to the candidate than there are individuals on the planet! High reliability and true orthogonality afford considerable confidence in harnessing this complexity and utilising it systematically, bringing subtlety, nuance and meaning to profile interpretation.

4. **That Risk Type characteristics are instinctive, at the core - not on the fringe**

The impressive reliability coefficients obtained for both RTC scales encouraged us to claim that the constructs we are measuring are substantive, coherent and potentially closer to nature and genotype rather than phenotype. Risk taking propensities are all about survival. They impact reactions to threat, willingness to take chances and decision making in general. All creatures are endowed with instincts that contribute to their survival. Similarly, wide variations amongst humans in these terms support a range of responses to threat or opportunity; options that enhance survival chances for each of us and for our species. The studies in the body of this manual demonstrate its significance and justify characterisation as highly consequential. We take the view that the dispositions and behaviours associated with the RTC are predominantly instinctive.

5. **"RTC is a circumplex"**

In a sense, (and because of our ignorance of it) we had reinvented the 'circumplex'. The steps taken from the point at which we had generated a four-factor solution from our item set, inspired the 360° spectrum of the RTC. Importantly, the creation of two bi-polar scales fully incremented that circular space. Geometrically and statistically, the model is reassuringly symmetrical. This balance, and the even distribution of scores throughout, provide a solid basis for confident interpretation and feedback.

6. **That RTC "Opposites ARE Literally Opposite"**

In a circumplex model, the positioning and relationships between components may be 'notional'. In the RTC, thanks to the orthogonality of the scales and the symmetry of their score distributions, positioning and relationships are precise. The Risk Types facing each other across the 'compass' are, in fact, linear opposites. Thus, the characteristics that define one of them – its assets and deficits - weigh in exactly the opposite direction for the other. Excitable and Deliberate Risk Types illustrate this very clearly:

> **Excitable Risk Types** score high on Emotion (risk averse), but low Cognition (risk taking) – so they experience strong feelings and are unpredictable. They are independently minded and dislike restrictions and formality. This profile is potentially creative and iconoclastic, an almost perfect description of 'Artistic Temperament'.
>
> **Deliberate Risk Types** score high on Cognition, so risk *averse* in this respect – they do things 'by the book'. But they are low on Emotion, so risk *taking* in this respect - they feel little anxiety and remain calm under pressure. This is the perfect equation for an Air Traffic Controller - someone who does everything 'by the book' (incidentally, this 'book' takes three years to learn) and they deal with events calmly and precisely (pilots complain that they don't express any urgency!)

In the same way, at the extremes, any other pair of opposites; Wary-Adventurous, Prudent-Carefree and Intense–Calm; each characterise recognisable caricatures of complementary inference – what they ARE and what they are NOT.

7. **The population is evenly distributed between Risk Types!**

This had an impact that still resonates – a surprise because no other typology achieves this kind of symmetry (Myers-Brigs, for example, identifies 16 different personality types ranging in prevalence from 1.3% ENTJ, to 13.8% ISFJ). This balance in Risk Type prevalence means that no one Risk Type is more representative (or 'normal) than any other; every Risk Type is equally significant. In evolutionary terms, each Risk Type has demonstrated its survival value and justified its continued existence. This is the basis for the concept of 'Team Homo-sapiens'; as in a sports team, to win in any competitive context (team, commercial enterprise, nation or species), we need people of every kind of risk disposition to play their part - from those that call attention to the threat – to those prepared to tackle it, from offense to defence, from goal keepers to strikers. Risk Types are complementary to one another.

8. **Parallels with Neuroscience**

Coinciding with the beginning of the RTC project, Mark Walport, Government Chief Scientific Advisor; stated; *"good decision-making draws on both the emotional and analytical systems in the brain*" (2014). This was our introduction to a swathe of academic literature and neuroscience research. Functional neuroimaging fuelled the debate about 'single', 'dual' or even 'triple' decision making systems in the brain. "*The Neuroscience of Dual Systems in Decision Making*" (Wood & Bechara, 2014), discusses the history of dual process models and the emergence of studies concerned with Emotion based systems (Hot) and Cognition based systems (Cool). This approach was brought to wider attention by Daniel Kahneman in his Nobel prize winning book, '*Thinking Fast and Slow*'. The two scales of the Risk Type Compass, of course, also explores this territory.

This physiological perspective was a double or even a triple Eureka!!! Incredible that something derived from FFM territory finds itself so aligned with neuroscience as well as with the ancient and extensive field of dualist theories of mind, (Plato, Descartes, Damasio, etc.). Another affirmation that, if not by design, the RTC model found itself building on robust foundations. At present, these alignments are at a conceptual and narrative level. There has been no substantive prior psychological research on Risk instinct, or even meaningful psychological research on risk (as we now conceive it). But the Risk Type Compass has the measurement quality to align it with other areas of research, whether in neuroscience or other areas of enquiry. The value of the RTC model is in its remarkable reliability and its coherence within other more established research topics. Risk instinct is a concept that will resonate with several other disciplines within and beyond psychology.

9. **A place for Paleoanthropology**

Having 'stumbled' into the various worlds of dualism, the implications for test score interpretation required that we seek appropriate assumptions and inferences for the two RTC scales; Cognition and Emotion. Our findings are presented in Chapter 5. Our discovery of the paleoanthropologist, Ian Tattersall, was yet another Eureka winning spin of the roulette wheel. His proposal that the sudden change of direction and success rate of Homo Sapiens, triggering an explosion of technical innovation, coincided with the development of language. Something very similar had been proposed by Julian Jaynes in his published lectures and in his book; *The Origin of Consciousness in the Break-Down of the Bicameral Mind* (1976).

This line of thought suggests a discrete and precise switch in development of the human mind. A clean line between, firstly; an intuitive, instinctive, emotional, heuristic mind for which 'a response' is an immediate reaction to proximal events. Communication, at this stage, involves gesture, posture, facial expression, and various vocal signals. Then secondly, a separate language driven mind that introduces consciousness and symbolic thought, with dramatic advantages in reasoning, communication, collaboration and creativity. In RTC terms, the first is represented by the Emotion scale and the second the Cognition scale.

This discrete pre-language/post-language separation brings a new coherence to the task of differentiating inferences appropriate in their interpretation and application. Effectively, two mind systems, one neural network centred of the pre-frontal cortex (the 'cold' System 2) and the other centred on the extended amygdala (the 'hot' System 1). This is invaluable in speculating on the interpretation of the RTC Emotion and Cognition scales and exploring ideas and possibilities with people assessed and in research studies.

10. Dualist Theories of Mind - a 'lived experience'

The two RTC scales are 'dualist' by design, but not by intent. As with so many features of the RTC, wider associations and implications were literally afterthoughts and 'dualism' is a case in point. The concept of dualism is a thread that runs through history of thought and philosophy, traced back to Plato's theory of forms and two kinds of reality: physical and spiritual. For Descartes, mind and body are fundamentally distinct and independent.

A more colloquial idea of dualism centres around the concept of 'mind' as a window of consciousness within which we are able to distinguish between our shared animalistic nature and moralistic speculations; the more elusive abstractions such as 'truth', 'beauty', 'infinity' and 'eternity'; ideas to be contemplated, as well as questions about death and the life beyond. The Dialogues of Plato exemplify these processes; although written narrative, they suggest the idea of internal dialog, two 'voices' in discussion about philosophical ideals and animal instincts.

We experience the dualist quality of our minds when we introspect. Reading this text there will be statements that you don't agree with and others that you comment on – they register in your 'mind space'. One 'voice' being the article (fed into mind as you read), the second 'voice' being yours. The commentary running in your mind may be applauding or critiquing the narrative point by point. If you are not captivated, your 'inner' mind begins to intrude, may consider 'scanning' rather than reading, or abandoning it altogether. It is significant that what you are, at this moment, engaged in is language based 'narrative', it could not occur in any other way (see note 9 above *'A role too for Paleoanthropology'*).

Is it plausible that something as subjective and familiar to us as our engaged experience of 'in mind' dialogues, could be what prepared a fertile ground for the various offshoots of philosophical dualisms? A theme that has attracted some of the most influential minds for over 2,000 years? The scales in the RTC also 'operationalise' a dualism; with two 'voices' - in collaboration or in tension; Kahneman's 'Thinking Fast and Slow' in operation.

SYSTEM ONE: The original decision-making by Homo-sapiens was pre-language and non-symbolic. Decision making, the triggering of action, being made reactively, spontaneously and intuitively. Immediate responses to events as they occur, based gut feelings and somatic triggers relating to significant prior experiences. Solutions are heuristic; approximate and 'feelings' based. System One would be similar to that of our closest surviving relatives, the apes, bonobos and chimpanzees. Communication in this pre-language context we envisage as being expressed through gestures, actions, facial expressions and a range of utterances, noises and whistles. Receptive communication we envisage as of an emotion rich perception of the world interpreted by association with experiences of life. Probably a far more detailed and nuanced experience of emotion than our own since it would have been the sole basis for decision making. The survival value of facial expressions, for example, being in displaying and signalling 'state of mind'.

SYSTEM TWO: Rooted in the richness of language in scope and structure, and in language-based thought, adds reason and logic to the immediacy of System One, holding it up to scrutiny and contemplation. The 'mind space' is the natural area for analysis and debate about each issue inspired and propelled by the impetuous and spontaneous instincts of, System One. This is the zone of resolution in decision making. It creates 'rules', principles' and 'pathways of reason' from the approximating heuristics of System one.

The balance between these two systems within any one of us will be highly influential and evident in our decision making. Overall RTC data reflects the 'normal' distribution of both these orthogonal scales – inferring a particular balance behind their diverse representation within individuals.

A crucial feature of this view is that emergence of language triggered a technology explosion. This view is supported by a) the observation that it had previously taken 2 million years to 'perfect' a hand axe. And (b), the explosion in technological progress towards the end of the Pleistocene era. The emergence of language and symbolic thinking is something that remains unique to Homo Sapiens.

11. Undercurrents of decision making

This concept arises from research that suggest a disconnect of awareness concerning the usual 'across the table' decision-making processes and the potential of risk instincts to be driving strong, influential but unrecognised 'beneath the table' undercurrents.
Our interest in this arose from Hagendorff et al.'s (2015) finding that 'uninvited' risk dispositions seemed to have overwhelmed the anticipated causal factors in a very large 18-year longitudinal study involving 1,578 Bank Executives ('The Wolves of Wall Street'). Most of the explicitly hypothesised variables adopted by the study showed modest impact. The dependent variable being the preferred business models adopted by the 165 Banks involved in the study. The residual for that study (referred to in the paper as variable 'X', and described as 'risk personality') very strongly predicted the Business Models adopted ($r = 0.72$). The remarkable strength of this entirely unexpected association suggested a persistent 'under the radar' influence of risk dispositions across the 165 banks over the 18 years of the study.

The realisation that risk dispositions may imperceptibly influence decision making was interesting for several reasons. Firstly, it might be related to the genotypic nature of risk dispositions and the inference that they are instinctive. Secondly, above the table politeness vs. the instincts and gut reaction of the participants sounds not only feasible but also close to personal experience. Thirdly, the interpersonal space (i.e., 'above the table') has been very explicitly linked to the two FFM factors which are NOT represented in the RTC (see next).

Characterising the RTC as driving 'Undercurrents of decision making' emphasises the discomfort and frustration we feel when a proposal comes up against our risk tolerance limits; whether too risk taking (i.e. beyond comfort and into the danger zone), or not risk taking enough (i.e. failure of others to see valuable opportunities).

Cognitively 'too much' - is 'beyond reason' - demands for ever more data delaying decisions – 'too little' - disconcerting information gaps, irrationality, uncomfortable levels of uncertainty.

Emotionally 'too much' – intolerable worry and anxiety verging of panic' - 'too little'- fails to enthuse or engage, triggers disinterest lack of excitement or enthusiasm.

12. The "interpersonal space" vs. risk instincts

We rediscovered a 'hot' topic in personality theory and research that had been all but buried by the wide adoption in the personality world of the Five Factor Model of Personality (FFM). FFM has so dominated the scene, holding a very strong academic and practitioner consensus that all but crowds out alternatives.

In earlier years (the 1960s), the work of Prof. Timothy Leary and colleagues at Harvard had a considerable following – and not only because of his interest in LSD. The highly regarded circumplex models of that entourage was concerned with 'interpersonal' behaviour which, in

FFM terms, was founded (conceptually) on two of the FFM measures; *Extraversion* and *Agreeability* which broadly defined its 'reach'. The "EUREKA" lies in the fact that the three remaining and omitted FFM factors all contribute to the RTC. The hypothetical question then arises; if the two interpersonal FFM factors cover the 'interpersonal space' but *not* decision making (as the RTC three *are*) how does this play out? Might the answer be that 'above the table' is devoted to 'Getting along' and 'Getting ahead'? The negotiation of status and friendship, dominance (Extroversion) and conviviality (Agreeability), while the instinctive discomfort associated with 'somatic markers' (Antonio Damasio), set limits of risk tolerance and discomfort that, for each of us, drive the *'Undercurrents'* of group decision making'?

13. "Getting Along and Getting Ahead"

Essentially Agreeability vs Extroversion, this terminology is associated with Socio-analytic Theory (See, Robert Hogan & Jerry Wiggins in *The Five Factor Model of Personality*, Wiggins, 1996). It draws attention to a basic dilemma for any group that owes its success to co-operation within the group (getting along), whilst also accommodating to personal aspirations for power and influence (getting ahead). These tensions are as relevant to boards and other decision-making bodies as they will have been in the past in kinship tribal group rivalries.

This is a tension that has to be managed – and will be managed instinctively. The stakes are high, both for the stability of the group and for any potential challenger of the status-quo on which the current stability is based. These are the implicitly accepted 'rules of the game', institutionalised in hierarchical organisations, but unwritten - protocols rather than procedures. Their origins must go back to pre-language era when they would have been acted out, whether with guile and cunning or as assertive displays of prowess and physical strength.

Fast-forward to 21st Century; when we meet someone for the first time, not yet sure if this will be an opportunity or a threat, we would be wise to hold back on any potentially sensitive topic. We want to get along - yes, but not at any cost to ourselves. This is 'survival mode' cognition - a version of "the need to know" what you are getting into - combined with 'survival mode' emotion - driven by self-preservation.

14. Decision making, the key at the core?

Decision making is the ultimate 'transaction'; selecting one path in life and rejecting others, plotting a journey of survival. A decision is pivotal; a step in the pursuit of survival or a transaction that mediates the pursuit of opportunity, navigated utilising our endowed 'risk instincts' and hopefully keeping us out of trouble. The 'right' decisions are those that keep us 'in the game'.

In organisations, the risk instincts of decision makers create the risk culture and drive business decisions. Acting almost as an unseen hand, determined in their desire to find expression, they have an impact. The large-scale longitudinal study (Hagendorff et al., 2015) referred to above, reveals links between the risk instincts of senior managers with their preferred business models. That, in its-self, may not seem so surprising. What is intriguing is the mysterious process that makes this possible. In a highly regulated financial world, the differences between the most traditional and conservative and those that are least traditional and most innovative, is considerable. How surprising is it then, that business models could be predicted by manager risk profiles with 72% accuracy?

From Freud we learn that there is an instinctual core to human nature - based on our evolutionary heritage – and that these core instincts move in opposing directions, so that ambivalence is an essential part of the human condition. BOB HOGAN

The undercurrents of combined risk instincts appear somehow to find expression in the waves of consensus. Could that be true for other decision-making situations? For domestic and recreational decision making? For the formal 'higher stakes' discussions and planning meetings of local government? For business and industry? In a committee setting, the 'above the table' discussions, are the main driver for the orator is to; 'get along' with colleagues while 'getting ahead' (getting a message out while preserving status). In those settings there is likely to be a strategic, aspirational, status-oriented dimension, especially within any administrative, policy oriented or financial planning context. How might unacknowledged instincts influence outcomes?

Interpersonal skills; politeness, eloquence, openness, respect and a willingness to listen to others, are some of the usual cards being played to smooth inter-personal discourse. Instincts, however, are visceral, and basically 'non-verbal'. Rather than being endlessly amenable and co-operative, there are limits beyond which you cannot suppress or disguise your feelings. These intrusions may be a challenge to your composure; they might not be welcome - especially if they pose a threat to reputation.

Inter-personal skills typically ensure harmonious exchanges of sentiment. In business settings that veneer of restraint has more work to do. Participants are likely be engaged within a 'getting along while getting ahead' process. The criteria for outspokenness, disagreement, assertiveness, contradiction, is very different. What goes on openly across the table, and the sentiments that are present but not openly expressed (under the table), characterise the tensions of business meetings. Not that tension is always a 'bad thing'. The objectives of boards, working parties, and committees, are not to be harmonious. The aim is to make the best possible decisions. Good decisions require matters to be 'hammered out', picked apart, stress tested to expose weaknesses and opened up to suggest changes or additions.

Covertly manifest physiologically 'below the table', our gut feelings of apprehension, anxiety, disgust, annoyance, frustration or disapproval are not easily set aside or disposed of. These are our individual 'factory settings' and in each of us those 'settings' are personal and distinctive. In close or intimate relationships, these feelings will at times reach a 'break through' peak, whether positivity or disruptively. In formal settings there is greater likelihood that they will be constrained (too much to lose in terms of status and respect). One way or another, these are consequential dynamics and the RTC offers an interpretive contribution based on reliable data.

Where participants feel unable to contribute to debate (too polite, too reticent, too fearful), those viewpoints are lost and the discussion is impoverished. A climate of mutual respect, trust and openness offers 'psychological safety' in which every participant is able to contribute the fullest exposition of their viewpoint. This should be every participant's mission. Given the remarkable diversity of risk instincts (no more that 15% of people in the population share your particular dispositions, views and perspectives), there is a significant probability that very commonly held perspectives or outlooks will be entirely unrepresented in any decision-making group. This surely underlines the importance of ensuring that all those present 'do their bit' in adequately representing the uncertainties and reservations, endorsements and elaborations that are available to them, and which are highly unlikely to map exactly onto any other views expressed.

The ways in which we as individuals, as nations, or as global representatives, actually make decisions - isn't immediately reassuring. We devote a lot of attention to potential hazards and pitfalls, the analysis and prediction of potential losses, advocate on the basis of complex models and predictive reasoning at a level of complexity few are able to follow. While some are impressed, others consider this dangerous 'alchemy'. All of this speculation recognises the influence of individual risk appetites, in 'market sentiment' for example, but finds it difficult to embrace within financial practices. Similarly, in Health and Safety, human factors are recognised more in principle than in practice. However, the increasing use of the Risk Type Compass in decision making contexts; in board rooms, C-suites, trading rooms, high level consultancy projects and heavy industry has all been hugely positive.

Everything that is in any sense alive, must somehow make the choices and decisions that avoid dangers and prolong existence. This is as true for Homo-Sapiens as it is for any other life form. In our own dualist *'mind space'*, conscious decision making ALWAYS involves cognition (*thinking and reasoning)* and ALWAYS involves emotion (*instinctive 'gut feeling'*). This IS the biochemistry of the decision-making process on which everything and everyone relies. No-one is exempt.

We are certain to make progress on these issues. The rate of technological progress has accelerated exponentially since the creation of the most sophisticated stone age hand tools. On the verge of an AI explosion, we anticipate rapid progress on anything for which we can find the appropriate logic and algorithms. In the recent past within our own field of applied psychology, the rapid progress and availability of computing power, processing speed, memory and the continuing transformative effects of the internet has repeatedly challenged our assumptions and reset our criteria. From data collection to meta-analyses, technology has accelerated progress and process.

At the dawn of modern personality science, Raymond Cattell spent months calculating his way through Factor Analyses without the help of even an electronic calculator. In hindsight, the authority accorded to factor analysis was in proportion to the effort it required to complete it, as well as to refute it. Based on meta-analytic studies and the rapid development of computer power, the FFM established it's self as the definitive framework for personality assessment. FFM is certain to remain the definitive model for phenotypic personality, but other lines of enquiry are inevitable. The Risk Type Compass has a different focus, concerned with decision making, viewing it as a process critical to success and survival for all life forms.

Our current interests in relation to RTC are still psychometric; the reliability, prevalence, distribution, definition and meaning of scales and sub-themes. Validation in relation to performance and in relation to other measures is amply documented in this manual. Our terms of reference have changed to dualist theories of mind, the distinction between 'thinking' and 'feeling', between 'getting along' and 'getting ahead', the neuroscience of dual processes, the anthropology associated with the 'explosion' in technological advance in the late Pleistocene era, the emergence of language and symbolic thinking, and dualist theories of mind.

To the extent to which we can shed light on these issues of interpersonal chemistry and unlock the interplay between our two minds, is going to be very fascinating.

GEOFF TRICKEY

Chapter 1 – Risk Themes in the Structure of Personality

The Beginning

When London based Columbus Wealth Management invited PCL in to discuss a problem, it wasn't about the usual performance or selection issues. Being tightly regulated by the Financial Services Authority (FSA) now the Financial Conduct Authority (FCA), they were required to assess each client's risk appetite as a basis for appropriate investment portfolio recommendations and the purchase of other financial products. Their difficulty was that, in spite of the many questionnaires rushed to market in response to this new regulatory requirement, Columbus couldn't find a convincing and useful way to meet it. The wider issue was how to prevent this becoming a box-ticking, regulation inspired chore rather than something that really worked for the company and for their clients. Coming from a Business Psychology background and having particular interest and experience in personality assessment, we were surprised to discover a parallel universe of questionnaire construction that had little connection with psychometrics or personality. The FSA initiative recognised the uncertainties of clients faced with complex choices and possible individual differences risk appetite, as well as the need for clear communication about the available options amongst financial services and products. These were certainly aims that needed to be addressed. On the other hand, there was no established methodology available to identify or calibrate 'client appetite for risk'.

The Background

Everyday vocabulary is replete with words that allow us to recognise individual differences in people's disposition towards risk: words like 'reckless', 'fearless', 'cautious', 'timid' and many more. There are many terms in the communal lexicon that would fall into this category. The implication is that people differ in some fundamental way in this regard. In personality research there are innumerable references that draw on this terminology when describing personality differences or defining traits. As practitioners, we were aware of many narrative themes from the personality assessment domain that are associated with risk perception, reaction to risk or risk-taking.

There was extensive and growing personality research literature that illustrated a relationship between risk and personality variables. For example, high scorers on a Neuroticism scale interpret ambiguous stimuli as more threatening (MacCleod & Cohen, 1993), the sensation seeking aspects of an Extraversion scale are associated with higher risk tolerance (Pan & Statman, 2010), and higher scorers on measures of Openness search for new experiences and actively seek out risk (Kowert & Hermann, 1997). High scores on Conscientiousness are significantly associated with intolerance of uncertainty, change and innovation (Nicholson, Soane, Fenton-O'Creevy, & Willman, 2005), and with a need for conformity and control (Hogan & Ones, 1997). These and numerous other observations link personality measures to risk. Added to the consensus building around the FFM, these findings convinced us that what was already known about risk and personality provided a solid starting point for our research.

Since the late 1980s, there had been a steadily growing consensus about the measurement of personality. Following the early work of Robert Hogan (then a psychology professor at Johns Hopkins University) in the early 1970s and the subsequent meta-analyses (Barrick & Mount, 1991; Costa & McCrae, 1992; Salgadoa & Táuriza, 2014). Differences between personality assessments based on very different theories of personality were increasingly being superseded by the substantive nature of the Five Factor Model (FFM).

Our literature review identified a number of FFM studies of risk and personality with promising results (e.g. Bailard, Biehl, & Kaiser, 1986). We found many studies that illustrated the relationship between risk behaviour and four of the five FFM factors (Emotional Stability, Conscientiousness, Openness to Experience and Extraversion). Evidence for the fifth

(Agreeability) was inconsistent. Clearly, the notion that propensity for risk could be meaningfully captured by a simple linear scale, with the reckless at one end and risk-aversion at the other, was not going to reflect this complexity. On the other hand, although there were many risk related themes in the FFM model, these assessments were panoramic and clearly tapped into aspects of personality far beyond our focus on risk. For these reasons we set out to identify themes within FFM that were risk related, leaving behind what might, for these particular purposes, just be noise in the system.

In a wide review of the literature the following themes drawn from the FFM were identified as potentially relevant in some way to risk or risk aversion and were selected for inclusion in the research.

Audacious	Explorative	Intuitive
Apprehensive	Focused	Perfectionistic
Equable	Forgiving	Hasty
Careless	Impulsive	Resilient
Conforming	Methodical	Sensitive
Confident	Optimistic	Spontaneous
Deliberate	Eager	Astute

Factor Analysis

Positive and negative items were written for each of these themes and a research questionnaire was created. Data was collected from an initial sample of 328 adults in work across a wide spectrum of occupations. Factor analysis generated the following four-factor solution.

Table 1.1. *Factor Analysis (Varimax Rotation with Kaiser Normalisation) of the Risk Type Compass Subthemes (n=328)*

Subthemes	Factor 1 Calm	Factor 2 Emotional	Factor 3 Measured	Factor 4 Daring
Resilient	.76			
Equable	.51			
Confident	.58			
Forgiving	.59			
Eager	-.56			
Apprehensive		.63		
Sensitive		.68		
Intuitive		.68		
Optimism		-.66		
Astute		.47		
Focused			.54	
Methodical			.67	
Perfectionistic			.67	
Audacious				.68
Conforming				-.54
Explorative				.63
Hasty				.74
Spontaneous				.62

Table 1.1 displays significant correlations between 18 subthemes and the four factors. Subthemes were clustered into four groups; the factors they correlate with best. Six of the original risk themes were lost during the process, but the analysis separated the remaining

themes into four clear factors; one relating to being calm and composed, a second relating to emotional intensity, a third associated with having a cautious and measured approach and a fourth related to being daring. We assigned the factors with the convenience labels 'Calm', 'Emotional', 'Measured' and 'Daring' (see Table 1.2 below).

Table 1.2. *The Mean, Standard Deviation, Skew, and Kurtosis findings for the 4 Risk Type Compass Factors (n=328)*

RTC Factor	Mean	SD	Skew	SE Skew	Kurtosis	SE Kurtosis
Calm	54.8	12.6	-.42	.14	.32	.27
Emotional	43.5	13.6	.28	.14	-.34	.27
Measured	36.7	7.8	-.22	.14	-.50	.27
Daring	61.3	12.9	.01	.14	-.09	.27

Risk Type

In the literature review that prefaced our research into propensity for risk we came across many examples of studies, some of which had already set a precedent in searching for a personality-based Risk Type taxonomy.

Bailard, Biehl, and Kaiser (1986) identified five main risk personality types, using different combinations of the Neuroticism ('Confident' to 'Anxious') and Conscientious ('Careful' to 'Impetuous') FFM scales. They consider that these two scales reflect the individual's confidence in their own ability and their preferred 'method of acting'; how methodical they tend to be. The five resulting personality types suggest distinct profiles ranging from the strong-willed go-getter (Adventurer) to the cautious safe guarder (Guardian).

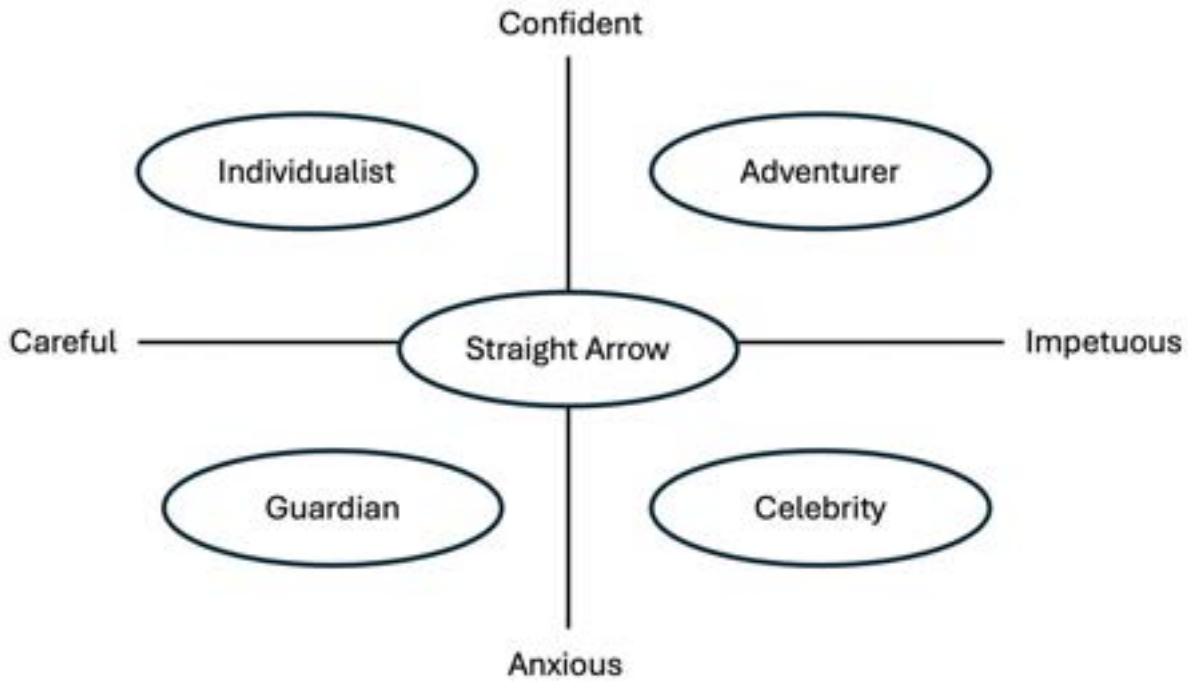


Figure 1.1. *Bailard et al.'s (1986) Five Way Model of Risk Personality*

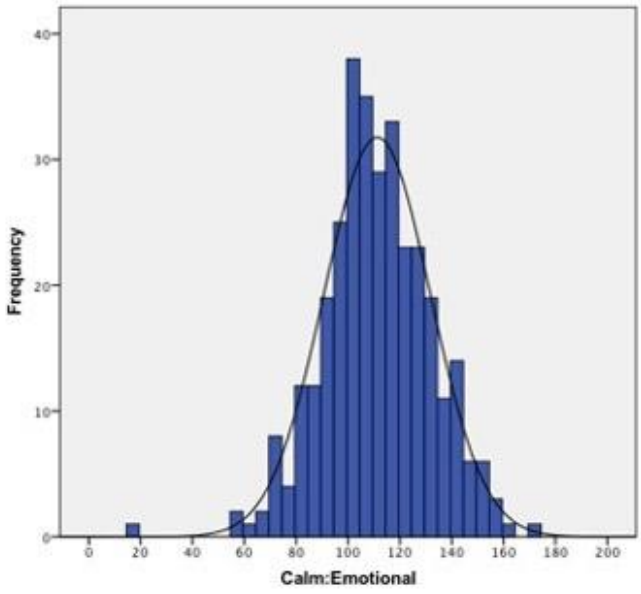
Barnewall (1987) had developed a personality-based risk typology having identified two main types of risk taking in investors. 'Passive investors' are described as having a greater need for security and a lower risk tolerance, whereas 'Active investors' have a lesser need

for security and thus greater risk tolerance. Links could certainly be drawn between valuing security and our own research into the Neuroticism scale.

On a similar note, Myers (1999) had identified six risk taking investor types: Cautious, Emotional, Technical, Busy, Casual and Informed. However, what differentiates Myers' model from the others is his fundamental belief that individuals will treat different aspects of their life in the same way and therefore will approach risky situations in a similar way regardless of the situational context.

Our four-factor solution (Table 1.1) had triggered the idea of a compass model for the assessment. This approach appealed because of its potential in creating a circumplex model (a 'compass') that would be readily accessible and easily understood beyond the usual HR focus of personality assessments. Neither Financial Advisors nor their clients would necessarily be familiar with psychometric assessment. For the same reason, we were open to the idea of something that could be presented in a 'Risk Type' format, the benefit being a simplified and coherent framework and a clear and differentiating vocabulary.

The first requirement in exploring 'Risk Type' possibilities was to translate four factors into two bi-polar scales. From the risk perspective, the content of the Calm and Emotional factors had a lot in common with the language used in the interpretation of the Emotional Stability (or Neuroticism) factor of FFM although, of course, all the item content in this case had exclusively risk related connotations. To explore whether these four themes could effectively be re-combined and reanalysed as two bi-polar scales, the data from both the 'Calm' and 'Emotional' factors was pooled and subjected to traditional item analysis. The resulting scale (alpha coefficient 0.86) was interpreted as self-doubting, fearful, pessimistic and emotionally reactive at one pole, and confident, imperturbable, optimistic and calm at the other. A similar process was then applied to the 'Measured' and 'Daring' factors, resulting in a second bi-polar scale (alpha coefficient 0.83). This scale can be interpreted as excitement seeking, impulsive, challenging and careless at one pole and organised, compliant, focused and perfectionistic at the other. The results of this exercise provided the basis for a revised 72 item questionnaire.



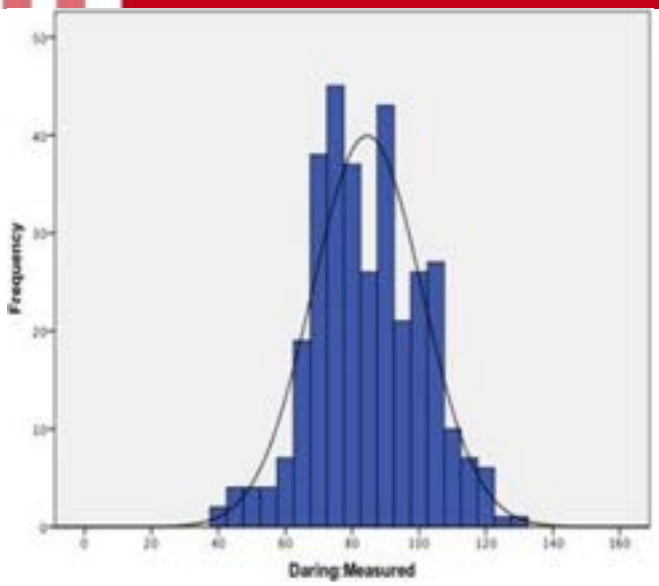


Figure 1.2. *The distribution curves of the raw scores for the two bi-polar scales Emotional:Calm and Daring:Measured (n=328)*

Although N was small at that point, the distributions in Figure 1.2 can be described as 'normal'. There is a greater concentration of instances around the centre, with fewer at the tails, and distribution is symmetrical. According to the logic of the 'risk compass' design blueprint, it would often be the case that an individual would score at one of the extremes on both scales. It therefore made sense that these two bi-polar scales should be presented as conceptually* orthogonal (* *in the final iteration of the RTC statistical orthogonality is confirmed R= 0.007*). Given their origins in four independent factors, we didn't anticipate any difficulty with this approach other than being clear that this orthogonal relationship was (at that time) conceptual and logical rather than statistical. We were encouraged by the fact that our starting point had been four independent factors. By using a z score style scale with a mean of zero and viewing all scores as positive, incremented standard scores could be computed for each of the four compass poles (see Figure 1.3). In each case, the axis of this configuration would mark a neutral point between the two poles.

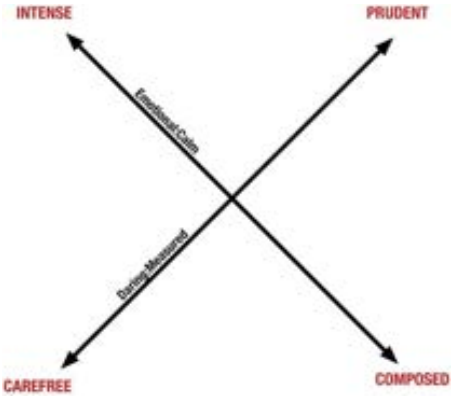


Figure 1.3. *The 4 points of the Emotional:Calm and Daring:Measured scales*

The outcome for a candidate would be expressed incrementally as a score towards one extreme on either scale (either Prudent or Carefree, Intense or Composed).

In this model, candidates would inevitably fall somewhere along each of the scales and many would be placed within the extreme range (high or low) on neighbouring scales (e.g. both high Intense and low Carefree). To account for this inevitability, four intermediate Risk Types were introduced to describe those achieving extreme scores on two neighbouring compass points, creating the model displayed in Figure 1.4 below:

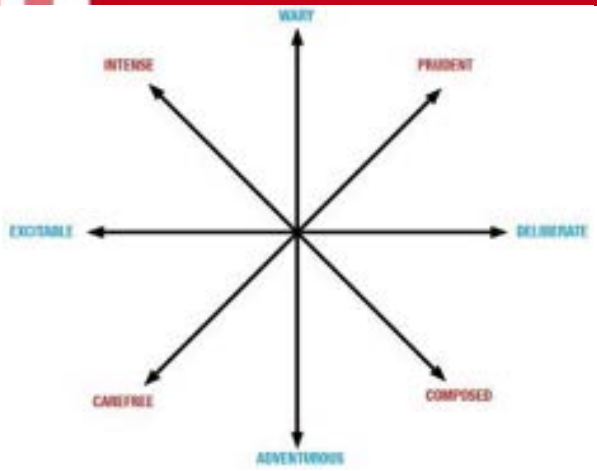


Figure 1.4. *The 8 points of the Risk Type Compass*

The original four compass points displayed in Figure 1.3 were described as 'pure Risk Types' and the additions displayed in Figure 1.4, which each involve interaction between two elevated or high scores, were described as 'complex Risk Types'. In effect, this 'compass model' is a continuous 360° spectrum in which neighbouring Risk Types blend into each other and this is reflected by the positioning of each candidate's 'dot' radial placement and in terms of distance from the axis (see Figure 1.5 below).

Positioning the Compass

The final task was to engineer accurate placement of individuals within the designed space of the compass. Mapping scores against two axes would arithmetically require a rectangular space. The task of transcribing data onto the circular space implied by the compass 'circumplex' necessitated the design of specific topological algorithms. Criteria for Risk Type designation were established based on scores on the two underlying scales and to establish placement of each individual within each Risk Type segment. This placement is according to Risk Type strength; (increasing distance from the axis) differentiated radially according to the degree of differentiation from the neighbouring Risk Type segment. The compass space illustrated in Figure 1.5 below allowed for 25 different locations in each segment after having designated a central 'axial' group that achieved scores on both scales that were too close to the mean (axis) to warrant Risk Type differentiation. Nine locations within the axial space differentiated those with a mild influence from one of the Risk Types from those in the Axis group (Axials). The default assumption for this group was that they would be effectively neutral in respect of Risk Type.

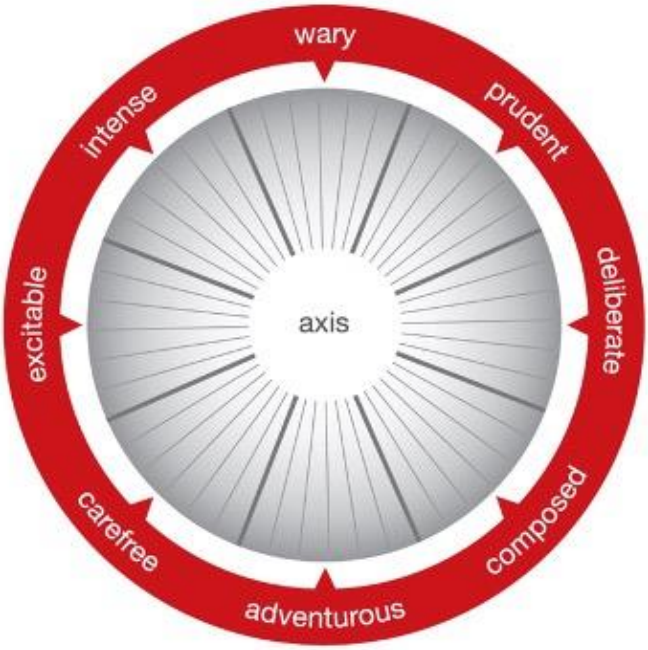


Figure 1.5. *The final model of the Risk Type Compass*

Although this process involved a slight reduction in the detailed discrimination inherent in the underlying scales, this was considered to be within acceptable bounds and compared favourably with other established metrics such as 'stanines' and 'stens' that also represent reduced differentiation. In both these cases, this is justified by the inferential nature of psychometric assessment and concerns about over-interpretation of small score differences. In the case of the Risk Type Compass, algorithmic conversion was necessary in order to portray each of the eight Risk Types topographically within the compass space. The priority then was for candidates to be placed systematically within each quadrant according to equivalent criteria. The data below (Figure 2.6), based on a large sample, indicates the effectiveness of the process.

There are two important points to bear in mind. Firstly, that although emphasising Risk Typology, the Risk Type Compass actually presents a continuous 360° spectrum of risk dispositions. The Risk Type designation is perhaps analogous to the numbers on a clock face in that they arbitrarily divide up the continuity of time for the purpose of reference and comparison. Secondly, there are no good or bad Risk Types. As with all personality characteristics, each has potential benefits and disadvantages in different circumstances and situations. Although there may be particular attractions in some occupations for some Risk Types (and the evidence strongly suggests that this is the case), every organisation and every profession will have some roles that buck any such general trend. The important thing is that individuals are aware of the particular behavioural biases that will emanate from their Risk Type. There will be potential pitfalls and challenges within any role that arise from a person's risk disposition. Risk Type helps to identify the personal agenda that each individual has to deal with in order to take personal responsibility for their performance in this regard and to be successful within a particular context.

Typology

Data for a sample of 21,113 individuals from a variety of industries and sectors demonstrated the following characteristics. The distribution curves for the two underlying scales are displayed in Figure 1.6 below.

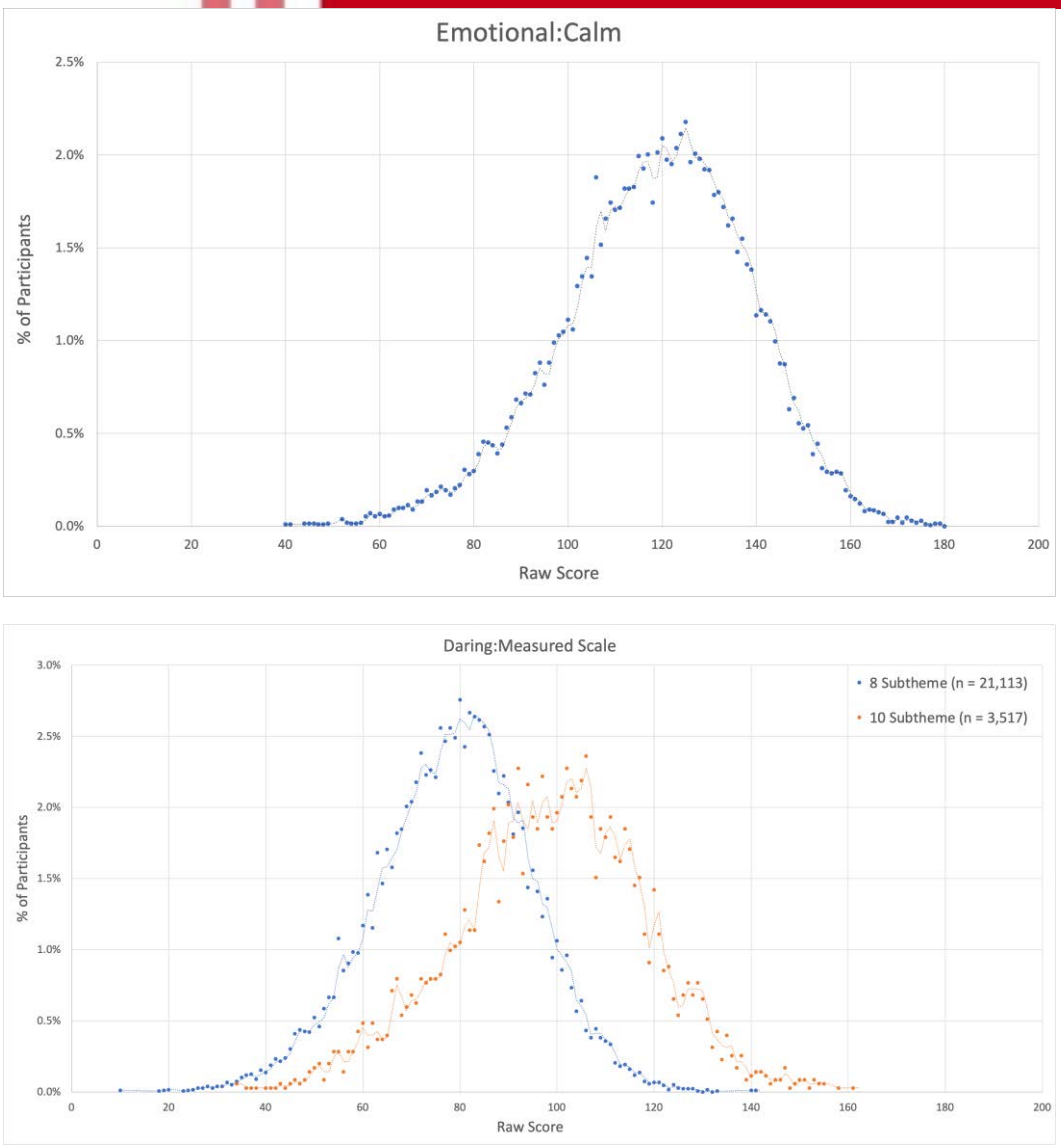


Figure 1.6. *The distribution curves of the raw scores for the two bi-polar scales (Emotional:Calm and Daring:Measured) (n=21,113)*

Perhaps the most notable point to make about the distributions displayed in Figure 1.6 is the considerable stability of the curvilinear pattern resulting when compared to the early stages of the development of the Risk Type Compass. Despite a considerably larger sample size of 21,113, the distribution of raw scores has remained highly consistent with the early analysis that encompassed a sample size of 328 participants. The resulting assignment of 8 Risk Types and the Axial group on this sample is displayed in Table 1.3 below.

Table 1.3. *The proportions of the sample categories as each of the 8 Risk Types and the Axial Group (n=21,113)*

Risk Type	% Distribution
Wary	12.55%
Prudent	10.30%
Deliberate	15.33%
Composed	11.32%
Adventurous	11.41%
Carefree	9.54%
Excitable	10.80%
Intense	9.39%
Axial	9.36%
Grand Total	**100.0%**

The equality of incidence of Risk Types in this data clearly reflected the symmetry of the distribution of the two underlying scales and their remarkable reliability.

The processes described above were necessary in order to achieve the benefits of a Risk Typology within a compass format that could readily be understood and communicated. This model supports coherent interpretation and a vocabulary that affords the utility desired by our original sponsors and that is also beneficial to the wide range of applications and industries.

In the text narrative above we refer to the two RTC scales using their original research designation as 'Emotional:Calm and Daring:Measured'. Throughout the remainder of this Technical Manual, we adopt the scale names **Emotion** and **Cognition**.

Chapter 2 – The Context

Everyday Risk

There is potential for risk in everything that we do and there are innumerable different factors that influence a person's readiness to take a risk at a particular moment in time. Many of these factors are unsystematic; incidents and events that defy prediction and make their management very difficult and even impossible. Happenstance of this nature has to be considered as 'noise' in the system; random elements that may obscure consistencies that are rooted in 'laws of nature'. Rather than attempting to define or measure risk in its many guises or to chart the elaborate world of risk, the focus of the Risk Type Compass (RTC) is on our instinctive responses to uncertainty of outcomes the idiosyncratic aspects of our decision-making. The RTC is a psychometric questionnaire that addresses risk dispositions that are characteristic of each individual. These aspects of our individual natures are as variable as our appearance, our fingerprints and the life trajectories to which they will contribute in so many ways. They are likely to be their most significant and most consequential aspect of their nature.

Even the most erudite attempts to define 'risk' as a 'disembodied abstraction' fail to resolve it's many contradictions. Risk is always associated in some way with decision making. Whether as a trigger for a decision to be made *"what should we do to avoid this catastrophe"*, or as the need to evaluate the options available; *"which of these alternatives would be most likely to succeed*". There is always potential for risk in whatever stands between us and the achievement of our objectives, the fulfilment of our dreams or the success of any plan of action. In effect then, risk is something that is defined whenever we plan an endeavour. Sometimes one person's risk is another person's opportunity. As in any team game, when we develop a strategy for *us* to succeed, we are creating the risk that *our opponents* have to overcome for *them* to succeed - and vice-versa.

Risk, as a subject, lacks coherence:

1. 'Risk' has no common unit of measurement

2. Subjective and objective perspectives are incongruent

3. Generalisations cannot be made across situations or domains

4. One's terror may be another's thrill – (Free solo climbing, investing money, public speaking)

5. Cognitive challenges are personal: some 'working it out' while others 'take it on the fly'

6. There is no consensus on the relationship between "Risk" and "Uncertainty"

There are though, many pockets of relative coherence *within* the realms of risk, for example in insurance, gambling, emergency services or medicine.

Psychology, at a theoretical level and in professional practice, has examined risk as a potential correlate of personality dimensions, rather than as a primary construct.

The Five Factor Model (FFM) made possible by the development of factor analytic techniques combined with meta-analysis and the ever-increasing processing power of computer technology, is 'lexical' in nature (i.e. derived from adopted language and its usage). FFM has an obvious appeal and is clearly an effective basis for a psychometric approach. It provides a systematic way of ensuring that the most appropriate terms are

being applied as consistently as possible in the descriptions of the individuals being assessed – a valued achievement. However, the basic assumption in all this is that the prevalence of common word usage accurately and adequately reflects the most inherent differences and the natural structures that differentiate us from one another. The answer to that is, I think, that this has been the best we have had, and a more tangible and acceptable approach than any of the big psychodynamic personality theories of previous generations – fascinating and influential though they still are.

In the FFM context, risk taking proves to be an inherent component of personality. The full extent of this was not generally recognised until recent studies identified the many 'risk themes' that permeate the major personality factors and reconfigured these as an assessment focused specifically on risk instinct. This Technical Manual recounts this process. Research has also identified a number of genes that are linked to risk-related behaviour. While we must recognise that there will always be a degree of unpredictability about risk behaviour, we also need to recognise that individual propensities for risk will be deeply rooted and have a consistent and pervasive influence on decision making. Balancing opportunity and risk is key to the success and survival of individuals, organisations and species.

A review of FFM item themes within the major FFM questionnaires shows that risk is most likely to be inferred within items on Extroversion scales and, to a lesser extent, is associated with emotional vulnerability.

Personality and Risk Tolerance

Historically, parameters measured when assessing risk tolerance have fallen into three main categories: an individual's personal circumstances, their experience, and their personality. This section focuses on the last of these points, providing an overview of the relevant literature that explores the complex link between personality and risk tolerance, as well as a discussion of the different approaches that have been used to measure it.

FFM and Risk Tolerance

In the FFM context, risk taking proves to be embedded within personality rather than merely an independent correlate. The full extent of this was not generally recognised until PCL studies a decade ago identified 'risk related themes' that permeate the major personality factors and reconfigured these as an assessment focused specifically on risk instinct.

This Technical Manual recounts this process. Research has also identified a number of genes that are linked to risk-related behaviour. While we have to recognise that there will always be a degree of unpredictability about risk behaviour we also need to recognise that individual propensities for risk will be deeply rooted and will have a consistent and pervasive influence. The achievement of a balance between opportunity and risk is key to the success and survival of individuals, organisations and species.

Personality is one of the most thoroughly researched areas of psychology and has been successfully utilised in applied settings for many years. Theories of personality rest on the assumption that, within each of us, there are enduring structures that shape our personal uniqueness and account for the behavioural consistencies on which our reputation with others is based; who we are and how we are likely to come across to others. A comprehensive review of the literature by Barrick and Mount (2005) summarises the breadth of research within the domain of personality, referencing the key outcomes from work and other life situations. Overall, they found that personality has a strong influence, not only on job performance, but also on absenteeism, turnover and citizenship behaviours – in addition to more general factors such as life satisfaction, quality of life and even life span. As well as having proven predictive qualities, personality assessments are easy to administer using questionnaires and offer the benefit of not discriminating between racial or ethnic groups, as can be the case with ability measures or other forms of assessment.

After decades of research, psychologists have identified five key factors that can be viewed as the 'primary colours' that underpin all personality. Together they are termed the 'Five Factor Model' (e.g. Barrick & Mount, 1991; Wiggins, 1996). The Five Factor Model is well supported by research findings over the past 20 years, using meta-analytic techniques and data from tens of thousands of personality assessments. This model has been hugely influential in psychological science, providing a global framework for much of the subsequent research in the area. Risk tolerance research is no exception to this, with literature on risk tolerance and personality exploring the extent to which one or more of these five factors influences a person's risk behaviour and perceptions of risk. The considerable body of research is briefly summarised below by an illustrative selection from the relevant findings (Table 2.1).

Table 2.1. *The Five Factor Model*

Openness to Experience	The degree to which a person needs intellectual stimulation,change and variety.
Conscientiousness	The degree to which a person is willing to comply with conventionalrules and is organised, planful and attentive to detail.
Extraversion	The degree to which a person is gregarious, assertive and seeks excitement.
Agreeableness	The degree to which a person needs pleasant and harmonious relations with others, and is sympathetic and concerned with what other people think of them.
Neuroticism	The degree to which a person experiences unpleasant emotions such as anger, anxiety, depression and a feeling of vulnerability. (Also known as Emotional Stability, with lower scores on Neuroticism signifying higher Emotional Stability, characterising those that are less prone to feeling stressed and who are more calm and even tempered).

Extraversion and Risk Tolerance

Extraversion is believed to play a key role in risk tolerance. Research by Nicholson, Soane, Fenton-O'Creevy, and Willman (2005), for example, invited 2,700 participants to complete a measure of personality (the Revised NEO Personality Inventory; an assessment based on the Five Factor Model) and a measure of risk propensity, assessed in terms of current and past risk behaviours in domains including financial, health and social behaviour. Correlational analysis revealed Extraversion to be associated with greater overall risk taking across all domains.

Drawing upon neuropsychological work by Eysenck (1973), Nicholson et al. (2005) proposed that this may be due to the Extrovert's desire for sensation-seeking. Indeed, Eysenck (1973) suggests that Extroverts possess a chronically under-aroused cortical system, resulting in a need for heightened external stimulation - such as risk taking - just to reach 'normal' levels of cortical functioning. In support of this, Harlow and Brown (1990) found that, out of the 183 students they sampled, those that were shown to have high levels of sensation seeking were more likely to show greater levels of risk tolerance.

Other research has indicated that sensation seeking - the Extravert's desire for external simulation - is related to other risk taking behaviour; including dangerous sports (Zuckerman, 1983), smoking heavily (Zuckerman, Ball, & Black, 1990) and making decisions about driving speed (Goldenbeld & van Schagen, 2007). Participants with low Extraversion scores (i.e. introverts) were more likely to have lower risk tolerance levels.

On the other hand, Kowert and Hermann (1997), who measured risk using a choice dilemma questionnaire and a self-report assessment of risk taking in corporate settings, found Extraversion to be unrelated to risk taking. However, they did find that the excitement seeking subscale of Extraversion was associated with scores on both measures of risk taking. It seems that certain aspects of Extraversion, such as sociability and warmth, may not be as important in predicting of risk taking as other aspects, such as sensation seeking, as has been suggested by previous researchers.

Openness to Experience and Risk Tolerance

Within the same research study, Nicholson et al. (2005) found that individuals high in 'Openness to Experience' were more risk taking than those low in the trait. McCrae and Costa (1997) see Openness to Experience as a cognitive stimulus for risk seeking, explaining that Openness allows the individual to be more accepting of experimentation and tolerant of uncertainty and change. This is in agreement with Kowert and Hermann (1997) who found increased levels of Openness to Experience and two related subthemes to be associated with risk taking in both the choice dilemmas and self-report measure. Kowert and Hermann concluded that individuals with this characteristic are adventurous and imaginative and that they tend to search for new experiences, as well as actively seek out risks.

Conscientiousness and Risk Tolerance

Research has shown that individuals with higher levels of Conscientiousness show a lower propensity for risk, presumably due to the characteristic need for conformity and control that is also associated with this personality trait (Hogan & Ones, 1997). Hampson, Andrews, Barckley, Lichenstein, and Lee (2000) studied the influence of personality on health-related risk and found that those higher in Conscientiousness were less likely to encourage cigarette smoking within the home due to the perceived health consequences. In another study that looked specifically at risk taking in pre- adolescents, Conscientiousness was once again found to be significantly associated with risk taking, with those high in the trait found to show more risk-averse choices in decision-making games (McGhee, Ehrler, Buckhalt, & Phillips, 2012). Taking a closer look at the themes within the trait, Kowert and Hermann (1997) reported that those that were more deliberate - a subscale of Conscientiousness - reported lower levels of risk taking, whereas individuals that were hasty, impulsive, careless and impatient were more likely to willingly take risks.

Overall, there is no shortage of research showing the same outcome; conscientious individuals are almost always found to be less risk taking than their low conscientious counterparts. In fact, out of all of the FFM traits studied, Kowert and Hermann (1997) found the strongest (negative) relationship with risk taking and Conscientiousness.

Agreeableness and Risk Tolerance

Evidence regarding the influence of Agreeableness on risk taking has been inconsistent. In a study by Nicholson et al. (2005), Agreeableness was shown to be linked to risk taking, with higher levels of the trait associated with lower levels of risk taking. The authors hypothesise that this may be due to consideration - or lack of - for the consequences that risk taking may have on other people. Kowert and Hermann's (1997) research supports these conclusions, with increased levels of self-reported risk taking showing a strong inverse relationship with Agreeableness. However, this effect was not found when risk was assessed using the choice dilemmas assessment measure. Kowert and Hermann similarly explain these findings by concluding that those high in Agreeableness are more likely to worry about the harm that could come to others through their own risk taking, and may therefore avoid engaging in risky activities for this reason.

Neuroticism and Risk Tolerance

High levels of Neuroticism have been found to be associated with reduced propensity for risk taking (Nicholson et al., 2005), which is perhaps unsurprising if we recall that Neuroticism is associated with a tendency towards experiencing unpleasant emotions, including anxiety.

Hogan & Hogan's (2007) research findings report Neuroticism (Low Adjustment) as being associated with descriptions of being low in self-confidence, defensive, mistrustful, moody and temperamental. These findings supported previous research (Klein & Kunda, 1994) suggesting that risk taking requires resilience, a characteristic that is rarely associated with high levels of Neuroticism. Interestingly, however, Kowert and Hermann (1997) found Neuroticism to be unrelated to risk, although they did note that lower levels of the anxiety subscale were linked to increased levels of self-reported risk taking, while increased self-consciousness – again a subscale of Neuroticism - was associated with reduced risk taking, implying that risk relates only to certain aspects of Neuroticism.

More recently, Paulus, Rogalsky, Simmons, Feinstein, and Stein (2003) investigated the relationship between risky decision-making, insula activation within the brain and personality, as measured using the NEO Five Factor Inventory (Costa & McCrae, 1992). They found that participants with higher levels of Neuroticism displayed increased right anterior insula activation when punished for making a 'risky' decision over a 'safe' one, which in turn lead to greater propensity for choosing a 'safe' response in a following task. This implies that Neuroticism may lead to more risk-averse behaviour due to a heightened sensitivity to the possible negative consequences associated with risky decision-making. Interestingly this study again highlights the likely biological correlates associating personality with risk-taking.

Haleblian, Markoczy, and McNamara (2004) focused their research on the relationship between risk and trait anxiety, defined as 'reactivity to stress and a tendency to worry'. They also assessed the relationship between risk and competence, i.e. the tendency towards being sure of oneself and having belief in one's ability to excel. The participants, 168 strategic management students, completed the NEO PI-R Anxiety subscale from the Neuroticism factor and the Competence subscale from the Conscientiousness factor. Risk was assessed using a decision-making scenario in which participants took on the role of the CEO in an engine manufacturing firm. They were given a choice of new products to produce, one being a low risk/low reward option and the other being high risk/high reward. Results found that higher levels of competence are associated with greater risk taking. Additionally, lower levels of anxiety were also found to be associated with increased risk taking.

It is important to briefly note that, although the Competence characteristic appears within the Conscientious scale of the NEO PI-R, the concept of competence could also be associated with other FFM factors. For example, the Hogan Personality Inventory includes a measure of 'Self-Confidence' in what is the equivalent to the FFM's Extraversion factor, whilst Profile:Match2 includes 'Self-Esteem' - a concept similar to Competence - in its equivalent to the FFM Emotional Stability factor.

Haleblian et al. (2004) cite some interesting research to explain the findings of their study, emphasising the literature on 'Confidence', rather than the NEO PI-R Competence scale, which they argue differs only in semantics. It seems that those high in confidence tend to place a greater emphasis on the positive outcomes of situations (such as those faced when weighing up the consequences of a risky situation), and therefore are more likely to take an optimistic view. Furthermore, Haleblian et al. (2004) note that individuals high in confidence are more likely to approach the threats faced in risky situations with the belief that they are able to exert some control over it (Klein & Kunda, 1994). However, a possible downside to this attitude is that such individuals are unlikely to pay adequate attention to the threats they encounter and be so confident about being successful that they take risks unknowingly.

Regarding trait anxiety, it is thought that those with higher levels of anxiety will focus more on the threats of a situation, as opposed to the potential positive outcomes (Eysenck, 1992), in contrast to those high in Confidence described above. Eysenck (1992) theorises that high anxiety individuals have an over-developed internal 'danger detection process' which causes them to become hyper-vigilant and grossly exaggerate the severity of dangerous events in the environment. Therefore, in terms of taking risks, these individuals are likely to worry more about the potential negative consequences rather than focusing on the potential

opportunities. In addition to this, these individuals are likely to perceive ambiguous stimuli as more threatening (MacCleod & Cohen, 1993). Overall, those prone to anxiety will prefer to take actions that reinforce their sense of security (Raghunathan & Pham, 1999), rather than embarking on more risky ventures that would only reduce security. This suggests that their decisions will reflect a preference for low-risk options over options with a higher potential for failure.

The Five Factor Model (FFM), made possible by the development of factor analytic techniques combined with meta-analysis and the ever increasing processing power of computer technology, is 'lexical' in nature (i.e. derived from adopted language and usage). FFM has an obvious appeal and is clearly an effective basis for a psychometric approach. It provides a systematic way of ensuring that the most appropriate terms are being applied as consistently as possible in the descriptions of the individuals being assessed – a valued achievement. However, the basic assumption in all this is that the prevalence of common word usage accurately and adequately reflects the most inherent differences and the natural structures that differentiate us from one another. The answer to that is, I think, that in terms of utility professional consensus, this has been the best we have had, certainly a more tangible and acceptable approach than any of the big psychodynamic personality theories of previous generations – fascinating and influential though they are.

The Hexaco Model of Personality and Risk Taking

De Vries, De Vries, and Feij (2009) conducted a study examining the relationship between risk taking and personality using the HEXACO model of personality. The HEXACO model shares some similarities with the FFM, however the model encompasses six factors in total: Honesty-Humility (H), Emotionality (E), Extraversion (X), Agreeableness (A), Conscientiousness (C), and Openness to Experience (O). Whilst the Extraversion, Openness to Experience and Conscientiousness dimensions have a great deal of overlap with the FFM, the main differences between HEXACO and FFM are the Honesty- Humility and Emotionality components. The Honesty-Humility component is concerned with individual differences in fairness, sincerity, greed avoidance and modesty. The Emotionality component is similar to the FFM Neuroticism factor, including experience of anxiety, sentimentality, fearlessness, detachment and independence. In the De Vries et al. (2009) research study, participants were asked to complete the HEXACO Personality Inventory, the IPIP Risk-Taking Scale (Goldberg, 1999) and the Sensation Seeking Scale (van den Berg & Feij, 1988). The Sensation Seeking Scale is comprised of four subscales: Disinhibition, Experience Seeking, Boredom Susceptibility and Adventure Seeking. Results indicated that, other than Agreeableness, the HEXACO factor scales were significantly related to sensation seeking and risk taking. Specifically, it was found that high Openness to Experience, high Extraversion, low Emotionality, low Honesty- Humility and low Conscientiousness played an important role in risk tolerance. This reinforces a number of the FFM findings relating personality to risk taking.

Personality and Risk Tolerance Summary

A summary of the studies cited above, and some additional relevant studies, that together demonstrate significant relationships between the Five Factor Model's personality scales and measures of willingness to engage in risk are presented in Table 2.2.

Table 2.2. *A summary of research into the Five Factor Model and risk tolerance concepts*

Authors	Factors Associated with Risk Tolerance Concepts
Pan and Statman (2010)	Openness to Experience Low Conscientiousness Extraversion

Mayfield, Perdue, and Wooten (2008)	Openness to Experience Low Neuroticism
Nicholson et al. (2005)	Openness to Experience Low Conscientiousness Extraversion Agreeableness Low Neuroticism
Grable and Joo (2004)	Low Neuroticism (self-esteem)
Haleblian et al. (2004)	Low Neuroticism (low anxiety) High Conscientiousness (high competence)
Hunter and Kemp (2004)	Openness to Experience Low Conscientiousness (impulsivity) Extraversion (sensation seeking)
Zuckerman and Kuhlman (2000)	Extraversion (sensation seeking)
Kowert and Hermann (1997)	Openness to Experience Low Conscientiousness Extraversion (excitement seeking) Agreeableness Low Neuroticism (low anxiety and self consciousness)
Harlow and Brown (1990)	Extraversion (sensation seeking and low Introversion)
Zuckerman, Kolin, Price, and Zoob (1964)	Extraversion (sensation seeking)
De Vries et al. (2009)	Openness to Experience Extraversion Low Conscientiousness Low Emotionality (Neuroticism)
Paulus et al. (2003)	Low Neuroticism
McGhee et al. (2012)	Low Conscientiousness High Extraversion High Open to Experience
Hampson et al. (2000)	Low Conscientiousness

In the discussion above, each of the studies includes a process that estimates the actual risk-taking behaviour of the individuals in their sample to compare with their personality assessment data. These risk-taking behaviour estimates can be made in different ways: self-report, observer ratings, behavioural observations or work performance ratings, none of which can be entirely objective. Firstly, it is important to appreciate that no common metric is available for the 'degree of risk' involved in any activity so, while the personality assessments all have a common element, the estimates of behavioural risk lack a similar consistency in calibration. Secondly, an important distinction has to be made between an individual's subjective experience of any risk and the way in which that 'degree of risk' might be rated by others, or by the same person in the same situation at a different time. There is clearly a cognitive aspect to risk behaviour which must be associated more with the discomfort associated with uncertainty than with the fears and anxieties associated with the emotional side of risk taking. Experience of, and exposure to, a particular risk situation changes the subjective appraisal of that risk. Knowledge, experience and familiarity reduce uncertainty and diminish the apprehension associated with that risk situation.

Overall, the research on the Five Factor Model and risk taking suggests that there is an association between personality and risk tolerance. Taken together these findings paint a picture of the typical personality profile of the 'risk tolerant' individual. The most consistent finding is that such individuals are likely to be high in confidence and will be less likely to worry about any potentially negative consequences of any venture, preferring instead to focus on the positives of a situation. As such they are likely to enter a risky situation with minimal anxiety (low Neuroticism). They are also likely to have little desire for conformity and control, preferring spontaneity and flexibility (low Conscientiousness). The risk tolerant

individual will tend to actively seek excitement and external sensation (high Extraversion), whether that is through recreational activities, in the social environment or through other means. Finally, a yearning for variety and adventurous activities (high Openness to Experience) also appears to be an important characteristic of the risk tolerant profile. The literature on the final factor within the FFM, Agreeableness, remains inconsistent. Although a few studies establish a significant relationship between the trait and risk tolerance, it has been suggested that this may relate more to the security of others than to personal exposure risk. It therefore remains to be seen whether this factor plays any direct role in risk behaviours.

Taken together, the links between personality and risk tolerance are clear. An individual's personality is likely to influence their perception of risk, their emotional reaction to risk and their willingness to seek and enjoy risk and ambiguity. We argue that these characteristics establish patterns of perceptual and emotional bias that have a consistent influence on decision-making and risk behaviour.

Genetic Influence on Risk Taking

Although not discounting the important role of the environment in the development of risk behaviour, there is little doubt that genes also play a defining role in its manifestation. Striking the required balance between risk and opportunity in critical decision-making situations is crucial to all species and would have proved essential to the survival of our early ancestors. No other influence will be as consistent or as persistent as DNA and this would also account for the reported heritability.

Twin studies have provided an effective research method in teasing out the interplay between genes and the environment. By comparing the behavioural characteristics of monozygotic (identical) twins, who have exactly the same set of genes, and dizygotic (non-identical) twins, who will share roughly 50% of their genes, we can estimate the proportion of variance in risk taking behaviour that can be attributed to genetic origins. Utilising this research method, Anokhin, Golosheykin, Grant, and Heath (2009) found individual differences in the propensity for risk taking to be significantly heritable. This finding is supported by Cesarini, Dawes, Johannesson, Lichtenstein, and Wallace (2009) who, in their twin study, estimated that genes accounted for as much as 20% of the behavioural variation in risk taking.

Other studies have aimed to pinpoint the exact gene, or combination of genes, that play a part in the development of risk tolerance. Kuhnen and Chiao (2009), for example, found that variants of two genes that regulate dopamine and serotonin neurotransmission (5-HTTLPR and DRD4) predict financial risk taking. Interestingly, these genes had previously been linked to emotional behaviour, anxiety and addiction. Zhong, Israel, Xue, Sham, Ebstein, and Chew (2009), on the other hand, have singled out the MAOA-L gene variant for its part in risk taking behaviour. This so-called 'warrior gene' is thought to make carriers eager to take risks while simultaneously enabling them to better assess their chances of success. However, in certain situations, it is thought that this gene may also be responsible for impulsive and aggressive behaviour.

Roe, Tilley, Gu, Beversdorf, Sadee, Haab, and Papp (2009) found that polymorphisms in the CHRNA4 gene were related to risk attitudes. CHRNA4 is a neural receptor that regulates the release of several neurotransmitters, such as dopamine and serotonin. Harm avoidance (which has been associated with extremely high introversion and neuroticism) is a risk attitude characterised by a tendency to worry and appear self- doubting, fearful and shy. It was found to be significantly related to two single nucleotide polymorphisms of this gene.

Whilst molecular genetics to this level of specificity is ground-breaking, the study of biological composites to personality is far from new. Some of our greatest early philosophers, Hippocrates and Galen, proposed a physiological basis to personality more than two millennia ago. Since then, various theories of personality have risen and fallen in

popularity, but many reflect the fundamental belief that our biology must somehow be related to the individual differences in our personality.

On the whole, the theoretical stance of the Risk Type Compass is not dependent on pinpointing the exact biological correlates of risk behaviour. This is simply because, as a psychometric tool, it is not attempting to explain why a person's behaviour may display a particular individuality, just that people do behave in certain characteristic ways and are therefore likely to continue to do so in the future. It is nevertheless important to recognise that the model reflects the interaction between nature and nurture and recognises that genes, nurture and the external environment will influence risk related behaviour, firstly in the shaping of personality, and secondly in terms of the situations, events, circumstances that 'frame' the act. The following section revisits this idea as it considers the important relationship between Risk Type, risk attitude and risk tolerance.

The Risk Type Compass

The Risk Type Compass is an online psychometric assessment that aims to capture the distinguishing ways in which we behave in risk-orientated situations. It does this by assigning individuals to one of eight distinctive Risk Types based on personality. The aim of the Risk Type Compass is to accurately reflect the individual's unique predisposition towards risk.

At its simplest, there are two reasons why people take risks. The first is concerned with levels of fearlessness and a lack of anxiety and the second concerns impulsivity, curiosity and thrill seeking. Combined with their opposite extremes, this creates the four poles of the Risk Type Compass. The fact that we will all register somewhere on each of these dimensions - with the possibility of being high on either, both, or neither - creates the possibility of eight different Risk Types. These are labelled Wary, Prudent, Deliberate, Composed, Adventurous, Carefree, Excitable and Intense. In addition to these eight Risk Types, the central Axial group identifies those whose scores on both underlying scales are close to the central point; the means between both extremes. This group will have a neutral and balanced risk perspective encompassing moderate elements of all the Risk Types.

The Risk Type Compass recognises that an individual's approach to risk is influenced by both their natural temperament and by their experiences, risk exposure and personal circumstances. This is reflected in the important distinction made by the Risk Type Compass between 'Risk Type' and 'Risk Attitude'. Risk Type is concerned with personality-based dispositions that remain relatively stable over a working life. Risk Attitudes, on the other hand, characterise the variations that arise from day-to-day events and experiences, such as economic instability, changes in personal circumstances, or personal accidents.

Part 1 of the Risk Type Compass questionnaire addresses Risk Type while Part 2 focuses on differences in Risk Attitude across five key risk domains: Health & Safety Risk, Recreational Risk, Financial Risk, Reputational Risk and Social Risk. These provide a snapshot of current variations in Risk Attitude. These two influences differ importantly in terms of their consistency over time and in the level of consciousness at which they operate. Risk Type is a direct derivative of personality and, as such, operates at a largely subconscious level. Its importance stems from the persistence and consistency of its influence. Risk Attitude reflects the sentient characteristics of our species; higher cognitive capabilities and freedom of thought. It is influenced by a kaleidoscopic combination of incidental, situational, and contextual influences encountered in day-to- day life and may therefore be very changeable.

Uses of the Risk Type Compass

The Risk Type Compass can be used to facilitate planning, research and discussion about risk awareness, risk tolerance, risk management and decision making. It provides a taxonomy and a vocabulary that facilitates navigation of the complexities of human factor

risk and identifies the potential benefits and challenges faced by different Risk Types in different roles and situations.

Personal Implications

The psychology of individual differences recognises that perception and awareness of risk differs from person to person. At their extremes, Risk Type perceptions generate very different personal views about risk and opportunity. This implies wide differences in interests, behaviours and opinions; differences of perspective that may at times cause irritation or conflict with others and interfere with effective and constructive communications. For this reason, Risk Type has implications for self-awareness and personal effectiveness. This is especially important for decision makers who have to resolve such differences of opinion about the appropriate balance between risk and opportunity.

Implications for Others

Individuals that are strong examples of different Risk Types may be quite incomprehensible to each other. This has an important bearing on working relationships, for teams, for managers and for organisations. The possibilities for misunderstanding and misinterpretation increase when distinctive individual differences in Risk Type are not appreciated or understood. Conversely, groups may be dysfunctional by virtue of extreme homogeneity and the absence of a balance across Risk Types. A team's effectiveness can therefore be enhanced by an appreciation of its Risk Type structure and recognition of the implications for group dynamics.

Risk Management

In the past, management of risk has focused heavily on procedures, regulation and legislation rather than on the risk taking nature of the individuals involved. The Risk Type Compass identifies critical individual differences that allow managers to maximise potential and to balance the contributions of both risk takers and more risk averse individuals, thereby minimising risk whilst maximising opportunity. To quote a frequently repeated truism attributed to the influential thinker, Peter Drucker: "If you can't measure it, you can't manage it". The Risk Type Compass can be used across industries and from the C-Suite to the shop floor. It has a particular relevance to teams where group dynamics, risk polarisation and the 'Risky Shift' phenomenon can create distortions that are a threat to controlled decision making. In survey mode, the Risk Type Compass captures the wider risk landscape and the contribution made by Risk Types to organisational culture.

Psychological Consultancy Ltd (PCL) has used the Risk Type Compass in a wide array of applications beyond these three broad categories; from coaching of city traders, senior police staff and high performance car drivers to work with operatives in aluminium manufacturing and heavy engineering, to applications in financial consulting, Health and Safety, risk management, project management, auditing, flight traffic controllers, and board development with both non-profit and commercial companies. The range of research and application develops continuously.

Risk Tolerance and Risk Attitude

A review of the literature suggests that issues about individual differences in risk tolerance have often been addressed through the concept of 'risk attitudes'. Since attitudes can clearly change, this approach exposes the variability in risk behaviour. As an example, the changeability in risk attitudes is demonstrated by the effectiveness of publicity campaigns designed to influence safety behaviour - notably concerning smoking, seat belts, disability and drink driving. Furthermore, attitudes to financial risk were transformed almost overnight following the dramatic financial events of 2008, where perceptions of borrowing and lending money changed radically.

In line with this viewpoint, it is widely believed that different situations may evoke different risk-taking behaviours in the same individual. For example, the correlation between recreational risk and financial risk may, intuitively at least, be expected to be low - we wouldn't necessarily assume that a mountaineer would also take extreme financial risks, for example. So, are individuals capable of different levels of risk tolerance in different risk domains?

This was certainly the prediction of Jackson, Hourany, and Vidmar (1972) who proposed four domains of risk tolerance: financial, physical, social and ethical. Each individual is expected to show a unique profile of risk tolerance within each of these domains, with some showing greater variability in their risk attitude across domains than others. Weber, Blais, and Betz (2002) and Blais and Weber (2006) similarly argue that risk taking is highly domain specific and not consistent across situations. These authors propose five main risk-taking domains, swapping Jackson et al.'s (1972) physical risk domain for a recreational risk domain and adding a fifth for health & safety. Weber et al. (2002) argue that these five domains represent a comprehensive and complete picture of risk-taking situations. In a more recent study Nicholson et al. (2005) argued for a six domain model which he believed to be a more accurate representation of the types of risk encountered on a daily basis: recreation, health, career, finance, safety and social risk taking. This involved dropping the ethical domain, adding a career domain and the splitting of health & safety. A number of studies have researched the validity of this domain approach to risk taking. For example, Hanoch, Johnson, and Wilke (2006) reported that individuals with high risk tolerance scores in one domain area (e.g. recreational risk) would, at the same time, report being risk averse in other areas (e.g. financial risk).

This picture of behavioural variability is certainly accurate but focusing a psychometric assessment entirely on Risk Attitudes rather than something more stable limits its utility. The shelf life of any assessment based in this approach must be limited. The Risk Type Compass, therefore, addresses both the more stable elements of risk behaviour, Risk Type, as well as the more transient aspects of Risk Attitude. When interpreting the Risk Type Compass it is therefore important to recognise that risk attitude is influenced by events, situations and circumstances as well as by personality. Personality is, both by definition and evidenced by research, relatively stable. Attitudes, in so far as that the concept is clearly defined, may be less systematic or predictable.

Risk Type, Risk Attitude and Risk Intelligence

To summarise, the Risk Type model establishes a clear position in the debate concerning the variability of risk behaviour across risk domains and the stability of personality. The Risk Type assessment reconciles these two observations by differentiating between Risk Type and Risk Attitude. Risk Type is stable and has a consistent and persistent influence on behaviour. It reflects personality characteristics that we believe to be underpinned by genetic endowment and to become firmly established during infancy and the dispositions associated with them. It will exert a continuous and pervasive influence on perceptions, emotions and inclinations. The Risk Attitude measure offers an all-embracing picture of the individual's current disposition so far as both attitudes and temperament are concerned. It incorporates Risk Type, but is compounded by the consequence of experience, training, exposure and the impact of an infinite variety of serendipitous and unsystematic influences. Attitudes are transient and Risk Attitude assessments can only provide a snapshot of the current balance in risk sensitivity across key risk domains.

A third related concept, Risk Intelligence (Evans, 2012), makes a useful contribution to this discussion. The latest edition of Evan's book (2012) is subtitled, "How To Live With Uncertainty", providing an indication of his approach. Risk Intelligence reflects the cognitive evaluation of risk, the extent to which training and experience can moderate risk perception. Risk perceptions are notoriously subjective. We may consider travelling by car as safer than flying although, statistically, this is not the case. Whether or not the statistical fact that car journeys are nearly 400 times more dangerous than plane journeys induces more rational

behaviour might be considered a matter of Risk Intelligence. Risk Intelligence is about ensuring that decisions are properly informed or estimated reasonably and as objectively as possible; it has been proffered as an effective development strategy for decision makers. It is an attempt to stabilise some of the variables that would be included in the discussion above as contributing to Risk Attitudes. Risk Intelligence is not a part of the Risk Type model but it is fully compatible with it. Issues about the influence of training, experience and exposure are addressed by both approaches. Within Risk Type, these are seen as influences on the subjective evaluation of risk and, as such, they explain differences in behaviour without having any impact on Risk Type. The anxious person who becomes a happy flyer hasn't become braver across the board; their appraisal of risk has simply become better informed, either through experience or through learning the facts.

The crucial distinction concerns the persistence and pervasiveness of Risk Type versus the variability of Risk Attitude and the ease with which it may be influenced. Both are important in understanding current behaviour.

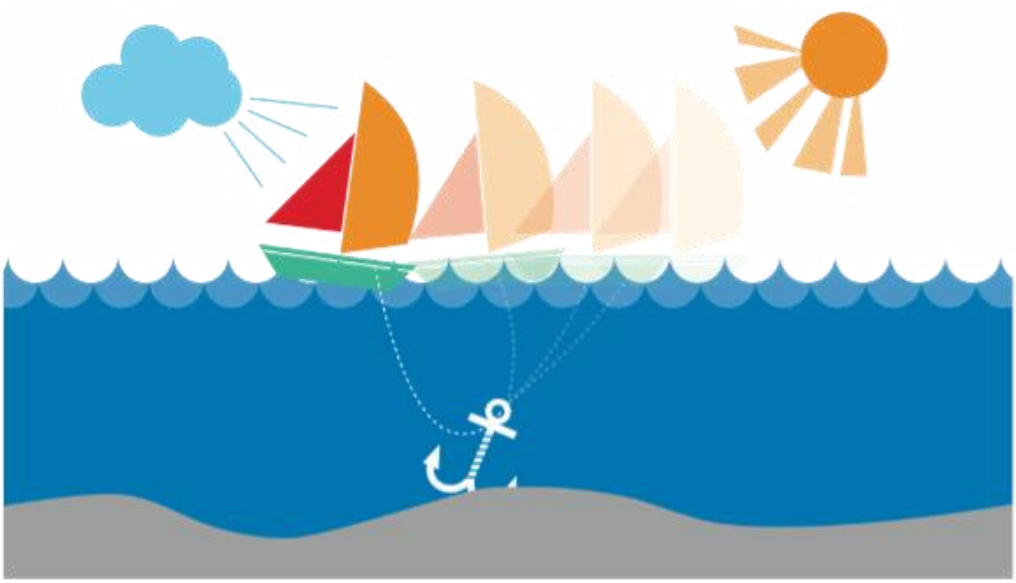


Figure 2.1. *Pictorial representation of the relationship between Risk Attitude and Risk Type*

Figure 2.1. illustrates the relationship between behaviour and personality. The boat may be observed in many different 'attitudes' influenced by transient events: the choppy waves, the winds and the rise and fall of the tides. But it is also limited and restrained by the anchor. Observing the boat from the shore, the position of the anchor will not immediately be clear, however, it will become apparent over time. Similarly, when it comes to taking risks, we are influenced by circumstances and events and experience allows us to recalibrate risk in the light of knowledge and exposure. But we are by nature, endowed with personality dispositions that determine how impulsive, curious, excitement seeking or fearful we naturally are. The evidence regarding these characteristics is that they remain pretty stable throughout adult life and this 'anchors' our disposition to risk.

Chapter 3 – What the Risk Type Compass Measures

Three measures are provided by the Risk Type Compass. The first and most important is Risk Type, a personality-based measure of an individual's fundamental disposition towards risk. As a complement to this, and in recognition that risk behaviour varies and can be modified by experience, circumstances, situations and other influences, a second measure, Risk Attitude, provides an estimate of the respondent's variability of Risk Attitude across different risk domains. The third measure, the Risk Tolerance Index (RTi), is an estimate of the individual's overall Risk Tolerance.

Personality Scales

The Risk Type Compass measures eighteen different risk-related personality subthemes. These feed into the two conceptually orthogonal bi-polar scales that underpin and provide the basic structure of the Risk Type Compass matrix and the eight Risk Types. These themes define the explicit content of the Risk Type Compass questionnaire, but interpretation of results also relies on the wealth of personality research that allows further inferences to be drawn from a profile.

Two Bi-polar Scales

1) The Emotion scale is concerned with the emotional elements associated with risk taking, plotting an individual's tendency to be emotional, apprehensive, and anxious at one end of the scale, or calm, confident and resilient at the other.

2) The Cognition scale is concerned with caution, preparedness and need for certainty; the extent to which an individual needs the reassurance of familiarity, clarity, and established guidelines. The other end of the scale identifies those who are impulsive, flexible and happy to work with ambiguity.

Emotion Scale Subthemes

The Emotion scale is made up of ten subthemes. These themes all have a strong relationship with the scale and may be very close to each other in terms of descriptive semantics.

Resilient: Optimistic, tenacious, not easily discouraged, takes feedback positively.

Sample item – 'Nothing really throws me off balance.'

Equable: Steady, level-headed, consistent and predictable in their mood.

Sample item – 'I experience very few emotional highs and lows.'

Confident: Self-assured, poised and projects an image of competence and positivity.

Sample item – 'I think highly of myself.'

Forgiving: Doesn't harbour resentment, gets over incidents and moves on quickly.

Sample item – 'I don't hold grudges.'

Eager: Irritated by delays or interruptions that impede progress.

Sample item – 'I would rather take my time and get a good result.'

Apprehensive: Tends to worry about things and to dwell on past misfortunes.

Sample item – 'I spend time thinking about past mistakes.'

Sensitive: Emotionally reactive and influenced by the emotions of others.

Sample item – 'I am easily influenced by my emotions.'

Intuitive: Inclined to make decisions based on feelings and intuition.

Sample item – 'I base my goals in life on inspiration, rather than logic.'

Optimistic: Displays an upbeat and positive mindset, turning problems into opportunities.

Sample item – 'Things usually work out alright in the end.'

Astute: Doubtful of others and wary about their motives and intentions.

Sample item – 'I believe that others have good intentions.'

Cognition Scale Descriptions

The cognition scale is comprised of eight subthemes. These themes all have a strong relationship with the scale and may be very close to each other in terms of descriptive semantics.

Focused: Purposeful, goal-driven and not easily deterred from objectives.

Sample item – 'I am not easily distracted from my objectives.'

Methodical: Plans ahead carefully adopting an organised and systematic approach.

Sample item – 'I always prepare things carefully.'

Perfectionistic: Meticulous, detailed, has exceptionally high standards.

Sample item – 'I like things to be 'just right'.

Audacious: Welcomes change, actively seeks variety and new ventures.

Sample item – 'I am attracted by novelty and the unconventional.'

Conforming: Abides by rules, respects superiors and the status quo.

Sample item – 'I am always careful to stick to the rules.'

Explorative: Curious, seeks novelty and enjoys experience for its own sake.

Sample item – 'I am willing to try anything once.'

Hasty: Pushes the limits, tries things on impulse, not always thinking them through.

Sample item – 'I have sometimes taken extreme risks.'

Spontaneous: Quick-witted, instinctive and makes decisions 'on the fly'.

Sample item – 'I am quick thinking.'

Forthright: Provocative, uninhibited welcomes strong debate

Sample item – 'Conflict can be productive.'

Tractable: Considerate of alternative viewpoints, accommodates other opinions, seeks consensus.

Sample item – 'I am not afraid to challenge established ideas.'

Risk Types

Each end of the conceptually orthogonal bi-polar scales of the Risk Type Compass is associated with a different 'Risk Type'. The four Pure Risk Types are: Intense, Prudent, Carefree and Composed. Between each of these falls a Complex Risk Type, which adopts aspects from each of its neighbouring Pure Risk Types. Together there are eight Risk Types which form a continuous spectrum round the Risk Type Compass (see Figure 3.1 below). Every Risk Type has similarities with its neighbouring Risk Type and has characteristics that are opposite to their facing Risk Types.

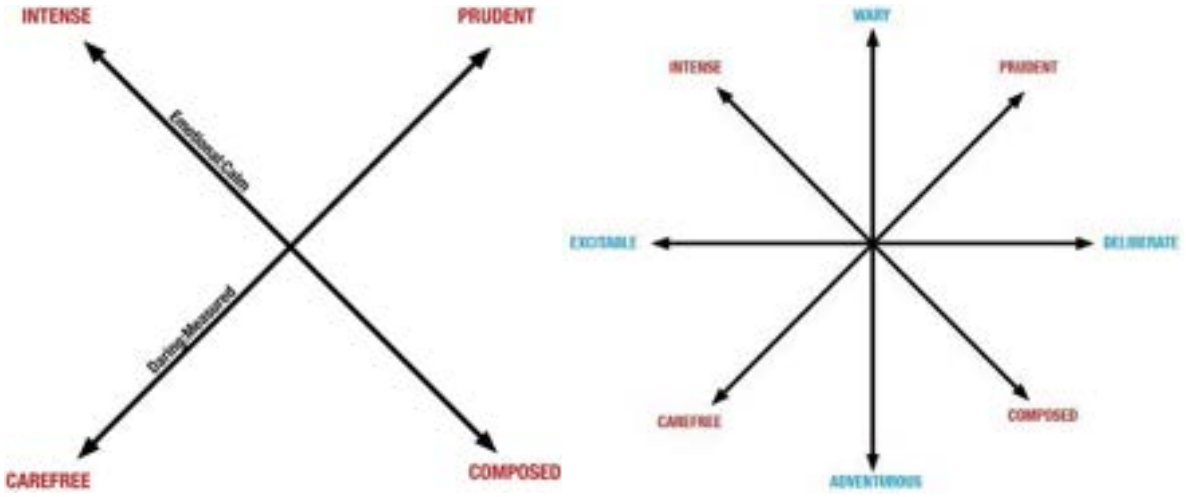


Figure 3.1. *Four Pure Risk Types are derived from the two conceptually orthogonal bi- polar personality scales, Emotional and Cognition (left). The four complex Risk Types are created through their interaction when scores on adjacent Pure Risk Types are both high (right).*

All the Risk Type descriptions are drawn from the item content of the questionnaire. In other words, they reflect what the person completing the questionnaire has said about themselves. More interestingly, inferences are also drawn from the extensive literature and research into personality. The total of the item responses can be interpreted by the extent to which they match known and understood response patterns. Each personality construct or scale is associated with particular behaviours and a particular vocabulary that, to those familiar with such patterns, allows them to discern patterns that are likely to be relevant. Finally, understanding about the meaning of any personality scale becomes increasingly informed by studies that compare it with similar or related scales from other personality assessments.

All personality assessments are estimates rather than hard facts. They estimate the likelihood that a person may be accurately described in a certain way. The more recent instruments do this extremely well, but their findings are still hypothetical rather than certain. They warrant careful consideration, even when the person assessed may not agree with them. We all tend to foster somewhat distorted self-images, whether that is because they are sanitised and self-deluding or because they are overly self-critical and unnecessarily disparaging.

Personalities seem to be built on genetic foundations and shaped, especially during early infancy, by the style and emotional quality of nurturing that the individual is exposed to. Later influences, unless truly traumatic, tend to make less impact. By early adulthood, when the brain reaches full maturity and the ongoing instinctive influences of development have run their course, personality becomes stable through to the influences of aging in the later years. Personality assessments have to be viewed in this light. The roots are always there and always influential. These deeply rooted characteristics define our temperament and might be referred to as 'constitutional'. This, in our opinion, is particularly likely to be the case where

risk-taking characteristics are concerned because of their fundamental importance to species survival - whether in their protective and risk avoidant aspects or their daring and adventurous aspects.

Risk Type descriptions are cameos that reflect the core inferences that might apply in each case. Since Risk Type strengths will vary considerably between people of the same Risk Type, they will apply more to some than to others. Also, because there is a continuous spectrum of Risk Type characteristics, they necessarily blur at the edges.

The eight Risk Types are described below.

The Eight Risk Types

Excitable 

At the root of this Risk Type is impulsivity and an attraction to risk combined with distress and regret if things go wrong. This Type tend to be passionate and vary in their moods between excited enthusiasm and pessimistic negativity. Such people are both frightened and excited by their impulsiveness and are likely to respond emotionally to events and react strongly to disappointment or the unexpected. Depending on the mood of the moment, they may enjoy the spontaneity of making unplanned decisions. Not being planful or well organised, there is a danger that such people may not take the trouble to check things out in their enthusiasm to embrace a new undertaking.

(*Opposite Type: Deliberate*)

Intense 

At the root of this Risk Type is anxiety and worry about risk; people who expect the worst. This Type is characterised by anxiety, strength of feeling and a tendency to become very involved at a personal level in things. Such people are highly-strung and alert to any risk or threat to their wellbeing. They invest a lot emotionally in their decisions and commitments and take it personally when things don't work out. Such people can therefore be very passionate about things, but their mood can vary dramatically, and today's enthusiastic endorsement can turn into tomorrow's critical rejection.

(*Opposite Type: Composed*)

Wary 

Characterised by a combination of self-discipline and concern about risk, these are cautious, organised people who put security at the top of their agenda. They are likely to be alert to the risk aspect of any investment opportunity before evaluating any potential benefits. Ideally, such people like to know precisely what they can expect. This quest for certainty may make it difficult to make decisions. At the extreme they will be strongly attracted to the idea of securing their future but anxious that, however well it has worked for others, something may go wrong in their case.

(*Opposite Type: Adventurous*)

Prudent 

At the root of this Risk Type is a high level of self-control and detailed planning. This type is organised, systematic, and conforming. Conservative and conventional in their approach, such people prefer continuity to variety and are most comfortable operating within established and familiar procedures. They like change to be gradual and evolutionary rather than radical. Generally, very cautious and suspicious of any new ventures, they may find reassurance in sticking with what they know.

(*Opposite Type: Carefree*)

Deliberate 

At the root of this Risk Type are high levels of calm self-confidence combined with caution. This Type tends to be unusually calm. In situations that would worry most people, they experience little anxiety and may seem almost too accepting of risk and uncertainty. However, any concerns about them being unaware of risk should be balanced by a desire to do things in a planned and systematic way. Because they are highly organised, compliant and like to be fully informed about what is going on, they are unlikely to walk into anything unprepared.

(*Opposite Type: Excitable*)

Composed 

At the root of this Risk Type is a high level of composure and self-confidence. This Type is cool headed, calm and unemotional, but at the extreme may seem almost oblivious to risk. Their outlook will always be optimistic and untroubled. These people take everything in their stride, seem quite imperturbable and appear to manage stress very well. They are not particularly impulsive, but neither are they very organised or systematic.

(*Opposite Type: Intense*)

Adventurous 

At the root of this Risk Type is a combination of impulsiveness and fearlessness. Extreme examples of this Type are people who combine a deeply constitutional calmness with impulsiveness and a disregard for custom, tradition or convention. They are imperturbable and seemingly oblivious to risk. Their decision making is likely to be influenced by both their lack of anxiety and their impulsiveness.

(*Opposite Type: Wary*)

Carefree 

At the root of this Risk Type are high levels of impulsiveness and unconventionality. These individuals dislike repetitive routine and don't really like being told what to do. Such people may seem excitement seeking and, in extreme cases, reckless. Not being good at detail or careful preparation, they may seem rather vague about their intentions and objectives. Their impatience, impulsivity and distractibility might leave them exposed to imprudent and hasty decisions.

(*Opposite Type: Prudent*)

Axial Group

Individuals who show none of the extremes that characterise other Risk Types are classified as being in the Axial Group. Members of this group are not particularly impulsive, anxious or emotional nor are they especially calm, self-assured or organised. Any pronounced risk-taking behaviours will likely be due to attitudes developed from specific experiences. Therefore, however distinctive these individuals may be in other ways, so far as the Risk Type Compass and the deep-seated aspects of personality that have a bearing on risk-taking are concerned, they are on the whole relatively unexceptional. Figure 3.2 displays each of the Risk Types within the Risk Type Compass graphic.

Figure 3.2. *The Risk Type Compass graphic indicating the positioning of the eight Risk Types across the compass*

The Risk Type Spectrum

An individual's Risk Type Compass score is indicated by a marker (•) on the Risk Type Compass graphic contained in the Risk Type Compass report (see Figure 3.2). The nearer the marker is to the outside edge of the compass, the more closely a person is likely to relate to that Type description. This is referred to as 'Risk Strength', which ranges from 0 (i.e. Axial) to 5. Since the Risk Type Compass is a continuous spectrum, scores can also vary in terms of their closeness to the Type boundaries, so that individuals with markers close to a neighbouring Type may also relate to some of the characteristics associated with it. Another important point to make is that there is less deviation between the adjacent Types, the closer the score is to the centre of the compass, the scores become less extreme, and the individual's characteristics become more in line with the central Axial group. This detailed, finely incremented model offers high levels of differentiation with the advantage of an easily communicated Type structure. This design promotes understanding of the influence that an individual's personality has on the way they deal with risk in everyday life.

Risk Strength

The model's ability to differentiate in terms of Risk Strength as well as Risk Type was displayed in an analysis conducted upon a sample group of 3,517 participants. The sample excluded 'Axial' individuals, who score a Risk Strength of '0' by definition. An illustration of the Risk Strength distribution across each of the eight Risk Types is displayed in Figure 3.3 below.

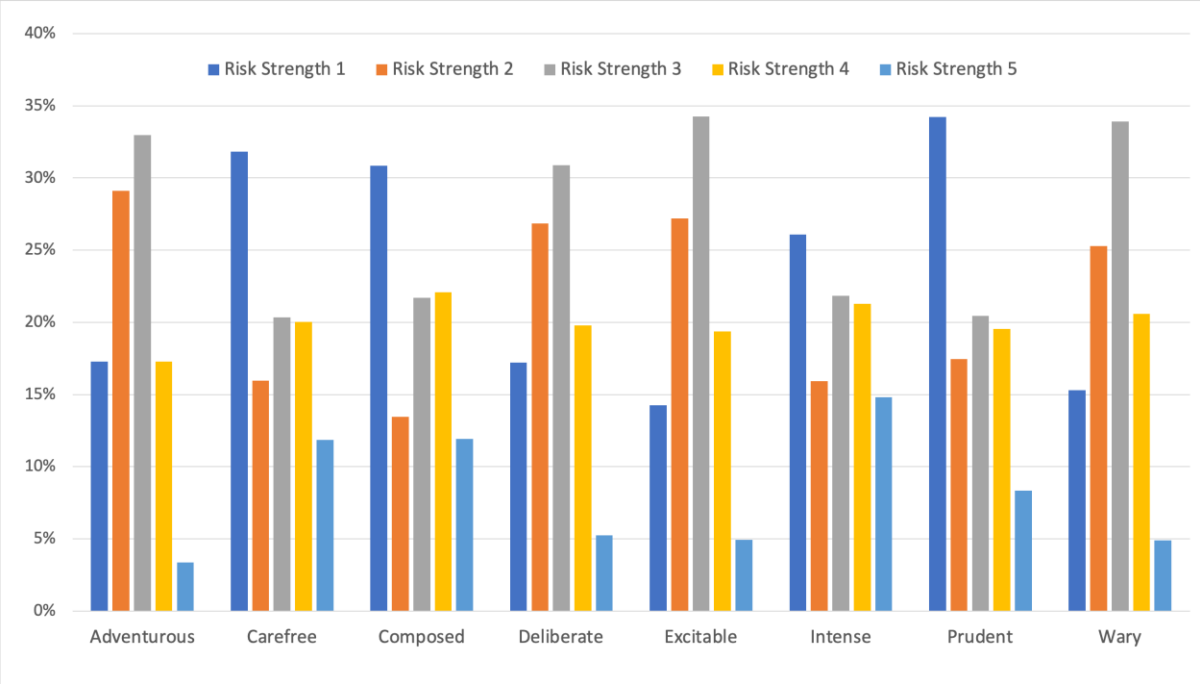


Figure 3.3. *The distribution of Type Strength for each of the eight Risk Types (n = 19,091)*

Identifying an individual's Risk Strength is a notable feature of the Risk Type Compass, as higher scorers are more likely to strongly reflect the characteristics outlined in their Risk Type description.

Risk Attitude

Research suggests that individuals have different attitudes to risk across different domains (Blais & Weber, 2006; Jackson, Hourany, & Vidmar, 1972; Weber, Blais & Betz, 2002); an individual may be more comfortable with talking in front of a room full of strangers (social risk) than they are with betting money on the horse races (financial risk). Preference for taking risk in any particular domain may be influenced by a wide range of situational and experiential factors. Whatever the initial perceptions are of the risk involved in learning to swim, ride a bike, or for a toddler in learning to walk, experience and familiarity will change those perceptions and attitudes. Differences in the amount of support and reassurance required, the size of incremental steps towards mastery that can be managed, the time it takes and the levels of expertise and enjoyment that will ultimately be achieved are all likely to reflect the constitutional influences of Risk Type.

We argue that, in effect, Risk Attitude reflects the recalibration or re-evaluation of risk. As uncertainty is replaced by knowledge and as experience identifies ways in which a risk can effectively be navigated, attitudes change. However, these changes are likely to be domain specific. A prudent and anxious person who has developed a successful career in the financial sector may seem more adventurous in their investments because of the knowledge and confidence they have built up over a number of years. Whether or not that confidence would be immediately transferable to horse riding or sky diving is another question. The

inference from a body of personality research strongly suggests it would not, but this is an empirical question and capable of an empirical answer.

What matters is the degree of anxiety, concern and emotional distress that may potentially be involved in any risk-taking challenge. Training may achieve a superficial change in attitude in a desired direction but, whilst one such person may shrug off a new challenge or set-back, another may despair, lose their nerve, become functionally impaired or even suicidal when confronted with an expectation that takes them a step too far, or when things go wrong. Such derailing behaviours are likely to reflect constitutional aspects of personality. Attitude is still important because it is reflected in current self-reporting and behaviour and because people feel sure that their attitude to different kinds of risk does vary. This expectation has to be dealt with if they are to appreciate the deeper significance of Risk Type.

To account for variability of this nature, the second part of the Risk Type Compass explores differences in current Risk Attitude across five key domains: Recreational risk, Financial risk, Reputational risk, Health & Safety risk and Social risk. Any variation of attitude across risk domains is attributed to experience, exposure, knowledge, recent events, circumstances and a wide range of other unsystematic influences. The purpose of this exercise is to quantify the variability of their risk attitudes.

A sample risk attitude item is presented in Figure 3.4. Each item includes three risk related statements, each referencing a different risk domain. For illustrative purposes, the domains have been displayed next to the described behaviours. Respondents are asked to indicate the activities they would be 'most likely' to engage in and which they would be 'least likely' to engage in, leaving the third option blank.

Domain	Risk Behaviour	Most Likely	Least Likely
Recreational	Support mandatory protective clothing in all sports		
Social	Openly disagree with the tastes of a friend		
Financial	Be alert to new money making opportunities		

Figure 3.4. *Sample item from the Risk Attitudes section of the Risk Type Compass Questionnaire*

The Risk Type Compass reports display Risk Attitude in a pie-chart graphic (see Figure 3.5). The larger the section of the 'pie', the greater appetite for risk the individual will have in this area.

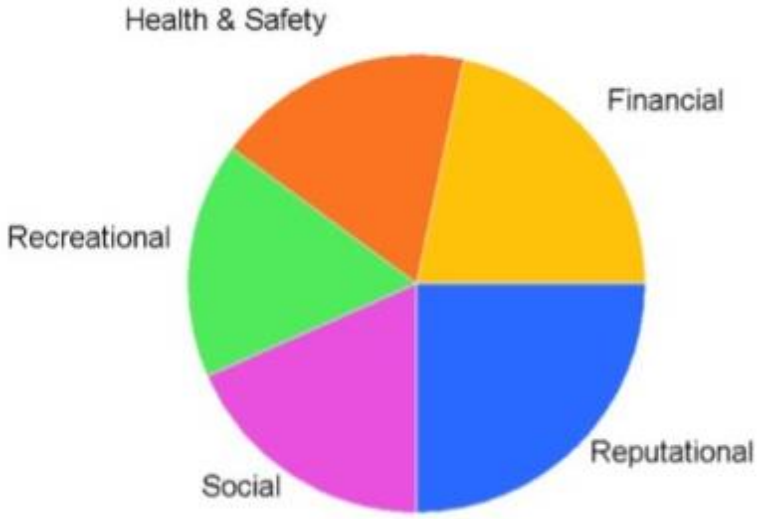


Figure 3.5. *The Risk Attitudes Graphic from the Risk Type Compass Report*

Risk Attitude Domain Definitions

The assessment of risk attitude within the Risk Type Compass is a 'within person' assessment concerned with intra-individual differences, not differences between people; it is ipsative rather than normative. The segment size in the pie chart does not represent an absolute level of risk. Rather, they represent that particular individual's relative preference for risk taking in each domain. The five Risk Attitude domains – Recreational, Financial, Health & Safety, Social and Reputational – are outlined in more detail below. The domains described briefly here could have included a very wide range of risk features. Recreational risk, for example, might range from the security of reading a book at home to the dangers of white-water rafting. But, in this part of the assessment, we are only concerned with the variability of Risk Attitudes across different domains. Appetite for risk is addressed by Risk Type; the risk domains within which that appetite is most likely to be satisfied is determined by Risk Attitude.

Recreational

Attitudes to risk within the Recreational domain are concerned with the possibility of physical danger and its influence on decisions about which sports or recreational activities one engages in. Aversion to this type of risk suggests an anxiety about the potential for physical damage in any activity. A preference for this domain suggests that one may accept an element of physical danger as exciting and be more comfortable with the 'rough and tumble' of some physical activities.

Financial

Attitudes to risk within the Finance domain concern one's willingness to take chances in one's financial affairs. Aversion to this type of risk suggests financial prudence and a preference for security and predictability. Such people will be cautious and seek to secure their future and to protect their capital. A preference for this domain suggests lower anxiety about financial issues than about other types of risk.

Health and Safety

Attitudes to risk within the Health and Safety domain concern being alert to common dangers and matters that may impact one's current or future health, whether at work, at home or in other everyday situations. Aversion to this type of risk suggests a concern about Health and Safety regulations and compliance in following recommended procedures. A

preference for this domain suggests a lower awareness of everyday dangers or a relatively casual attitude to personal Health and Safety issues.

Social

Attitudes to risk within the Social domain concern the risk of embarrassing oneself or others and risking disapproval, unpopularity or loss of reputation. Aversion to this type of risk suggests a concern about how one comes across to others, being cautious about what one says and how one behaves. A preference for this domain suggests being relatively relaxed about the impression one makes in social situations, being likely to speak one's mind and being less anxious about other people's opinions.

Reputational

Attitudes to risk within the Reputational domain concern morality and a readiness to live life according to accepted principles and codes of behaviour. Aversion to this type of risk suggests a concern about what is right and wrong and not allowing oneself leeway on matters of principle. Such people will be anxious to do the right thing in any situation rather than seek personal advantage by bending the rules. A preference for this domain suggests being relatively expedient and viewing issues in terms of shades of grey rather than black and white. Decisions and behaviour may reflect one's evaluation of a situation rather than one's principles.

Risk Tolerance

The Risk Tolerance index draws from both Emotion and Cognition scales to provide an overall psychometric measure of Risk Tolerance (see Figure 3.6). The index therefore combines both Emotion and Cognition and may be represented on the Risk Type Compass® graphic as an incremented vertical line extending from top to bottom (the two scales being collapsed to the vertical – combining High Emotion with High Prudence). High Risk Tolerance scores are closest to the bottom of the compass, High Risk Aversion is close to the top of the compass.

Low Risk Tolerance scores are associated with a strong resistance to risk taking and very careful preparation of procedures when significant levels of risk-taking have to be accommodated.

High Risk Tolerance scores focus more on the opportunities in any situation rather than the potential risk. High scores are also associated with higher levels of resilience when faced with risk and uncertainty.

Risk Stability

This graphic conveys how far any individual's RTC placement falls along the horizontal line superimposed on the compass from centre left to centre right – between the Excitable Risk Type and Deliberate Risk Type segments (see Figure 3.6). This index also draws from the combination of Emotion and Cognition Scales (the two scales being collapsed to the horizontal – combining High Emotion with Low Prudence).

Low Risk Stability scores reflect variability and changeability in decision making. This reflects the extent to which participants are variable and volatile; curious, imaginative, open to new ideas and who also feel passionate about things; are animated, enthusiastic, and expressive; in general, behaviours based on high levels of Excitable Risk Type characteristics and low levels of Composed Risk Type characteristics. Low scores appear on the left side of the scale.

High Risk Stability scores reflect consistency and stability in decision making, indicating stable and predictable behaviours based on high levels of Prudent Risk Type characteristics and high levels of Composed Risk Type characteristics. This reflects the extent to which a

participant is calm and imperturbable. Such individuals are conservative, systematic, organised and work hard to eliminate uncertainty. Scores in the high range suggest increasing consistency and predictability of decision-making. High scores will appear on the right side of the scale.

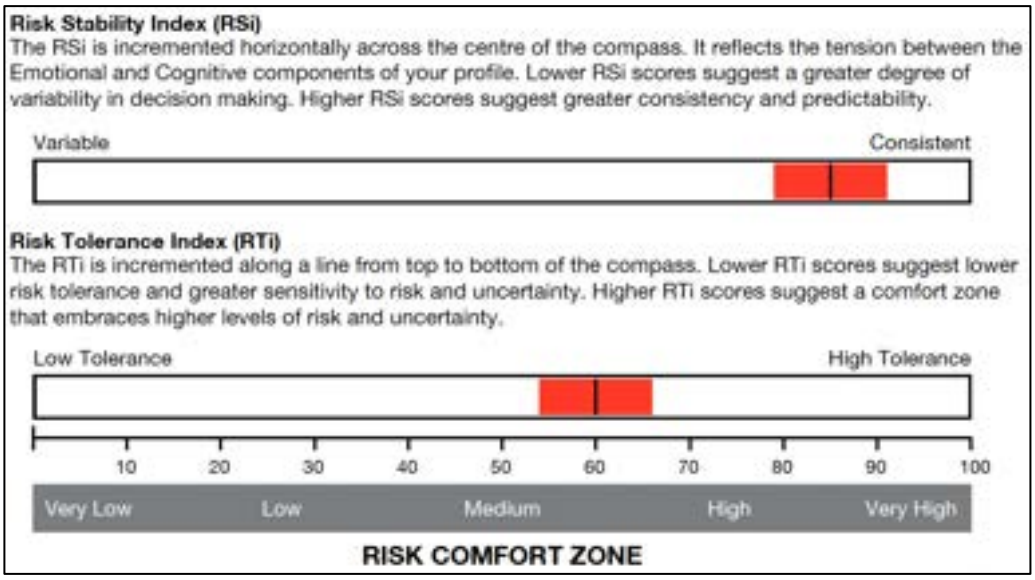


Figure 3.6. *The Risk Tolerance Index graphic from the Risk Type Compass report*

Some practitioners and researchers have a requirement for a single metric that gives a specific indication of an individual's risk tolerance and risk stability relative to others. Rather than generate such metrics as a further derivative of the process required to convey risk disposition within the designed space of the Risk Type Compass, by going back a step we calculate an additional risk tolerance and risk stability index directly from scores on the two scales of the Risk Type Compass. Using the conventional standard score calibration techniques, RTi and RSi scores are derived from the combined scores achieved on each of the Risk Type Compass scales. Using the 'active' mid score range of the T score scale, the range within which 99% of scores are likely to fall, we construct the 1 to 100 scales in Figure 3.6 with the same measurement properties.

The Validity Scale

There are ten items within the Risk Type Compass that assess the validity, or consistency, of a person's responses. The scale is made up of items that the majority of people will answer in the same way, agreeing with the positive items and disagreeing with the negative items. If a respondent starts to drop points on this scale it is indicative that they are not adequately paying attention to the items. Example items within the validity scale include 'most people have some positive qualities' and 'I like to do things well'.

The validity scale ranges from 0-50 and scores that are equal to, or greater than, 24 are deemed acceptable. Anybody who scores below 24 on the validity scale is flagged up as having an invalid profile. All of the Risk Type Compass reports include a validity statement that indicates whether the profile is valid and interpretable or invalid. If the profile is invalid this would suggest careless or inattentive responding. Depending on the situation, the respondent may be asked to complete the assessment again, or the reasoning behind the respondent's carelessness may be explored as part of a feedback discussion.

Summary

The Risk Type Compass report provides the participant with:

1. Their Risk Type

2. Their risk strength
3. Their position within the full 360° spectrum of Risk Types
4. The potentially positive and negative implications of their Risk Type
5. The questionnaire themes attracting emphatic responses
6. The variability of their risk attitude across different domains
7. Their overall risk tolerance and risk stability

These different reference points are to be considered by the individual assessed in the light of their experience and their current self-perceptions. The assessment provides a number of systematic data points and inferences and an objective view positioning the person assessed in relation to others. This is likely to compliment current assumptions based on daily life and experience, but it may also challenge those more subjective perceptions.

The benefits of the assessment process comes from harmonising these two potentially very different perspectives; the personal and the psychometric. Both emanate in their different ways from the candidate. The report offers the opportunity for them to subject their present view of themselves to a rigorous auditing process in the expectation that they may make some useful revisions. This may not be an immediate result, as it is very difficult to assimilate such information instantly, but it will raise useful questions, challenge assumptions and plant new ideas, even if it takes time to achieve a resolution.

Chapter 4 – Descriptive Statistics

This chapter looks at the statistical properties of each of the four personality factors (Calm, Emotional, Daring and Measured), and the two underlying, and conceptually orthogonal, scales (Emotion and Cognition) that make up the Risk Type Compass. The final section gives a breakdown of the current Risk Type Compass norm group.

Risk Personality Factors and Scales

Table 4.1 shows the average score of each of the four personality factors and the score distribution around the mean. These statistics are based on a sample of 21,113 working individuals from a broad range of working, ethnic and demographic backgrounds.

Table 4.1 also displays descriptive statistics for the underlying axis scales of the Risk Type Compass. The Emotion scale is derived from the combination of the themes for the personality factor Calm with those from Emotional. It describes people who are, at one end of the scale, particularly fearless, optimistic and calm and at the other end of the scale nervous, apprehensive and pessimistic. The Cognition scale was similarly derived by combining Measured with Daring. It places individuals along a continuum from carefree, impulsive and disorganised to prudent, planful and compliant. The Emotion and Cognition scales have a raw score that ranges from 0-200, although the Cognition scale formerly encompassed eight subthemes, resulting in a maximum raw score of 160.

Prominent personality psychology researchers (e.g. Cattell, 1978) point out that, as with many natural phenomena, personality traits will fall broadly along a normal distribution. For each personality trait, we would therefore expect fewer individuals to fall at either extreme and the majority to fall somewhere in between, with the highest proportion possessing - what is by its very definition - 'average' amounts of the trait. This has been the case for the personality factors that make up the FFM (e.g. Cobb-Clark & Schurer, 2012). The concept that personality characteristics are normally distributed is a pivotal part to the theory of norm-referenced psychometric assessments, i.e. those that compare individuals' scores to a sample of a larger population, such as with the Risk Type Compass. Consequently, we would expect the four personality factors, and two underlying scales, of the Risk Type Compass to be normally distributed.

To test the hypothesis that the Risk Type Compass personality factors and scales are normally distributed, scatterplots with skew statistics were produced. When dealing with large sample sizes, the established rule of thumb is that a skew or kurtosis above 2 would indicate that the data are not normally distributed. As we can see in Table 4.1, this is not the case. This is further confirmed visually by the scatterplots (see Figures 4.1 to 4.6) which can be seen to show an approximately symmetrical bell-shaped curve. These provide evidence that there is no significant skew or kurtosis in the Emotion and Cognition scales nor in their composite personality factors (Calm, Emotional, Measured and Daring).

Table 4.1. *Mean, Standard Deviation, Skew and Kurtosis statistics for the Calm, Emotional, Measured and Daring personality factors and the Emotion and Cognitive scales (n=21,113; *n=3,517)*

Personality Factors	Mean	Std. Dev.	Skew	Kurtosis
Emotional	47.43	8.48	0.08	0.39
Calm	61.23	12.16	-0.41	0.21
Daring (4 Subthemes)	50.71	10.25	-0.15	-0.04
Daring (5 Subthemes)	59.92	12.09	-0.10	0.00
Measured (4 Subthemes)	49.19	9.90	-0.30	0.11
Measured (5 Subthemes)	58.09	11.37	-0.30	-0.01
Personality Scales	**Mean**	**Std. Dev.**	**Skew**	**Kurtosis**
Emotion	117.44	19.95	-0.34	0.23
Cognition (8 Subthemes)	78.47	15.92	-0.16	0.18
Cognition (10 Subthemes)	98.17	19.50	-0.15	0.02

Visual representations of these Factor and Scale distributions are presented in Figures 4.1 to 4.6 below.

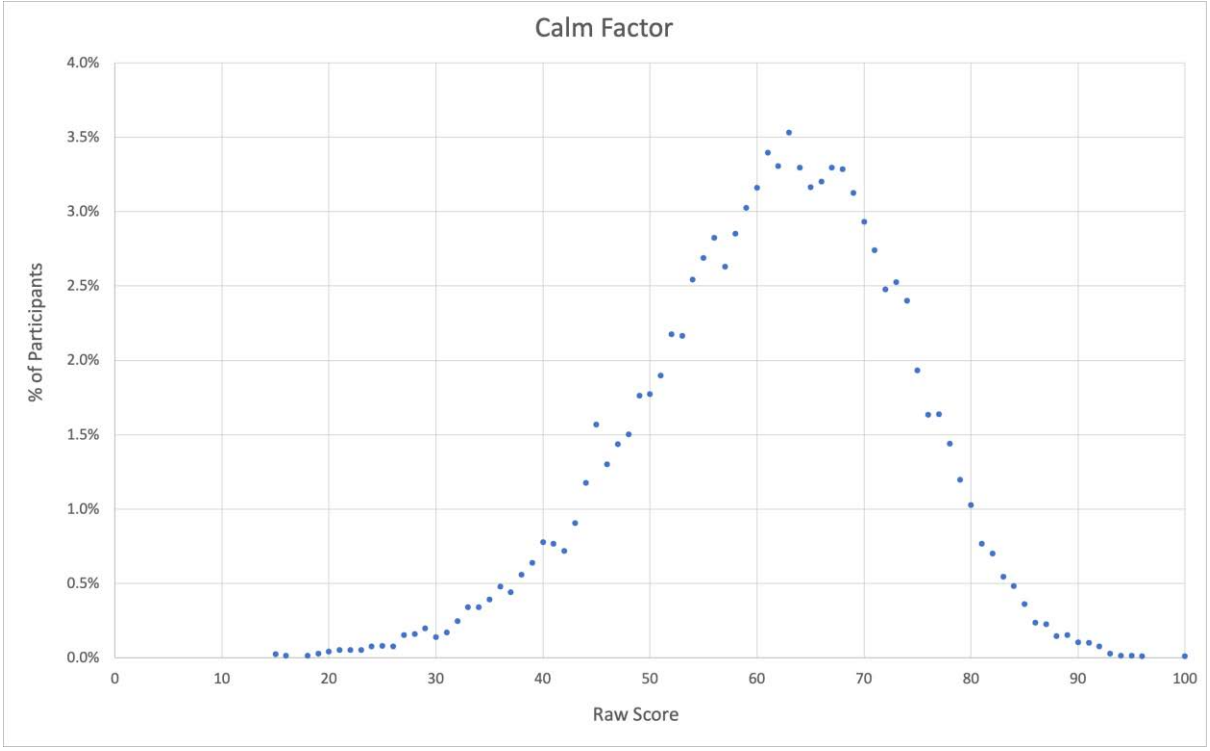


Figure 4.1. *Scatterplot showing the distribution of the Calm factor (n=21,113). Please note, the scales of Emotional and Daring are reversed when used in the Emotion and Cognition scales respectively.*

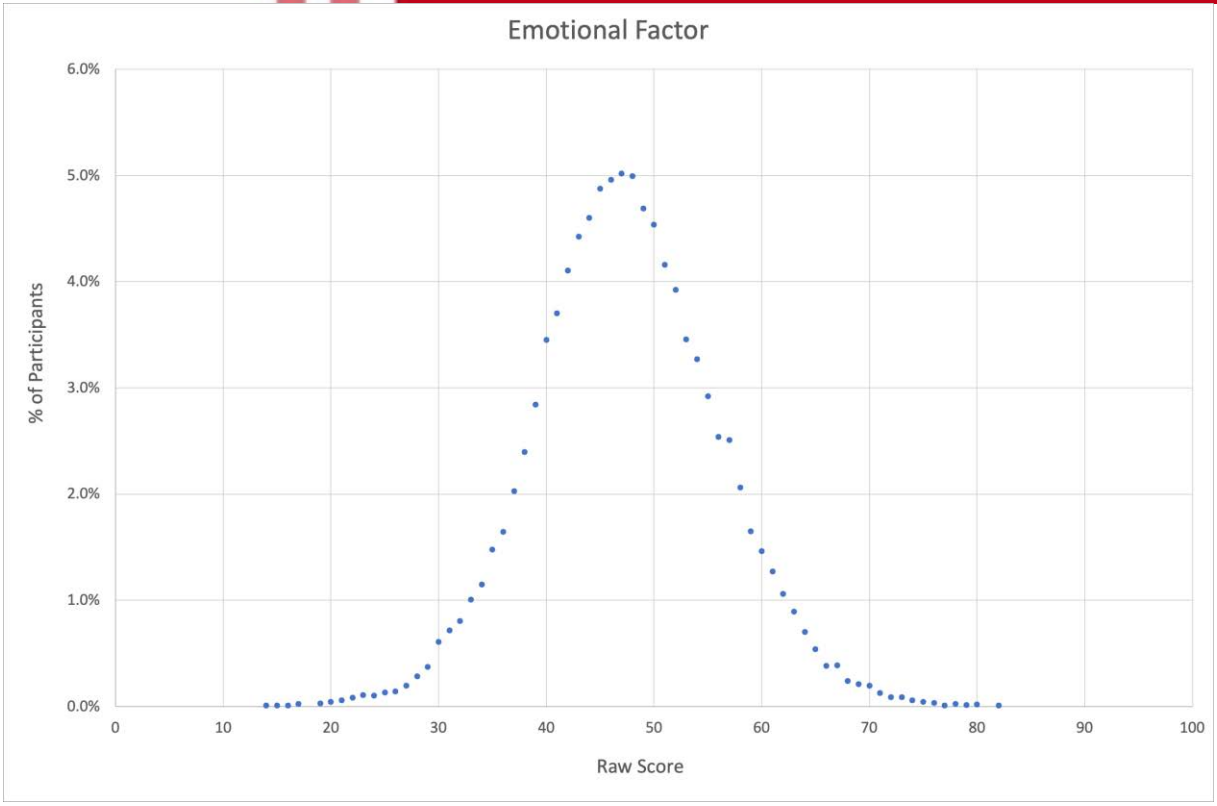


Figure 4.2. *Scatterplot showing the distribution of the Emotional factor (n=21,113)*

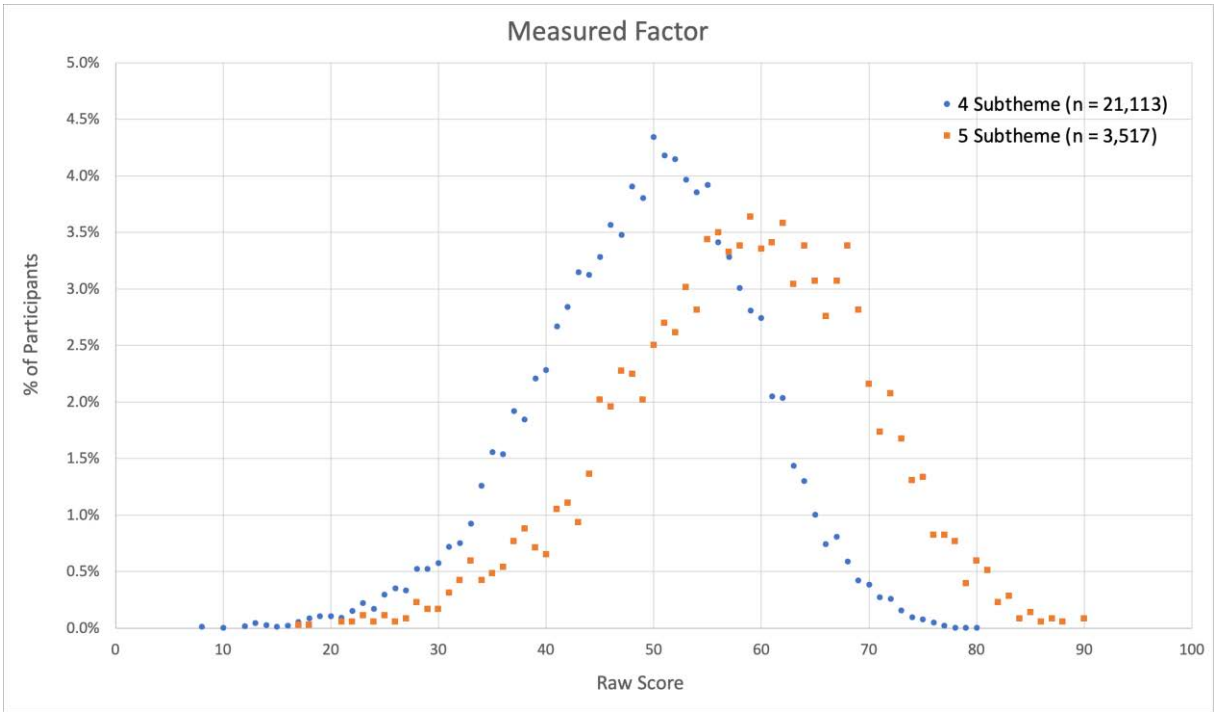


Figure 4.3. *Scatterplot showing the distribution of the Measured factor (4 subtheme n=21,113; 5 subtheme n=3,517)*

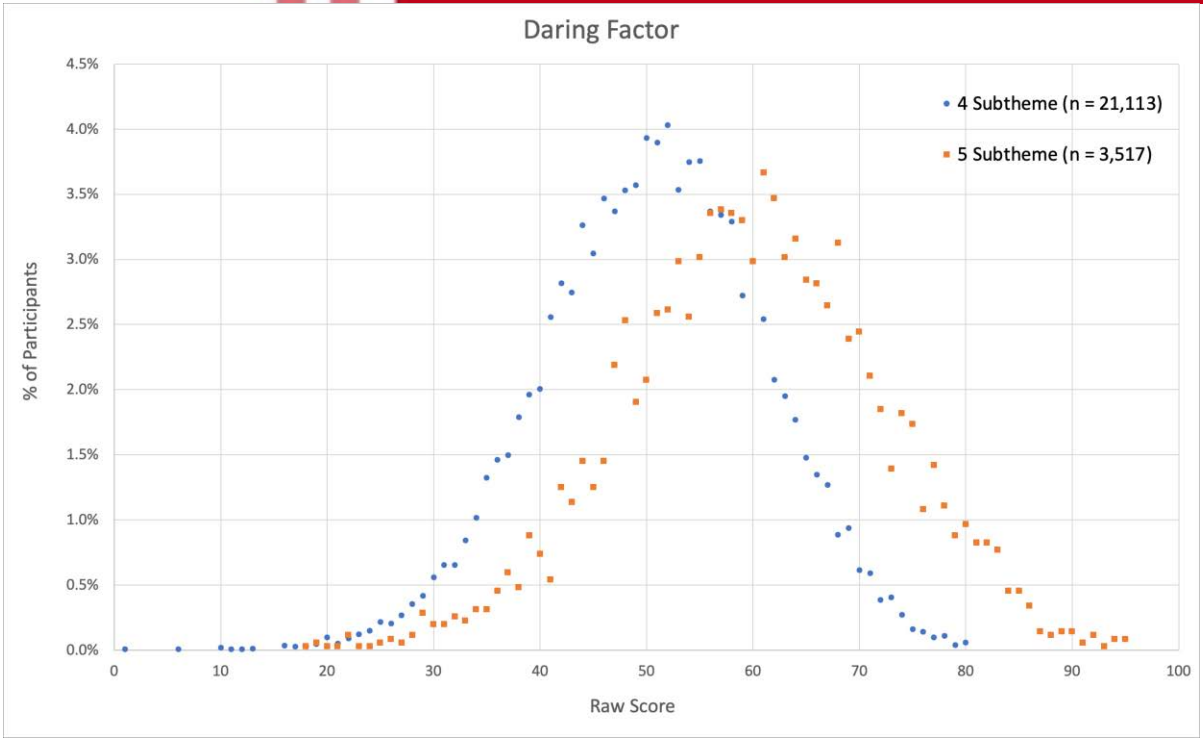


Figure 4.4. *Scatterplot showing the distribution of the Daring factor (4 subtheme n=21,113; 5 subtheme n=3,517)*

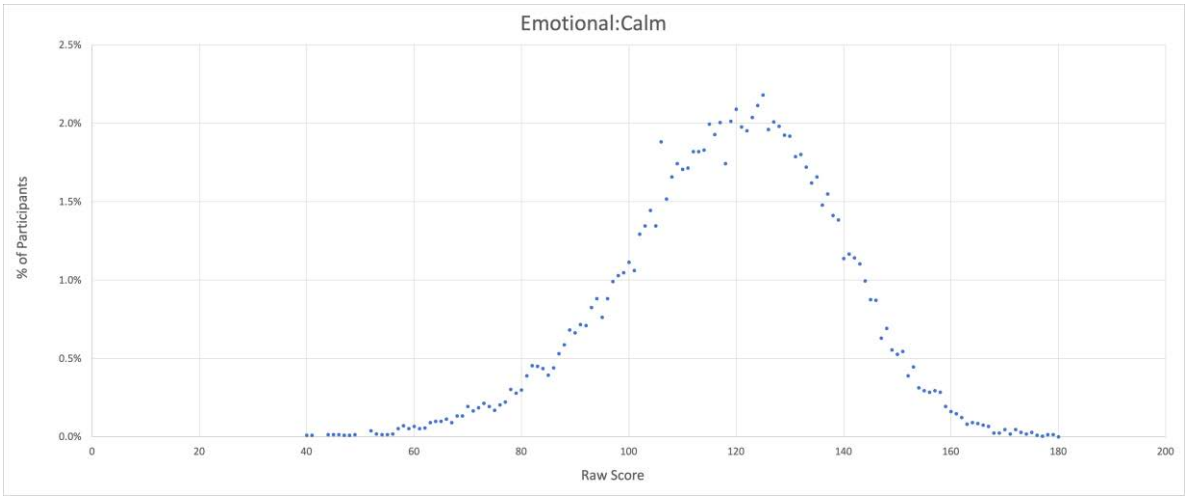


Figure 4.5. *Scatterplot showing the distribution of the Emotional:Calm scale (n = 21,113)*

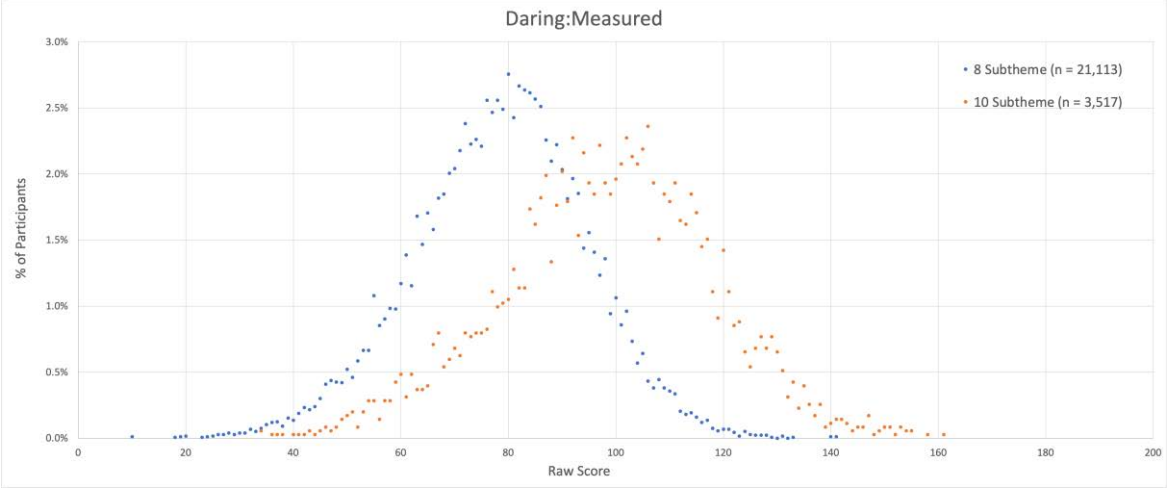


Figure 4.6. *Scatterplot highlighting the distribution of the Cognition scale (8 subtheme n=21,113; 10 subtheme n=3,517)*

Risk Type Frequencies

After providing some basic information, a total of 21,113 participants took part in the Risk Type Compass assessment. Table 4.2 and Figure 4.7 below present the distribution of these 21,113 individuals across the eight Risk Types and the Axial group.

Table 4.2. *Percentage of the total sample in each of the eight Risk Type groups. The Axial group consists of 9.36% (n=21,113)*

Risk Type	% Distribution
Wary	12.55%
Prudent	10.30%
Deliberate	15.33%
Composed	11.32%
Adventurous	11.41%
Carefree	9.54%
Excitable	10.80%
Intense	9.39%

Perhaps the most significant feature of the Risk Type frequencies in Table 4.2 concerns the striking similarity of frequencies for Risk Type distributions, with a range of just 5.94% between the most populace Risk Type, Deliberate (15.33%), and the least populace Risk Type, Intense (9.39%). The fact that the Risk Types occur in almost equal frequencies across the population gives credit to the suggestion that the Risk Type Compass is successfully capturing, measuring and categorising a very real phenomenon within individuals.

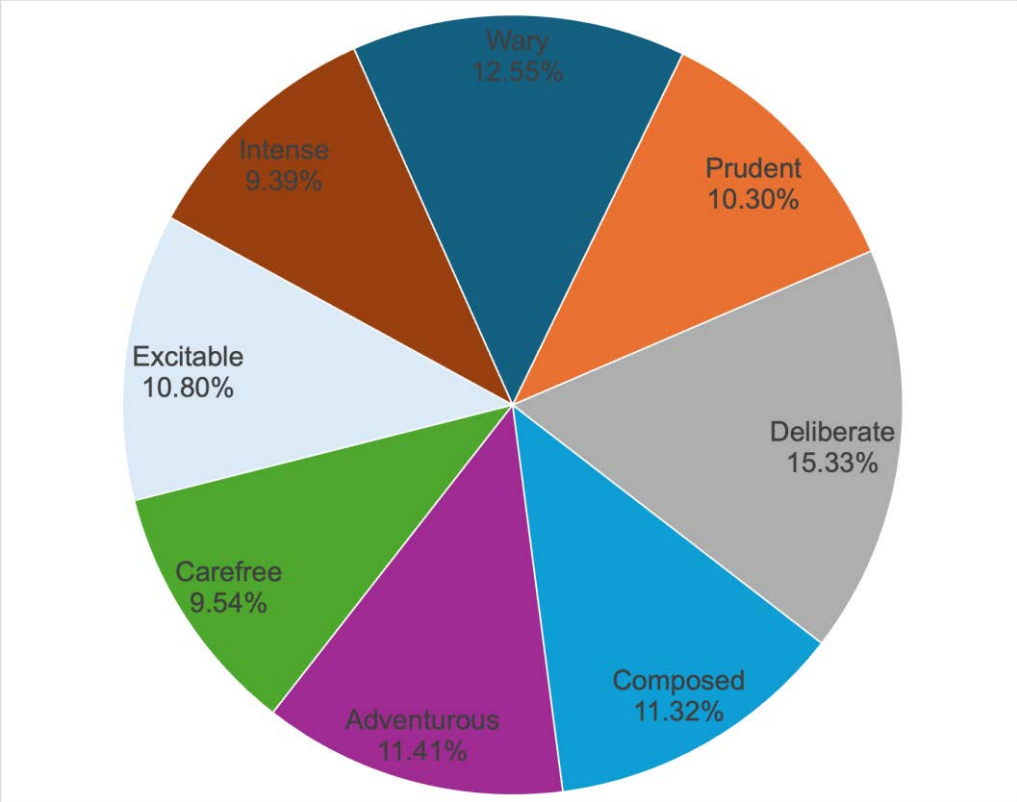


Figure 4.7. *The percentage of participants in each of the eight Risk Types. The Axial group consists of 9.36% (n=21,113)*

A total of 20,578 participants from the overall sample provided information on their sex, allowing PCL researchers to divide these candidates into males and females and analyse the Risk Type distributions to see if any gender differences arose. Figure 4.8 presents the findings of this analysis.

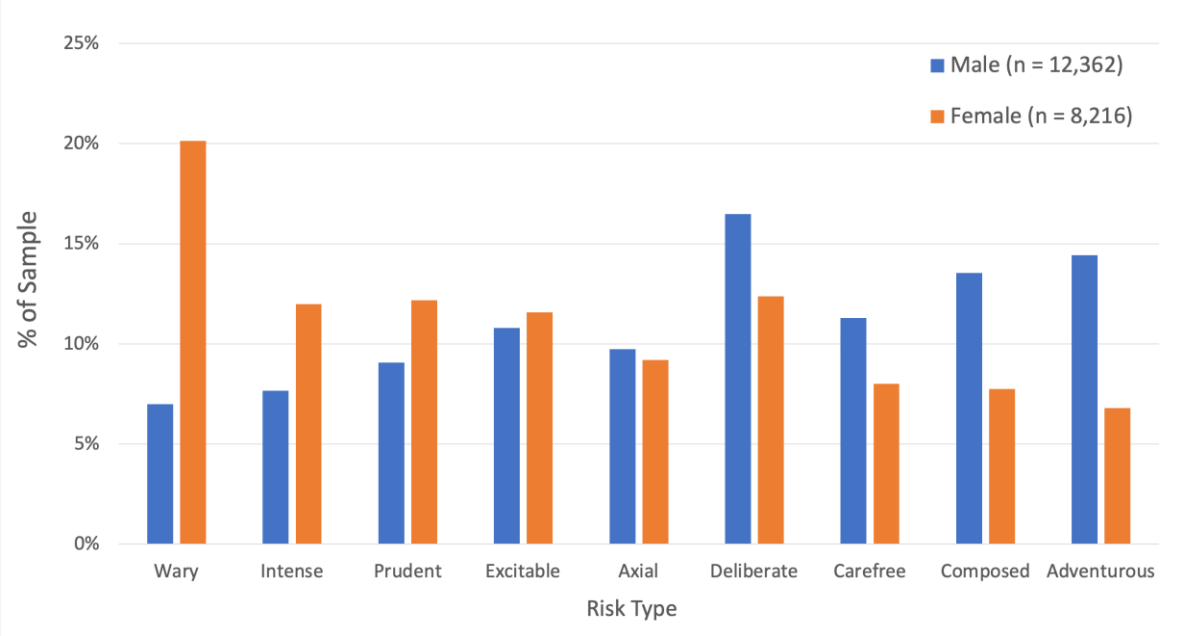


Figure 4.8. *The percentage of males and females in each of the eight Risk Types. The Axial group accounted for 9.73% of the male population and 9.19% of the female population (n=20,578).*

The Risk Type Compass 2024 Norm Group

The Risk Type Compass 2024 Norm Group is gathered using an opportunity sampling method comprising of people who have completed the Risk Type Compass assessment. This is a sample that is almost exclusively comprised of working adults, all of whom have passed the Risk Type Compass's in-built validity scale.

The 2024 Norm Group consists of 16,000 participants for the Emotion scale and, due to more recent developments, 2,500 participants for the Cognition scale. This reflects an increase of 6,000 from the previous norm group. The 2024 Norm Group includes a 50/50 split of males and females for each scale.

Of the 1,822 participants who reported their ethnicity, 76% were British, 2% were from another European country, 4% were Asian, 1% were African, and 17% described themselves as 'Other'.

A total of 15,183 participants in the Emotion scale norm and 2,448 in the Cognition scale norm provided information about their age. A breakdown of the ages can be seen in Table 4.3. below.

Table 4.3. *Distribution of age ranges in the norm groups*

Age Range	Emotion scale Norm		Cognition scale Norm	
	N	%	N	%
18-30	3811	25.11%	618	25.25%
31-40	3945	25.98%	639	26.10%
41-50	4078	26.86%	646	26.39%
51-60	2591	17.06%	429	17.52%
Over 60	631	5.00%	116	4.74%

The key point established by the information above is the even spread of ages across the adult working population that is present in the Risk Type Compass 2024 norms. An analysis of the impact age has on risk can be found in the next chapter.

The ability to draw from various age categories contrasts with norms that are heavily reliant upon student populations and supports the norm's appropriateness for use in the working population.

This leads to the breakdown of job roles in the 2024 norms. A total of 14,119 participants across both norms volunteered information on their jobs, enabling us to identify the norm groups' distribution of job categories in Table 4.4 below.

Table 4.4. *Distribution of job roles in the norm groups*

Job Category	Emotion scale Norm		Cognition scale Norm	
	N	%	N	%
Administration	565	4.81%	150	6.33%
Finance	2,175	18.51%	676	28.51%
General Management	1,777	15.13%	352	14.85%
Human Resources	764	6.50%	165	6.96%
IT	678	5.77%	91	3.84%
Production	282	2.40%	61	2.57%
Professional Services	4,301	36.61%	540	22.78%
Research and Development	456	3.88%	146	6.16%
Sales and Marketing	750	6.38%	190	8.01%

The opportunistic nature of sampling for the 2024 norms reflects the innate appropriateness of the norm by definition, as users would typically be completing the questionnaire for application in a professional capacity.

The most frequently reported job categories were ‘Professional Services’ (Emotion norm) and ‘Finance’ (Cognition norm). The most cited job roles in the professional services category include consultancy, health and safety, and auditors. Recurring job roles in the finance category include accounts, traders, and investors. A breakdown of Risk Type distributions across these job categories can be found in Chapter Six.

Information is also collected from participants regarding their employment in the broader category level of ‘Sector’. Table 4.5. provides a breakdown of participants by sector across both norm groups.

Table 4.5. *Distribution of job roles in the norm groups*

Sector	Emotion scale Norm		Cognition scale Norm	
	N	%	N	%
Business and Other Services, Finance or Insurance	4,028	50.36%	1,266	52.86%
Health or Social Care	837	10.47%	251	10.48%
Hospitality, Catering or Leisure Services	333	4.16%	90	3.76%
Manufacturing, Construction or Agriculture	742	9.28%	192	8.02%
Public Sector or Education	1,441	18.02%	443	18.50%
Transport, Retail or Wholesale	617	7.71%	153	6.39%

Unsurprisingly, the most frequently cited sector across both norm groups was the ‘Business and Other Services, Finance or Insurance’ category. This group typically included many of the most commonly recurring job roles, including professional and financial services. Additional data was requested on the job level of participants. Job level data was collected for 10,405 of the participants across both norms included in the 2024 norm groups. A breakdown of these levels is included in Table 4.6. below.

Table 4.6. *Distribution of job levels in the norm group*

Job Level	Emotion scale Norm		Cognition Scale Norm	
	N	%	N	%
Board/Executive/Director	1301	16.20%	406	17.09%
Senior Manager	1257	15.66%	386	16.25%
Manager	1335	16.63%	387	16.29%
Supervisor	435	5.42%	119	5.01%
Employee	3005	37.43%	895	37.67%
Self-Employed	696	8.67%	183	7.70%

Perhaps unsurprisingly (given the opportunistic sampling method), the most prevalent job level in the data is that of standard employees. However, there is still considerable representation from more senior positions, with management prevalent in the norm group.

The Influence of Biological Sex

Our analysis of males and females illustrated in Figure 4.8. above indicated a clear variance in the prevalence of Risk Types in these two groups. The most notable of these differences involve the Wary Risk Type (6.99% males to 20.14% females) and the Adventurous Risk Type (14.43% males to 6.80% females). Guidance on addressing the Risk Types of participants are expanded upon in the RTC User Handbook, and the implications of Risk Types are explored in the latter stages of this technical manual. However, we felt this variance demanded further analysis to understand the driving factors.

This began with an analysis on the Emotion and Cognition scales for 20,575 participants after dividing them by biological sex. The purpose of these analyses was to determine if and how males (n = 12,360) and females (n = 8,215) differed on their scale scores, and whether these differences were statistically significant. The findings of the analyses are presented in Table 4.6. below.

Table 4.6. *Descriptive findings of scale raw scores by sex (10 Cognition subthemes in parentheses)*

Scale	Sex	N	Mean	Std. Deviation
Emotion	Male	12,360	121.19	18.82
	Female	8,215	111.72	20.36
Cognition	Male	10,473 (1,889)	76.53 (94.92)	14.06 (16.31)
	Female	6,947 (1,267)	81.25 (102.47)	14.20 (16.66)

Findings indicate that females scored lower on the Emotion and higher on the Cognition scales respectively. Standard deviation also indicated a slightly broader spread of scores for females in each scale. Additional analysis using Independent T Tests indicated these differences were statistically significant ($p < 0.01$). These findings are illustrated in Figures 4.11. to 4.13. below.

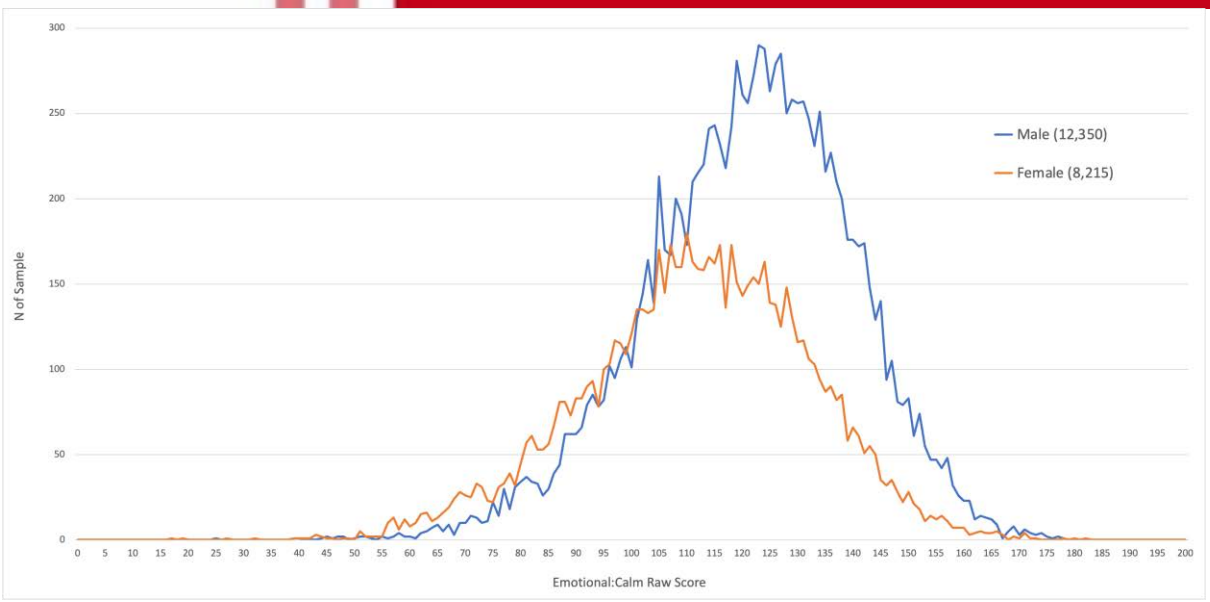


Figure 4.11. *Emotion scale raw score distributions of males (n=12,360) and females (n=8,215)*

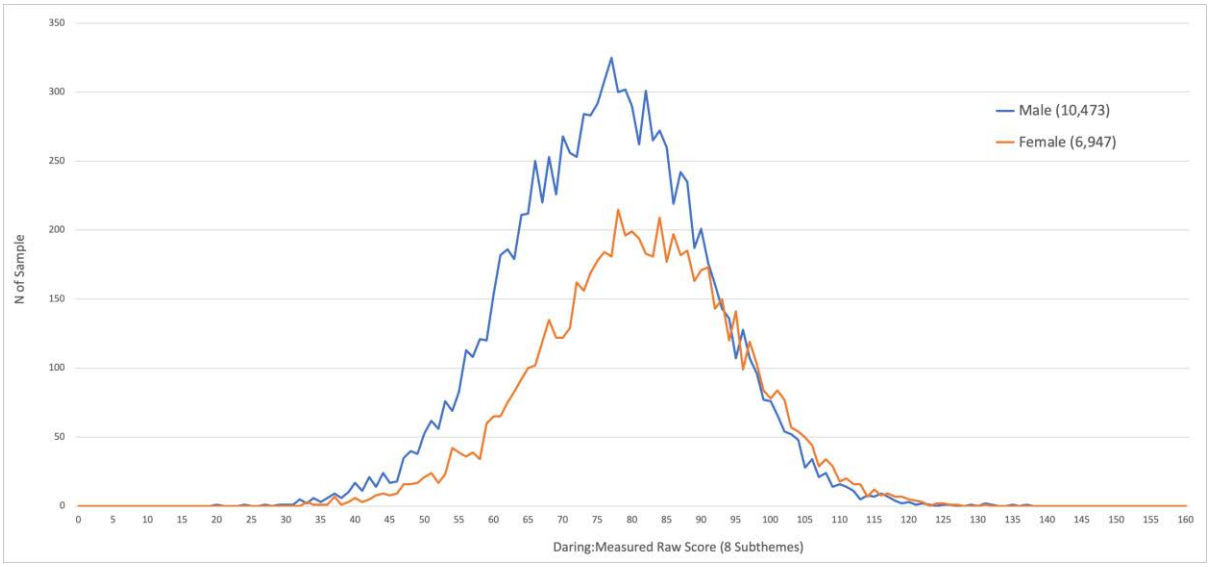


Figure 4.12. *Cognition Scale (8 Subthemes) raw score distributions of males (n=10,473) and females (n=6,947)*

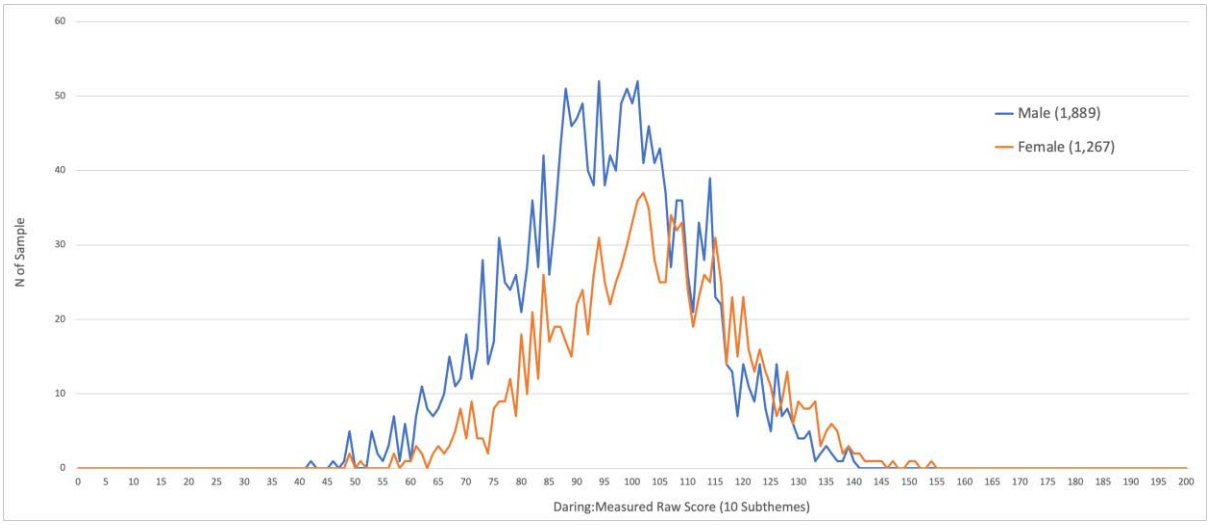


Figure 4.13. *Cognition scale (10 Subthemes) raw score distributions of males (n=1,889) and females (n=1,267)*

The variation between males and females on each scale would drive the variation in Risk Type propensity. Males were slightly more likely to report higher scores on the Emotion (i.e., more 'calm') scale and lower scores on the Cognition (i.e., more 'daring') scale than females. This pattern of scoring would increase the likelihood of locating 'lower' on the compass (e.g. Adventurous/Composed/Carefree) Risk Type designations, and the findings presented in Figure 4.8. above show this is true.

Despite reporting variation between males and females on each scale, the considerable level of overlap should also be noted. This leads us to conclude that focus should be given to the Risk Type designation of individuals, with subsequent feedback conducted accordingly (see Risk Type Compass Handbook for guidance on feedback).

Further analysis was also conducted to ensure that the structure of the Risk Type Compass was equally applicable to both sexes. This process is outlined in greater detail in Chapter Two and involved the use of factor analysis on subtheme scores. An analysis of the 2019 Risk Type Compass norm group compared males (n = 5,000) and females (n = 5,000), and the findings are presented in Table 4.7. below.

Table 4.7. *Factor Analysis (Varimax Rotation with Kaiser Normalisation) of the Risk Type Compass subthemes by biological sex - females in parentheses (n=10,000 [males n=5,000, females n=5,000])*

Subtheme	Factor			
	Emotional	Calm	Measured	Daring
Apprehensive	-0.533 (-0.678)	-0.408 (-0.273)		
Sensitive	-0.817 (-0.834)	0.018 (0.1340		
Intuitive	-0.51 (-0.381)	0.298 (0.415)		
Astute	0.103 (-0.07)	-0.756 (-0.771)		
Eager	-0.184 (-0.163)	-0.239 (-0.271)		
Resilient	0.507 (0.641)	0.472 (0.367)		
Confident	0.481 (0.593)	0.294 (0.25)		
Forgiving	0.302 (0.466)	0.713 (0.613)		
Optimistic	0.15 (0.298)	0.594 (0.624)		
Equable	0.752 (0.769)	0.211 (0.111)		
Audacious			-0.116 (-0.178)	0.595 (0.625)
Explorative			-0.086 (-0.071)	0.704 (0.686)
Hasty			-0.148 (-0.167)	0.773 (0.774)
Spontaneous			0.21 (0.237)	0.612 (0.602)
Focused			0.714 (0.701)	0.224 (0.228)
Methodical			0.748 (0.724)	-0.342 (-0.412)
Perfectionistic			0.809 (0.81)	-0.073 (-0.01)
Conforming			0.503 (0.427)	-0.516 (-0.578)

Findings from the factor analysis indicate that, whilst some minor variation exists between the factor loadings of subthemes, the structure of the Risk Type Compass can be considered consistent between males and females.

Having established the variance in scores between males and females and the consistent applicability of the Risk Type Compass framework, the final step of our investigation was to compare our findings against peer reviewed academic literature.

As previously discussed in the earlier chapter of the technical manual, the Risk Type Compass views the Five Factor Model of personality through the lens of risk. This approach enables us to draw parallels with a vast body of research.

We initially focussed on the Emotion scale, which reported the greater male-to-female variance of the two scales. By far the largest factor influence on the Emotion scale from the Five Factor Model is Neuroticism. Costa, Terracciano, and McCrae (2001) describe Neuroticism as a broad domain of negative affect, and numerous Risk Type Compass subthemes encompassed by the Emotion scale reflect the factor's traits. After conducting analysis on over 23 thousand adult and college-age participants from 26 cultures using the NEO-PI-R, Costa et al. (2001) reported modestly higher levels of Neuroticism in the females of the sample. More specifically, Costa et al. (2001) reported male-to-female differences in the facets of Anxiety and Vulnerability to be the greatest of the six, and these could be regarded as the most relevant to risk. Similar results were also presented by a sample of 2,643 participants, with Weisberg, DeYoung, and Hirsh (2011) reporting higher scores for females on the Neuroticism aspects of Withdrawal and Volatility.

Our analysis of the Cognition scale indicated relatively smaller, yet significant, differences between males and females. Comparisons with the literature are based upon the influence of Conscientiousness and Extraversion, with these factors resulting in higher and lower scores on the Cognition scale respectively. In addition to their findings on Neuroticism, Costa et al. (2001) reported higher scores for males on the Extraversion facets of Explorative and Assertiveness, and lower scores on the Conscientiousness facets of Order and Dutifulness. Weisberg et al's (2011) analysis indicated that males scored higher for the Extraversion aspect of Assertiveness and lower on the Conscientiousness aspect of Orderliness.

These patterns of results would align with the scale-level differences reported by our analyses comparing males and females. This supports the development process of the Risk Type Compass framework, and the subsequent results that are generated.

Ultimately, sex-based differences resulting from our analysis of Risk Type Compass data are significant yet somewhat small, meaning that any application of the Risk Type Compass should focus exclusively on the individual and/or group data of those who are receiving the feedback.

Chapter 5 – Reliability and Validity Research

This chapter reports the reliability and validity research that has been carried out on the Risk Type Compass to date.

The first section details reliability research, which is concerned with assessing whether the constructs within the Risk Type Compass are consistent within themselves. The chapter then goes on to look at validity research, reporting on the relationships between the two Risk Type Compass scales, Emotion and Cognition, and relevant themes or scales within other psychometric assessments; namely Profile:Match2, the Hogan Personality Inventory (HPI), the Hogan Development Survey (HDS) and the Motives, Values, Preferences Inventory (MVPI). In a further test of construct validity, scores on the Risk Type Compass were also assessed against another measure of risk that taps specifically into risk attitudes (Blais & Weber, 2006).

Following the argument of Hogan and Hogan (1997), the presumption here is that the nuances of the Risk Type Compass scales should be discovered according to the pattern of correlates that emerge from these studies, rather than necessarily pre-empted or pre-determined. The discussion that follows considers how the research findings help us to better understand the risk-taking behaviours of the Risk Types.

Reliability

Internal Reliability of the Personality Factors and Scales

Internal reliability is concerned with the extent to which all the items within a personality scale are 'pulling' in the same direction. That is, does this analysis support the view that they are all measuring the same underlying construct? The internal reliability of a psychometric assessment indicates whether the construct being addressed is broad and complex or narrow and specific and provides reassurance that that scale is internally consistent.

Internal reliability analysis was carried out on the items that make up each of the four personality factors identified by factor analysis (Table 5.1); Calm, Emotional, Measured and Daring, as well as the two Risk Type Compass scales; Emotion and Cognition.

Focus should be on the scale level, as the interaction between the two scale scores determine Risk Type. We also conducted analyses comparing Males (N=10,437) and Females (N=10,138) to ensure that reliability was relatively consistent between these groups.

Table 5.1. *Internal Reliability Coefficients for the Risk Type Compass personality factors and scales*

		Internal Reliability Coefficient		
		All (n = 21,203)	Male (n = 10,437)	Female (n = 10,138)
Factor	Calm	0.846	0.828	0.858
	Emotional	0.741	0.708	0.747
	Daring*	0.824 (0.828)	0.816 (0.810)	0.828 (0.831)
	Measured*	0.823 (0.813)	0.827 (0.818)	0.816 (0.808)
Scale	Emotion	0.883	0.869	0.890
	Cognition^	0.843 (0.862)	0.793 (0.796)	0.796 (0.799)

*5 Subthemes in parentheses
^10 Subthemes in parentheses

The results demonstrate that both the personality factors and the Risk Type Compass scales have strong internal consistency, with all values significantly greater than the widely accepted benchmark of .70 (Nunnally & Bernstein, 1994). This reinforces the view that each of the four factors are indeed generating measurements consistently across the various contributing item themes, and that the two bi-polar scales constructed from these factors also provide highly reliable measurements. Our multiple analyses also identified no notable drop in internal reliability coefficients between the males and females, with all values remaining comfortably above the 0.7 threshold.

The benefit of collating internal reliability coefficients for the Emotion and Cognition scales is that it can enable us to determine the standard error of measurement values for each scale. Table 5.2. presents the findings of the analysis for the Emotion scale (which is scored out of 200) and the Cognition scale (which is scored out of 160).

Table. 5.2. *Means, Standard Deviations, and Standard Error of Measurements for Risk Type Compass Scales (n=21,113)*

Scale	Mean	Std.	Standard Error of Measurement	Confidence Interval	Upper Limit	Lower Limit
Emotion	117.44	19.95	6.82	13.38	130.82	104.07
Cognition*	78.47 (98.17)	15.92 (19.5)	6.31 (7.25)	12.37 (14.2)	90.84 (112.37)	66.11 (83.97)

*10 Subthemes in parentheses (*n=3,517*)

The findings of the analysis indicate that there is a 95% chance that an individual's 'true' score will fall between 104.07 and 130.38 for the Emotion scale, between 66.11 and 90.84 for the 8-subtheme Cognition scale, and between 83.97 and 112.37 for the updated 10-subtheme Cognition scale.

Internal Reliability of the Subthemes

The strong internal consistency reliabilities reported at the Risk Type Compass scale and personality factor levels reflect the assessment's effective performance at item and subtheme level. Each of the Risk Type Compass' 20 subthemes has four items scored using a 0-5 response scale (to generate a total raw score between 0-20). Every subtheme is associated with the relevant personality factor so that responses contribute to an individual's position on one of the two underlying scales (Emotion and Cognition) of the Risk Type Compass. Data from 21,113 Risk Type Compass participants was analysed to determine internal reliability coefficients, means, and standard deviations for each of the 20 Risk Type

Compass subthemes. Table 5.3 presents the findings of this analysis, as well as showing how each subtheme is grouped into scales and personality factors.

Table 5.3. *Risk Type Compass Subtheme Internal Reliabilities, Means, and Standard Deviations (n=21,113)*

Scale	Factor	Subtheme	Subtheme Alpha	Subtheme Mean	Subtheme SD
Emotion	Emotional	Apprehensive	0.621	4.87	2.35
		Sensitive	0.710	4.93	2.23
		Intuitive	0.664	2.82	1.71
		Astute	0.760	2.92	1.68
		Eager	0.545	6.99	1.82
	Calm	Resilient	0.529	5.26	2.04
		Confident	0.765	6.85	2.07
		Forgiving	0.734	6.14	2.24
		Optimistic	0.570	7.88	1.57
		Equable	0.612	4.61	2.23
Cognitive	Daring	Audacious	0.593	7.10	1.76
		Explorative	0.519	7.19	1.76
		Hasty	0.730	5.06	2.74
		Spontaneous	0.688	7.35	1.75
		Forthright*	0.599	3.90	2.29
	Measured	Focused	0.671	7.11	2.00
		Methodical	0.636	5.06	2.09
		Perfectionistic	0.618	6.57	2.17
		Conforming	0.607	5.55	2.10
		Tractable*	0.602	5.07	2.11

* N = 3,517

Whilst several of the subtheme groupings reflect limited internal consistency reliabilities (of which Explorative (.519), Resilient (.529), and Eager (.545) were the lowest), it should be noted that each subtheme only consists of four items.

To explore the consistency of the concepts and items encompassed by the Risk Type Compass, a Test Retest process was conducted on a sample of 242 participants. As well as conducting analysis on all 242 participants, the nature of this temporal analysis led us to conduct further analysis on the sample after dividing them into two groups based upon the length of time between completion of each assessment.

Sample	N	Minimum	Maximum	Mean	Std.
1-14 days (incl.)	127	1	14	8.29	3.87
Over 15 days	115	15	1011	189.10	278.92

After establishing time-based categorisation of the total sample, analysis was conducted to explore the temporal stability of the Risk Type Compass's two scales, and the influence of extended time periods between completions. Results of these analyses are presented in Table 5.4. below.

Table 5.4. *Test Retest Correlations for the Risk Type Compass Scales (N=242)*

Scale	1-14 days (N = 127)	Over 15 days (N = 115)	All (N = 242)
Emotion	.916**	.920**	.918**
Cognition	.914**	.904**	.909**
RTi	.964**	.958**	.961**

**. Correlation is significant at the 0.01 level (2-tailed).

Findings indicate that the correlations between the first and second assessments were exceedingly high (> 0.9) for both scales that underpin the Risk Type Compass. The Emotion scale obtained a slightly higher correlation (at 0.918) than the Cognition scale (at 0.909). Both correlations were significant to the p<0.01 level. Dividing the sample into two groups based on the time between completions provided further evidence of the RTC's consistency, as even scale scores completed between 15 to 1011 days apart obtained correlation coefficients above 0.9. All correlations were significant to the p<0.01 level.

In addition to the Test Retest procedure outlined above, further reliability work was conducted using a 'split half' analysis of the two Risk Type Compass scales. To complete this process, each of the 4-item 18 subthemes were divided in half, resulting in two sets of 36 items. Of these items, 20 contributed to the Emotion scale, and 16 to the Cognition scale. We also conducted analyses comparing Males (N=7,879) and Females (N=5,135) to ensure that reliability was relatively consistent between these groups. An analysis was conducted on a sample containing 10,793 participants, and the findings are displayed in Table 5.5 below.

Table 5.5. *Split-Half Analysis of the Risk Type Compass Scales (N=13,014)*

Scale	Part/ Half	No. of Items	Correlation Between Parts			Spearman-Brown Coefficient		
			Male (n=7,879)	Female (n=5,135)	All (n=13,014)	Male (n=7,879)	Female (n=5,135)	All (n=13,014)
Emotion	Part 1	20	.794	.836	.82	.885	.911	.901
	Part 2	20						
Cognition	Part 1	16	.814	.823	.819	.898	.903	.901
	Part 2	16						

Split-half analysis of the Risk Type Compass indicated strong correlations between the two halves of the two scales, with strong Pearson correlation coefficients of .82 (2 d.p) for each scale. Each scale also reported a Spearman-Brown Coefficient of .90 (2 d.p). There were slightly higher variations between males and females for the Emotion scale, although differences were relatively minor.

In order to determine an individual's Risk Type, the Risk Type Compass utilises 20 subthemes, each consisting of four items. Tables 5.6 – 5.22 present the inter-item correlations between each of the items included in the subtheme, in addition to each item's correlation to the subtheme total.

Table 5.6. **Inter-Item Correlations of Audacious Subtheme Items (n=21,113)**					
AUD_1	x				.744**
AUD_2	.416**	x			.714**
AUD_3	.36**	.406**	x		.692**
AUD_4	.359**	.431**	.227**	x	.753**
	AUD_1	**AUD_2**	**AUD_3**	**AUD_4**	**AUD TOTAL**

Table 5.7. Inter-Item Correlations of Apprehensive Subtheme Items (n=21,113)					
APP_1	x				.699**
APP_2	.333**	x			.760**
APP_3	.267**	.394**	x		.765**
APP_4	.322**	.452**	.406**	x	.675**
	APP_1	**APP_2**	**APP_3**	**APP_4**	**APP TOTAL**

Table 5.8. Inter-Item Correlations of Equable Subtheme Items (n=21,113)					
EQU_1	x				.672**
EQU_2	.343**	x			.723**
EQU_3	.252**	.440**	x		.743**
EQU_4	.281**	.265**	.417**	x	.698**
	EQU_1	**EQU_2**	**EQU_3**	**EQU_4**	**EQU TOTAL**

Table 5.9. Inter-Item Correlations of Confidence Subtheme Items (n=21,113)					
CFD_1	x				.756**
CFD_2	.547**	x			.825**
CFD_3	.268**	.468**	x		.690**
CFD_4	.230**	.468**	.618**	x	.772**
	CFD_1	**CFD_2**	**CFD_3**	**CFD_4**	**CFD TOTAL**

Table 5.10. Inter-Item Correlations of Conforming Subtheme Items (n=21,113)					
CFM_1	x				.749**
CFM_2	.429**	x			.694**
CFM_3	.263**	.434**	x		.692**
CFM_4	.351**	.288**	.301**	x	.717**
	CFM_1	**CFM_2**	**CFM_3**	**CFM_4**	**CFM TOTAL**

Table 5.11. Inter-Item Correlations of Intuitive Subtheme Items (n=21,113)					
INT_1	x				.707**
INT_2	.295**	x			.743**
INT_3	.329**	.502**	x		.684**
INT_4	.266**	.494**	.480**	x	.773**
	INT_1	**INT_2**	**INT_3**	**INT_4**	**INT TOTAL**

Table 5.12. Inter-Item Correlations of Explorative Subtheme Items (n=21,113)					
EXP_1	x				.688**
EXP_2	.361**	x			.707**
EXP_3	.329**	.282**	x		.659**
EXP_4	.288**	.264**	.237**	x	.641**
	EXP_1	**EXP_2**	**EXP_3**	**EXP_4**	**EXP TOTAL**

Table 5.13. Inter-Item Correlations of Focussed Subtheme Items (n=21,113)					
FOC_1	x				.737**
FOC_2	.465**	x			.767**
FOC_3	.390**	.453**	x		.770**
FOC_4	.324**	.341**	.521**	x	.723**
	FOC_1	**FOC_2**	**FOC_3**	**FOC_4**	**FOC TOTAL**

Table 5.14. Inter-Item Correlations of Forgiving Subtheme Items (n=21,113)					
FOR_1	x				.819**
FOR_2	.554**	x			.728**
FOR_3	.330**	.436**	x		.767**
FOR_4	.574**	.578**	.464**	x	.840**
	FOR_1	**FOR_2**	**FOR_3**	**FOR_4**	**FOR TOTAL**

Table 5.15. Inter-Item Correlations of Methodical Subtheme Items (n=21,113)					
MET_1	x				.753**
MET_2	.351**	x			.758**
MET_3	.363**	.433**	x		.755**
MET_4	.375**	.466**	.408**	x	.682**
	MET_1	**MET_2**	**MET_3**	**MET_4**	**MET TOTAL**

Table 5.16. Inter-Item Correlations of Optimistic Subtheme Items (n=21,113					
OPT_1	x				.714**
OPT_2	.295**	x			.639**
OPT_3	.425**	.334**	x		.760**
OPT_4	.283**	.236**	.344**	x	.652**
	OPT_1	**OPT_2**	**OPT_3**	**OPT_4**	**OPT TOTAL**

Table 5.17. Inter-Item Correlations of Eager Subtheme Items (n=21,113)					
EAG_1	x				.112**
EAG_2	.174**	x			.751**
EAG_3	.061**	.337**	x		.745**
EAG_4	.039**	.307**	.377**	x	.716**
	EAG_1	**EAG_2**	**EAG_3**	**EAG_4**	**EAG TOTAL**

Table 5.18. Inter-Item Correlations of Perfectionist Subtheme Items (n=21,113)					
PER_1	x				.514**
PER_2	.137**	x			.690**
PER_3	.229**	.280**	x		.702**
PER_4	.068**	.446**	.293**	x	.708**
	PER_1	**PER_2**	**PER_3**	**PER_4**	**PER TOTAL**

Table 5.19. Inter-Item Correlations of Hasty Subtheme Items (n=21,113)					
HAS_1	x				.789**
HAS_2	.372**	x			.593**
HAS_3	.574**	.320**	x		.802**
HAS_4	.248**	.223**	.252**	x	.645**
	HAS_1	**HAS_2**	**HAS_3**	**HAS_4**	**HAS TOTAL**

Table 5.20. Inter-Item Correlations of Resilience Subtheme Items (n=21,113)					
RES_1	x				.666**
RES_2	.043**	x			.520**
RES_3	.073**	.301**	x		.656**
RES_4	.249**	.256**	.364**	x	.724**
	RES_1	**RES_2**	**RES_3**	**RES_4**	**RES TOTAL**

Table 5.21. Inter-Item Correlations of Sensitive Subtheme Items (n=21,113)					
SEN_1	x				.792**
SEN_2	.551**	x			.787**
SEN_3	.334**	.361**	x		.731**
SEN_4	.480**	.436**	.317**	x	.695**
	SEN_1	**SEN_2**	**SEN_3**	**SEN_4**	**SEN TOTAL**

Table 5.22. Inter-Item Correlations of Spontaneous Subtheme Items (n=21,113)					
SPO_1	x				.748**
SPO_2	.333**	x			.756**
SPO_3	.527**	.388**	x		.713**
SPO_4	.283**	.433**	.346**	x	.728**
	SPO_1	**SPO_2**	**SPO_3**	**SPO_4**	**SPO TOTAL**

Table 5.23. Inter-Item Correlations of Astute Subtheme Items (n=21,113)					
AST_1	x				.774**
AST_2	.488**	x			.859**
AST_3	.618**	.440**	x		.834**
AST_4	.444**	.449**	.447**	x	.860**
	AST_1	**AST_2**	**AST_3**	**AST_4**	**AST TOTAL**

Table 5.24. Inter-Item Correlations of Forthright Subtheme Items (n=3,527)					
FOT_1	x				.609**
FOT_2	.250**	x			.745**
FOT_3	.315**	.276**	x		.619**
FOT_4	.233**	.186**	.440**	x	.727**
	FOT_1	**FOT_2**	**FOT_3**	**FOT_4**	**FOT TOTAL**

Table 5.25. Inter-Item Correlations of Tractable Subtheme Items (n=3,527)					
TRA_1	x				.704**
TRA_2	.278**	x			.624**
TRA_3	.299**	.426**	x		.625**
TRA_4	.239**	.169**	.295**	x	.747**
	TRA_1	**TRA_2**	**TRA_3**	**TRA_4**	**TRA TOTAL**

As discussed in previous chapters, the 20 subthemes that comprise the Risk Type Compass are broadly grouped under four main factors, which have been derived through factor analysis. Inter-subtheme correlations are presented in Tables 5.26 – 5.29.

Table 5.26. Inter-Subtheme Correlations of Calm Factor Subthemes (n=21,113)						
RES_Total	x					.736**
EQU_Total	.410**	x				.692**
COT_Total	.450**	.354**	x			.728**
FOG_Total	.473**	.373**	.338**	x		.743**
OPT_Total	.279**	.226**	.438**	.377**	x	.621**
	RES Total	EQU Total	COT Total	FOG Total	OPT Total	Calm Factor

Table 5.27. Inter-Subtheme Emotional Factor Subthemes (n=21,113)						
EAG_Total	x					.401**
AST_Total	.067**	x				.422**
APP_Total	.040**	.206**	x			.667**
SEN_Total	.105**	.036**	.415**	x		.754**
INT_Total	.087**	-.080**	.059**	.441**	x	.528**
	EAG Total	AST Total	APP Total	SEN Total	INT Total	Emotional Factor

Table 5.28. Inter-Subtheme Daring Factor Subthemes (n=21,113; *3,527)						
FOC_Total	x					.604**
MET_Total	.375**	x				.773**
PER_Total	.438**	.541**	x			.731**
COG_Total	.173**	.449**	.322**	x		.650**
TRA_Total*	-.192**	.247**	.131**	.520**	x	.499**
	FOC Total	MET Total	PER Total	COG Total	TRA Total	Measured Factor

Table 5.29. Inter-Subtheme Daring Factor Subthemes (n=21,113; *3,527)						
AUD_Total	x					.630**
EXP_Total	.377**	x				.740**
HAS_Total	.383**	.674**	x			.788**
SPO_Total	.333**	.239**	.327**	x		.577**
FOT_Total*	.261**	.272**	.394**	.308**	x	.647**
	AUD Total	EXP Total	HAS Total	SPO Total	FOT Total	Daring Factor

Whilst the four factors inform the conceptual structure of the Risk Type Compass, the determination of Risk Types is primarily determined through the use of the Emotion and Cognition scales.

Table 5.30. Inter-Subtheme Emotion Scale Subthemes (n=21,113)											
RES Total	x										.695**
EQU Total	.410**	x									.719**
COT Total	.450**	.354**	x								.677**
FOG Total	.473**	.373**	.338**	x							.680**
EAG Total	-.292**	-.186**	-.020**	-.190**	x						-.307**
OPT Total	.279**	.226**	.438**	.377**	.035**	x					.536**
AST Total	-.194**	-.186**	-.173**	-.417**	.067**	-.415**	x				-.435**
APP Total	-.392**	-.460**	-.470**	-.418**	.040**	-.392**	.206**	x			-.684**
SEN Total	-.430**	-.608**	-.479**	-.283**	.105**	-.169**	.036**	.415**	x		-.703**
INT Total	-.132**	-.262**	-.154**	-.025**	.087**	.059**	-.080**	.059**	.441**	x	-.344**
	RES Total	EQU Total	COT Total	FOG Total	EAG Total	OPT Total	AST Total	APP Total	SEN Total	INT Total	E:C Scale

Table 5.31. Inter-Subtheme Cognition Scale Subthemes (n=21,113)											
FOC Total	x										.252**
MET Total	.375**	x									.656**
PER Total	.438**	.541**	x								.521**
COG Total	.173**	.449**	.322**	x							.612**
AUD Total	.135**	-.278**	-.151**	-.317**	x						-.550**
EXP Total	.002	-.280**	-.136**	-.243**	.377**	x					-.597**
HAS Total	.059**	-.340**	-.206**	-.395**	.383**	.674**	x				-.672**
SPO Total	.336**	-.081**	.059**	-.155**	.333**	.239**	.327**	x			-.354**
FOT Total*	.073**	-.201**	-.138**	-.367**	.261**	.272**	.394**	.308**	x		-.588**
TRA Total*	-.192**	.247**	.131**	.520**	-.403**	-.262**	-.453**	-.394**	-.446**	x	.642**
	FOC Total	MET Total	PER Total	COG Total	AUD Total	EXP Total	HAS Total	SPO Total	FOT Total	TRA Total	D:M Scale

Risk Type Compass Short Form

The standard Risk Type Compass questionnaire is a manageable size, involving 110 items (80 items to determine Risk Type, 20 items to determine Risk Attitude, and 10 items for validity). However, the value of the Risk Type Compass as a research tool has led to the creation of a 'short form' including just half of the items used to identify an individual's Risk Type. Table 5.32 outlines the internal reliability coefficients, means, and standard deviations of the 40-item short form assessment.

Table 5.32. *Short Form Risk Type Compass Subtheme Internal Reliability Coefficients, Means, and Standard Deviations (n=21,113)*

Scale	Factor	Subtheme (Short)	Subtheme Alpha (Short)	Subtheme Mean (Short)	Subtheme SD (Short)
Emotion	Emotional	Apprehensive	0.621	4.87	2.35
		Sensitive	0.710	4.93	2.23
		Intuitive	0.664	2.82	1.71
		Astute	0.760	2.92	1.68
		Eager	0.545	6.99	1.82
	Calm	Resilient	0.529	5.26	2.04
		Confident	0.765	6.85	2.07
		Forgiving	0.734	6.14	2.24
		Optimistic	0.570	7.88	1.57
		Equable	0.612	4.61	2.23
Cognition	Measured	Audacious	0.593	7.10	1.76
		Explorative	0.519	7.19	1.76
		Hasty	0.730	5.06	2.74
		Spontaneous	0.688	7.35	1.75
		Tractable*	0.602	5.07	2.11
	Daring	Focused	0.671	7.11	2.00
		Methodical	0.636	5.06	2.09
		Perfectionistic	0.618	6.57	2.17
		Conforming	0.607	5.55	2.10
		Forthright*	0.599	3.90	2.29

** N = 3,517*

Despite consisting of only two items per subtheme, all internal reliability coefficients of the short form Risk Type Compass subthemes report alpha scores of .5 or above, with 12 of the subthemes having alpha scores of 0.6 or above. Further analysis identified the correlation values between the Emotion and Cognition scale raw scores of the short form and standard Risk Type Compass.

Similarly to the standard version, focus should be at the scale level, as scores on these scales determine Risk Type. We replicated the analysis framework used with the standard version by focussing on the same participants, as well as differentiating between Males (N=7,879) and Females (N=5,135). Findings are in Table 5.33 below.

Table 5.33. *Short Form Risk Type Compass raw score correlations with standard Risk Type Compass scales (n=13,014)*

RTC		Internal Reliability Coefficient		
		All (n=13,014)	Male (n=7,789)	Female (n=5,135)
Factor	Calm	.723	.699	.73
	Emotional	.67	.64	.677
	Daring	.723	.712	.73
	Measured	.707	.715	.695
Scale	Emotion	.807	.784	.812
	Cognitive	.71	.71	.707

As expected, reducing the number of items used in the standard version of the Risk Type Compass by 50% led to reduced internal consistency at both factor and scale level. However, scale-level coefficients still remained above the benchmark of .70 suggested by Nunnally and Bernstein (1994). Whilst this suggests the short form represents a viable proxy for the standard form of the Risk Type Compass if circumstances demand, the standard form remains the more statistically reliable version of the assessment.

Validity

Personality Scale Validity

A common method for analysing the construct validity of psychometric assessments is to correlate the test's underlying scales against those within established assessments that claim to be measuring the same, similar, or related themes. The construct validity of the Risk Type Compass was examined through correlational analysis of the Emotion and Cognition scales against relevant scales within the instruments cited later in this chapter.

Correlations with Profile:Match2

One hundred and forty-one participants from a range of occupations completed both the Risk Type Compass and Profile:Match2; a Five Factor model of personality developed and published by Psychological Consultancy Limited was designed to assess individuals against key competencies related to work performance. Two hypotheses were proposed. First, that the Emotion scale will be related to the two Profile:Match2 (PM2) personality scales Composure and Self Esteem, which relate to the Five Factor Model's Emotional Stability. Second, that the Cognition scale will be negatively related to the two Profile:Match2 scales that measure aspects of Conscientiousness; the Compliant and Perfectionistic scales. Results of this analysis are presented in Table 5.34.

Table 5.34. *Correlations between the Risk Type Compass scales and Profile:Match2 personality scales (n=141)*

RTC scales	Composure PM	Self-Esteem PM	Compliant PM	Perfectionistic PM
Emotion	.44**	.44**		
Cogntion			-.41**	-.48**

***p <.01*

Overall, both hypotheses were supported. Results of the analysis show strong correlations between the scales at the .01 significant level, ranging from .41 to .48.

A second analysis looked at the extreme ends of the personality scales by splitting the data into quartiles and including only the top and bottom quarters in the analysis. The correlations were re-run with a reduced sample (n=74) and the results are presented in Table 5.35. The relationship between high and low scorers on the Risk Type Compass scales and their corresponding Profile:Match2 scales were found to be highly significant, although the reduced sample size suggests caution about over-generalising from these results.

Table 5.35. *Correlations between the Risk Type Compass scales (top and bottom quartile scorers only) and Profile:Match2 personality scales (n =74)*

RTC Scales	Composure PM	Self-Esteem PM	Compliant PM	Perfectionistic PM
Emotion	.75***	.78***		
Cognition			-.61**	-.57**

***p<.01, ***p<.001*

Correlations with the Hogan Personality Inventory

The Hogan Personality Inventory (HPI) is a Five Factor Model instrument designed specifically for occupational assessment purposes. It is a measure of normal personality, designed to predict 'reputation'; how an individual is likely to perform at work and how they come across to others. The assessment consists of seven scales which, when combined, create a detailed overview of an individual's personality that can be used in selection, development, coaching and other occupational settings. First developed by Hogan Assessment Systems in the 1970s, the HPI is now backed by almost four decades of comprehensive research and is used globally.

243 participants from a range of occupational backgrounds completed both the HPI and the Risk Type Compass. It was hypothesised that the Risk Type Compass Cognition and Emotion scales would correlate with two theoretically similar scales within the HPI; Prudence, which is concerned with conscientiousness, self-discipline and dependability, and Adjustment, which is to do with confidence, self- esteem and emotional stability. The results are presented in Table 5.36.

Table 5.36. *Correlations between the Risk Type Compass and HPI personality scales (n=297)*

RTC Scales	Adjustment HPI	Prudence HPI
Emotion	.34**	
Cognition		-.26**

***p<0.01*

As expected, both scales of the Risk Type Compass were significantly correlated with the selected HPI scales, with correlation coefficients of .34 for the Emotion scale and -.26 for the Cognition scale. The participants were ranked by their scale scores, then the correlations with personality scales were re-run on the sample's top and bottom quartiles. The results of this analysis are presented in Table 5.37. The correlation coefficients show significant relationships between high and low scorers on the Risk Type Compass scales and their corresponding HPI scales; individuals who scored high on Adjustment HPI were more likely to fall at the Calm end of the Emotion scale, while those that scored high on Prudence HPI were more likely to fall at the Measured end of the Cognition scale.

The derivation of the Risk Type Compass through our original research, extracted risk related themes from the FFM themes and identified the four risk related factors (Calm, Emotional, Measured and Daring), implying that there are significant structural differences

between the Risk Type Compass and FFM models. The results confirm this, whilst acknowledging a significant relationship between the two. Overall, these findings suggest a shared variance of no more than 25%.

Table 5.37. *Correlations between the Risk Type Compass (top and bottom scorers only) and HPI personality scales (n=110)*

RTC Scales	Adjustment HPI	Prudence HPI
Emotion	.51*	
Cognition		-.33*

*$p<0.01$

As a further measure, the Risk Type Compass scales were analysed against the remaining HPI scales of Ambition, Sociability, Agreeability, Inquisitive and Learning Ability. No significant relationships were found here. Again, this is in line with expectations that, since only some FFM item themes are absorbed as contributors to the Risk Type Compass scales, other aspects of the FFM (and of the HPI) will be unrepresented in the Risk Type Compass model.

Correlations with the Hogan Development Survey

The risks that leaders choose, or choose not, to take will undoubtedly play a key role in organisational success. Leaders must continuously weigh up the costs and benefits of situations and events and make a decision that will impact the working lives of others. As such, there has been a great deal of research into what contributes to good or poor leadership performance (e.g. Fiedler, 1995). However, consensus or coherence in the subject has proved elusive. The Hogan Development Survey (HDS) was developed to measure factors that contribute specifically to leadership failure. The HDS is comprised of eleven scales of personality that, while generally advantageous, can prove counter-productive, especially under stress or periods of intoxicating success.

Termed 'dark side' characteristics, these behaviours can be grouped into three main themes, each containing between 2 and 5 behaviour scales: Moving Away, Moving Against and Moving Towards. Each of these three themes is related to the way an individual will handle insecurity and were developed from the self-defeating interpersonal styles identified by Horney (1950). Moving Away is characterised by a tendency to manage one's inadequacy by avoiding contact with others and maintaining a distance. Moving Against is characterised by using manipulation or control techniques to manage anxiety. Moving Towards, or 'ingratiation', is characterised by dealing with one's doubts through building alliances with others. Hogan saw Horney's classification as a useful way of organising dysfunctional behaviour (Hogan and Hogan, 1997). Furthermore, Hogan found the disorders to accurately reflect the common themes exhibited by individuals who, on the most part, appear to be getting by but perhaps are not realising their full potential or are gradually failing (Hogan & Hogan, 1997).

Seventy-three participants completed both the HDS and the Risk Type Compass. It is worth noting at this point, that due to the relatively small sample size, any conclusions drawn from the results must be tentative. It was hypothesised that individuals with different Risk Types would achieve significantly different scores on the HDS scale and that particular inferences for the interpretation of one or more of the Risk Type Compass scales based on the HDS may be justified by the relationships observed.

Correlational analysis between the Risk Type Compass scales and the three themes within the HDS revealed interesting findings (Table 5.36). First, it was found that participants who scored higher on the Moving Away HDS theme, characterised by a tendency to gain security by distancing oneself from others, were more likely to score low on the Emotion scale. This placed them at the emotional end of the spectrum, which is characterised by a tendency to

be pessimistic, easily irritated, apprehensive and emotional. The only exception here was the Reserved HDS scale, which did not show a significant association with either Risk Type Compass scale.

Second, participants who scored high on the Moving Against HDS theme, characterised by the type of individual who wins recognition with self-promotion or charm, tended to score higher on the Cognition scale. The Bold HDS scale is an exception here. Individuals who fall at this end of the Cognition scale are likely to be seen as flexible, carefree, disorganised and spontaneous in their risk taking. The strongest association within this cluster is with the Mischievous HDS scale, which is characterised by an enjoyment of risk taking, impulsivity and limit testing, a craving for excitement and a tendency to be manipulative or, at times, exploitative.

Third, participants who scored highly in the Moving Towards HDS theme, characterised by a tendency towards being loyal and indispensable in an attempt to obtain approval, generally scored lower on the Cognitive scale. Although both HDS scales within this theme were found to be negatively related to the Cognitive scale, Dutiful narrowly missed out on being significant which could perhaps be a consequence of the relatively small sample size used in the study.

Table 5.38. *Results of two-way Pearson correlational analysis between the HDS scales, categorised here according to their themes, and the two Risk Type Compass scales (n=74)*

HDS Theme	HDS Scale	Emotion Scale	Cognition Scale
Moving Away	Excitable	-.559**	-.1
	Sceptical	-.366**	-.088
	Cautious	-.360**	.131*
	Reserved	-.220**	-.053
	Leisurely	-.177**	.098
Moving Against	Bold	.125*	-.193**
	Mischievous	-.112	-.599**
	Colourful	.004	-.385**
	Imaginative	-.076	-.426**
Moving Towards	Diligent	.058	.349**
	Dutiful	.058	.062

** p<.05, **p<.01*

Correlations with the Motives, Values, Preferences Inventory

Research conducted as part of an MSc Occupational Psychology dissertation project by Gordon (2010) aimed to examine the role of security values in the workplace and how this might be related to the Risk Type Compass scales.

Security was measured using the Hogan Motives, Values, Preferences Inventory (MVPI), which assesses an individual's identity, motives and personal preferences. The MVPI is derived from over 80 years of literature on motivation and consists of ten scales which can be used to assess a person's 'fit' with a job, team or organisation. One of the scales in the MVPI is Security; high scores on the Security MVPI scale are associated with a need for structure, order and predictability. Individuals with this profile are likely to be averse to risk taking and will tend not to take unnecessary chances. They will be most satisfied working in an organisation that emphasises planning, has well defined processes and procedures and a history of stability.

130 participants, from a broad range of occupations within the UK working population, completed the Risk Type Compass and the MVPI. The results of a regression analysis between the Risk Type Compass scales, Cognitive and Emotion and MVPI Security values is displayed in Table 5.37.

Table 5.37. *Standardised beta coefficients for the study variables in the regression analysis (n=130)*

MVPI Variable	Cognition scale	Emotion scale
Security	-.59***	-0.1

****p<.001*

Correlations with the HPI Safety Competencies

Safety in the workplace can have important implications at the individual and organisational level, as well as to the wider economy (Barling & Frone, 2004). The traditional approach to improving workplace safety is to look at environmental factors, but a lack of success with this strategy has prompted researchers to focus on individual differences instead (e.g. Clarke, 2006). In response, Hogan Assessment Systems developed the Safety Competencies as part of their Hogan Personality Inventory (HPI) to help organisations identify individuals that were likely to engage in safe behaviours at work. These are displayed in Table 5.38.

Table 5.38. *The Hogan Safety Competencies with description*

Competency	Description
Compliant	A person's tendency to follow rules. Poor performers ignore authority and company rules. Exceptional performers willingly follow rules and guidelines.
Strong	A person's ability to handle stress with confidence. Poor performers tend to panic under pressure and make mistakes. Exceptional performers are steady under pressure.
Emotionally Stable	A person's ability to handle pressure without emotional outbursts. Poor performers easily lose their tempers and then make mistakes. Exceptional performers control their tempers.
Vigilant	A person's ability to stay focused when performing monotonous tasks. Poor performers are easily distracted and then make mistakes. Exception performers stay focused on the task at hand.
Cautious	A person's tendency to avoid risk. Poor performers tend to take unnecessary risks. Exceptional performers evaluate their options before making risky decisions.
Trainable	A person's tendency to respond favourably to training. Poor performers overestimate their competence and are hard to train. Exceptional performers listen to advice and like to learn.

Safety and risk taking at work are linked concepts. It's likely that certain Risk Types will have a more favourable disposition to safety behaviours, and this will subsequently be reflected in their scores on the Safety Competencies. Research conducted by PCL set out to examine this relationship.

Participants consisted of 78 individuals who completed both the Risk Type Compass and the Hogan Personality Inventory. Although there was a fairly even spread of participants across each Risk Type, there were only a limited number of participants in each, with sample sizes ranging from 6 in the Prudent Type to 12 in the Adventurous and Carefree Types. Therefore, conclusions must be tentative.

Results found the Cognition scale to be significantly associated with the HPI Safety Competencies (HSC), Compliant and Cautious. This suggests that individuals who fall at the Measured end of this Risk Type Compass scale are likely to follow rules and evaluate all options before making a decision. No significant relationship was found with the Vigilant HSC.

The Emotion scale was found to be significantly associated with the Strong and Emotionally Stable HSC, implying that individuals that are calm and composed in their risk-taking style are more likely to be capable of handling pressure and stress without emotional outbursts. A significant association was also found between the Trainable HSC and Emotion scale. The association with the Cognition scale and the Trainable HSC was marginally not significant (p=0.05).

Table 5.39. *Correlation analysis of the two Risk Type Compass scales and the six HPI Safety Competencies (n=78)*

RTC scales	Compliant HSC	Strong HSC	Emotionally Stable HSC	Vigilant HSC	Cautious HSC	Trainable HSC
Emotion	.36**	.19	-.19	-.18	-.46***	-.22
Cognition	.26*	.51***	-.53***	-.19	.00	.25*

**p<.05. **p<.01. ***p<.001*

Interpretative Summaries of Correlation Research

This section draws together each of the studies reported above to consider what we can draw from these findings in terms of the meaning and interpretation that can be applied to Risk Type Compass assessment results.

There are broadly three levels of interpretation for a personality questionnaire like the Risk Type Compass. The first is the item content, i.e., the questions that the candidate has answered. Here we can make assumptions about the individual based on the way that they have answered the items and where they fall on the tool's underlying scales.

The second level involves inferences that are supported by the extensive research into personality accumulated over recent decades and, in particular, by the various validation studies comparing the specific instrument in question with others addressing similar or related themes or constructs and different behavioural variables (like those described above). Here we can broaden our understanding of the meaning of the assessment, allowing fuller interpretation of the Risk Type Compass scales and, consequently, of the Risk Types.

Thirdly, as with the use of any personality questionnaire, the proficiency of the practitioner will reflect the depth and use of the information gleaned; in particular, experience in giving feedback to candidates and discussing their profiles. This develops a clearer appreciation of a subtler range of implications for particular profiles. Overall, the first level of interpretation can be seen as the most literal, the second is backed by empirical evidence and the third is the richest and most nuanced.

Drawing from the validation studies reported above, the following inferences may reasonably be made about the eight Risk Type Compass Risk Types.

The Pure Risk Types

The Composed Risk Type (High Calm)

The Composed Risk Type is even-tempered, emotionally even and remains calm and steady in the face of change or the unexpected. Such people should be capable of taking life's ups and downs in their stride and will be comparatively calm in situations that may rattle others (Composure PM2). Consequently, the Composed Risk Type is likely to be capable of coping with fast-paced work environments and will cope with heavy workloads without over-reacting to stress (Adjustment HPI). Overall, the Composed Risk Type is likely to appear self-confident, upbeat, and optimistic; they will be at ease with themselves and have few self-doubts about the value of their own views and their ability to communicate their ideas (Self-esteem PM2).

Overall, themes of resilience, composure and optimism can be seen to consistently emerge as key constructs underscoring this Risk Type (Strong, Emotionally Stable and Trainable HSC). As a side point, the association made here to the HPI Safety Competencies points to the appropriate use of the Risk Type Compass for Health and Safety management within the workplace. Those who fall within the Composed Risk Type are likely to be considered 'safer' employees due to their tendency to be level-headed and emotionally stable and their willingness to embrace new training opportunities (Foster, 2010).

The Intense Risk Type (High Emotional)

The Intense Risk Type may react passionately to events and display their emotions readily (Composure PM2). At times, their passion may be perceived as an inconsistency in mood in which they appear 'up' one moment and 'down' the next (Excitable HDS). While the Composed Risk Type will remain cool, calm and collected in the face of stress, the Intense Type is likely to become anxious and on edge. They are their own worst critic and are hard on themselves. This, coupled with being overly sensitive to criticism from others, means they tend to feel things deeply when things go wrong and dwell on past mistakes (low Adjustment HPI, Sceptical HDS). On the upside, when they are able to manage the negative aspects of strong fluctuating emotions, their passion and enthusiasm makes them committed and loyal employees (Composure PM2, Excitable HDS). Those with this Risk Type have the potential to not trust people, they may choose to distance themselves from others, assuming others have bad intentions (Moving Away HDS). They are also likely to avoid taking chances where possible, in an attempt to sidestep the inevitable anxiety.

The Intense Risk Type may be described as being self-conscious, unsure of their ability, and have a tendency to be self-doubting (Self-esteem PM2). On the upside, these characteristics can provide the fuel and determination required for the Intense Type to improve and succeed in what they do; due to their tendency to be self-critical they make note from past failings and learn from their mistakes. (Low Adjustment HPI).

The Prudent Risk Type (High Measured)

Drawing from the validity research, the Prudent Risk Type is likely to appear conforming and obedient; they may be particularly anxious to comply with rules and procedures and, as a result, behave in a restrained and cautious manner (Compliant PM2, Prudent HPI, Compliant HSC). On occasions, this desire to stick to the 'right way' of doing things may be seen as a level of inflexibility and result in an inability to cope in fast-paced or more fluctuating environments (Prudent HPI and Diligent HDS). This potentially explains the risk-

averse nature of the Prudent Type, for whom sticking with the established way of doing things will typically take preference over any form of innovation.

The Prudent Risk Type is likely to be thorough, organised and concerned about the quality of the detail in their work (Perfectionistic PM2). Individuals with this profile are likely to be the type of person who will prefer to gather all the information available and consider it in a systematic manner before making a decision (Prudent HPI, Cautious HSC). They are likely to value working within a climate of predictability and certainty, in which everything 'has its place' and there are clear and structured guidelines to work within (Security MVPI). In terms of risk taking, it is likely that the Prudent Type will attempt to minimise risk by having a detailed and structured plan that will allow them to overcome all eventualities.

The Carefree Risk Type (High Daring) 

Situated at the opposite end of the scale from the Prudent Type, the Carefree Risk Type may be described as individualistic and autonomous; this Type will have little concern for conforming with established ways of doing things, preferring instead to tread their own path (low Compliant PM2, low Diligent HDS). As such, they are likely to be viewed as flexible, and perhaps as innovative thinkers (low Prudence HPI, Imaginative HDS); characteristics that have shown to correlate with greater risk tolerance.

On the other hand, the Carefree Risk Type may seem careless and disorganised at times (low Perfectionistic PM2, Colourful HDS). They will be less concerned about adopting a carefully planned and structured approach and, as a result, their decision-making style may lack consistency (low Prudence HPI). The Carefree Type has a preference for variety and enjoys a changing work environment; they embrace uncertainty and revel in the excitement associated with being impulsive and spontaneous. They may at times purposely test the limits and push the boundaries, fuelled by a craving for excitement and a lack of inhibition (Mischievous HDS). The attention this type of behaviour attracts from others may only add to the excitement and appeal (Colourful HDS). Risk taking for the Carefree Type is likely to be a consequence of both a lack of concern for structure, order and predictability, coupled with a need for excitement and experience seeking.

The Complex Risk Types

Positioned between two 'Pure' Risk Types, the 'Complex' Risk Types display a combination of features from their adjoining neighbours. In addition to this simple summation, there will be an interaction between these two influences; a chemistry that contributes an additional set of features distinct to that Risk Type.

The Deliberate Risk Type (High Calm and High Measured) 

The Deliberate Type falls between the Composed and Prudent Type on the compass and will therefore contain elements of both. Feeding in from the Composed side, the Deliberate Type is likely to be resilient and calm in the face of stress (Composure PM2) and will appear self-confident, self-assured and optimistic (Adjustment HPI, Self-esteem PM2). Coupled with this is a desire to stick to the rule book and follow procedures; a tendency to conform to the established norms (Compliant PM2). These individuals are likely to be particularly capable of adopting a systematic and organised approach to their work, for example researching options thoroughly and putting in place detailed plans of action (Prudent HPI, Diligent HDS). Although this Risk Type has a preference for predictability and certainty, their resilience, optimism and confidence allow them to tolerate risk reasonably well. They will remain relatively calm and steady under pressure (Adjustment HPI) and approach decision-making in a business like, purposeful way and never go into anything unprepared.

The Adventurous Risk Type (High Calm and High Daring)

Falling between the Composed and the Carefree Risk Types, the Adventurous Risk Type shares characteristics with each. This Risk Type will be relatively unmoved by disappointment and will remain calm under pressure (Composure PM2). They are able to maintain a positive and upbeat outlook, taking any setbacks confidently in their stride (Adjustment HPI). In addition, the Adventurous Risk Type has the potential to be impulsive, spontaneous and nonconforming with regard to expected rules and processes (low Prudence HPI, low Compliant PM2).

Taken together, their optimism and resilience, combined with being excitement seeking, impulsive and resilient, give the Adventurous Risk Type a level of risk tolerance that surpasses all others. A desire for stimulating challenges, combined with the self-belief and confidence to meet new experiences head on, means their decision-making will be fuelled by an impulsive fearlessness.

The Excitable Risk Type (High Daring and High Emotional)

The Excitable Risk Type falls between the Intense and the Carefree Types, creating a unique combination of characteristics derived from the two. The Excitable Type is likely to demonstrate elements of passion and emotion; an enthusiastic rush when things are going well, coupled with 'moodiness' when the going gets tough (low Composure PM2). As a result, their mood is likely to be inconsistent and their commitment to ideas, projects or new ventures may be seen to vary (Excitable HDS). This temperamental nature may be further fuelled by the excitement-seeking impulsivity adopted from the Carefree Type (Colourful HDS, Mischievous HDS). This Risk Type also has the tendency to disregard rules, and a preference for a flexible and individualistic approach (low Prudence HPI, low Diligent HDS).

However, although experience seeking, the Excitable Risk Type is anxious by nature and will possess a fear of failure (low Adjustment HPI, low Self-esteem PM2). As a consequence, this kind of individual is likely to appear inconsistent in their risk-taking style; moving from excitable impulsiveness to being cautious and regretful about decisions made in haste.

The Wary Risk Type (High Measured and High Emotional)

The Wary Risk Type falls at the top of the compass, sandwiched by the Prudent and the Intense Risk Types. Consequently, they are likely to demonstrate elements of rule-abiding conformity, with a high level of anxiousness. They may be seen to be restrained, cautious and perhaps rather inflexible (Prudence HPI). As such, the Wary Type may not be as comfortable as others in fast-paced environments, preferring a level of prescribed structure and predictability (Security MVPI).

This Risk Type is likely to be particularly organised and concerned with the quality of their work. They will devote time and effort to everything they do in an effort to avoid failure (Perfectionistic PM2). Underlying characteristics of the Wary Risk Type suggest they are more emotional than most (low Composure PM2). They will be uncomfortable under pressure or when out of their comfort zone (low Adjustment HPI) and have the potential to be self-doubting in their abilities (Self-esteem PM2, Composure PM2). Yet, when things are going according to their rather exacting requirements, the Wary type will bring enthusiasm and passion to the table (Excitable HDS) as well as commitment and loyalty.

In terms of their risk taking, the Wary Type appears to have two reasons for being particularly risk averse: first in their preference for structure, order and predictability and,

second, in a level of fearfulness that arises from their low confidence, pessimism and anxious nature. It is therefore perhaps unsurprising that the Wary Type is the most risk-averse of all the Risk Types.

Risk Tolerance

The focus of the above discussion is on the meaning of Risk Type Compass scores and the inferences that can appropriately be considered in interpreting each of the Risk Types. In addition to these Risk Type validity issues, responses to the Risk Type Compass questionnaire are also scored to derive a composite measure of risk tolerance; the RTi. The remaining issue is, 'does the Risk Type Compass actually measure risk taking?'. We know that it is built from the Five Factor Model (FFM) risk themes and that the FFM scales are backed by a significant body of research confirming their associations with various features of risk taking and risk aversion; impulsivity, over-confidence, prudence, vigilance, compliance, and fearfulness, for example. There are also a number of studies that have explicitly addressed the question that we originally posed; 'is personality a predictor of risk behaviour?'. These all provided some affirmative evidence within different contexts.

To address the issue more directly, PCL conducted a study comparing the overall risk tolerance measure derived from the Risk Type Compass (the RTi), with a questionnaire relating to five different risk domains (Blais & Weber, 2006) that was also capable of generating an overall measure of propensity for risk taking. The approaches of the two instruments are conceptually different: the focus of the Risk Type Compass is on the more deeply rooted core of personality, seeking to get behind the more variable influences of personal experience, situation, exposure, and attitudes; the approach adopted by Blais and Weber is more holistic, incorporating both what the Risk Type Compass would term Risk Type and Risk Attitude. The questionnaire measures risk taking across five domains: reputational, financial, recreational, social and health and safety.

For the purposes of this study, a total risk-taking variable was created from the Blais and Weber questionnaire by summing the scores on each of the five risk attitude domains ('Total Risk'). It is important to note that whilst the questionnaire uses similar domains to the Risk Type Compass Risk Attitudes measure (part two of the assessment), the questionnaire itself differs both theoretically, as discussed above, and structurally. Importantly, Blais and Weber's (2006) risk attitude measure is normative rather than ipsative, allowing objective comparisons to be made between participants. In practical terms, the similarities between the Risk Type Compass and the Blais and Weber questionnaire are that both are self-reports and concerned with predicting risk behaviours. Both, in their different ways, take risk attitude into account but with different degrees of emphasis.

Seventy participants who had completed the Risk Type Compass were invited to complete the Blais and Weber (2006) risk attitude questionnaire. The questions are based on a Likert scale, requiring participants to rate the likelihood of engaging in particular risky behaviours on a scale from 1 ("Extremely Unlikely") to 7 ("Extremely Likely").

Table 5.40. *Correlations for the personality and risk attitude variables measured in the study (n=70)*

RTC scales	Reputational	Financial	Health & Safety	Recreational	Social	Total Risk
Emotion	-.16	.31**	-.10	-.39**	-.47***	-.31**
Cognition	.22	.44***	.33**	.46***	.59***	.64***

***p<.01. ***p<.001*

The Risk Type Compass Cognitive scale was found to show a strong positive relationship to the Blais and Weber's Total Risk, implying that the further towards the Daring end of the spectrum an individual fell, the greater their risk tolerance. Similarly, the Emotion scale was

also found to show a significant positive relationship to the Blais and Weber measure, suggesting that the further towards the Calm end of the scale an individual fell, the greater their risk tolerance.

Inspection of risk tolerance at the domain level reveals how this relationship is patterned in different areas of risk taking. From Table 5.40 we can see that the Emotion and Cognition scales are significantly positively related to risk tolerance within the financial, recreational and social domain. The exception is the Health & Safety domain, which, although significantly related to the Cognition scale, showed no relationship to the Emotion scale.

Overall, these results provide strong evidence of the relationships between the personality scales Emotion and Cognition and risk tolerance as assessed by Blais and Weber's (2006) self-reported attitudinal measure. Both hypotheses were supported. First, high Emotion scores were found to be related to greater risk tolerance. That is, those that are likely to be described as resilient, confident, calm, optimistic, trusting, forgiving, patient and as the type of person who would not let their emotions affect their decision making, will show greater risk tolerance overall. This can be explained by the tendency of these individuals not being overly anxious about failure and having the confidence to take risks that others may find daunting. This behavioural pattern was found to be consistent across all domains, excluding health and safety.

Second, higher Cognition scores were related to having a greater risk tolerance. Individuals with this score profile are likely to be spontaneous, adventurous and excitement seeking, but at times may also be reckless, non-conforming and lack a methodical and focused approach. These individuals will not be aware of the need to plan through the positives and negatives of risk actions and their desire for adventurous and sensation seeking means they are likely to actively seek out risks. This was found to be true across all risk domains.

Risk Tolerance and MVPI Security

In a second study looking at the validity of risk tolerance, Gordon (2010) considered the association between valuing Security (MVPI) and risk tolerance, hypothesising that those individuals that have a preference for security will have a lower risk tolerance (RTi).

High scores on the Security MVPI scale are associated with a need for structure, order and predictability. People with scores like this will be concerned with planning for the future and minimising financial risk, employment, uncertainty and criticism. They are likely to be averse to risk taking and will not take unnecessary chances. In the workplace they will foster a climate devoted to safety, proper procedures and minimising mistakes. High scorers should therefore have fairly low levels of risk tolerance. Gordon's study used a sample of 132 people from a variety of different sectors.

Table 5.41. *Standardised beta coefficients for the study variables in the regression (n=132)*

Predictor Variables	Risk Tolerance Index
Security	-.42***
Gender	.33***
Age	.08

****p<.001*

Results showed Security to be significantly negatively associated with the Risk Tolerance Index (Beta= -.42, p<0.001), confirming the hypothesis that high scorers on the Security scale are associated with having a lower risk tolerance.

There was no relationship between age and risk tolerance. However, gender was significantly related (Beta = .33, p<0.001), with males (Mean=54.96, SD = 17.88, n=72) having higher risk tolerance levels than females (Mean=40.50, SD = 18.18, n=60).

Mean Security scores were also ascertained for each of the Risk Types. As each Risk Type is associated with a different level of risk tolerance (with those at the top of the compass less risk tolerant than those at the bottom), each should also be associated with varying levels of the Security variable.

Analysis of Variance (ANOVA) showed significant differences in Security scores across the Risk Types ($F(8,123) = 6.23$, $p<0.001$). Definitive conclusions cannot be drawn due to the small sample sizes in the majority of the groups. Nonetheless, it would be predicted that as Risk Tolerance increases from the top of the graphic at the least risk tolerant Wary type down to the most risk tolerant Adventurous type, Security scores would follow the same pattern. Results indicate that this is largely the case, with the mean Security value for the Wary Type (44.93) significantly higher than the mean Security value for Adventurous (34.62).

Table 5.42. *Average score on MVPI Security for each Risk Type (n=132)*

Risk Type	Security MVPI
Wary	44.93
Intense	38.25
Prudent	43.6
Deliberate	43.36
Excitable	33.89
Axial	39.67
Composed	37.59
Carefree	32.75
Adventurous	34.62
Total	**39.98**

However, it is interesting that Security scores do not decrease entirely in accordance with increasing risk tolerance. This may be due to the two main personality scales that underpin the Risk Types. There is a tendency for the Types associated with taking a measured approach to risk (Wary, Prudent and Deliberate) rather than having a more daring disposition (Excitable, Carefree and Adventurous) to score higher on Security. The emotional side of risk personality seems not to have a great impact on valuing security, as indicated by minimal differences between the Type associated with low levels of emotional stability (e.g., Intense: Security mean=38.25), and the Type related to high (e.g., Deliberate: Security mean=43.36).

Table 5.43. *Standardised beta coefficients for the study variables in the regression analysis (n=132)*

Predictor Variables	Cognitive scale	Emotion scale
Security	-.59***	-.01

***p<.001

As would be predicted, only the Cognitive scale was significantly associated with Security (Beta = -.59, $p<0.001$). This is in accordance with the previous Risk Tolerance validity study based on Blais and Weber's (2006) psychometric assessment. In summary, this suggests that characteristics pertaining to Daring and Measured have a greater overall influence on risk tolerance than those associated with the more emotional side of risk taking.

Summary

The broad ranging nature of the personal characteristics discussed above, and the fact that the research produces correlations that fall towards the medium to low range in strength, implies that, although statistically significant their 'overlap' will be nuanced rather than emphatic. Each individual falling within a particular Risk Type will show a unique combination of characteristics from this broad spectrum described. The influence of these dispositions will not be confined to risk behaviour. The Risk Type Compass overlaps with the personality domain and, although focused on risk, the impact of Risk Type characteristics will be widely expressed in behaviour and in many contexts.

To summarise our findings, the Emotion scale is concerned with measuring dispositions ranging from fearful, (hypersensitive, changeable in mood, and apprehensive), to fearless (stable, poised, flexible, self-confident, upbeat, and optimistic). Considering risk preferences along the Emotion scale, we appear to be categorising risk taking in terms of the degree of fear and apprehension inherent in individuals faced with threat, change, the unexpected or the need to make decisions that are emotionally challenging. Those who fall at the Calm end of the scale (the Composed, Adventurous and Deliberate Risk Types) are likely to be more risk tolerant due to an inherently calm fearlessness; they are comfortable with taking leaps into the unknown because they are generally optimistic; they are 'calm and collected' in conditions that would fluster others and confident in their choices and their ability. Those located towards the Emotional end of the scale (the Intense, Wary and Excitable Risk Types) will be risk averse for the opposite reasons.

The correlation results both confirm and add to what we already know about the Cognition scale. In summary, the results show that the Cognition scale is tapping into constructs of conformity, dependability, obedience, and rule-abiding tendencies. Or, at the opposite end of the scale, an almost reckless disregard for established procedures. In addition, there is a key theme of characteristics pertaining to being organised, prepared and systematic, and wanting to gather and evaluate all the available information. This runs through several of the correlation research findings. An inherent tendency to be prudent, detailed, planned and compliant with procedures and rules will typically place individuals at the Measured end of the Cognition scale (i.e. Prudent, Deliberate and Wary Risk Types). This is likely to lead to behaviours that are typically careful, informed and risk averse. Towards the Daring end, individuals are likely to be carefree, unpredictable, flexible, impulsive and therefore fairly risk tolerant (the Carefree, Adventurous and Excitable Risk Types). In this way, the two scales can be seen to take different stances on measuring risk tolerance. The Emotion scale looks at risk taking as a consequence of anxiety, or lack of it. The Cognition scale can be described in terms of control, or lack of it.

Chapter 6 – Occupational and Age Differences in Risk Type

This chapter explores the Risk Type profiles of different occupations and across age ranges. The subject of occupational differences is approached from multiple angles, taking into consideration industry sector, job level, years of experience and a discussion of the risk profiles of a selection of individual job types. The aim here is to explore how Risk Type differs as a function of various job attributes.

Public versus Private Sectors

It has been argued that the work motivations and preferences of private sector workers differ from those who work in the public sector (e.g. Buelens & Van den Broeck, 2007). Some of these differences may stem from the nature of public sector jobs, many of which are to do with caring for others or contributing directly to the welfare of society. Alternatively, people may be attracted to public sector jobs due to a desire for greater job security; in the majority of cases, public sector jobs are less volatile than their private counterparts, tend to be more secure and have generous pension plans. This perhaps explains why research has consistently found public sector workers to be more risk averse than those in the private sector. Roszkowski, Davey, and Grable (2009), for example, looked at the financial risk tolerance of financial planners and found private sector workers to be significantly more risk tolerant than their public sector counterparts. Psychological Consultancy Ltd (PCL) set out to research this topic and recruited 433 participants (156 of whom worked in the public sector) to complete the Risk Type Compass. In line with previous research, it was hypothesised that public sector workers would show a lower risk tolerance than private sector workers.

An independent sample T-Test revealed private sector workers as having a significantly greater risk tolerance (RTi) than their public sector counterparts (277 vs. 156, $p<.05$), supporting the hypothesis. This implies that – whether through a process of attraction, selection and/or attrition – those in the public sector are generally more risk averse than those in the private sector.

Job Level and Risk

Risk and leadership are inextricably linked. Progression in seniority is accompanied by increased responsibility and influence over increasingly complex systems, and actions will have a greater impact as a result. Managing these systems effectively will necessitate greater exposure to uncertainty, as increased responsibility for decisions about new products, market expansion, or strategy implementation will carry more risk. This suggests that an individual's ability to tolerate risk is an important predictor of advancement in seniority.

Despite the integral importance of risk to leadership, Fourie (2022) notes that no review on the topic of leadership and risk has appeared in highly ranked management journals in the past 20 years. After conducting this review of the management literature, Fourie notes six thematic clusters, including the interlinked ‘followers’ risk appetite’ and ‘leaders’ risk appetite’, ‘risk, creativity and innovation’, and ‘risk and failure’. Consideration is given to the teams, organisations, and even national cultures in which leaders operate, but little attention has been given to individual leaders' risk tolerance and how it may aid in advancement in an organisational hierarchy.

By analysing data collected with the RTC over the previous 15 years, PCL sought to explore whether levels of risk tolerance varied across different levels of seniority, from employees up to the boardroom. Given that leadership positions will encompass greater uncertainty, our research sought to determine whether participants employed in opposition of increased seniority would possess greater risk tolerance (RTi) compared to less senior participants.

A total of 7,662 participants were included in the study. Participants were asked to identify their job seniority from a dropdown menu that included the options of 'Board', 'Director', 'Executive', 'Senior Manager', 'Manager', 'Supervisor', or 'Employee'. Participants who identified as 'Self Employed' were excluded from this analysis. Table 6.1. presents the breakdown of participants' job levels after grouping 'Board', 'Director', and 'Executive' into a 'Board-level' category, in addition to the sex distribution and average age of each group.

Table 6.1. *Breakdown of participants by job seniority*

Job Level	N	Av. Age	% Male	% Female
Board Level	1379	48.24	69.91%	28.28%
Senior Manager	1305	45.21	64.21%	35.02%
Manager	1388	40.59	58.72%	39.91%
Supervisor	449	37.99	58.57%	40.76%
Employee	3141	34.10	49.51%	49.60%
Total	**7662**	**40.12**	**57.88%**	**41.01%**

The proportion of each job level by Risk Type is included in Figure 6.2. below. Risk Types are broadly ordered (left to right) from low Risk Tolerance (Wary) to high risk tolerance (Adventurous).

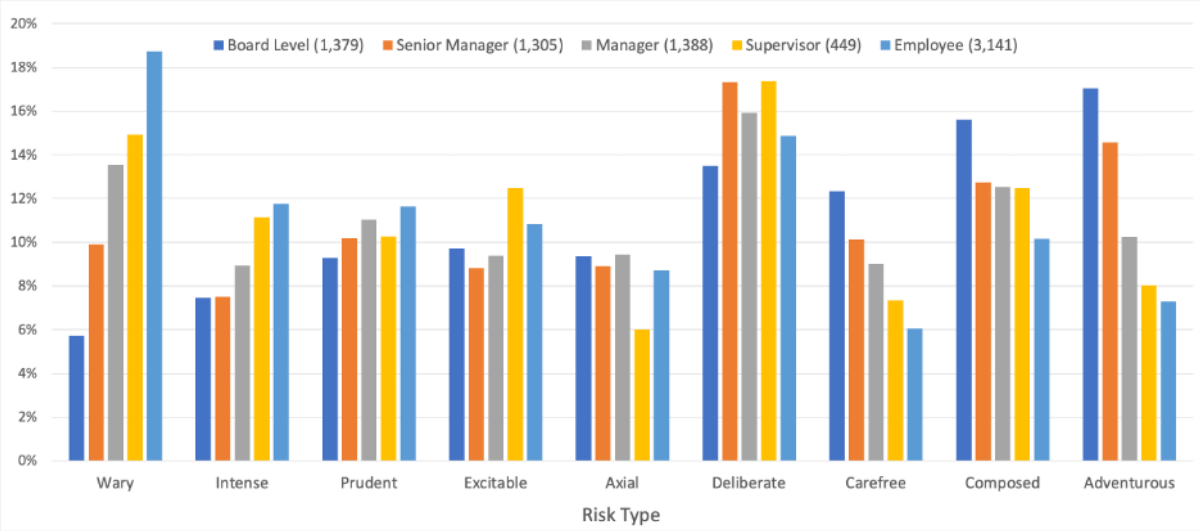


Figure 6.2. *Job Seniority Breakdown of Participants by Risk Type*

The analysis revealed that the distributions of Risk Types varied significantly depending on the seniority of the participants. Participants with lower seniority were more likely to be in the most risk-averse 'Wary' Risk Type. Participants who were more senior, on the other hand, were more likely to be an 'Adventurous' Risk Type.

Figure 6.3. shows an additional analysis of the data using the Emotion, Cognition, and RTi scales, and it illustrates the key trends in relation to participant seniority.

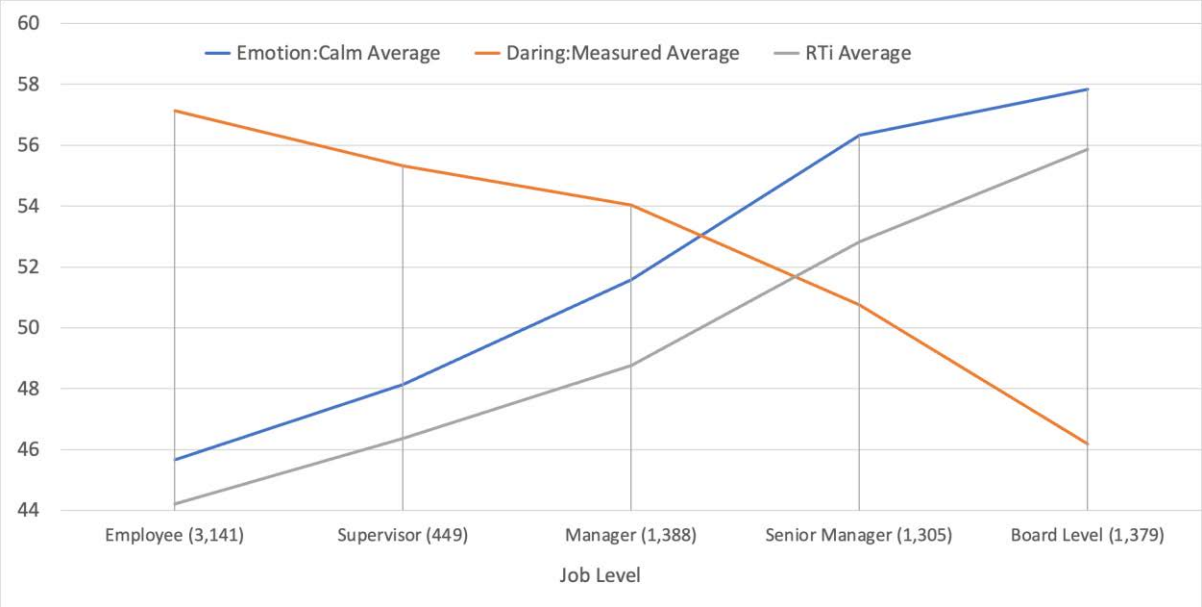


Figure 6.3. *Scale Averages by Job Seniority*

Analysis revealed clear correlational trends between job role seniority and several key RTC scales, in line with Risk Type distributions. Scores on the Emotion scale increased with seniority, indicating that participants with more seniority were more likely to score near the 'calm' end of the scale. When the Cognition scale was analysed, the correlational trend was reversed, indicating that more senior participants were more likely to score near the 'daring' end of the Cognition scale. These two scales combine to create the Risk Tolerance Index (see Fig. 6.3.), which subsequently illustrated that as the seniority of participants increased, so did risk tolerance.

The findings show that risk tolerance and seniority have a clear and positive relationship. This suggests that the ability to tolerate uncertainty appears to facilitate organisational upward mobility. Furthermore, the analysis revealed that the two underlying drivers of risk tolerance - emotion and cognition - were equally important in predicting seniority. Several explanations can be advanced for why risk tolerance correlates with seniority.

Willingness to learn from failure reflects an important interaction between risk tolerance and leadership. Leaders who do not fear taking risks will inevitably face setbacks and failures. Instead of viewing failure as a negative outcome, leaders may view it as an opportunity to learn and grow. Leaders can develop a more effective approach to risk-taking in the future by analysing what went wrong and identifying areas for improvement. Personality is important in this context because it can predict how setbacks will be perceived and reacted to, as well as how they will influence future behaviour. The Emotion scale is particularly pertinent here, as it encompasses personality characteristics that include 'optimism', 'resilience', and 'forgiving'. Participants who score highly in these areas are less vulnerable to the emotional impact of failure and are less likely to exhibit risk aversion in future decisions as a result.

At a broader level, the FFM factor of Neuroticism that the Emotion scale heavily draws from strongly predicts experiences of wellbeing, stress and burnout. RTC research provides consistent evidence that high scores on this scale strongly predict greater wellbeing and lower levels of stress and burnout. Given that an important element of risk tolerance is a decreased likelihood of experiencing emotional instability from uncertain situations, it is unsurprising that more senior participants reflect these characteristics more strongly.

The Risk Profiles of Specific Occupations

Certain occupations can be differentiated by their risk profiles. By default, any occupation or profession will tend to attract and retain people who are happy with the risk demands and exposure associated with it. This is the premise behind Schneider's (1987) attraction, selection, attrition hypothesis which describes how people with similar values to the organisation will (a) be more attracted to apply for a position in the company, (b) have a higher chance of being recruited for the role and (c) will in the majority of cases stay in organisation for the long-term. The result of this is a set of shared characteristics that make up the organisational culture and define what a profession stands for.

4,126 individuals from the 2015 Risk Type Compass sample provided a level of self-reported qualitative data that was sufficient to place them within job categories. In many cases, the detail that was provided enabled an additional level of specificity (e.g. auditors, accountants, police officers, etc.), allowing researchers to draw multiple comparisons between job roles. Exploration of the data indicated that a sizeable range of job roles were represented in the sample group, allowing analyses to reflect the distribution of Risk Types that are prevalent in several industries. Within some industries the distribution of Risk Types is broadly similar to that in the total sample. The first two examples in the discussion below - Professional Services and Finance - show a fairly equal balance of Risk Types. This is probably because of the diversity of roles within both of these sectors. In each of the other examples, differentiation is more pronounced.

Professional Services

A total of 5,192 candidates (54.45% male, 45.55% female) reported a role that fell into this broad category, with examples including 'risk managers', 'consultants', 'auditors', and 'project managers'. Figure 6.4. illustrates the breakdown of Risk Types in this group.

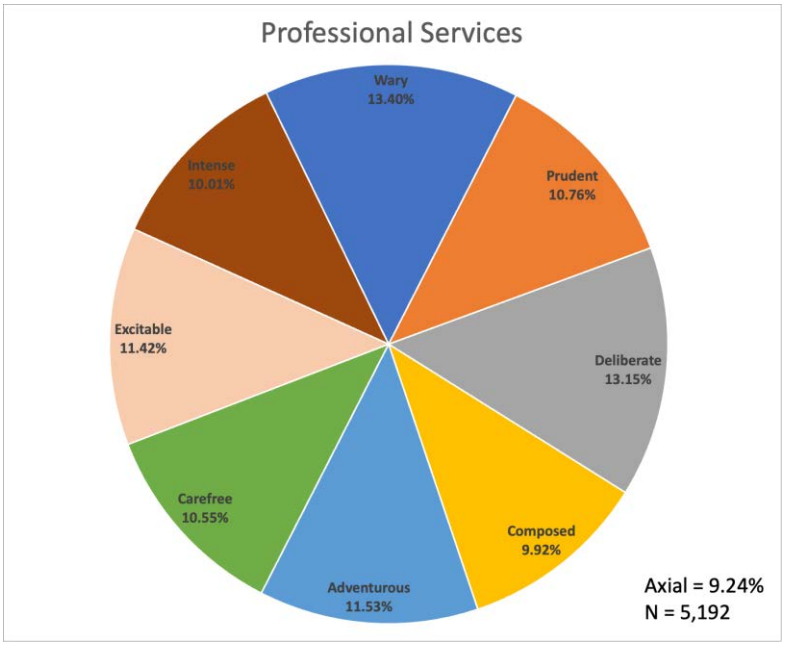


Figure 6.4. *Pie chart illustrating the percentage of the 'Professional Services' sample in each of the eight Risk Types (n=5,192). The Axial group consists of 9.24%.*

The distribution of Risk Types in the 'Professional Services' group indicates a relatively even spread of Risk Types.

Finance

Another broad employment category was labelled ‘Finance’, which contained 2,511 individuals (78.95% male, 21.05% female). Job roles in this sample included ‘trader’, ‘accountant’, and ‘finance director’. Figure 6.5. below presents a breakdown of Risk Types for this group.

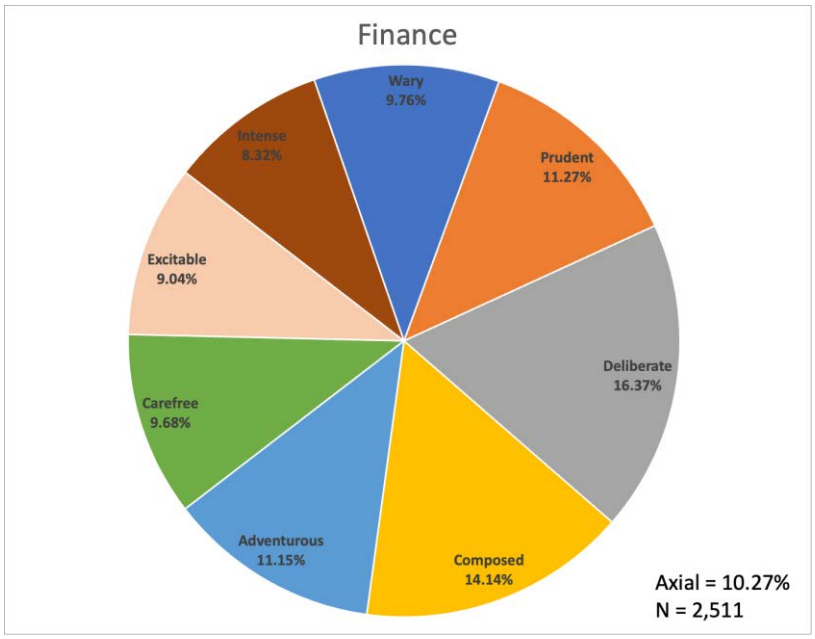


Figure 6.5. *Pie chart illustrating the proportion of the ‘Finance’ sample in each of the eight Risk Types (n=2,511). The Axial group consists of 10.27%.*

Comparison of the ‘Finance’ group against the Risk Type distributions in the overall sample shows that, with a couple of minor exceptions, both have a similar distribution of Risk Types. The most significant contrast is reflected in the ‘Axial’ group, with a greater proportion of individuals allocated to this category. The data also indicates a slight decrease in the proportion of ‘Deliberate’ Risk Types in the Finance sample. Overall, the distribution between Risk Types in these two samples is fairly even. This is perhaps reflective of the wide range of skills and roles available under these two categories meaning that no one Type dominance emerges.

Human Resources

An additional employment subset was categorised as ‘Human Resources’, which included a sample of 787 individuals (22.19% male, 77.81% female). Examples of the roles that were included in this group were ‘human resources advisor’, ‘recruiter’, and ‘junior HR Specialist’. Figure 6.6 below illustrates the distribution of the eight Risk Types within this group of individuals.

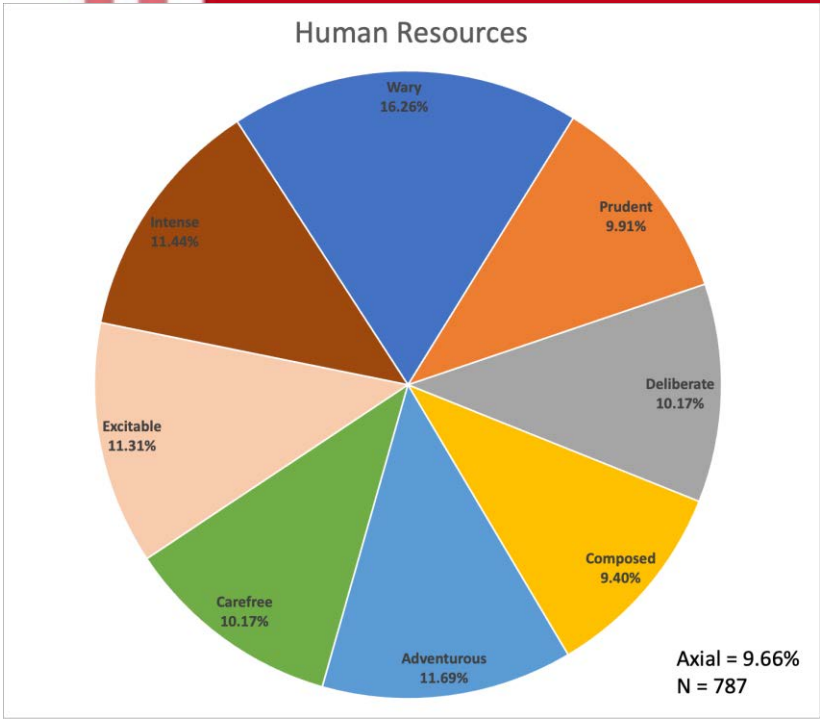


Figure 6.6. *Pie chart illustrating the percentage of the 'Human Resources' sample in each of the eight Risk Types. The Axial group consists of 9.66% (n=787).*

As with other broad employment groups, the 'Human Resources' sample showed variations in the distribution of Risk Types when compared with the overall sample group. When compared against the total sample of 7,072 individuals, there are notable contrasts within this employment category; lower proportions of the 'Deliberate' and 'Composed' Risk Types, and greater proportions of the 'Intense' and 'Carefree' Risk Types. We have chosen to report on just a few occupations that have particularly visible cultures; namely, Recruiters, IT professionals, Police Officers and Auditors. The risk profile of each of these is discussed below.

Administration

A subset of individuals were categorised as 'Administration' professionals. This sample of 575 individuals (29.71% male, 70.29% female) is represented in Figure 6.7. below.

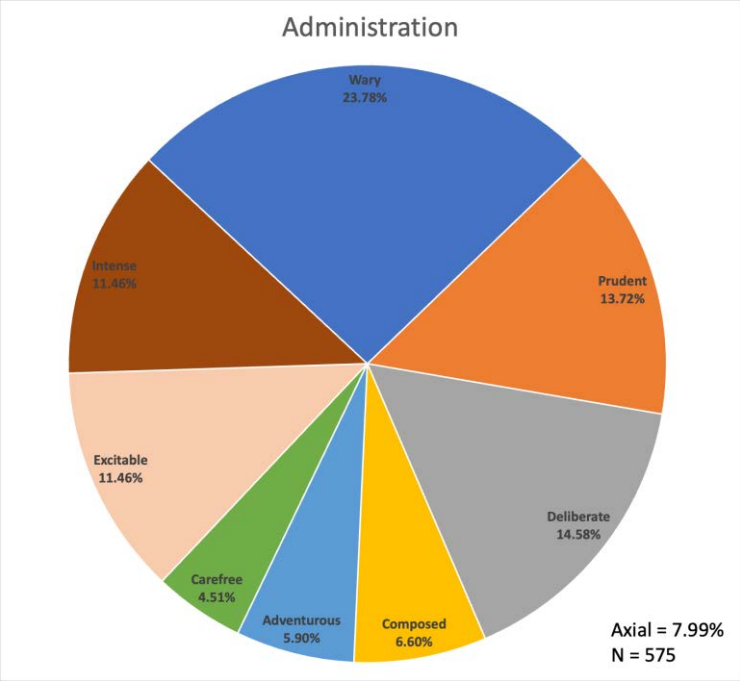


Figure 6.7. *Pie chart illustrating the percentage of the 'Administration' sample in each of the eight Risk Types. The Axial group consists of 7.99% (n=575).*

General Management

A subset of individuals were categorised as 'General Management' professionals. This sample of 2,178 individuals (67.73% male, 32.27% female) is represented in Figure 6.8 below.

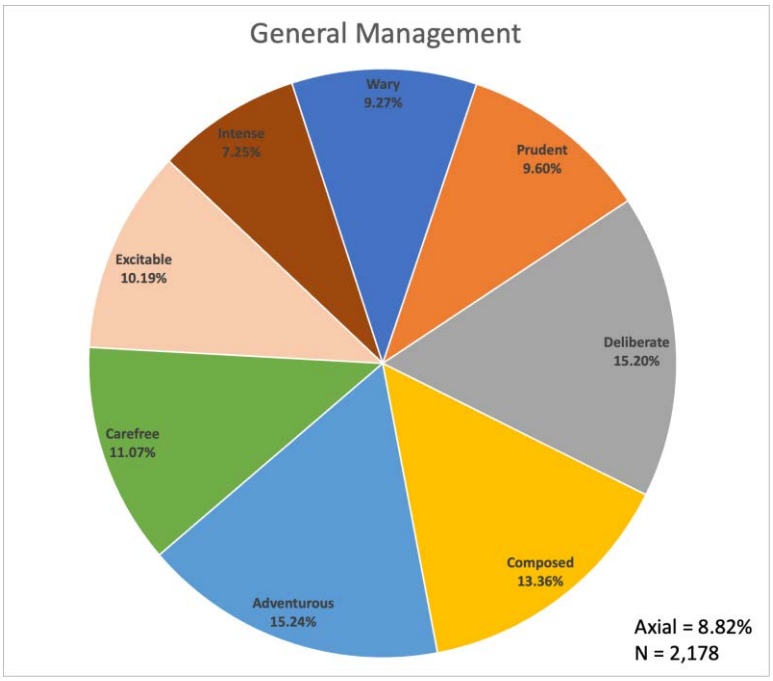


Figure 6.8. *Pie chart illustrating the percentage of the 'General Management' sample in each of the eight Risk Types. The Axial group consists of 8.82% (n=2,178).*

Production

A subset of individuals were categorised as 'Production' professionals. This sample of 297 individuals (77.12% male, 22.88% female) is represented in Figure 6.9. below.

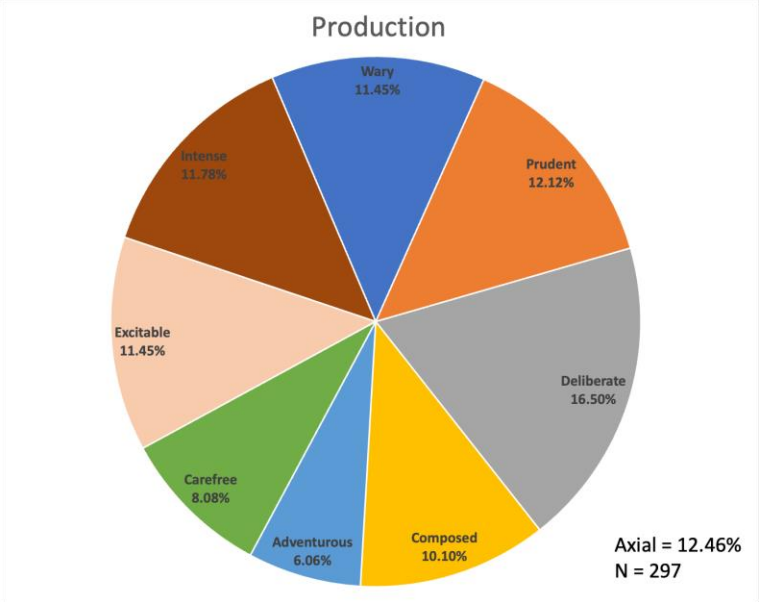


Figure 6.9. *Pie chart illustrating the percentage of the 'Production' sample in each of the eight Risk Types. The Axial group consists of 12.46% (n=297).*

Research & Development

A subset of individuals were categorised as 'Research & Development' professionals. This sample of 487 individuals (46.79% male, 53.21% female) is represented in Figure 6.10 below.

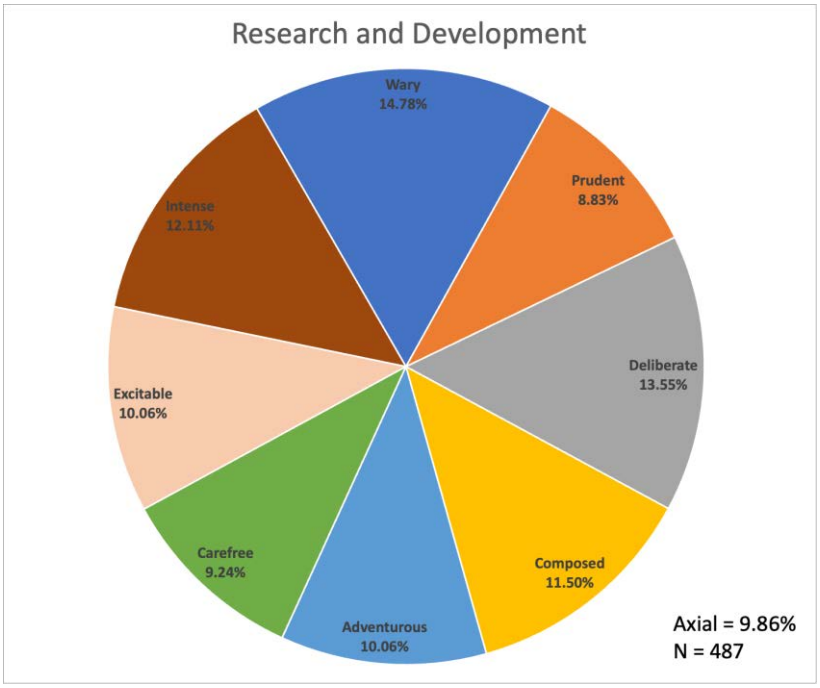


Figure 6.10. *Pie chart illustrating the percentage of the 'Research & Development' sample in each of the eight Risk Types. The Axial group consists of 9.86% (n=487).*

Sales & Marketing

A subset of individuals were categorised as 'Sales & Marketing' professionals. This sample of 832 individuals (54.7% male, 45.3% female) is represented in Figure 6.11. below.

Figure 6.11. *Pie chart illustrating the percentage of the 'Sales & Marketing' sample in each of the eight Risk Types. The Axial group consists of 9.74% (n=832).*

The Recruiter Risk Profile

The role of the recruiter has become increasingly complex. The recruitment consultant today very often works across a wide range of industry sectors and requires an extended level of expertise and knowledge of areas such as Telecoms, IT and Finance. Furthermore, there has been dramatic impact from Internet based innovation on recruitment practices. A role in recruitment requires the ability to be proactive and innovative as well as to be resilient in the face of frequent setbacks. While the core element of the recruitment industry is sales and profit, the industry deviates from traditional sales roles in terms of the amount of risk involved. Traditional sales roles involve finding a match between a customer and a product; the need for the recruitment consultant to establish a match that is acceptable to both parties effectively doubles the risk of failure.

PCL sought to explore risk personality of the recruiter profession, hypothesising that recruiters would have a higher risk tolerance than the general population. In total, 141 participants from the industry (mostly recruitment consultants) and 664 participants from other occupations ('general population') completed the Risk Type Compass. The results of the analysis are presented below (Figure 6.12).

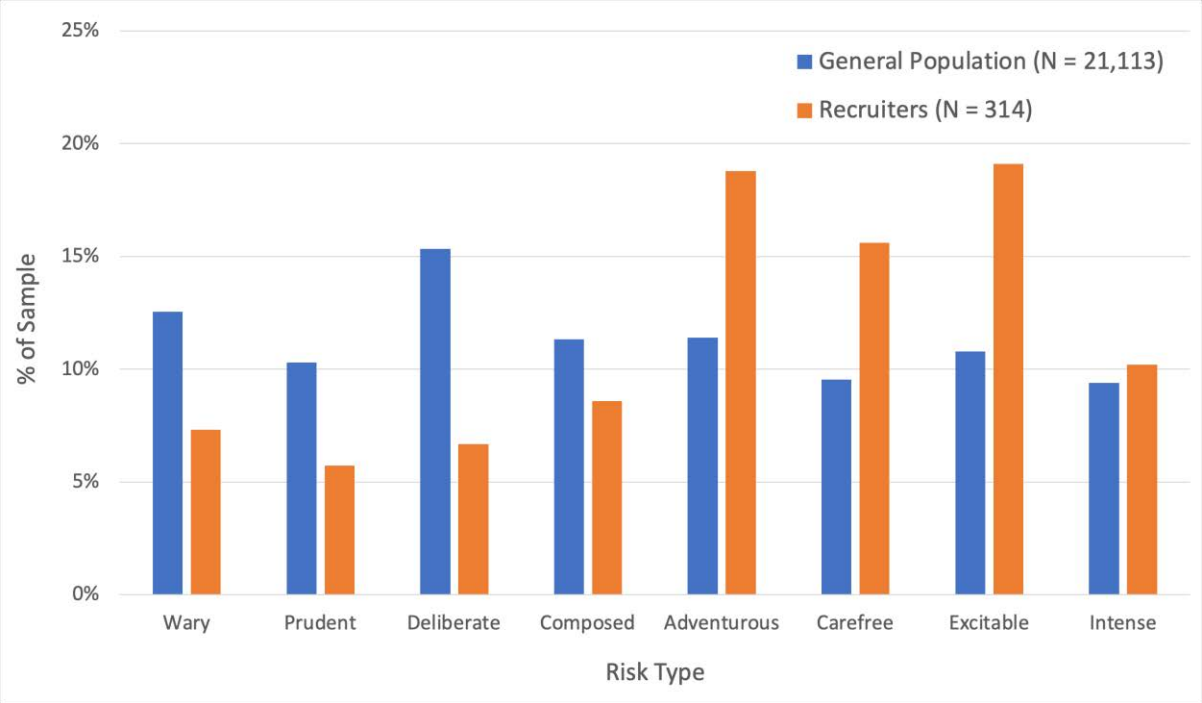


Figure 6.12. *Distribution (%) of the Recruiter sample and the general population across the Risk Types (n=314)*

Results indicate that recruiters do have a distinctive risk profile, with a higher proportion of recruiters compared to the general population falling within the 'high risk tolerance' Types. In particular, the most common Risk Types in the Recruiter sample were Adventurous (18.79% of the sample) and Excitable (19.11% of the sample). These Risk Types are all on the 'daring' end of the Cognition scale. This is a striking finding when you consider that only 10.80% of a general population sample fell within the Excitable Type and 11.41% in the Adventurous Type. As a result, there was a relatively small percentage of the Recruiter sample in the lower risk tolerant Risk Types such as Wary and Prudent.

Together, the Adventurous, Excitable, and Carefree Risk Types make up around 53.5% of the Recruiter sample. All these Risk Types are characterised by a preference for spontaneity and excitement seeking, as opposed to a methodical approach to risk taking. The main difference between the Adventurous and Excitable Risk Types is that Adventurous is also characterised by a particularly calm and steady temperament as it is a Complex Risk Type; a mixture of both the Carefree and Composed Risk Types. Those in the Excitable Risk Type, on the other hand, tend to be as emotionally stable as most other people.

Table 6.2 shows the average Risk Tolerance Index (RTi) for the recruiters and the general population, as well as the raw scores on the Cognition and Emotion personality scales. Results indicate clear differences between the recruiters and the general population on the Cognition scale, implying that the recruiters have a greater preference for spontaneity and adventure compared to the general population. Group differences across the Emotion scale, on the other hand, were found to be negligible.

Table 6.2. *Average Risk Tolerance Index, Cognition and Emotion raw scores for Recruiters and the General Population (n=805)*

Group	RTi	Cognition raw score	Emotion raw score
Recruiters	61.5	94.6	113.8
General Population	50.5	83.6	111.7

In summary, recruiters can be seen to have a specific risk profile that is more risk tolerant than the general population. This increased risk tolerance within recruiters appears to be predominantly driven by a preference for change, variety and excitement, rather than an inherent fearlessness. In terms of specific Risk Types, a substantial proportion of the recruiters sampled fell within just two Types: Adventurous and Carefree.

The Risk Profile of IT Professionals

A sample of individuals from the IT industry were invited by PCL to complete the Risk Type Compass via an article in Computer Weekly magazine. Data on a number of demographic variables such as industry experience and job title were also collected in order to explore whether these factors distinguished between Risk Types.

There has been little research conducted on the personality profile of IT professionals to date. However, of note is a study by Lounsbury, Fisher, Levy, and Welsh (2009) who found individuals within the IT profession tended to score higher on Emotional Resilience, Openness, Tough-Mindedness and Customer Service, when compared with the general population. Lounsbury et al. (2009) also found IT professionals to score lower on Conscientiousness; one of the Five Factor Model's personality traits, concerned with being organised, conforming and planful. Overall, this paints a picture of heightened tolerance to risk within the IT profession. Theoretically, this appears to fit neatly with the requirement of IT roles; a sector that is characterised by innovation, continuous change, flexible work environments and unconventionality. Based on this research, it was hypothesised that IT employees would be more risk tolerant than that of the general population. Overall, 862 IT professionals completed the Risk Type Compass. The results of this are displayed below (Figure 6.13).

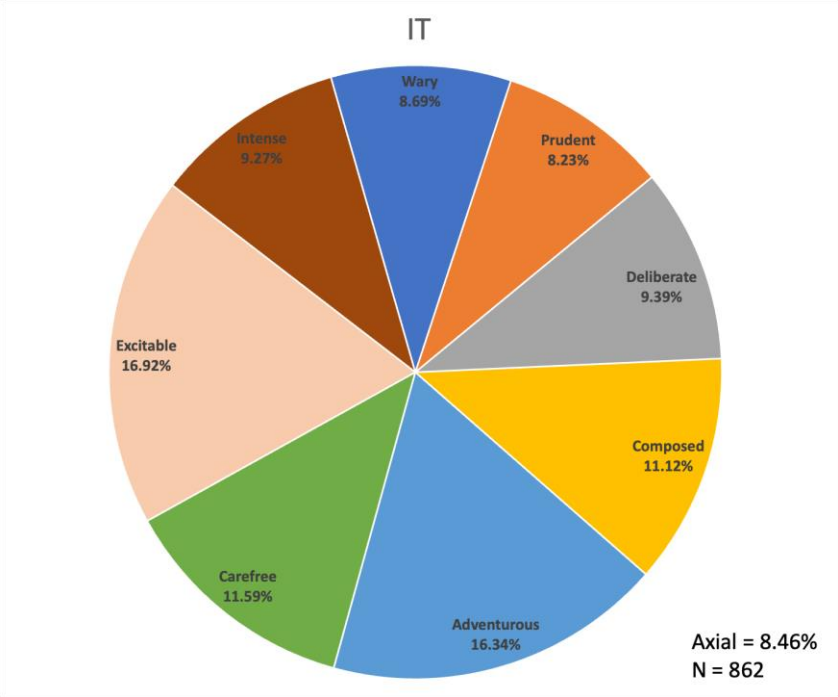


Figure 6.13. *Pie chart illustrating the percentage of the 'IT' sample in each of the eight Risk Types. The Axial group consists of 8.46% (n=862).*

As can be seen from Figure 6.13, a large proportion of the IT Industry sample fell within the Adventurous, Carefree and Excitable Risk Types (together making up 44.85% of the sample). These Risk Types are associated with a greater preference for risk taking. The Adventurous Risk Type concerns being both impulsive and emotionally stable, the Carefree Type is primarily associated with a tendency towards being excitement seeking and daring, and the Excitable Type is characterised by excitement seeking and emotionality. There were considerably fewer participants in the Prudent (8.23%) and Deliberate (9.39%) Risk Types, both of which are associated with an aversion to risk that stems from being overly pessimistic, apprehensive and emotional. Our results are in support of the hypothesis.

Finally, it was considered relevant to look at whether the Risk Type of individuals within the IT profession played a role in their work arrangements, assuming that working arrangements are, in the majority of cases, self-selected. It was predicted that freelance workers would show a greater disposition for risk compared to those working in full- time ('permanent') employment. This is due to the fact that freelance work tends to lack the security that permanent work brings and should therefore attract people who are comfortable taking chances.

To test the assumption that freelance IT professionals are characterised by a fearless risk-taking style overall, and to assess which group has the highest risk tolerance, it was considered worthwhile analysing scores on the Risk Type Compass scales and the RTi within both work arrangements for the 235 participants who had provided this information.

Table 6.3. *Sample size, Mean and Standard Deviation of Risk Type Compass raw scores across working arrangement groups in the IT Profession (n=235)*

Scale	Working Arrangements	N	Mean	SD
Emotion	Freelance	49	120.80	18.38
	Permanent	186	114.55	17.07
Cognition	Freelance	49	88.65	18.01
	Permanent	186	87.97	15.89
RTi	Freelance	49	60.38	22.54
	Permanent	186	56.32	20.20

Looking at Table 6.3, the average scores of freelance workers on the Emotion scale were found to be significantly higher than those working in permanent employment ($t(233) = 2.24$, $p < .05$), as expected. Risk Tolerance (RTi) scores were also found to be higher for this group, however this effect narrowly missed out on reaching significance. Scores on Cognition scale between the two groups are almost identical. These results imply that freelance or contract workers tend to have a slightly increased tolerance to risk than their permanent counterparts and that this tolerance is likely driven by a greater sense of calm fearlessness and optimism.

In summary, a greater prevalence of the more risk tolerant Risk Types - such as Carefree and Adventurous - were found in the IT professional sample. This reflects the requirements associated with the profession of having sufficient resilience to cope with stressful job demands, and yet being flexible enough to cope with a continuously changing industry sector; the IT industry is continually improving with new innovated systems, processes and software applications. Further differences were found between freelance and permanent IT professionals. Freelance workers were found to have increased levels of fearlessness, i.e. they approach risk in a relaxed, flexible and optimistic way. The Adventurous Risk Type was found to be more prevalent than any other in this group. Nevertheless, there was no clear indication that freelance workers were substantially more risk tolerant overall than their permanent counterparts.

In addition to demonstrating the ability of the Risk Type Compass to differentiate across professions, the findings here also suggest that individuals with the more risk tolerant Risk Types - the Adventurous, Carefree and Composed Risk Types – are likely to make effective employees within the IT sector. These findings have implications for both selection and coaching practices. Further research should test these findings by including a measure of job performance.

The Risk Profile of Police Officers

The Authorised Professional Practice (APP) for the policing profession states that the willingness to make decisions in conditions of uncertainty (i.e. risk taking) is a core requirement for the police. Avoiding decision making in these conditions is not deemed as acceptable practice; police officers are expected to be able to readily respond to risks and act decisively. Nevertheless, decisions are expected to be logical and, above all, should be in the interest of the community they serve.

PCL assessed the risk-taking personality of a sample of police officers using the Risk Type Compass. Based on the expectations of the police force outlined by the APP, it was hypothesised that the Risk Type profile of the police would span the medium to high risk tolerance range, and cluster towards the Measured and Calm end of the Emotion and Cognition scales respectively; characterised by fearlessness and low impulsivity. In terms of Risk Types, this leads to the hypothesis that the Composed and Deliberate Types will be the most frequent.

One hundred and seventeen police officers completed the Risk Type Compass. Risk Tolerance Index and raw scores on the Emotion and Cognition scale were analysed in

comparison to the general population (Table 6.4). Interestingly, it was found that the police were more risk averse than the general population, contradicting the hypothesis set out in the study. The police sample fell further towards the Measured end of the Cognition scale, as expected, but were unexpectedly more emotional in their decision-making style than predicted.

Table 6.4. *Average Risk Tolerance Index, Emotion and Cognition raw scores for the Police and general population (n=117)*

Group	RTi	Emotion raw score	Cognition raw score
Police	43.99	110.70	81.91
General Population	50.21	114.60	85.53

In the second part of the study, differences in Risk Types across the sample were explored. The percentage of the whole sample in each of the Risk Types is displayed in Figure 6.15. Overall, the data indicates that the police sample had the highest proportion of individuals in the Wary Type (20%). This Risk Type is characterised as being cautious, vigilant and unadventurous, and likely to keep individual security high on their agenda. Individuals who fall within this Risk Type tend to have a respect for convention and tradition preferring change to be gradual. There are far fewer individuals at the opposite end of the spectrum, in the Adventurous Risk Type (6%). The Adventurous Risk Type is both impulsive and fearless; at the extreme, they combine a deeply constitutional calmness with a willingness to challenge tradition and convention.

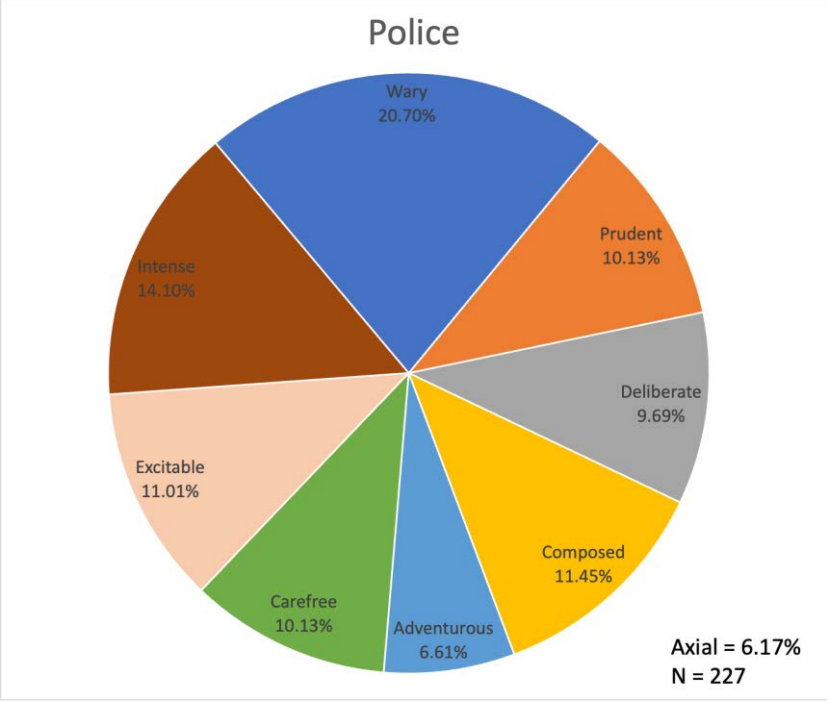


Figure 6.15. *Percentage of each Risk Type in the sample of police (n=227) in comparison to the general population*

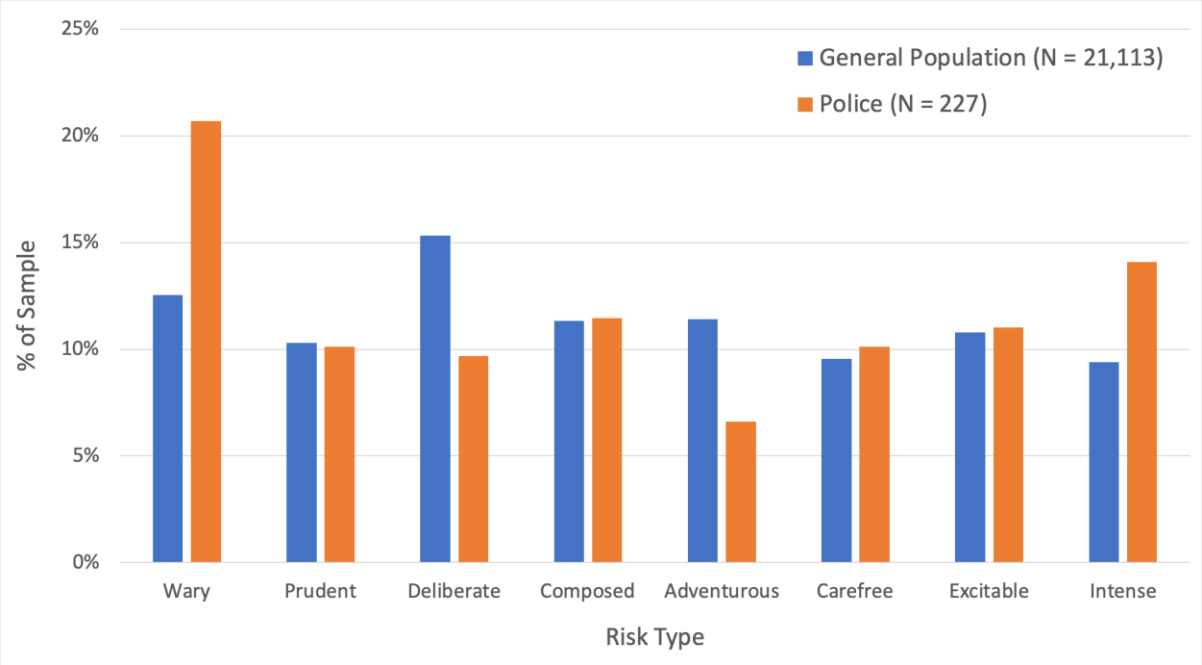


Figure 6.16. *Percentage of each Risk Type in the sample of police (n=227) in comparison to the general population*

Figure 6.9 looks at the distribution of Risk Types within the Police sample compared to the general population. Two distinct contrasts are apparent; first, is the higher proportion of the Wary Risk Type in the Police sample compared to the general population and, second, is the smaller proportion of the Adventurous Risk Type. The increased prevalence of the Wary Risk Type can perhaps be explained by the emphasis on security and planning associated with this Type; characteristics that could be perceived as important in the policing profession. The lower proportion of the Adventurous Risk Type indicates that this Police sample are not overly attracted by excitement and perhaps are a little less resilient than the general population.

In summary, based on the APP's principles of policing, it was hypothesised that the Police Officer sample would be found to have a medium to high risk tolerance and would fall towards both the Measured and Calm polarised Risk Type scales. Unexpectedly, the Police sample in this study showed low risk tolerance and higher prevalence of the Wary Risk Type. Although this contradicts the study's hypothesis, these findings can perhaps be explained by the emphasis on security and conformity in decision making procedures and the over-emphasis on individual Health and Safety compliance within the profession.

The Risk Profile of Engineers

The engineering profession recognises that risk is inherent in the activities undertaken by its members. Engineers are tasked with solving real world challenges, the solution to which must often satisfy contradictory requirements; safety procedures may add to complexity and conflict with the desire to work rapidly. The optimal engineering solution is the one that considers all such conflicting demands, and which will largely depend on the Engineer's analysis of the levels of risk involved.

The sheer scope and diversity of engineering makes generalisations about Risk Type difficult. It is a profession in which challenges range from the nuclear industry to ship building and from aerospace to road construction. Nevertheless, all of the engineering specialisms have to deal with risk and to make decisions about tolerances and safety margins. Failures do happen and, when engineers fail, the social and economic costs can be very high.

In a research study conducted by PCL, 397 engineers completed the Risk Type Compass. Initial analysis grouped the data in to the Risk Types (Figure 6.10) and compared the dispersion to that of the general population (Figure 6.11).

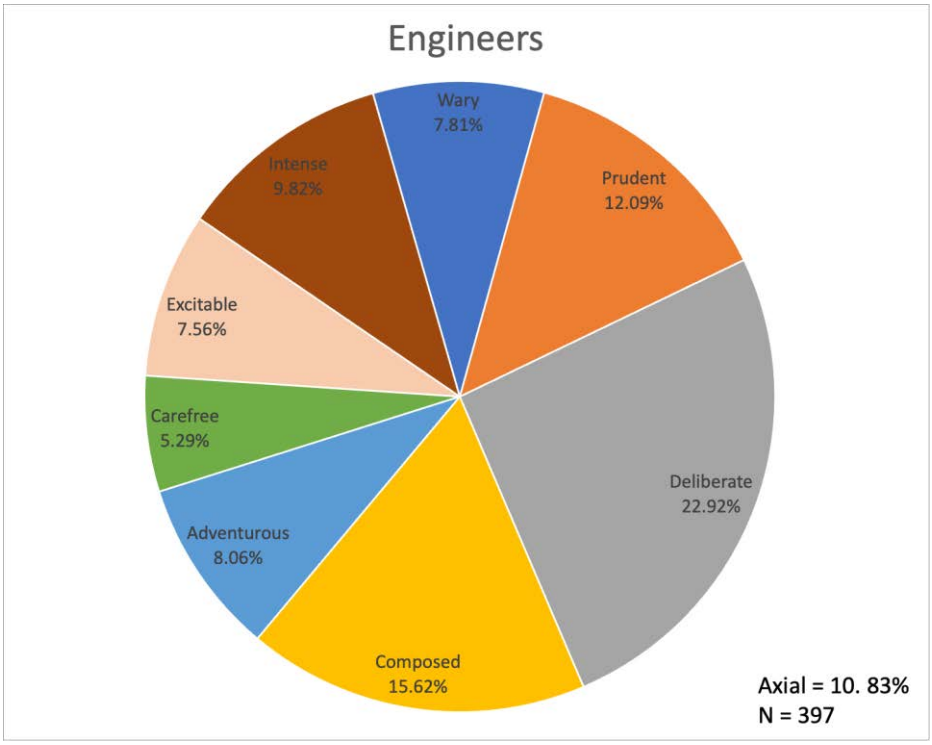


Figure 6.10. *Proportion of Engineers in each of the Risk Types (n=397)*

Figure 6.10 shows a clear preference towards the Composed, Deliberate and Prudent Risk Types that are associated with a self-assured, resilient, optimistic and emotionally stable approach to risk. Together these three Risk Types account for 50.6% of the engineering sample. Out of these, the Deliberate Risk Type was the most prevalent (22.92%). Individuals who fall in this Risk Type tend to maintain a calm and confident outlook and are well prepared for any setbacks. The least prevalent Risk Types amongst the engineering sample were Carefree and Excitable. These are individuals who tend to be unpredictable, unconventional and inclined to act on impulse. They may be considered either creative and innovative or, at times, challenging and unorganised.

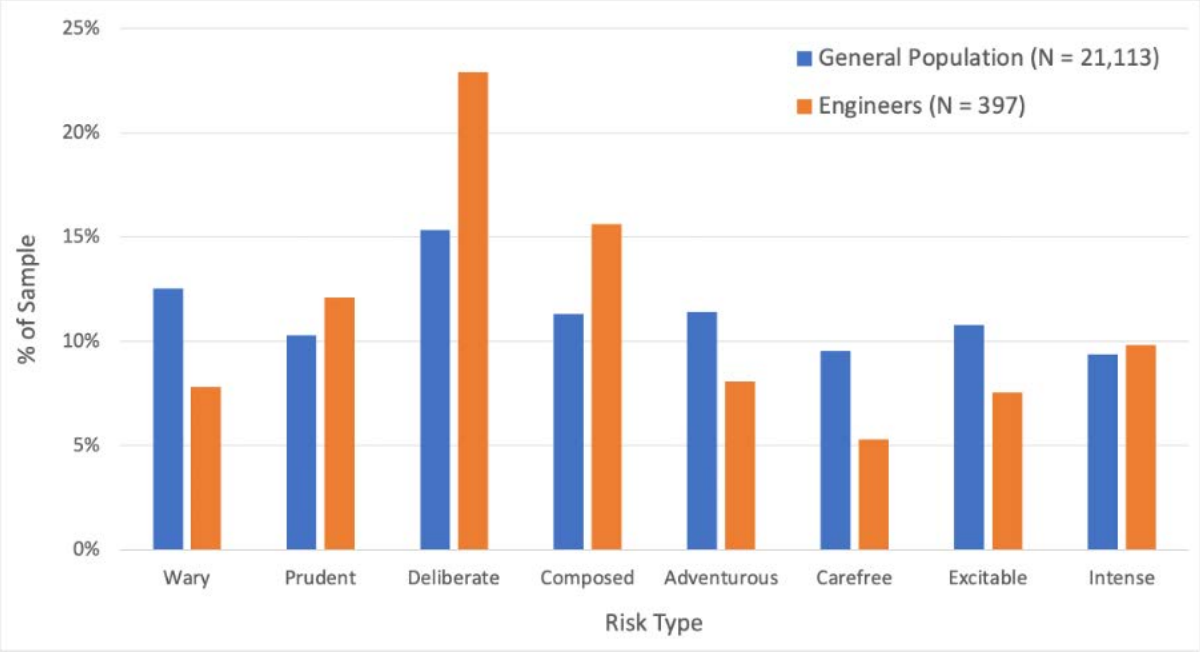


Figure 6.11. *Percentage of Engineers (n=397) in each of the Risk Types compared with the General Population*

As shown in Figure 6.11, the Composed and Deliberate Risk Types were found to be more prevalent in the Engineer sample than in the general population. This suggests that the engineer profession does possess its own unique Risk Type profile and that this is characterised by a calm self-assurance. Overall, these results are generally in line with the assumption that engineers need the 'can do' temperament to confront and deal with the challenges that arise, whilst needing to be systematic in the search for optimal solutions. From the personality point of view, these findings emphasise the value of engineers being calm, methodical and resilient decision makers.

The Risk Profile of Auditors

Research exploring the Risk Type profile of auditors was carried out in conjunction with Exemplar Global, who aided the recruitment of auditor participants from Canada, USA and Australia. Exemplar Global is an internationally recognised personnel and training certification body for auditors across a range of disciplines and industries, including Quality, Environment and Occupational Health and Safety. Using the Risk Type Compass, PCL aimed to identify any systematic patterns in the risk disposition of the auditor profession. Although there are many specialisms across the auditing profession, we hypothesised that a common need for care and vigilance would generalise throughout the group.

Auditors are required to look for risks, assess the likelihood of occurrence and, in the event that the risk is realised, calculate its severity. The main concern for individuals in this sector is that an incorrect or incomplete audit has a direct impact on the audited organisation. It can result in organisational mismanagement and breaches in regulatory requirements, as well as potentially huge financial costs. The emphasis on prudence and attention to detail suggested that, for those working in audit roles, the more apprehensive, careful and cautious Risk Types would be most prevalent.

Three hundred and twenty-seven auditors completed the Risk Type Compass. The dispersion of Risk Type within the sample is shown in Figure 6.12. Here we can see a very distinctive distribution of Risk Types, with 51% of the participating Auditors grouped in a cluster of just three Risk Types. The highest proportion of individuals fell in to the Deliberate Type (24%), described as being rooted in a high level of calm self-confidence combined with detailed preparation and planning. The second most common Risk Type was the wary Type (14.9%); individuals who fall within this group are described as well organised and self-

aware but are anxious and fearful of change. The third most common Risk Type was the Prudent Type (14%); individuals who fall within this group tend to be cautious, controlled and most comfortable with familiarity. There are far fewer individuals in the Intense and Excitable Risk Types, and just 5% within the Adventurous Risk Type.

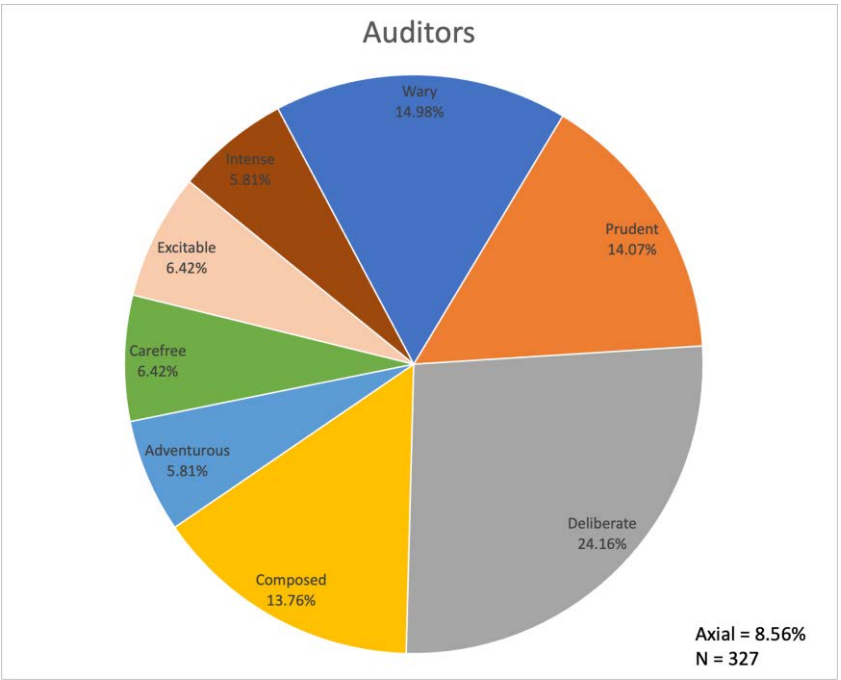


Figure 6.12. *Proportion of Auditors in each Risk Type (n=327)*

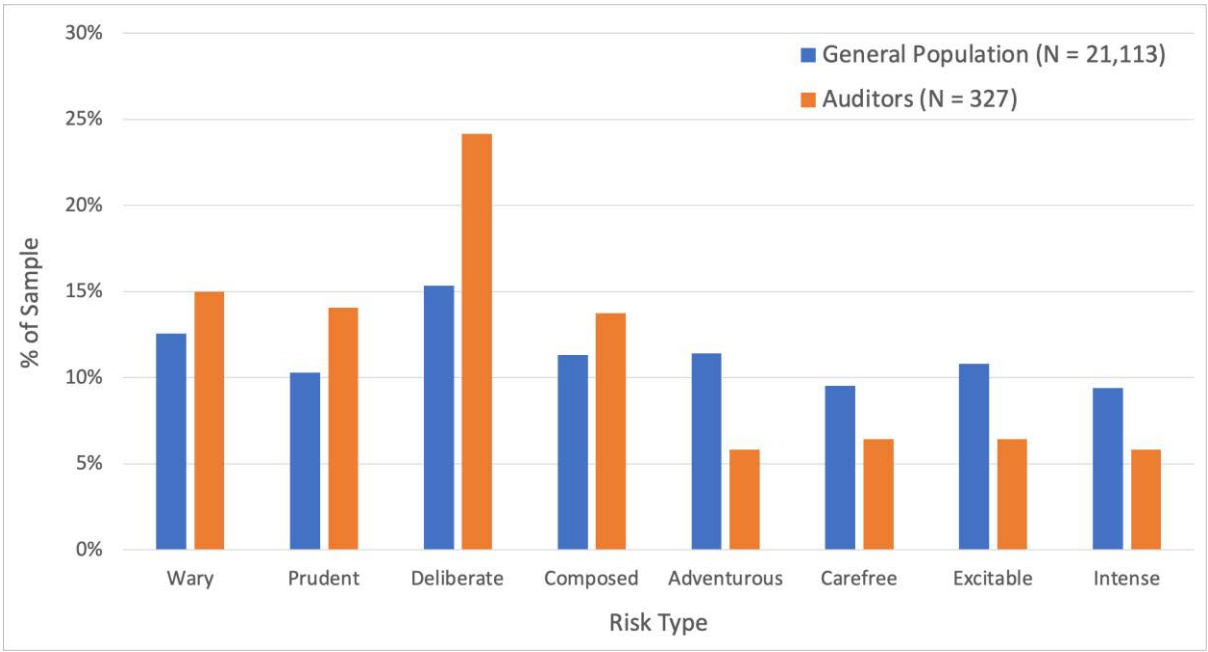


Figure 6.13. *Distribution of auditor Risk Types (%) compared to the general population (n=327)*

Figure 6.13 illustrates the strong 'pull' of the calm and organised side of the Risk Type Compass in the Auditor sample. The difference in prevalence between the Deliberate Risk Types in the sample in comparison to the general population (almost a factor of four) is quite remarkable, as is the greater proportion of the Composed Risk Types. Figure 6.13 clearly highlights that there is significant under-representation of other Risk Types, excluding the Prudent and Wary Risk Type. There is an almost complete absence of the Adventurous Risk Type, and the Intense and Excitable Risk Type representation is also very limited. These

Risk Types are associated with approaches to risk that may be impulsive, unconventional and emotionally charged suggesting that, by and large, Auditors are likely to be less emotionally reactive and spontaneous than most other people.

Overall, the auditing profession possess a very unique Risk Type profile. In line with the hypothesis, this profile is characterised by exceptional care and vigilance and a lack of impulsivity or excess emotionality.

The Risk Profile of Air Traffic Controllers

When it comes to handling high-stake risks on a day-to-day basis, the role of an air traffic controller has few rivals. Traditional risk management approaches focus on training, procedures, the work environment and employee health, but the interaction between personality and risk remains comparatively unexplored.

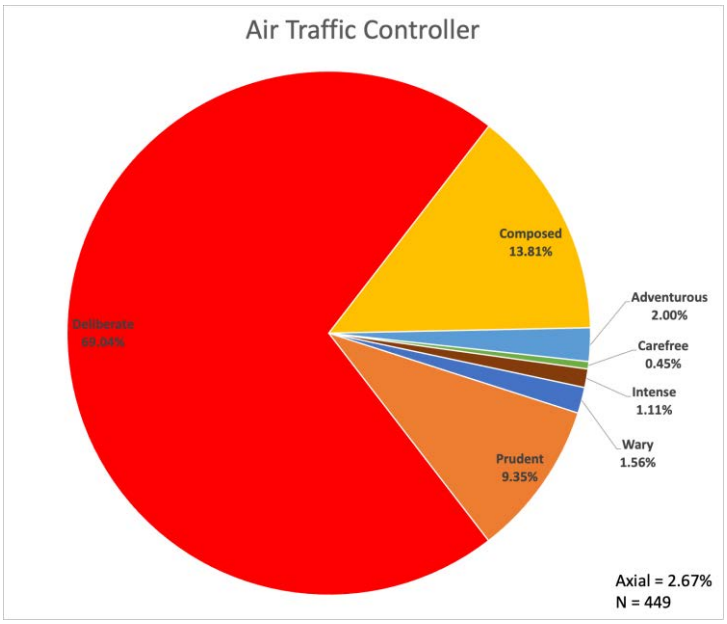


Figure 6.14. *Risk Type Breakdown of Air Traffic Controllers*

So, do Air Traffic Controllers have a Type?

To explore this specialist form of employment, we analysed the reports of 449 individuals from the latter stages of an ATC recruitment process. Initial results point to a resounding "yes", but it is only when compared against a general population sample of 21,113 that the extent of these differences become fully apparent (see Fig. 6.15 below).

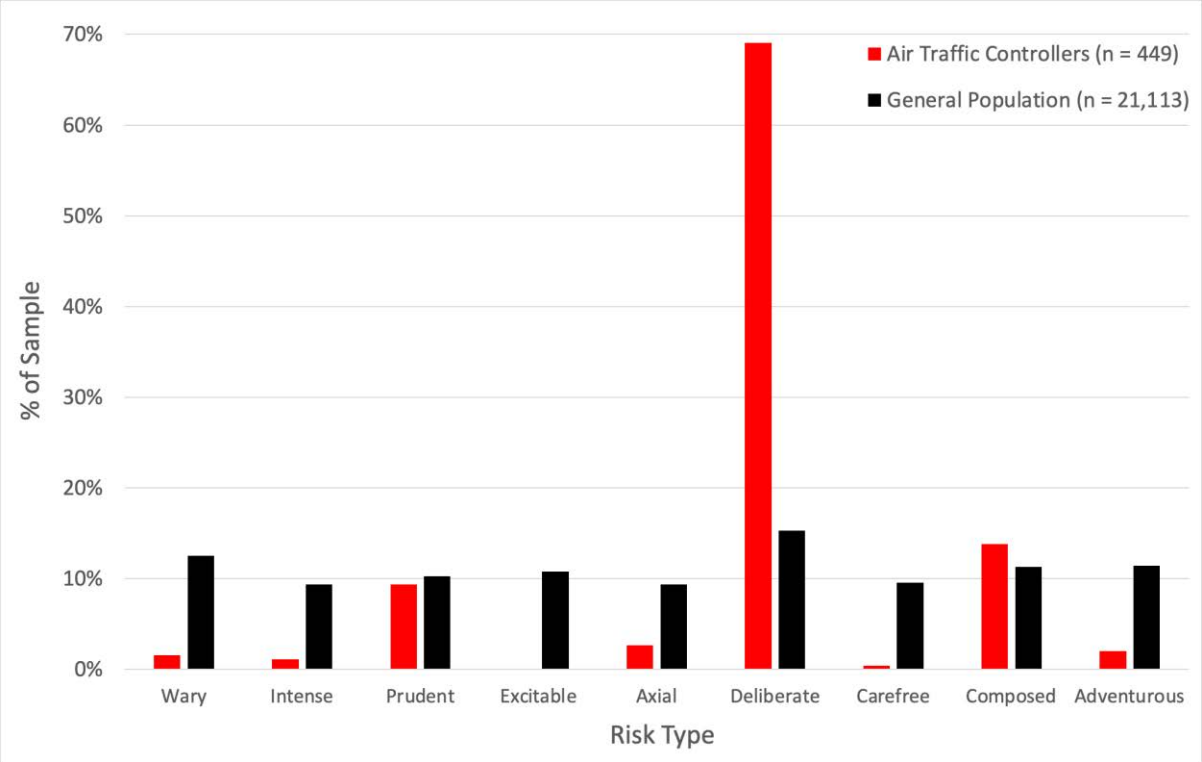


Figure 6.15. *Comparison of Risk Type distributions between the Air Traffic Controller sample (n=449) and the general population (n=21,113)*

As indicated, approximately 70% of the ATC sample were categorised as 'Deliberate' Risk Types, greatly exceeding the 15% represented in the general population. A complete absence of Carefree and Excitable Risk Types was also notable as, together, these reflect around a quarter of the general population. However, the distinctiveness of the sample did not end with the distribution of Risk Types.

Risk Type Strength refers to the distance of the individual from the Risk Type Compass' central axis and reflects how closely the individual will relate to their Risk Type description. When compared with Deliberate Risk Types from the general population, the Air Traffic Control group were over three times more likely to fall into the strongest 'Strength 5' category (see Figure 6.16 below).

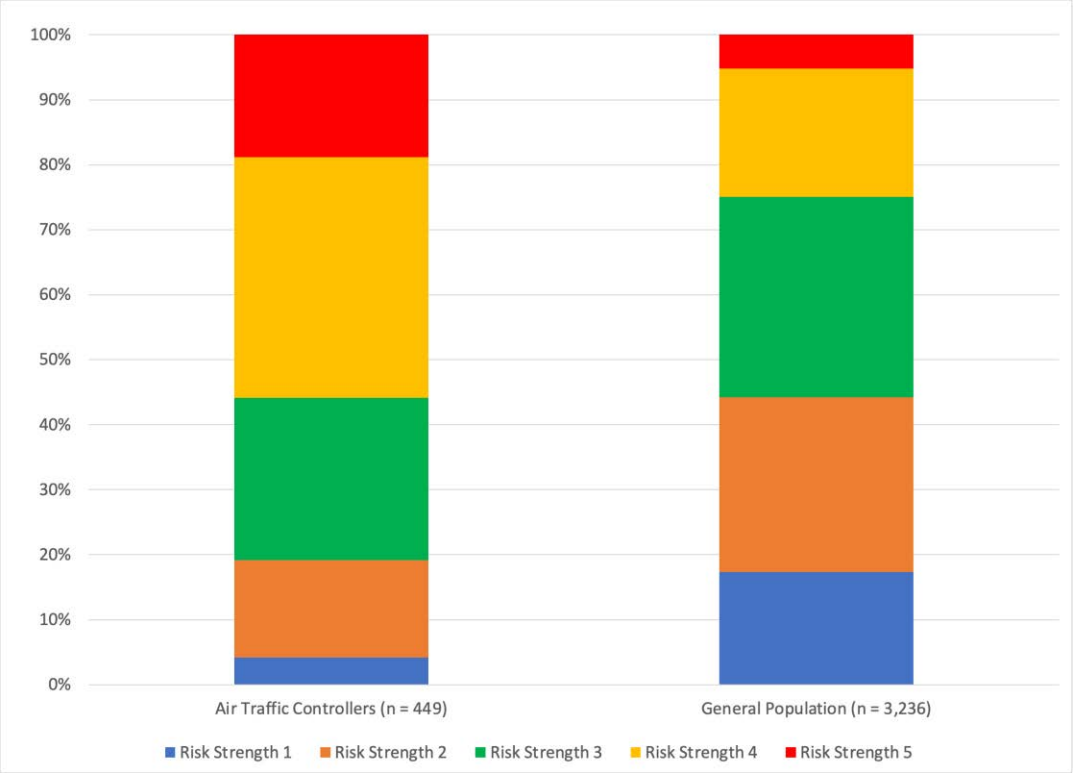


Figure 6.16. *A comparison of Risk Strength distributions between the Air Traffic Controller sample (n=449) and the general population (n=3,236)*

An individual's Risk Type is a reflection of their perception, tolerance and propensity towards risk taking, and this insight can be applied in various ways. When used in combination with other metrics, the Risk Type Compass can facilitate discussion around a variety of risk-related topics, and these can benefit processes involved in the selection and personal development of individuals in the air traffic controller industry.

Each Risk Type encompasses various strengths and challenges that influence how individuals' approach and complete tasks. The self-awareness generated by the Risk Type Compass can aid in identifying the most suitable and effective strategies for that individual to adopt in dealing with any challenges and to improve performance. An example for the Deliberate Risk Type could be the need to appreciate that whilst their calm and business-like manner will usually prove a valuable asset in coping with the stress of their role, that same calmness may also prove a barrier to communicating the potential urgency of a situation to pilots.

Understanding variation in these factors will aid in selection, development and team building programs to help ensure an organisation achieves its desired balance.

Comparison of Employment Categories by Risk Types

An additional benefit of employment data is the ability to conduct comparisons of Risk Type distributions between multiple groups. One such comparison was made between a sample of auditors (n=327, male = 58.11%, female = 41.89%), and traders (n=981, male = 97.28%, female = 2.72%). Figure 6.16 below presents findings from the comparison of these two groups.

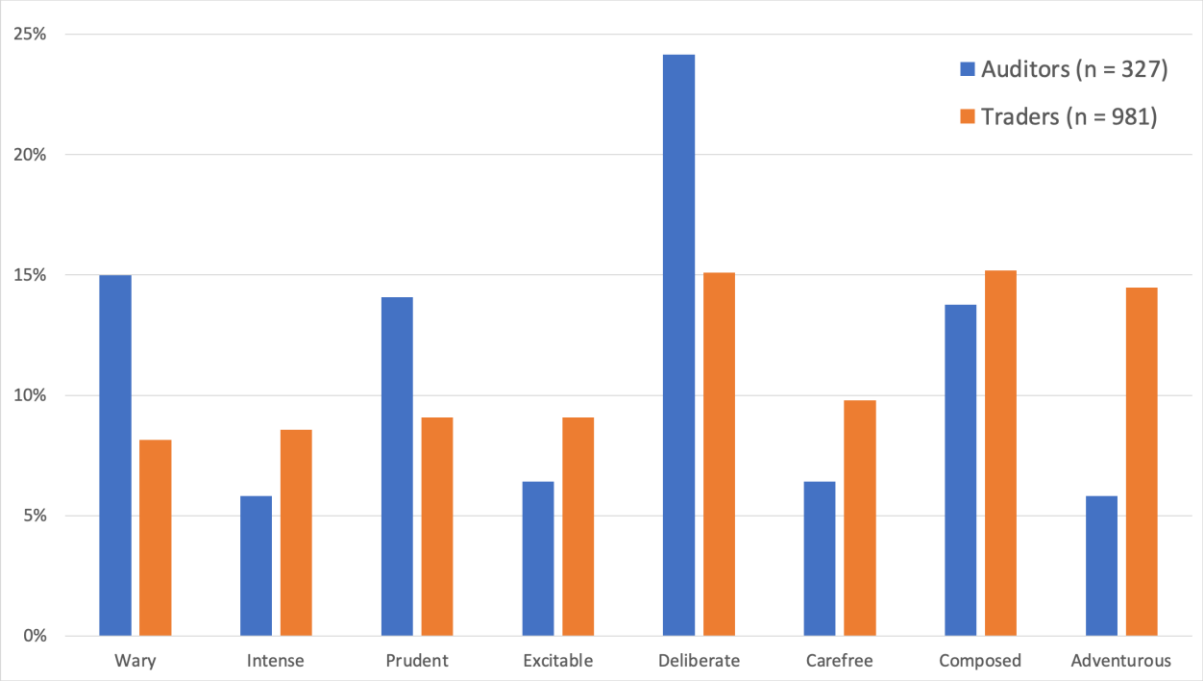


Figure 6.17. *Bar graph illustrating a comparison of Risk Type distribution between Auditors (n=327, Axial = 8.56%) and Traders (n=981, Axial = 10.60%).*

By presenting two samples side-by-side, outputs of Risk Type distributions can highlight potentially significant contrasts between job roles. Figure 6.17 above presents several of these contrasts, with Auditors considerably more likely to be Deliberate, Wary, or Prudent Risk Types, whilst Traders reflected a higher proportion of Adventurous and Carefree Risk Types.

Another comparison was made between those reporting their position as either accountants or sales. The accountant group contained a total of 72 individuals (male = 37.5%, female = 62.5%), whilst the sales group totalled 203 participants (male = 68.92%, female = 31.08%). Figure 6.18 presents findings from the comparison between these two groups.

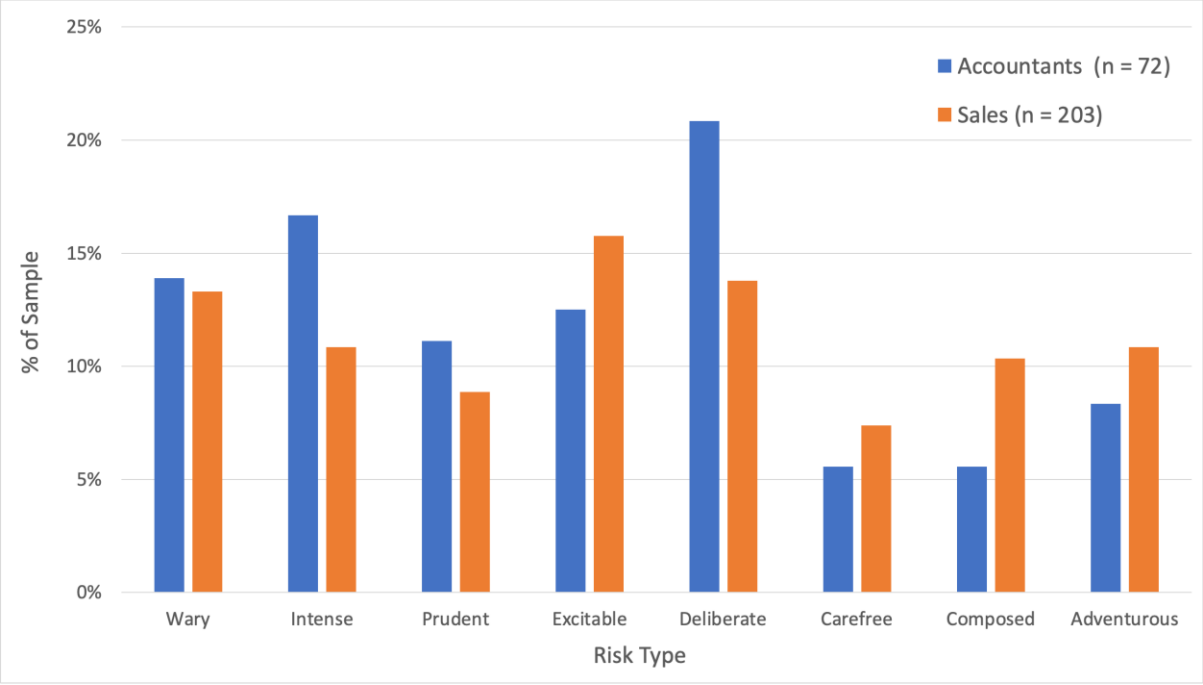


Figure 6.18. *A comparison of Risk Type distribution between Accountants (n=72, Axial = 5.56%) and Sales (n=203, Axial = 8.87%).*

The side by side comparison presented in Figure 6.18 highlights several variations in the Risk Type distributions for these two employment groups. The largest of these concerns the Deliberate Risk Type, with a considerably larger proportion of accountants represented. In contrast, the most prevalent Risk Type within the sales group was the Excitable Risk Type, with over a fifth of the sample assigned to this category.

Risk Taking and Self Employment

PCL research has used the Risk Type Compass to provide insight into a significant variety of professions, sectors, and seniorities. A key area emerging from academic literature into employment arrangements identified the variation in preference for self-employment and entrepreneurialism in comparison to more 'standard' employment arrangements. To explore this topic further we began by asking the question 'why do people choose to be self-employed? Responses to this question will vary, but you will often hear answers like:

- Wanting to be your own boss

- Creative freedom

- No two days the same

- Greater control over working hours and work-life balance

- Choice of who you work with and for

- You can choose where you work

Some people will find these reasons compelling. The opportunity to work unsupervised outside an organisational structure may feel exhilarating and liberating. For others, the increase in risk and uncertainty will prove too daunting. As personality psychologists, we were interested in the following question: Are there elements of personality that predict these preferences and influence the decision to pursue self-employment? Research indicates a resounding 'yes'!

Chan et al. (2015) recruited two Undergraduate samples to explore whether personality could predict those who are motivated or aspire towards entrepreneurial careers. The analysis incorporated risk-related traits, the Big Five, and a 'proactive personality' construct that assesses the tendency to identify opportunities, take initiative, and persevere in efforts to change one's environment in a manner that is ''unconstrained by situational forces''.

The analysis found that risk-related traits, the Big Five (primarily Openness to Experience and Extraversion), and proactive personality were all found to predict participants' desire for entrepreneurial careers. Conversely, increased risk aversion predicted reduced interest in an entrepreneurial career path.

Research like this provides an intriguing insight into the aspects of our personality that are likely to predict a desire to be self-employed. However, reliance on student samples can limit generalisability to working populations. Will these findings translate to the working population?

This leads to the current study that sought to explore the interaction between personality and self-employment. Researchers at PCL analysed data collected from a large and diverse sample of the working population using the Risk Type Compass to determine whether personality could predict self-employed status.

Analysis focussed on an initial sample of 20k participants from the working population who had completed the RTC. Of these participants, 596 individuals identified themselves as 'Self-Employed'. Findings from the initial analysis indicated an interesting Risk Type distribution for this self-employed group, illustrated in Figure 6.23. below.

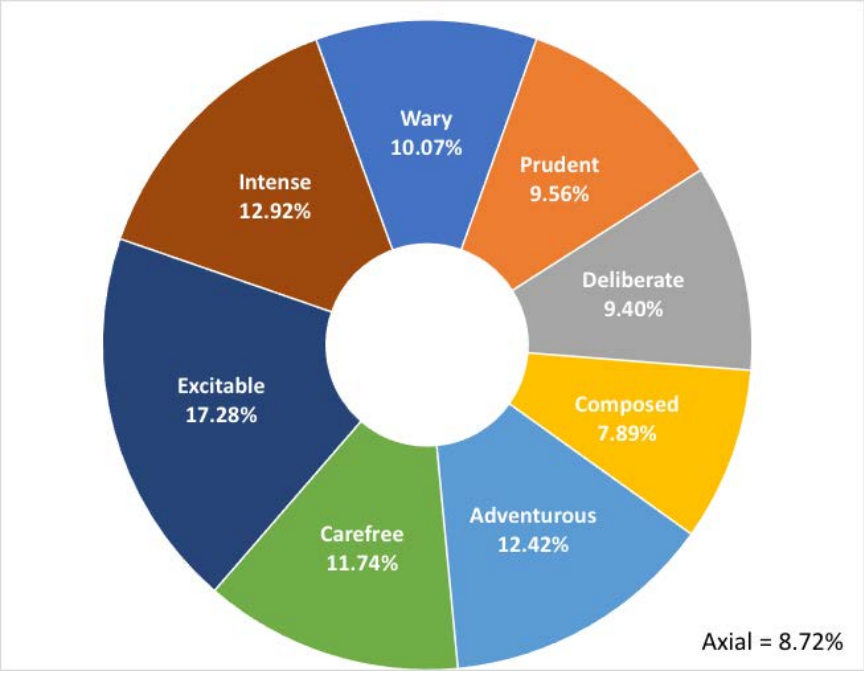


Figure 6.23. *Risk Type distribution of Self-Employed participants (N = 596)*

Analysis indicated a greater propensity of Risk Types positioned towards the 'low RSI' side of the compass, with Excitable, Intense and Adventurous the most represented respectively. This finding is also illustrated with a direct comparison to the Risk Types of over 19k 'non self-employed' participants in Figure 6.24. below. Risk Types are ordered from low-to-high RSi.

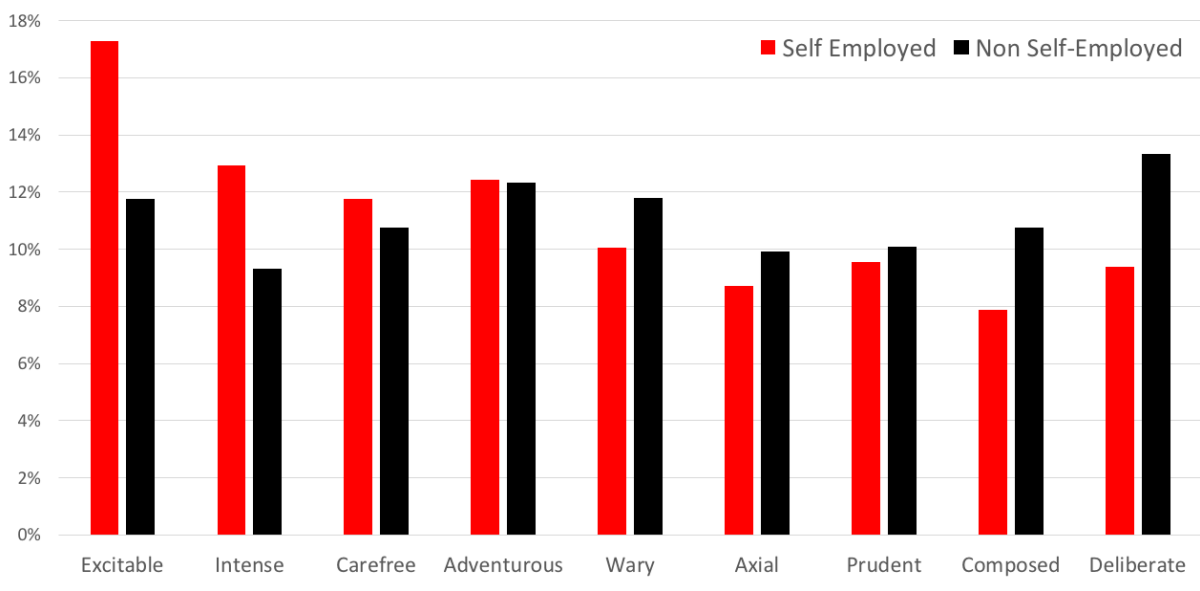


Figure 6.24. *Risk Type Distribution between Self-Employed and Non-Self-Employed*

The outcomes of the analyses provide interesting distinctions between the two worker samples. Excitable Risk Types were approximately 50% more likely to be found in the self-employed sample compared to the non-self-employed sample. This distinction was also significant at the scale level, with Risk Types placed at the lower end of the Risk Stability Index also over-represented. In the context of decision making, lower RSi scores indicate a desire for greater variability and flexibility, whilst higher RSi scores suggest a personal preference increased consistency and predictability.

This is particularly prevalent in Excitable Risk Types. Depending on the mood of the moment, they may enjoy the spontaneity of making unplanned decisions. Not being planful or well organised, there is a danger that such people may not take the trouble to check things out in their enthusiasm to embrace a new undertaking. When viewed in conjunction with self-employed preferences, it is easy to understand why they would be less inclined to work in the more restrictive and regimented ways that will often come from managerial supervision and adherence to organisational hierarchy.

In contrast, Deliberate Risk Types will be characterised by a higher propensity towards process and compliance. Previous analyses of this Risk Type have indicated over-representation in job roles and industries heavily reliant on following rules and procedures. The most significant example of Deliberate Risk Type over-representation was found in a sample of Air Traffic Controllers. Analysis of over two hundred ATC's identified over 70% to be Deliberate, compared with approximately 14% of the general population, with nearly all remaining participants in the high-RSi Risk Types of Prudent and Composed. Equally notable is the fact this sample of over two-hundred ATC's contained zero Excitable Risk Types.

The RTC is generated using information from twenty personality-based 'subthemes' that combine to calculate an individual's Risk Type. Further analysis at this level can provide supplementary insight into the distinctiveness of the self-employed group. Figure 6.25. below illustrates the largest subtheme differences between the self-employed and non-self-employed workers.

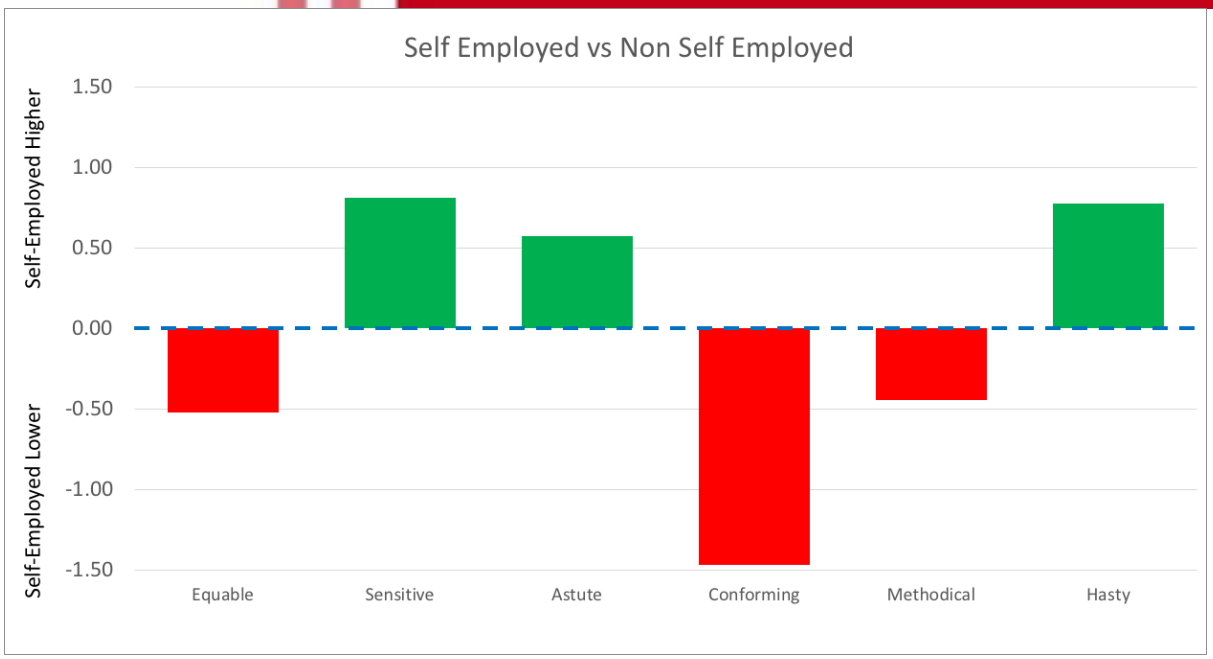


Figure 6.25. *Subtheme variations between the self-employed and non-self-employed groups*

Unsurprisingly, the largest difference between the two groups occurred on the 'Conforming' subtheme. High scorers will typically abide by rules, respect superiors, and adhere to the status quo. In contrast, low scorers are more likely to find rules and procedures irksome and may look for workarounds when possible.

In conclusion, personality has a clear impact on the preference for being self-employed. Risk Types higher on the Risk Stability Index are more likely to have a preference for the stability that organisations provide and a greater need for 'permission to act' that can be fulfilled by managers and supervisors. In contrast, Risk Types lower on the RSi are more likely to crave the flexibility and autonomy afforded by self-employment and may be more negatively impacted in job roles that fail to provide this.

Understanding these personality-driven propensities may shed light on professional discomfort and identify alternatives more strongly aligned with individuals' underlying tendencies and preferences.

Risk Type and Age

PCL's desire to understand the potential interaction between age and risk led us to analyse nearly ten thousand participants. This sizeable sample provides solid grounding for subsequent analysis, although caution should be exercised with the 'under 20s' group due to its comparatively small sample size of 106. Figure 6.19. below presents the average raw scores of each age group on the two underlying scales of Emotion and Cognition. It also includes the sample sizes of each age group.

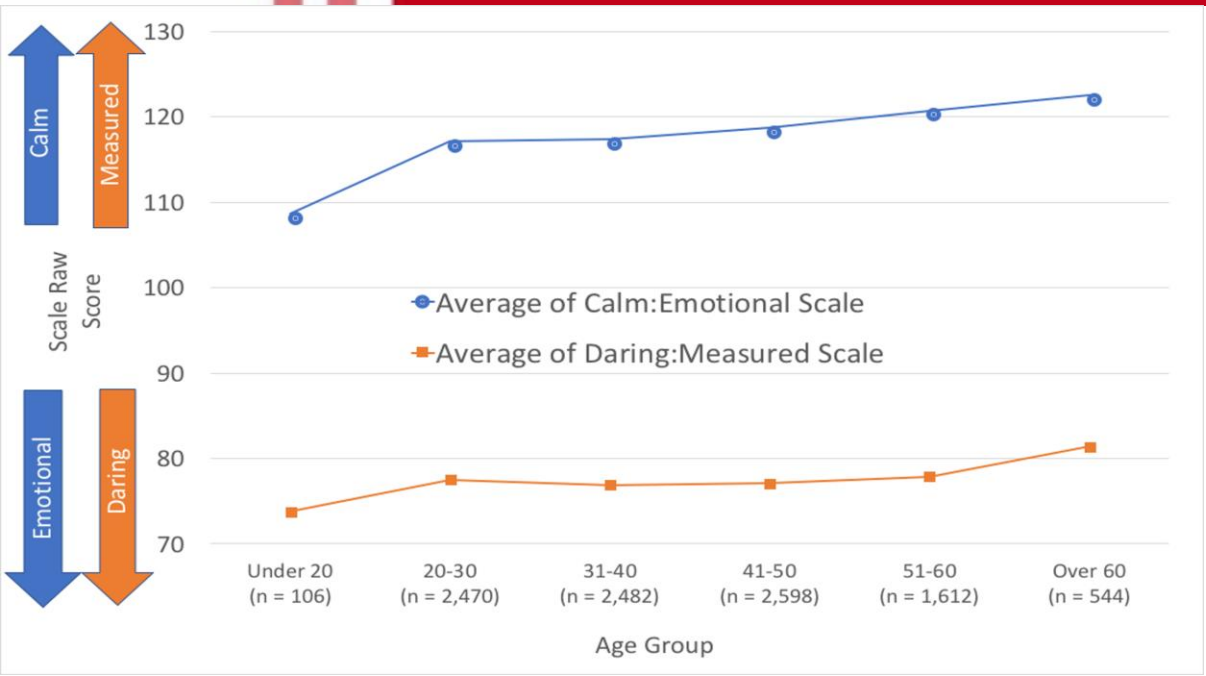


Figure 6.19. *Raw score averages of the two Risk Type Compass scales by age group*

A higher raw score on the Emotion scale signifies a closer proximity to the 'Calm' end of the spectrum, whilst a higher raw score on the Cognition scale would place the scorer closer to the 'Measured' end of the spectrum.

As illustrated by the line graph in Figure 6.19., the Emotion scale recorded the largest variation between age groups, with a positive correlation of '.077' that was statistically significant at the $p<0.01$ level. This indicates that individuals may become calmer with age, although the small effect size and timescale suggests that the rate of such development would be gradual.

The Emotion scale finding is driven by weak, yet statistically significant, correlations between age and both the 'Calm' factor (.077) and 'Emotional' factor (-.064) upon which the scale is built. In contrast, the Cognition scale appears to have a weaker relationship with age, although variation is evident at the factor level. Despite the 'Measured' factor recording a significant (at the $p<0.05$ level), albeit weaker, correlation with age of .028. The 'Daring' factor showed no correlation with age.

In the context of PCL's research into age, variance between age groups in the proportions of Risk Types was observed, the most striking of which occurred with the 'Excitable' and 'Deliberate' Risk Types. The former are individuals who reside at the 'Emotional' and 'Daring' ends of the Emotion and Cognition scales respectively, whilst the latter are positioned towards the 'Calm' and 'Measured' ends of these scales. These differences place the two Risk Types at opposing sides of the compass. Figure 6.20. below displays the proportion of Excitable and Deliberate Risk Types within each age group.

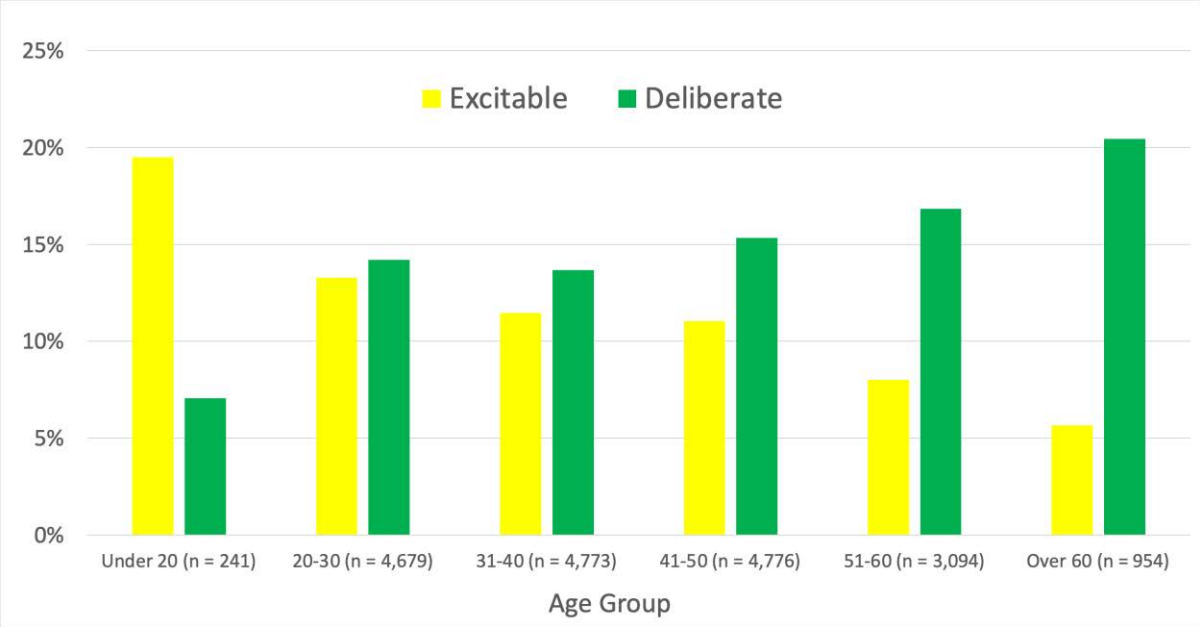


Figure 6.20. *Proportion of Deliberate and Excitable Risk Types across the age groups*

The clear finding from the bar graph above is the decrease in Excitable and increase in Deliberate Risk Types as the ages of participants increase. These findings should be viewed in the context of the 'General Population' sample of 18.5 thousand, in which Excitable and Deliberate Risk Types comprise of 11.04% and 15.02% of the total respectively. Additional understanding of these trends is provided by considering the Risk Type descriptions included in Chapter Three.

Risk Type provides insightful narratives into the variations recorded by the underlying scales, making the Risk Type Compass a powerful assessment tool and a useful instrument for research into population trends in individual differences. However, the Risk Type and scale scores presented above are built upon 18 distinct subthemes, and the trends that have emerged in our analyses warrant further investigation at this more granular level.

What are the Subthemes driving these variations?

The two scales that underpin the Risk Type Compass draw from 20 subthemes, each of which comprise of four items. Delving into these subthemes provides additional insight into the aspects of personality driving scale-level findings, although caution should be observed due to the limited number of items in each subtheme.

Quantitative analysis of age group variance found between-group differences to be statistically significant in 15 of the 20 subthemes, with the exceptions including the subthemes of 'Sensitive', 'Optimistic' and 'Perfectionistic'. Of the remaining subthemes, 'Apprehensive', 'Equable' and 'Explorative' recorded the largest variance between the six age group categories. Figure 6.21. below illustrates the pattern and strength of these variances.

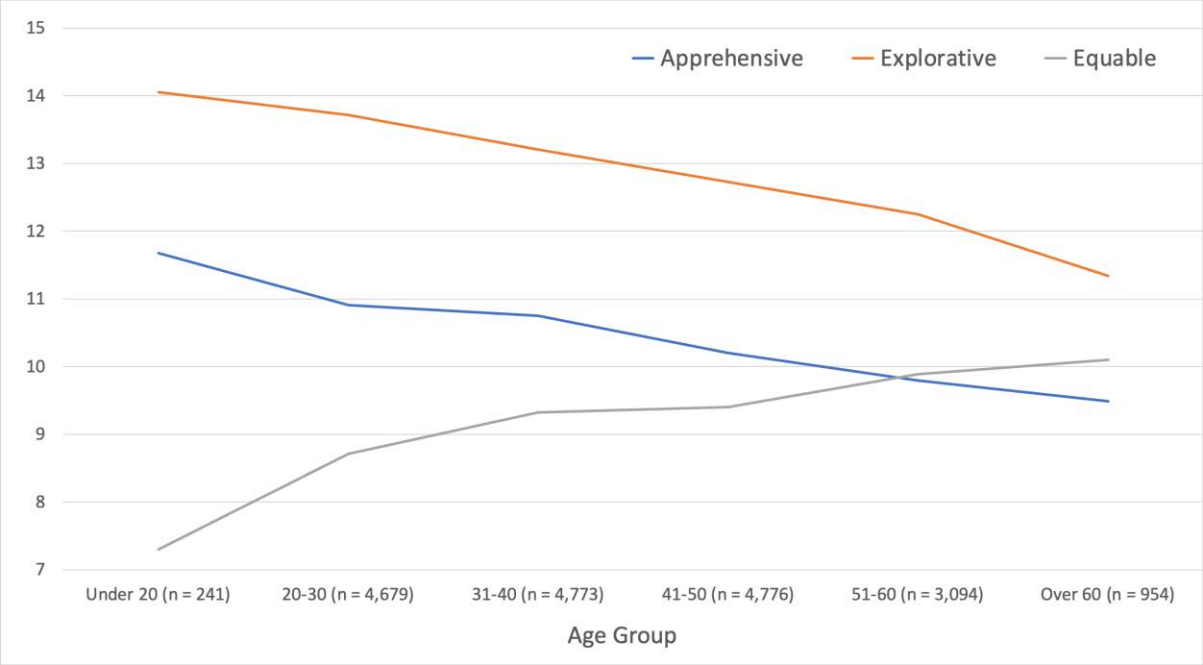


Figure 6.21. *Apprehensive, Equable and Explorative subtheme raw score averages*

As with Risk Types, considering the narrative descriptions of the subthemes in question provide valuable insight into the dispositional differences indicated by the variance observed in the age group trends. These subthemes are described in more detail below:

Apprehensive – Distinguishes those that will rarely worry about things unnecessarily from those that are apprehensive and need reassurance.

Equable – Distinguishes those that have a high level of self-esteem and belief in their own worth from those who may be self-critical and pessimistic.

Explorative – Distinguishes individuals that avoid extreme or risky activities from those that need stimulation and seek excitement.

The Apprehensive and Equable subthemes would feed into the Emotion scale, reflecting the overarching trend for the scale illustrated in Figure 6.21. above, whilst Explorative would be addressed by the Cognitive scale. In line with the findings at the broader scale and factor levels, effect sizes of inter-age group subtheme differences were small, suggesting that whilst we cannot discard the influence that age may have upon the traits reflected by the subthemes, the strength of such influence appears to be limited.

Do our findings align with the literature?

Despite its innovative approach to exploring the various traits that affect individuals' disposition to risk, the Risk Type Compass is deeply rooted in decades of academic research concerning the psychological study of personality. General consensus has emerged regarding the existence of five basic dimensions of personality deemed the 'Big Five' consisting of 'Agreeableness', 'Extraversion', 'Openness to Experience', 'Conscientiousness' and 'Neuroticism'. The Risk Type Compass was developed using facets that were most relevant to risk from the latter four factors, enabling us to contextualise the findings of our analyses alongside thousands of peer-reviewed academic research studies.

In the case of the 'Big Five', Neuroticism is the factor most represented in the RTC, with the Emotion scale reflecting various facets of the trait in the subthemes it contains. The Cognition scale's relationship with the 'Big Five' is more complex, as the subthemes it contains reflect elements of Extraversion, Openness to Experience and Conscientiousness. This gives us a basis for comparisons with the research literature, which is best understood

using 'meta-analytic' methods that combine and analyse large datasets collated from multiple studies. A meta-analysis of longitudinal research into personality traits conducted by Roberts, Walton, and Viechtbauer (2006) encompassed over twenty thousand participants spread across 92 samples. Figure 6.22. below provides a basic overview of two 'Big Five' factors addressed by Roberts et al.'s (2006) research.

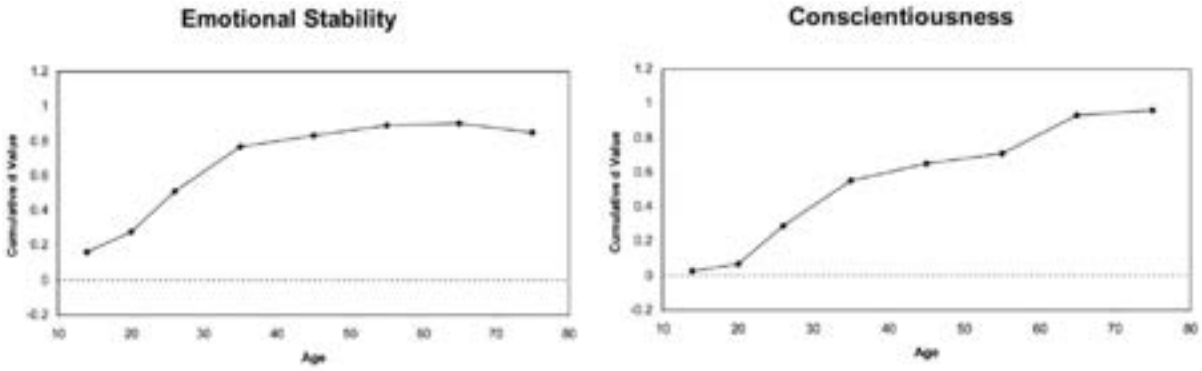


Figure 6.22. *Cumulative d scores for the traits of Emotional Stability and Conscientiousness across the lifespan (Roberts et al., 2006)*

Conclusions

This section above reports some clear findings emerging from our analysis of Risk Type Compass data and age for nearly ten thousand participants. Our large sample size gives us a high degree of confidence in the differences we are reporting, as this has driven the very low 'p values' that have emerged during our tests of statistical significance. However, these must be viewed in conjunction with the small effect sizes that characterise the correlations and group differences we have reported. It must also be noted that our data is cross-sectional, meaning that individuals were not tracked over time. The youngest age group was also the smallest by far, suggesting that the variations emerging from their data should be treated with caution.

The findings that we report align with the expectations resulting from meta-analyses of longitudinally-derived data. This validates the conceptual underpinnings of the Risk Type Compass, as the 'Big Five' trends emerge from both datasets in a similar fashion. In terms of personality, whilst our data cannot contribute to the notion that our dispositions become 'set in stone' at some point in early adulthood, our findings do lend support to the 'relative' stability of personality over the adult lifespan. When viewed in conjunction with the very strong 'test-retest' findings of the assessment, our research into age provides added credence for the longevity of data obtained from a well-developed personality assessment like the Risk Type Compass.

Summary

The specific studies described in this chapter demonstrate that the Risk Type Compass is able to differentiate very clearly between the risk characteristics of individuals as well as between teams, professions, organisations and sectors and even generation. As well as each individual study being interesting in its own right, together they demonstrate how we can differentiate between groups of individuals based on their Risk Type, providing further validation for the Risk Type Compass. These results highlight the benefits of using the tool in selection and recruitment as well as employee development.

Chapter 7 – The Varied Uses of the Risk Type Compass

The Risk Type Compass can be applied across three broad levels: the individual, the team and the organisation as a whole. It has wide relevance across these areas and has been applied in a variety of industries. As Risk Type is a recent concept, there are also considerable opportunities to develop new and interesting applications for the assessment. The aim of this chapter is to provide an overview of how the Risk Type Compass is currently being used in practice and to ignite new ideas on its application. Towards the end of the chapter, we look more specifically at some of the wide ranging occupational domains and industries that so far have embraced the Risk Type Compass and are experiencing the benefits of its application.

The potential application of the Risk Type Compass is extensive because there are few situations where risk is not a consideration. The immediate and most obvious opportunities reflect the interests and challenges of the risk management professions, which are almost entirely associated with efforts to control and minimise risk. Events in banking and the financial sector, which threatened the global economy, highlighted issues around risk taking. However, the focus still remains largely on the nature of the risk itself and on working practices - the systems, regulation and legislation. The catastrophic impact of particular individuals and the collapse, or near collapse, of huge institutions as a direct consequence of their actions suggests that a focus on the personal characteristics of employees in risk–related occupations could be fruitful and necessary.

Effective risk management is not just a matter of eliminating risk; risk aversion can be just as devastating and detrimental. Success in any organisation requires a balance between risk mitigation, innovation and embracing new opportunities. Balancing risk and opportunity is a tightrope that organisations have to tread; those who do it successfully are the ones that survive. The implication of this argument is that risk management has to embrace both sides of the risk/opportunity equation; addressing the challenges of risk culture that are out of balance in either direction, being either too risk taking or too risk averse. We refer to this concept as ‘Positive Risk Management’.

The Risk Type Compass is not simply a revised version of something that has previously existed. It has no direct precursors and, in addressing the causes of risk behaviours, it achieves something that has not been successfully accomplished in the past. It therefore has to be instrumental in discovering its own opportunities. Since the territory and practices of risk management have been shaped by a very different set of assumptions, the opportunities for Risk Type Compass, with its focus on individual differences, will depend on identifying new approaches to risk management and other new professional practices. This puts us, as the developers, and you, as the practitioners, in a very exciting position: opening new doors to unexplored areas in human factor risk.

Individual Level

When using the Risk Type Compass on a one-to-one basis we gain a better understanding of an individual’s risk threshold: their risk perception, reaction to risk, risk-taking propensity and how in turn these can influence decision-making. From a manager’s perspective, this broadened viewpoint plays a useful part in selection and re-deployment, providing an additional window to view the strengths and potential blind spots of applicants. The Risk Type Compass can also be used on a one-to-one basis for employee development. For example, it can be incorporated into coaching sessions or built into appraisals. In this way, employees can benefit from an increased self-awareness and understanding of their own personal biases in relation to risk and an appreciation of how to manage some of those impulses and dispositions. Self-awareness, discipline and personal responsibility are all big factors in the shaping of risk behaviour.

Selection

The Risk Type Compass adds a further dimension to existing selection procedures, better informing employee appointment decisions. The key here is the 'fit' between individual risk profiles and the role. It is not the case that there will necessarily be a one-to-one match between role and Risk Type. Although risk issues may differ dramatically from role to role, there may also be an argument for a balance of Risk Types within a particular group or workforce. Although compliance officers may face a very different risk agenda than traders, a mix of Risk Types may be complementary and broaden the perspective within either of those contexts.

Strategic Re-Deployment

Through greater awareness of Risk Type, valued employees can be strategically re-deployed into roles that may better suit their risk-taking dispositions. The Risk Type Compass provides an additional angle from which to evaluate the positioning of employees, in terms of their department, job focus and the team they work within. In many cases there are benefits to having diversity and a balance of Risk Types, combining the vigilance and caution of the more risk averse with the inquisitiveness, adventurousness and pursuit of opportunities of the more risk tolerant.

Personal Development

An individual's awareness and knowledge of their own disposition towards risk provides a basis for personal development. Coaching helps an individual to better understand their own risk propensity and the implications this will have on risk behaviour, management style or team dynamics. A coach can work with the employee to understand, maximise or overcome these biases, as appropriate, to improve performance and achieve the desired outcome.

In some instances, the coaching strategy can be further tailored to the situation. In the case of traders, for example, work has been undertaken to identify specific 'trader pit- falls' relative to each of the Risk Types. Here, a number of common trading errors are categorised according to the characteristics associated with each Risk Type. Wary Risk Types, for example, may be more prone to missing out on significant trades, holding back until the opportunity is lost, and may need to override this natural caution. Excitable Risk Types, on the other hand, may sometimes need to curb their impulsivity.

Team Level

Research has consistently shown that people react differently to risk when in group situations compared to when making decisions individually. The 'Risky Shift' phenomenon refers to the 'risk polarisation' that occurs when high risk takers predominate in a group. This situation seems to establish a climate in which risk taking escalates and the individuals involved sanction greater levels of risk than any of them normally would if they were acting alone. Wallach, Kogan, and Bem (1964) suggest that this is due to diffusion of responsibility: social bonds decrease decision-making anxiety as responsibility for the outcome is perceived to be shared. Similarly, a group of risk-averse individuals within a team can behave in an overly cautious manner as each person encourages the next to make increasingly wary choices. This is sometimes known as "Cautious Shift". In both scenarios, teams can unknowingly fall victim to these biases, resulting in decisions that are either too risk averse or too risk tolerant.

Auditing Teams

The Risk Type Compass can be used to audit groups and teams to increase understanding of a team's strengths, limitations, dynamics and overall propensity for risk taking. It highlights the composition of teams and may reveal a need to develop a more suitable balance in the

risk-taking tendencies of the team. The team audit may indicate the need for a team development event.

Developing Teams

The Risk Type Compass Team Report was designed specifically to support the group development process. Using a series of group data graphics, the team report views the group through a number of different perspectives. It considers Risk Type convergence or factions within the group, the degree of influence each Risk Type has within the wider group dynamics, and how this impacts the risk perception and risk-taking propensity of the group overall. The aim is to encourage discussion and debate about the implications, strategies and potential developmental goals. This approach allows the group to work through each of these perspectives, resulting in a framework they can work against to re-evaluate team functioning and effectiveness, as well as the risk characteristics, group dynamics and decision-making processes of the team.

Bridging Silos through Senior Management

The "Connect with Purpose" initiative aimed to break down operational silos and enhance collaboration among 22 senior risk management leaders. Participants completed the Risk Type Compass assessment and received individual feedback from PCL psychologists, followed by a team event that leveraged their diverse risk instincts to improve decision-making. The assessment provided a shared language and framework for understanding different approaches to risk.

As a result, the program increased self-awareness, reduced siloed thinking, and enhanced communication across the leadership team. This led to more balanced decision-making through the intentional inclusion of diverse perspectives, strengthened alignment in support of business objectives, and established a foundation for wider cultural change across the entire 220-person risk function.

Case Study – Why your creative employees are more likely to be risk-takers

“Five years from now, over one-third of skills (35%) that are considered important in today’s workforce will have changed [...] Creativity will become one of the top three skills workers will need.” – World Economic Forum (2016)

In the most popular TED talk of all time, Sir Ken Robinson delivers a powerful argument about the way educational institutions often hinder students’ creativity. His central message is clear – being wrong is not the same as being creative, but if you are not prepared to be wrong, you will never come up with anything original (Ted, 2007). He concludes that the fear and anxiety resulting from this stigmatisation can significantly hamper our creativity. This, in turn, affects our ability to innovate and adapt to the unpredictable demands of an increasingly uncertain future.

So how can we embrace creativity and prepare the workforce for what the World Economic Forum (2016) has termed ‘The Fourth Industrial Revolution’?

Tolerance of uncertainty

Thinking ‘outside the box’ involves challenging the way things are done, but without yet having an alternative solution. For some, that is an uncomfortable, risk-taking scenario. They don’t like to stray, even mentally, from the comfort of what they know and have little desire for change.

The appetite for originality goes hand in hand with tolerance of uncertainty. Whether the urge to create overrides the fear of risk, or whether fear of risk stifles the urge to create is, to

some extent, a matter of internal dynamics. Either way, an individual's ability to tolerate uncertainty is importantly related to their capacity to be creative.

Risk aversion and creativity

Yet, creativity is not solely determined by what's inside us; the climate or culture of an organisation provides the context within which natural inclinations may grow or be suppressed. Echoing Sir Ken Robinson, Gigerenzer (2014) argues in his book 'Risk Savvy: How to make good decisions' that concern about making errors is essentially a form of risk aversion. So, if employees are incessantly discouraged from taking a chance, exercising their own judgement or challenging the status quo, their organisations are actively fostering a culture of risk aversion.

Discouragement can come in the form of stigmatic external pressures like overbearing managers, judgemental colleagues or stifling company bureaucracy. Creativity will struggle to flourish in any environment where risk aversion has been encouraged and fostered to the point of becoming excessive.

Personality, risk and creativity

Against this background, research into how people differ in their perception of risk can provide useful insights to help us understand creativity. An academic study conducted by Cichomska (2010) with Psychological Consultancy Ltd using psychometric assessments addresses the issue of the relationship between personality, risk-taking and creativity.

The Risk Type Compass assesses the elements of personality that have the greatest influence on how individuals perceive and manage risk and how these propensities influence their decision-making. The PCL research used this assessment in conjunction with a widely used adjective checklist that measures creativity. Assessing individuals using both instruments shows a strong and statistically significant positive relationship between an individual's risk tolerance and their level of creativity. Therefore, more creative individuals are likely to be higher risk-takers.

Risk, creativity and entrepreneurship

Similar conclusions were also recently reported from a study in South Africa by psychology consultancy JvR Psychometrics. Whilst the Risk Type Compass was again used to evaluate risk tolerance, creativity was assessed using a measure of entrepreneurship that focuses on an individual's ability to generate innovative business ideas.

Again, a significant positive association was found between risk tolerance and creativity. The focus on entrepreneurial creative potential is also interesting because entrepreneurs will often be drawn towards innovation and pride themselves on identifying opportunities where others see only danger.

Understanding the interaction between risk and personality

Personality provides an important perspective on risk-taking and creativity. Both are related to an aspect of personality that disposes people to embrace novelty, question routine and to find fast-moving roles and changing environments stimulating. At the other end of this scale are individuals who are measured, organised and systematic. Their preferred approach to change - if indeed it needs to happen at all - is cautious and incremental.

In conjunction, the research mentioned above indicates the value of considering the interaction between personality and risk. Creativity has been identified as a precursor and propellant to innovation (Locke, 2009). An individual's perception of risk is a vital component in understanding their creative behavioural tendencies. A leap of faith is needed if radical new ideas are to take off, but there are important collaborating roles for others who spot the flaws and weaknesses that might otherwise have brought disaster.

Whatever the fruits of 'blue sky thinking', there will always be a place for those who can constructively question, those who can think through the pit-falls and those who can turn ideas into realities. No matter what the future holds, creative ideas alone will never be the full story. Success will always be the reward for the teams that strike for this essential balance.

Lessons for management:

1. Some workplace situations may require employees to comply to rules and follow rigid procedures. However, 'blind obedience' to these processes is not the same as employees taking personal responsibility for their actions. While the first stifles creativity, the second encourages it.

2. Personality dispositions feed the desire to innovate in some people and the wish to limit exposure to risk and uncertainty in others. Organisations need to harness their employees' natural dispositions in ways that build understanding, mutual respect and cooperation between the two. This is effective team building.

3. You can have 'too much of a good thing'; too much creativity can be as unproductive as excessive risk aversion. The former can lead to endless questioning, unsettling rapid change or so many ideas flying around that no decisions are ever made. The latter can result in inhibiting discretionary decision-making, infantilising the workforce or becoming too inflexible to address changing technical and economic challenges.

4. Most people try to act in accordance with what is expected of them at work, and this can make them appear deceptively similar. In reality, one person's welcomed opportunity may be an onerous demand for another. So, an individual's personal development agenda depends on their own nature - the natural tendencies and dispositions that don't just go away. Understanding those dispositions is the foundation for development and that is what personality profiling is all about.

Organisational Level

Risk Culture

At the micro level, risk culture is inevitably influenced by the individuals of whom that culture is composed. Schneider's (1987) 'the people make the place' theory of culture is the clearest exposition of this. In this two-way, dynamic relationship, people make an important contribution to culture and culture influences the people. Surveying the propensity for risk at the individual level provides a reliable, objective and deliverable strategy for the elucidation of the wider risk culture.

The risk culture of an organisation reflects the values, style and behaviours prominent amongst current staff (particularly amongst senior staff) and the legacy of their predecessors. Considering this perspective, the Risk Type Compass assessment provides objective measures which identify shortcomings and set goals, shape, foster and monitor the risk culture and manage change across an organisation.

Any occupation or profession will tend to attract and retain people who are happy with the risk demands and exposure associated with it. This is the premise behind the attraction, selection, attrition hypothesis (Schneider, 1987). This hypothesis describes how: (a) people with similar values to the organisation will be more attracted to, and more likely to apply for, a position in a company that has similar values; (b) the recruitment process is likely to bias their application because incumbents tend to recruit in their own image; and (c) those who fit with the culture will stay, while those don't will leave or be excluded.

The Risk Onion graphic (Figure 7.1 below) suggests the relationship between 'Risk Type', 'risk attitude', 'risk behaviour' and 'risk culture'. Risk Type is seen as the core of risk culture, and risk attitude grows and develops from this through exposure and experience. Together

these combine to produce an individual's visible risk behaviour, which (along with others in the team/organisation) will contribute to the wider risk culture.

Figure 7.1. *The 'Risk Onion'*

The 'cascade' project model is one example of an approach to risk culture change that has been successfully utilised by Psychological Consultancy Ltd. In essence, a cascade model approach will encompass a programmed series of group coaching and Risk Type team development events that start at the pinnacle (i.e. the boardroom) and work down through successive management levels of the organisation, all the way to the shop floor. This is a process that can extend across the workforce, providing a common frame of reference for the consideration of risk issues and a vocabulary that facilitates strategic planning and the communication of risk-related ideas and policies. It also clarifies personal responsibilities and provides a development agenda for individuals that reflects the compliance requirements of their particular role.

Risk Landscape

The Risk Type Compass can be used to uncover the risk-taking tendencies within a department or larger group of teams. It can highlight where there are concentrations of a particular Risk Type, or where other Risk Types are lacking. This enables the organisation to reflect on the appropriate balance between the 'risk tolerant' and the 'risk averse' to improve the performance of that department. The Risk Type Compass not only illuminates such distinctions in risk-taking behaviour at an organisational level, but it also makes them manageable.

To aid this process, PCL have developed specialised software that allows users to physically map the risk landscape of an organisation so that it can be viewed in a tangible way (see Figure 7.2). Using this software, organisations can identify 'hot' and 'cold' risk spots. The risk landscape software can be used to inform strategic planning and risk policy development.

Figure 7.2. *Screenshot of the Risk Type Compass Company Risk Landscape software*

Group data on an organisational scale can be difficult to summarise without losing the extent of differentiation between individuals and groups to the vagueness of averages. The Risk Landscape software was designed to present Risk Type data in a way that allows it to be viewed on-screen graphically. Risk Type Compass data can be viewed at different levels of an organisation and interrogated down to team and individual levels. In the illustration, each 'node' represents a team. It is possible to click through to view Risk Type dispersal of any team, and the characteristics of any individual. The colour saturation, or 'tint', of each node conveys the mean Risk Tolerance Index (RTi) for the team: stronger colour reflecting stronger risk tendencies in either risk-taking or risk-averse direction; bleaching out to white for the most balanced teams.

RTC and Sports Psychology

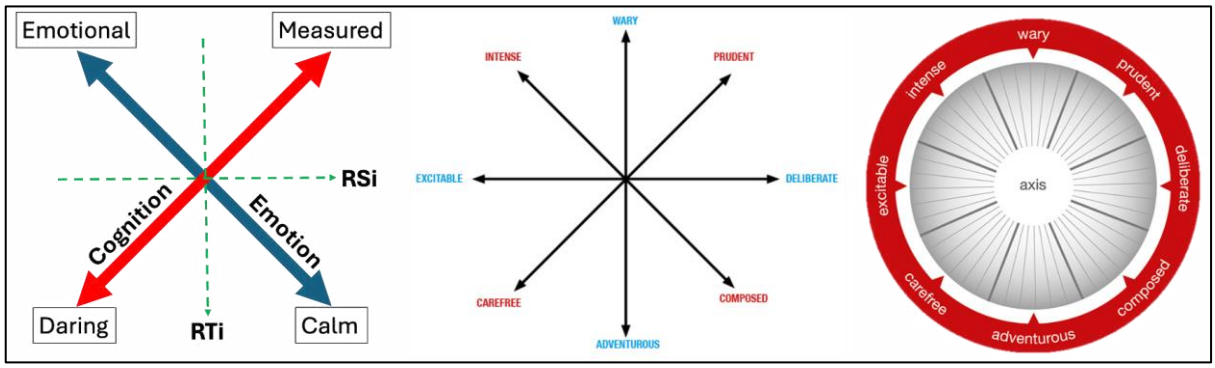
The basic thesis of this RTC Technical Manual is that, in order to survive, all life forms need to make decisions, whether consciously or unconsciously. Sport has been described as 'a metaphor for life' and during a game of football, a player apparently makes between 3,000 and 6,000 decisions. So, to what extent might the Risk Type Compass model of decision making be of value to sports teams? RTC research has focused on individuals and teams in a wide variety of business context and the logic translates well to many kinds of endeavour. The challenge is to integrate the theory with the practices, knowledge and context of competitive sport - both to enhance decision making in that context and to take advantage of the existing body of coaching expertise and extensive experience in this 'stripped down' sports analogy of competitive behaviour. This is a massive opportunity with plenty of exciting potential for both fields - and at both individual and team levels.

Taking stock; what we think we know:

1. Brains were making decisions long before there was consciousness
2. We refer to these decisions as 'intuitions' – impulses mediated by feelings

3. Intuitions are rooted in perceptions, memories, and associative learning
4. Repeated movement patterns become 'automated' and unconscious
5. 'Heuristics' are pragmatic - 'good-enough' non-language dependent solutions
6. The emergence of language and symbolism was transformational and dramatic
7. 'Dualist' Homo sapiens now have both pre and post language brain networks
8. In your mind, 'I'- the decision maker - mediates between thoughts and feelings
9. Consciousness is self-aware thinking, feeling and reasoning in a 'mind space'
10. 'Risk instincts' reflect the Thinking/Feeling balance within each individual

In our conscious minds we each experience life from two viewpoints; both as reactive, impulsive, feelings-driven beings (Channel One). But, at the same time, as conscious, contemplative beings, armed with intelligence, reason and symbolic conceptualisation (Channel Two). Wide individual differences arise from the possibility of any combination of these two influences; tensions that we attempt to reconcile (with varying degrees of success). These two channels are physiologically and functionally independent; within the RTC, the two orthogonal scales that underpin the circumplex model.



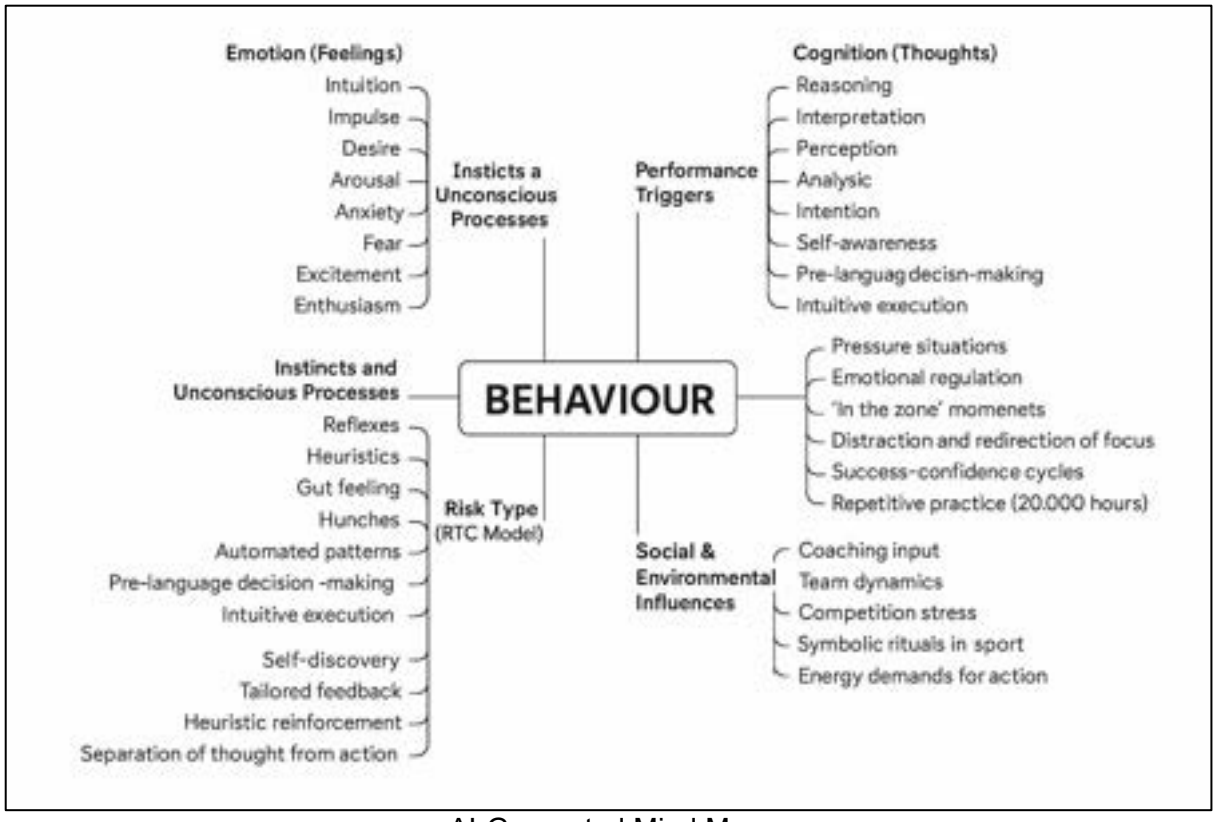
This then is the 'individuality' with which we each approach sporting performance; these individual differences are distinctive and definitive and likely, in a wider 'life' context, to be each person's most notable and most consequential feature. For purposes of communication, we segment this total domain of possible combinations into eight distinctive Risk Types that are very evenly distributed in the population.

The tensions between Channel One (**Emotion**) and Channel Two (**Cognition**) are commonly recognised in discussions of sports performance issues; the inability to '*close out*' after having dominated a tennis match; failure to score from the penalty spot; the difficulty of 'holing' a winning 'put', dropping an easy catch, or any other performance failure/anomaly. We talk about '*over thinking*', staying calm but *'right on it'*, being '*in the zone*'. Anxiety and the need to maintain concentration and to control the emotions under pressure and stress is the widely recognised goal, as are the benefits of extreme levels of practice and repetition. In all of this, awareness of an individual's natural Anxiety/Cognition balance (i.e., knowing their Risk Type), provides a sound, measurable and highly reliable starting point for further exploration. For coaches, Risk Type offers personal reference points that come with a rich 'back story', extensive data and a knowledge base and terminology that provides a framework from which to develop insights and practical applications at team and personal development levels.

Any individual seeking to improve the skilfulness and consistency of their performance is on a mission of personal discovery – reflecting the fact that, apart from triggering an action (issuing *'structions'* - Julian Janes), we don't actively take part in it. So, this cannot be a '*one size fits all*' process. The questions to be asked require personal solutions based on insights developed through both self-reflection and formal assessment to promote insight and a grasp of what actually works for them.

A starting point is to look for decisions (both successful and unsuccessful) that align with Risk Type expectations. This is NOT an exercise in 'fulfilling' your Risk Type; more about using the Risk Type framework and it's supporting validation research, as a dependable basis for an open-minded self-examination of performance, enlightening/ explaining/ identifying links and influences. Also, it is matter of abandoning 'blanket' over generalised solutions in favour of approaches that recognise the wide individual variation in both emotional and cognitive differences and the principle of caution; 'first do no harm' alert to potentially disruptive effects of hindering or unhelpful practices while building confidence and realistic self-perceptions. All of this is within the broad framework of existing coaching practices – albeit with additional input from the psychometric measures provided by the Risk Type Compass.

The full realisation of the RTC in the sphere of sport, I believe, will be in the possibilities for taking the analysis deeper into the personal inner landscape of the individual. Deep psychologies have been out of fashion for good reasons and I'm not proposing to take that route. However, recognition of the 'dualist' neuroscience that identifies two independent networks that both impact our decision making – together with the anthropology - supports points 1-5 above developed in Homo-Sapiens *prior* to the emergence of language, and points 6-10 developed *through* language, reasoning and thought.



AI-Generated Mind Map

Summary

The Risk Type Compass has been researched within more than 20 different sectors. It can be applied at the individual, team and organisational level for both selection and development purposes and has a key role to play in pro-actively managing risk culture. The above is an account of the early impact of Risk Type within the world of work and largely in English-speaking countries; it is by no means intended to be an exhaustive list of all the uses of the Risk Type Compass. We anticipate that further application will become apparent as the tool demonstrates its utility to more practitioners and in more varied scenarios. The Risk Type Compass is now being distributed in north America, Canada, South Africa and Australia. The assessment is now available in four languages.

Chapter 8 – Real World Consequences

The concept of Risk Type as expressed in this Technical Manual and allied publications is supported in a number of ways by past developments in the realms of personality theory and by research from other spheres. Our assertion that the Risk Type Compass identifies individual differences deeply rooted in our constitution, ring fences around 'subjective risk' as as an area of coherence within the labyrinthine complexities of the total risk domain. It implies relevance to humanity in general.

Risk Type Compass validity is discussed here at several levels and in different terms. We refer to the reasoning behind the theory, the logic of the Compass model and the position of Risk Type as Concept Validation. More specifically, the Risk Type Compass has important implications for Individuals, for Teams, for Industries, and for Risk Culture. We discuss validity under each of these headings in terms of the meaning and plausibility of inferences for test interpretation.

Our aim is to provide reassurance at the most objective level possible. The discussion of Concept Validation is rhetorical; discussion of significance to Individuals is correlational; implications for Teams are illustrated by case study summaries; organisational differences in Risk Type composition are validated using non-parametric statistics; and Risk Culture is briefly discussed in terms of ongoing action research.

Concept Validation

Development of the Risk Type Compass model was entirely research driven, by factor analysis and by psychometric development of the two orthogonal bi-polar scales that provide measures of the emotional and cognitive components of decision-making.

The 360-Degree Spectrum of Risk Dispositions

The 360-degree spectrum reflects the orthogonality of the two neurological functions - cognition and emotion - which are crucial components of decision making. Arranged orthogonally (as an 'X'), they provide the axes for a continuously incremented 360-degree spectrum of risk dispositions. The radii of this circumplex model map all the possible permutations of those two orthogonal measures.

Eight Risk Types

Factor analysis defined the four 'poles' of the Risk Type Compass (Intense, Prudent, Composed, Carefree). Additional horizontal and vertical axes (as a '+') account for individuals with extreme scores on both the scales, adding four more Risk Types to the model (Wary, Deliberate, Adventurous, Excitable). See page 36 for details.

Meaning & Significance

Decades of personality research has provided a rich source of meaning for interpretive personality narrative. It also contributes to our understanding of the trajectory of personality characteristics over the life cycle (Harris et al., 2016), its relevance across different cultures (Allik & McCrae, 2002), and its heritability (Gottesman, 1963). Evolutionary psychology contributes to the debate about the significance of personality to species survival (Social Defence Theory, Ein-Dor, 2013). Neuroscience provides insights into decision making, cognition and emotion (e.g. Damasio, 2006; Berthoz, 2006), and establishes consensus that two brain systems are involved in decision making (Simon, 1983; Walport, 2014). Common Currency Theory (Levy & Glimcher, 2012) highlights the correlation between propensity for risk taking across different domains and reward systems - all of which are relevant to the positioning of the Risk Type Compass.

In our view, Risk Type is stable from brain maturity through to the onset of degenerative processes of age. It is a feature of human nature that can be detected across cultures. It maps onto accepted neuroscience. It is consistent with an evolutionary psychology perspective that recognises the role of diversity in species survival.

Risk & Human Nature

The relationship between risk taking and personality is intrinsic. Our personalities (Risk Type) shape our world view, the decisions we make and our approach to the challenges involved in realising opportunities (subjective risk). The consequences of those endeavours, whether intended or not, generate the statistics of risk (objective risk). Whether we buy or sell influences value, financial markets, the economy, and, ultimately, what our money is worth. Whether we cross roads or wait, or drive cars carefully or intrepidly, it influences accident statistics, as does road design, road maintenance, aircraft design, aircraft maintenance, or any other kind of design or maintenance. Risk statistics arise from what we do. Why we do it is about human nature.

Human factor risk is concerned with our perceptions, feelings and temperamental dispositions on the one hand (emotional factors), and with differences in the extent that individuals have a need for 'locked down' certainty, order and coherence in making sense of the world (cognitive factors) on the other. Together, these account for the individual differences in risk personality dispositions that have global consequences.

All this takes us a long way beyond the simplistic assumption that risk taking is a linear characteristic defined by a single scale from extreme caution to extreme recklessness. The reality that decision making involves emotion as well as rationality is rich with possibilities. For Homo Sapiens, dealing with risk successfully is clearly a team game. Whether those decision-making teams exist in a military, corporate, commercial, or public sector context, the ability to create teams or to audit teams on the basis of Risk Type diversity is something new. In order to play the game better and to raise our performance, it is necessary to understand this.

Risk Type & Individual Differences

The study of individual differences has been a central theme within scientific psychology for decades and Risk Type was developed within this tradition. As with any other personality test, the interpretive narrative of Risk Type draws from the extensive accumulation of personality research and insights of professional practice.

> *"No two persons are born exactly alike; but each differs from the other in natural endowments, one being suited for one occupation and the other for another."*
>
> - Plato

Scale names provide only an approximate indication of the meaning and interpretation of test scores and should never be regarded as more than barely adequate labels. Item content gives some understanding of personality scales, but this is elaborated by other research into a construct and incrementally developed by comparison with other measures and confirmed through successful application to work samples and candidate feedback and coaching sessions.

The inferences attributed to Risk Type Compass test scores have been enriched by numerous statistically significant relationships established with the constructs and themes of other measures in the course of research. Strong relationships imply a semantic overlap between measures.

Table 8.1. *Correlations between Risk Type Compass and other measures*

		E:C Scale	D:M Scale	RTi
SRC	Scientific	.240*	-0.154	.225*
	Social	.231*	-0.047	0.213
	Visual arts	-0.175	0.141	-.221*
	Verbal arts	0.018	-0.141	0.049
	Sports	0.093	-0.195	0.194
	SRC Total	**0.19**	**-0.19**	**.217***
Creative Achievement Questionnaire Domain	Visual Arts	-0.029	-0.154	0.081
	Creative Writing	0.05	-.214*	0.186
	Inventions	0.161	-0.104	0.192
	Scientific Discovery	0.12	0.033	0.033
	CAQ Total	**0.093**	**-.313****	**.270***
	Turnover Intention	**-0.185**	**-0.138**	**-0.088**
	Satisfaction	**0.139**	**0.125**	**0.06**
	Agreeableness	**-0.04**	**0.126**	**-0.118**
	CD_RISC	**.598****	**-0.083**	**.513****
Job Affective Wellbeing Scale	High pleasurable-High arousal	0.159	0.023	0.075
	High pleasurable-Low arousal	.342**	-0.044	.251*
	Low pleasurable-High arousal	.327**	-0.019	.248*
	Low pleasurable-Low arousal	0.212	0.117	0.07
	JAWS Total Score	**.324****	**0.027**	**0.198**
Resistance to Organisational Change (N = 121)	Routine Seeking	-.258**	.456**	-.538**
	Emotional Reaction	-.480**	.330**	-.615**
	Short Term Thinking	-.507**	.231*	-.564**
	Cognitive Rigidity	0.162	.217*	-0.066
	Resistance to Change Total	**-.399****	**.439****	**-.644****
Perceptions of Organisational Change (N = 121)	Frequency of Change	-0.073	.236**	-.211*
	Planned Change	.182*	0.04	0.112
	Uncertainty	-.386**	.287**	-.507**
	Perceptions of Change Total	**-0.1**	**.277****	**-.270****
	Resilience Average	**.463****	**-.212***	**.546****
Performance	Individual Task Proficiency	.193*	.226*	-0.006
	Individual Task Adaptivity	.381**	-0.083	.358**
	Individual Task Proactivity	.203*	-0.082	.215*
	Performance Average	**.328****	**0.003**	**.255****
	Well-Being Average	**.599****	**-.266****	**.677****

**p<.05. **p<.01*

Table 8.1. (continued) *Correlations between Risk Type Compass and other measures*

		E:C Scale	D:M Scale	RTi
HDS Scales (N = 297)	Excitable	-.559**	-0.1	-.339**
	Sceptical	-.366**	-0.088	-.232**
	Cautious	-.360**	.131*	-.363**
	Reserved	-.220**	-0.053	-.127*
	Leisurely	-.177**	0.098	-.215**
	Bold	.125*	-.193**	.238**
	Mischievous	-0.112	-.599**	.353**
	Colourful	0.004	-.385**	.293**
	Imaginative	-0.076	-.426**	.251**
	Diligent	0.058	.349**	-.223**
	Dutiful	0.008	0.062	-0.058
Psychological Capital (N = 83)	Efficacy Factor	.361**	0.04	.277*
	Hope Factor	.369**	-0.02	.363**
	Resilience Factor	.356**	-.337**	.505**
	Optimism Factor	.597**	0.209	.332**
	PsyCap Total	**.531****	**-0.005**	**.446****
Psychological Capital (N = 124)	Efficacy Factor	.329**	-.228*	.389**
	Hope Factor	.456**	-0.153	.444**
	Resiliency Factor	.492**	-0.158	.542**
	Optimism Factor	.423**	-0.055	.426**
	PsyCap Total	**.510****	**-.181***	**.540****

**p<.05. **p<.01*

Table 8.1. (continued) *Correlations between Risk Type Compass and other measures*

		E:C Scale	D:M Scale	RTi	RSi
Psychological Capital (N = 291)	Hope Factor	.332**	0.102	.148*	.284**
	Optimism Factor	.333**	-0.055	.266**	.155**
	Resilience Factor	.399**	-0.047	.305**	.201**
	Self-Efficacy Factor	.425**	-0.113	.371**	.156**
	PsyCap_Total	**.455****	**-0.033**	**.332****	**.244****
Psychological Capital (N = 123)	Efficacy	.430**	-0.158	.447**	.233**
	Hope	.386**	-0.104	.436**	.255**
	Resiliency	.554**	-.221*	.561**	.270**
	Optimism	.488**	-0.056	.620**	.423**
	PsyCap Total	**.547****	**-0.152**	**.614****	**.358****
Career Competencies (N = 147)	Reflection on Motivation	.237**	-0.136	.239**	0.086
	Reflection on Qualities	.241**	-0.154	.252**	0.055
	Networking	.241**	-0.06	.190*	0.134
	Self Profiling	.327**	-.238**	.359**	0.058
	Work Exploration	0.046	-0.039	0.053	0.01
	Career Control	0.129	-0.114	0.154	0.012
	Career Competencies (Total)	**.266****	**-0.158**	**.269****	**0.08**
Job Crafting (N = 147)	Increasing Structural Job Resources	.226**	-0.131	.227**	0.082
	Hindering Job Demands	0.072	-.194*	.169*	-0.13
	Increasing Social Job Resources	0.034	0.035	0	0.058
	Increasing Challenging Job Demands	0.118	-.236**	.224**	-0.091
	Job Crafting (Total)	**.168***	**-.205***	**.237****	**-0.039**
Subjective Career Success (N = 147)	Recognition	0.157	0.056	0.062	.165*
	Quality Work	.271**	0.122	0.092	.290**
	Meaningful	-0.076	0.057	-0.085	-0.022
	Influence	.253**	-0.09	.217**	0.139
	Authenticity	0.16	0.01	0.096	0.136
	Personal Life	.274**	-0.017	.184*	.187*
	Growth and Development	0.158	-0.016	0.11	0.113
	Satisfaction	0.09	-0.018	0.069	0.086
	Subjective Career Success (Total)	**.254****	**0.017**	**0.149**	**.212****

**p<.05. **p<.01*

Table 8.1. (continued) *Correlations between Risk Type Compass and other measures*

		E:C Scale	D:M Scale	RTi	RSi
Aversion to Online Shopping Behaviour (N = 60)	Frequency of online shopping	-.475**	-0.012	-.359*	-.430**
	Fear of bank transaction and no faith	-.442**	0.096	-.392**	-0.250
	Traditional Shopping Convenience	-.420**	.309*	-.490**	-0.174
	Reputation and service provided	0.267	0.207	0.094	.347*
	Bad experience	-0.231	0.040	-0.199	-0.154
	Insecurity and insufficient product information	-.541**	0.226	-.535**	-.332*
	Lack of Trust	-.496**	0.170	-.473**	-0.268
	Aversion to Online Shopping Behaviour (Total)	**-.523****	**.302***	**-.564****	**-0.223**
Values (N = 93)	Benevolence Scale	0.059	-0.016	0.029	0.052
	Universalism Scale	0.099	0.006	0.07	0.091
	Self Direction Scale	-0.033	-.230*	-0.181	0.155
	Stimulation Scale	-0.09	-.340**	-.297**	0.201
	Hedonism Scale	0.106	-.286**	-0.126	.290**
	Achievement Scale	-0.042	-0.153	-0.136	0.106
	Power Scale	-0.084	-0.053	-0.096	-0.032
	Security Scale	0.001	.289**	0.199	-0.197
	Conformity Scale	-0.192	.465**	0.19	-.493**
	Tradition Scale	-0.169	.238*	0.049	-.259*
	Self Enhancement Factor	-0.046	-0.138	-0.128	0.078
	Self Transcendence Factor	0.077	-0.03	0.031	0.09
	Openness To Change Factor	0.024	-.205*	-0.127	0.181
	Conservation Factor	-0.042	0.18	0.094	-0.152
Multidimensional Workaholism Scale (N = 291)	Motivational	-0.034	0.083	-0.085	0.011
	Cognitive	-.197**	-0.011	-.123*	-.138*
	Emotional	-0.1	-0.014	-0.058	-0.098
	Behavioural	-0.062	-.152**	0.072	-.165**
	Workaholism Total	**-.128***	**-0.033**	**-0.062**	**-.128***
Job Affective Wellbeing (N = 73)	High Pleasured / High Arousal	.233*	-0.09	0.193	0.119
	High Pleasured / Low Arousal	.387**	-0.155	.326**	0.153
	Low Pleasured / High Arousal	-.283*	0.03	-0.186	-0.185
	Low Pleasured / Low Arousal	-.358**	-0.055	-0.173	-.351**
Creativity (N = 73)	Scientific	0.09	0.067	0.009	0.122
	Social	-0.058	-0.186	0.087	-0.205
	Visual	0.159	-0.197	0.22	0
	Verbal Artistic	-0.122	-0.183	0.048	-0.206
	Sports	.306**	-.300*	.376**	-0.024

**p<.05. **p<.01*

Table 8.1. (continued) *Correlations between Risk Type Compass and other measures*

		E:C Scale	D:M Scale	RTi	RSi
Burnout (N = 93)	Disengagement	-.433**	-0.038	-.318**	-.265*
	Exhaustion	-.598**	-0.03	-.424**	-.373**
	Burnout Total	**-.557****	**-0.038**	**-.401****	**-.344****
Engagement (N = 93)	Vigor	.569**	0.021	.398**	.358**
	Dedication	.408**	-0.08	.221*	.326**
	Absorption	.327**	-0.042	0.193	.250*
	Engagement Total	**.485****	**-0.04**	**.301****	**.350****
Work Engagement (N = 291)	Vigor	.338**	0.07	.175**	.255**
	Dedication	.232**	0.11	0.074	.219**
	Absorption	.199**	0.003	.131*	.117*
	Work Engagement Total	**.285****	**0.068**	**.140***	**.219****
	Psychological Safety (N = 123)	.291**	0.010	.276**	.380**
Creativity (N = 123)	Identification	-0.098	0.036	-0.042	-0.108
	Solving	-.204*	0.094	-0.055	-.191*
	Psychological Safety	.416**	0.022	.314*	.360*
Pro Social Rule Breaking (N = 42)	Company	.310*	-.393*	.473**	0.02
	Co Worker	0.119	-.505**	.383*	-0.18
	Client	0.045	-.313*	0.216	-0.152
	PSRB_Total	**0.184**	**-.441****	**.399****	**-0.106**
Mental Toughness (N = 70)	Confidence	.543**	-0.166	.485**	.315**
	Constancy	.391**	0.068	0.234	.362**
	Control	.644**	-0.124	.531**	.423**
	Mental Toughness Total	**.673****	**-0.121**	**.550****	**.451****
	Subjective Socio-Economic Status (N = 156)	.244**	.154	.029	.290**

**p<.05. **p<.01*

An account of each of the research studies from which this data was generated from are presented below. The original PCL-published White Papers from which they are drawn are available in full, from the Knowledge Bank on the PCL website.

The subject matter of the Risk Type Compass is well-suited for driving interesting research, from industry to individual levels. It has been administered over 14,000 times, allowing research samples to be compared against a 'general population' sample. The Risk Type Compass generates data points based on Risk Type designation; firstly, on the two scales that provide the underpinning axes for the Compass model - the Emotion and Cognition scales; secondly, on the Risk Tolerance Index - the RTi; and finally, from the eighteen Risk Type Compass subthemes.

The Risk Type Compass is a British Psychological Society registered test with excellent reliability (Cronbach's Alpha, Test Retest, and Split Half - see Chapter 5), and has been used in a range of psychological research. The content below refers only to recent research, but a considerable amount of additional content can be found in previous sections of this Technical Manual.

Risk & Creativity

Creativity and risk go hand in hand. From crafting artwork to starting a new entrepreneurial venture, engaging in creative endeavours opens the creator up to potential risk and reward. Understanding this is vital to organisations hoping to attract and retain creative or entrepreneurial talent.

Creativity has been researched by PCL several times in relation to the Risk Type Compass, and has played a formative role in the assessment, most notably in the incorporation of the 'Risk Stability Index' (RSi) spectrum that run horizontally across the compass.

The concept of creativity has elicited various definitions and measurement approaches. Some have focussed on tangible outcomes as evidence of creativity (e.g., creative output), whilst others consider it an antecedent to creation (e.g., creative temperament). PCL research has considered several of these approaches to measurement across multiple studies.

Risk in Creative Professions

The first study sought to explore the interaction between risk and creativity by asking purposively sampled 'creative' individuals (n=85) to complete the Risk Type Compass assessment and two measures of creativity. The first measure focused on self-rated creativity (SRC; Hughes, Farnham & Batey (2013) and then second focussed on creative achievements (CAQ; Carson, Peterson, & Higgins (2005). Findings indicated that Excitable Risk Types were 3.5 times more likely to occur in the creative sample compared with the general population (n=11,900).

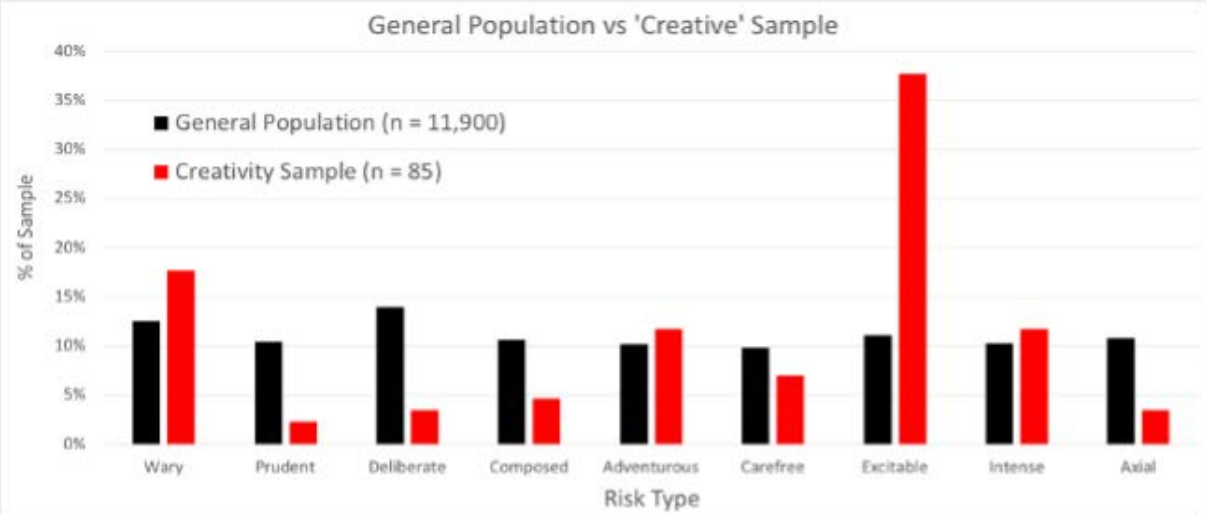


Figure 8.1. *Risk Type breakdown of creativity and general population samples*

Further breakdown indicated nuance between Risk Type Compass subthemes and SRC domains. The most notable Risk Type Compass subtheme was Intuitive, which generated contrasting correlations between 'artistic' and 'scientific' creativity domains.

Table 8.2. *Correlations between Risk Type Compass subthemes and SRC scores*

Emotional: Calm Subtheme	Self-Rated Creativity Domain (SRC)					SRC Total
	Scientific	Social	Visual Arts	Verbal Arts	Sports	
Apprehensive	-0.2	-0.203	-0.014	0.039	-0.142	-.250*
Sensitive	-.334**	-0.035	.308**	0.209	-0.193	-0.032
Intuitive	-.243*	.216*	.308**	.399**	-.224*	0.196
Astute	-0.03	-0.184	.219*	0.01	-0.046	-0.006
Eager	0.165	-0.047	-0.148	-0.108	0.011	-0.054
Resilient	-0.094	.351**	-0.016	0.078	-0.008	0.13
Confident	0.137	.381**	-0.051	-0.052	.387**	.245*
Forgiving	0.11	0.187	-0.032	.238*	0.003	.232*
Optimistic	-0.017	0.096	0.138	0.101	-0.062	0.117
Equable	.236*	0.045	-.241*	-0.195	0.149	0.005

Table 8.2. (continued) *Correlations between Risk Type Compass subthemes and SRC scores*

Daring: Measured Subtheme	Self-Rated Creativity Domain (SRC)					SRC Total
	Scientific	Social	Visual Arts	Verbal Arts	Sports	
Audacious	0.031	.327**	0.089	0.189	0.099	.338**
Explorative	0.185	0.019	-0.051	-0.052	.387**	.245*
Hasty	0.189	0.113	-0.078	0.009	.266*	.242*
Spontaneous	0.083	.454**	-0.002	.215*	0.007	.342**
Focused	0.138	0.21	0.1	-0.044	0.019	0.2
Methodical	-0.147	0.208	0.175	-0.06	-0.098	0.027
Perfectionist	-0.161	0.157	.271*	-0.022	-0.176	0.024
Conforming	-0.06	-0.077	-0.052	-.220*	0.179	-0.102

**p<.05. **p<.01*

In summary, findings indicate a clear trend of Risk Types, with Excitable considerably over-represented. This could be due to the greater proportion of 'artistic' creatives. This effect could also be located in the subtheme breakdown with the SRC (Table 8.2 above), where Intuitive appeared to influence differentiation between these forms of creativity.

A full report of this research can be found HERE.

Investigating risk propensity in creative professions, and looking at the relationship between creativity, risk-taking and job-related affective well-being

Further research sought to explore varying domains of creativity alongside measures of job-related wellbeing. 73 participants (37% male, 63% female, average age 28.71) completed the Risk Type Compass, Self-Rated Creativity Scale (SRC; Hughes et al., 2013), and the Job-related Affective Well-being Scale (JAWS, Van Katwyk et al., 2000). SRC includes

several domains of creativity (e.g., visual, sport, scientific, etc.), and JAWS consists of four categories (high/low pleasure and high/low arousal).

Analysis reported varying findings dependent on SRC's multiple domains. The Emotion scale had a significant negative correlation with 'visual' creativity (-.31, p<.01), which replicates previous research findings into neuroticism and visual artistic propensity. In contrast, the Emotion scale had a significant positive correlation with 'sports' creativity (.31, p<.01), accompanied by a similarly strong negative correlation with the Cognition scale (-.30, p<.05).

Various correlations were also reported for the Emotion scale and wellbeing in line with previous research, with positive scores on the Emotion scale consistently and significantly predicting higher scores on the JAWS scale. The study provides further insight into how different domains of creativity are related to and predicted by contrasting elements of our personality, along with resulting job-related wellbeing.

How Risk Personality Affects Idea Generation in Creative Problems Solving

An alternative approach to assessing personality and creativity conducted by PCL research focussed on idea generation (fluency) in creative problem solving. 123 participants were recruited from a major UK Fire and Rescue Service (66% male, 34% female; average age 45 years old), and administered the RTC, the Creative Problem-Solving Fluency (CPS Fluency) test (Callan et al., 2019).

The primary focus of the analysis was to determine if the RSi was negatively related to creativity (CPS Fluency) as previous findings into creative professions seemed to suggest. Regression analysis indicated that RSi predicted 11% of the variance in CPS Fluency scores, suggesting that, as scores on the RSi increase, performance on the CPS Fluency test could decrease.

Further consideration as given to whether psychological safety and psychological capital played a role in the relationship between risk personality and creativity. In line with previous research into these two measures, RSi positively correlated (driven primarily by the Emotion scale). Resulting in some interesting counteracting elements resulting from personality in the context of creativity.

Risk & the Legal Industry

Research into the legal industry was conducted using the Risk Type Compass. A sample of 105 lawyers/legal representatives were analysed. Figure 8.2 below shows the distribution of Risk Types in comparison with the general population of 11,900 individuals.

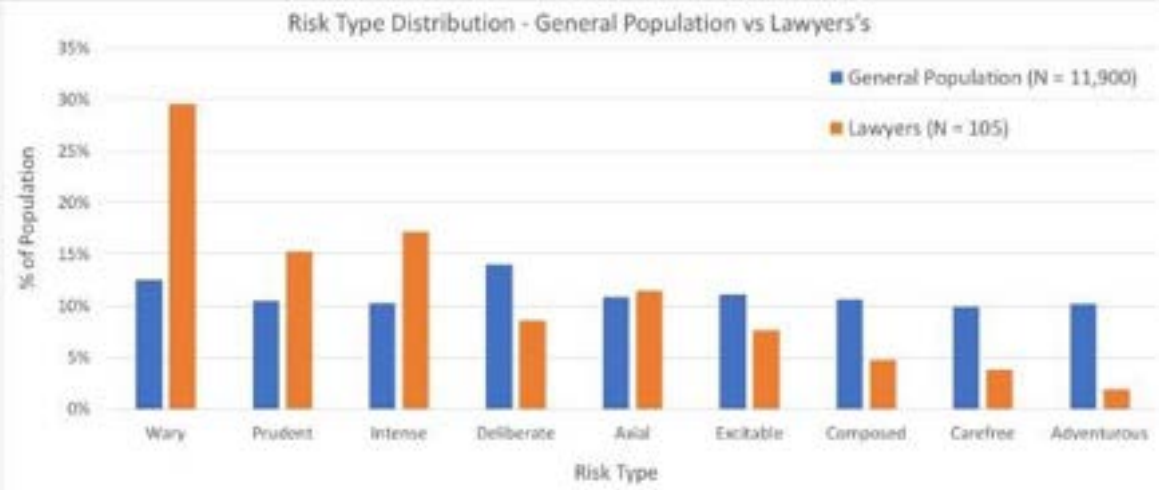


Figure 8.2. *Risk Type breakdown of lawyers and general population samples*

The findings indicate a clear 'upward' trend, with Wary Risk Types (29.52%) considerably over-represented in the sample of 105 legal representatives. Findings also indicate minimal representation of Daring Risk Types (i.e. Excitable (7.62%), Carefree (3.81%), Adventurous (1.9%)). This suggests that risk-taking individuals are neither drawn to, nor selected, nor remain in a legal profession designed to enforce rules.

A full report of this research can be found HERE.

Risk & Mental Health Professionals

Research into the Mental Health Professionals industry was conducted using the Risk Type Compass. A sample of 234 Mental Health Professionals were analysed. Figure 8.3 below shows the distribution of Risk Types in comparison with the general population sample of 11,900.

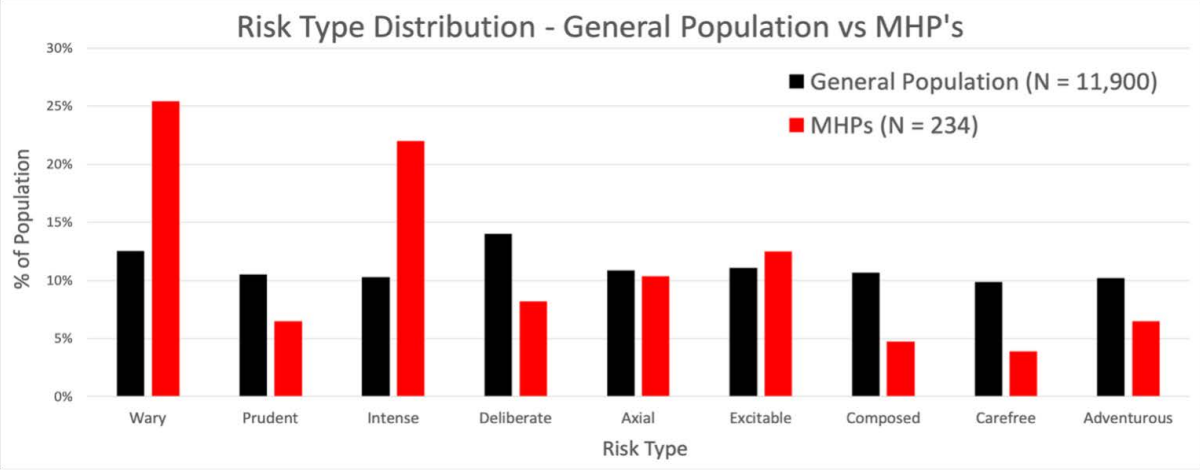


Figure 8.3. *Risk Type breakdown of Mental Health Professionals and general population samples*

Findings indicate a clear left-sided trend, suggesting individuals employed in the Mental Health industry were more likely to reside on the Emotional side of the Emotion scale with Wary (25.43%), Intense (21.98%) and Excitable (12.5%) being the most prominent Risk Types respectively.

Risk & Change Management

Change is an unavoidable part of organisational growth and development and has become more important as economic and social volatility has grown. The current study encompasses a sample of 121 participants and focusses on the variable of 'Resistance to Organisational Change' (Oreg, 2003). This variable comprises of four factors, and was correlated against the subthemes, scales, and RTi of the Risk Type Compass. See Table 8.3 below.

Table 8.3. *Correlations between Risk Type Compass subthemes and Resistance to Organisational Change*

RTC		Resistance to Change				
		Routine Seeking	Emotional Reaction	Short Term Thinking	Cognitive Rigidity	Total
Subtheme	Apprehensive	.252**	.553**	.389**	-.061	**.420****
	Sensitive	.180*	.365**	.3**	-.224*	**.254****
	Intuitive	-.025	.004	.125	-.233**	**.359****
	Astute	-.038	-.011	.142	.063	**.054**
	Eager	.104	.12	.233*	-.072	**.137**
	Resilient	-.128	-.419**	-.404**	.083	**-.322****
	Confident	-.354**	-.463**	-.472**	.214*	**-.395***
	Forgiving	-.292**	-.376**	-.357**	-.138	**-.419****
	Optimistic	-.344**	-.224*	-.207*	-.061	**-.297****
	Equable	-.205*	-.416**	-.384**	.135	**-.323****
	Audacious	-.593**	-.441**	-.454**	-.07	**-.556****
	Explorative	-.432**	-.256**	-.285**	-.087	**-.377****
	Hasty	-.472**	-.368**	-.318**	-.123	**-.457****
	Spontaneous	-.259**	-.237**	-.250**	.05	**-.250****
	Focused	-.157	-.243**	-.236**	.374**	**-.104**
	Methodical	.304**	.321**	.126	.253**	**.359****
	Perfectionist	.109	.156	-.004	.196*	**.164**
	Conforming	.224*	.172	.059	.118	**.204***
Scale	E:C %ile	-.258**	-.480**	-.507**	.162	**-.399****
	D:M %ile	.456**	.330**	.231*	.217*	**.439****
RTi		-.538**	-.615**	-.564**	-.066	**-.644****

**p<.05. **p<.01*

Analysis indicated numerous and (in some cases) large statistically significant relationships between each level of the Risk Type Compass and both the factor-level and total of the Resistance to Change variable. Factor-level influence varies but remains highly significant (with the exception of the Cognitive Rigidity factor), suggesting some interesting nuances alongside the overall finding regarding risk and resistance to change. These findings also have implications at Risk Type level, as shown in Table 8.4.

Table 8.4. *Average scores by Risk Type for the 4 factors and Total of Resistance to Change*

Risk Type	N	Resistance to Change				
		Routine Seeking	Emotional Reaction	Short Term Thinking	Cognitive Rigidity	Total
Wary	17	3.14	4.00	3.25	3.12	**3.38**
Prudent	10	2.67	2.70	2.47	3.40	**2.81**
Deliberate	7	2.38	2.43	1.62	3.19	**2.40**
Composed	11	2.06	2.15	1.70	3.18	**2.27**
Adventurous	8	1.75	2.13	1.79	3.25	**2.23**
Carefree	13	2.10	2.67	2.21	3.05	**2.51**
Excitable	18	1.98	2.94	2.52	2.50	**2.49**
Intense	20	2.25	2.98	2.30	2.90	**2.61**
Axial	17	2.14	2.73	2.18	3.24	**2.57**
Total	**121**	**2.29**	**2.86**	**2.33**	**3.04**	**2.63**

Table 8.4 highlights the lowest (in green) and highest (in red) Risk Type average for each column, with Risk Types broadly sorted from lowest RTi (least risk tolerant) to highest RTi (most risk tolerant). This further illustrates the influence of risk tolerance on resistance to change, with the most resistant being Wary and the least resistant likely to be Adventurous (although factor variation does exist).

These findings strongly support the argument that practitioners involved in change management must take individual differences into account when establishing the impact that organisational change processes are likely to have upon pre-existing staff.

A full report of this research can be found HERE.

Risk & Resilience

Several separate studies have explored the interaction between the Risk Type Compass and resilience, which has become an emerging focus of organisations in recent years. Our research into change management (n=121) also included the 'Brief Resilience Scale' (Smith, Dalen, Wiggins, Tooley, Christopher & Bernard (2008). This was analysed against the Risk Type Compass data and is presented in Table 8.5 below.

Table 8.5. *Risk Type Compass subtheme correlations with Brief Resilience Scale*

RTC		Resilience Average
Subtheme	Apprehensive	-.456**
	Sensitive	-.362**
	Intuitive	-0.047
	Astute	0.022
	Eager	0.03
	Resilient	.286**
	Confident	.451**
	Forgiving	.332**
	Optimistic	.400**
	Equable	.469**
	Audacious	.350**
	Explorative	.298**
	Hasty	.276**
	Spontaneous	.325**
	Focused	.216*
	Methodical	-0.036
	Perfectionist	-0.126
	Conforming	-0.131
Scale	E:C Percentile	.463**
	D:M Percentile	-.212*
RTi		.546**

**p<.05. **p<.01*

Findings indicate a clear relationship between resilience and the Risk Type Compass, primarily relating to the Emotion scale.

Research into Mental Health Professionals (n=232) also included Connor and Davidson's (2003) 25-item Conner-Davidson Resilience scale (CD-RISC25) and reported similarly significant findings, displayed in Table 10.6.

Table 8.6. *Risk Type Compass subtheme correlations with CD-RISC25*

	RTC	CD-RISC Total
Subtheme	Apprehensive	-.478**
	Sensitive	-.455**
	Intuitive	-.161*
	Astute	-.192**
	Eager	-0.013
	Resilient	.356**
	Confident	.577**
	Forgiving	.313**
	Optimistic	.577**
	Equable	.390**
	Audacious	.354**
	Explorative	.253**
	Hasty	.261**
	Spontaneous	.366**
	Focused	.526**
	Methodical	0.064
	Perfectionist	.179**
	Conforming	0.114
Scale	E:C Percentile	.598**
	D:M Percentile	-0.083
RTi		.546**

**p<.05. **p<.01*

As with the Brief Resilience Scale, the CD-RISC25 scale presented numerous interactions with Risk Type Compass subthemes, with clear emphasis on the Emotion scale. These findings would suggest that levels of resilience are in part determined by deeply rooted personality temperaments, some of which are assessed by the Risk Type Compass.

A more detailed report of this research can be found HERE.

Risk & Wellbeing

Several projects have also explored the role that personality plays in feelings of wellbeing using the Risk Type Compass. As with resilience, greater focus has been placed on this variable in recent years, with increased pressure on companies to take the wellbeing of their staff into account. Research using the Job Affective Wellbeing Scale (JAWS) (Van Katwyk, Fox, Spector, & Kelloway (2000)) was conducted with a sample of 74 managers. The JAWS is job specific and can be broken into four factors but acts primarily as a total score using all 20 items. Findings from the analysis are presented in Table 8.7. below.

Table 8.7. *Correlations between Risk Type Compass subthemes and the Job Affective Wellbeing Scale (JAWS)*

RTC	High Pleasurable-High Arousal	High Pleasurable-Low Arousal	Low Pleasurable-High Arousal	Low Pleasurable-Low Arousal	JAWS Total Score
Apprehensive	-0.072	-.236*	-0.175	-0.065	-0.17
Sensitive	0.096	-0.068	-0.142	0.04	-0.019
Intuitive	-0.175	-0.205	-0.185	-0.134	-0.219
Astute	-0.117	-.375**	-.379**	-.389**	-.395**
Eager	0.015	-0.023	-0.109	-0.072	-0.057
Resilient	0.022	0.179	.273*	0.1	0.176
Confident	0.197	0.221	0.155	0.187	.240*
Forgiving	0.228	0.186	0.206	0.16	.245*
Optimistic	.290*	.372**	0.113	0.174	.301**
Equable	-0.11	0.162	0.225	0.145	0.129
Audacious	0.059	0.212	0.126	-0.07	0.099
Explorative	.301**	.239*	-0.07	0.082	0.179
Hasty	0.194	0.157	-0.033	0.029	0.112
Spontaneous	0.105	0.197	0.051	0.129	0.153
Focused	.378**	.320**	0.081	.352**	.363**
Methodical	0.11	0.082	-0.075	0.024	0.048
Perfectionist	0.135	0.139	-0.037	0.177	0.135
Conforming	0.17	0.11	-0.072	0.193	0.133
E:C %ile	**0.159**	**.342****	**.327****	**0.212**	**.324****
D:M %ile	**0.023**	**-0.044**	**-0.019**	**0.117**	**0.027**

**p<.05. **p<.01*

Similarly to the resilience findings, analysis indicated the prominence of the Emotion scale in its significance to wellbeing. The Change Management research (n=121) also encompassed Warr's Wellbeing scale and reported the correlations below.

Table 8.8. *Correlations between the Risk Type Compass subthemes and Warr's (1990) Wellbeing Scale*

RTC		Wellbeing Average
Subtheme	Apprehensive	-.545**
	Sensitive	-.333**
	Intuitive	-0.069
	Astute	-0.145
	Eager	-.216*
	Resilient	.409**
	Confident	.580**
	Forgiving	.486**
	Optimistic	.483**
	Equable	.443**
	Audacious	.489**
	Explorative	.314**
	Hasty	.306**
	Spontaneous	.397**
	Focused	.343**
	Methodical	-.189*
	Perfectionist	-0.05
	Conforming	-0.027
Scale	E:C Percentile	.599**
	D:M Percentile	-.266**
RTi		.677**

**p<.05. **p<.01*

These findings elicited stronger relationships with the Risk Type Compass, potentially due to the broader focus of the scale (in comparison with the job-specific JAWS). The Emotion scale was again influential, suggesting deeply rooted dispositions play a role in feelings of wellbeing reported by individuals.

Risk Type Compass & the Hogan Development Survey (HDS)

The Hogan Development Survey (HDS) is a psychometric measure of leadership derailers, referred to as 'the Dark Side of personality'. Each of the eleven scales is concerned with sub-clinical manifestations of personality disorder characteristics within the range of the normal population. Very high scores (above the 90th percentile) indicate high risk of career derailment. Table 8.9. provides correlations of the Risk Type Compass RTi/ scales/subthemes and the eleven HDS scales. The sample is of 297 individuals who had completed both the Risk Type Compass and the HDS assessments.

Table 8.9. *HDS Scale Percentile Average by Risk Type*

		HDS Scale Average Percentiles										
Risk Type	**N**	**Excitable**	**Sceptical**	**Cautious**	**Reserved**	**Leisurely**	**Bold**	**Mischievous**	**Colourful**	**Imaginative**	**Diligent**	**Dutiful**
Wary	9	81.0	83.8	71.3	69.9	72.8	51.3	44.2	47.7	60.3	71.4	54.2
Prudent	22	72.2	70.2	57.1	64.7	64.8	57.5	42.6	46.6	61.7	79.9	47.7
Intense	13	87.3	77.0	62.9	63.7	50.5	39.2	60.8	67.4	63.9	37.7	47.2
Deliberate	90	47.3	52.5	43.2	52	51.8	52.9	39.7	46.2	49	67.7	48.5
Axial	25	72.6	68.1	59.0	56.5	56.3	56.8	72.4	54.8	73.8	54.5	45.9
Excitable	4	83.0	69.0	63.3	75.5	75.8	67.5	79.3	64.3	72.3	40.5	44.8
Composed	73	44.8	55.9	42	51	49.2	62.8	61.5	62.7	71.7	60.6	50.7
Carefree	20	69.8	70.4	44.6	56.6	43.0	57.4	81.9	63.7	80	50.4	44.2
Adventurous	41	51.3	59.2	34.7	56.7	48	68.2	76.5	69.8	77.7	45.1	44.8
Total	**297**	**56**	**60.3**	**46.2**	**55.4**	**52.3**	**58**	**57.5**	**56.6**	**65**	**59.**	**48**

Table 8.10. *Correlations between the Risk Type Compass subthemes and HDSScales*

		HDS Scale										
		Excitable	Sceptical	Cautious	Reserved	Leisurely	Bold	Mischievous	Colourful	Imaginative	Diligent	Dutiful
Emotion	Apprehensive	.361**	.229**	.266**	0.1	.138*	-.128*	-.022	-.125*	0.009	0.041	.141*
	Sensitive	.318**	0.08	.257**	-0.052	0.065	-.118*	0.093	.150**	0.085	-.213**	0.023
	Intuitive	-0.046	-.115*	0.054	-.122*	-0.043	-0.072	.132*	.160**	0.063	-.307**	-0.008
	Astute	.270**	.476**	0.056	.312**	0.097	-0.006	.193**	-.144*	0.064	0.1	0.018
	Eager	.193**	.171**	0.043	0.095	.154**	.230**	.221**	.235**	.145*	-0.089	-.135*
	Resilient	-.376**	-.212**	-.275**	-.149*	-.201**	-0.021	0.013	-0.075	-0.021	-0.067	0.025
	Confident	-.368**	-.207**	-.433**	-.175**	-.115*	.315**	0.084	.201**	0.098	0.067	-.136*
	Forgiving	-.441**	-.478**	-.252**	-.293**	-.238**	0.024	-0.043	.118*	-0.085	-0.085	0.065
	Optimistic	-.258**	-.214**	-0.09	-.224**	-0.113	.140*	.163**	.220**	0.044	-0.088	0.025
	Equable	-.404**	-.132*	-.132*	-0.091	0.059	0.003	-.212**	-.133*	-.227**	0.045	0.039
Cognition	Audacious	-0.021	-0.064	-.171**	-0.005	-0.07	.294**	.400**	.266**	.414**	-0.091	-0.036
	Explorative	-0.019	0.087	-.191**	0.007	-.119*	.215**	.507**	.315**	.356**	-0.026	0.058
	Hasty	0.046	.144*	-.212**	0.041	-0.108	.206**	.550**	.264**	.395**	0.031	-0.03
	Spontaneous	-.141*	-0.065	-.354**	-.181**	-.128*	.302**	.250**	.329**	.276**	0.015	-.114*
	Focused	-.188**	-0.094	-.351**	-.179**	-0.067	.227**	0.015	0.056	0.08	.283**	-0.075
	Methodical	-.173**	-0.095	-0.052	-0.05	-0.043	-0.076	-.349**	-.224**	-.185**	.506**	0.073
	Perfectionist	-0.015	.114*	0.012	-0.028	.136*	0.099	-.130*	-.127*	-0.109	.516**	-0.087
	Conforming	-.226**	-.150**	0.004	-.172**	-0.054	-.133*	-.324**	-.178**	-.223**	.219**	.253**
Scale	Emotion	-.559**	-.366**	-.360**	-.220**	-.177**	.125*	-0.112	0.004	-0.076	0.058	0.008
	Cognition	-0.1	-0.088	.131*	-0.053	0.098	-.193**	-.599**	-.385**	-.426**	.349**	0.062
RTi		-.339**	-.232**	-.363**	-.127*	-.215**	.238**	.353**	.293**	.251**	-.223**	-0.058

**p<.05. **p<.01*

These tables illustrate an interesting alignment between the themes and factors of Risk Type and the scales and factors of the HDS. The HDS has been factor analysed into three factors: 'Moving Against' (Bold, Mischievous, Colourful, Imaginative); 'Moving Away' (Excitable, Sceptical, Cautious, Reserved, Leisurely); and 'Moving Towards' (Diligent, Dutiful).

Findings indicate greater association between the Risk Type Compass Emotion themes with the HDS scales of the 'Moving Away' factor, and between the Risk Type Compass Cognition themes and the HDS scales of the 'Moving Against' factor.

This relationship is even more evident between the scale level data of the Risk Type Compass and the HDS scales (see Table 8.10., Scale rows), all of which are statistically significant at the 0.01 level. Statistical relationships between Risk Type Compass scales and the third HDS factor, 'Moving Towards', are strongest for the HDS Diligent scale, in terms of Risk Type Compass themes, the RTi and the Cognition scale.

The weakest Risk Type Compass relationships in this data are with HDS Dutiful, although even here there are strong significant findings for six Risk Type Compass themes, one of them at the 0.01 level.

The big picture is that the Risk Type Compass Cognition scale has its strongest relationship with HDS Mischievous and that the Risk Type Compass Emotion scale has its strongest relationship with HDS Excitable. The latter is the biggest correlation in this matrix (-.559**) and both of the scales involved have also been shown to have a strong relationship with other Neuroticism proxies: 0.76** (Excitable/Hogan Personality Inventory); 0.75** (Profile:Match2 Composure/ Risk Type Compass Emotion scale); and 0.78** (Profile:Match2 Self-Esteem/ Risk Type Compass Emotion scale).

These findings contribute to the well documented importance of Neuroticism, or emotion, in terms of its influence within the structure of personality and in terms of its real-life significance to wellbeing and mental health. In this data, its influence is evident throughout the HDS 'Moving Away' scales and the Emotion themes of the Risk Type Compass (see Table 8.10). This represents the terrain of the emotional component in decision making and risk taking.

The strongest association between the rational component of decision making and the HDS is illustrated by the prevalence of high correlations between the 'Moving Against' HDS scales and the Risk Type Compass Cognition themes (see Table 8.10).

From the Risk Type perspective there are a number of implications for interpretation that derive from the HDS/ Risk Type Compass correlations reported in Table 8.9. above. The inferences are selected from the interpretive HDS text judged to be semantically compatible with each Risk Type Compass theme and are illustrated in Table 8.11 below.

Table 8.11. *Risk Type and HDS Inferences*

Risk Type Compass Scales	Compatible HDS Inference
Wary	Suspicious, fearful of disappointment - but not risk-taking
Prudent	Perfectionistic and pessimistic - but not impulsive
Deliberate	*There are no relationships with extreme HDS scores for this scale*
Composed	Open-minded and energetic and will argue their case
Adventurous	Innovative and energetic - but not vigilant
Carefree	Limit-testing and flexible - but not easily irritated
Excitable	Passionate and has no regrets - but not diligent
Intense	Takes things personally and alert to rejection - but not assertive
Axial	Insightful, open-minded and energetic and will argue their case

Risk & Agreeability

In the original Risk Type Compass research, items were written addressing themes from four of the Five Factor Model (FFM) factors. The literature review at the outset showed equivocal and contradictory correlations between FFM Agreeability and various measures of risk-taking, so no items were written for that factor. In the processes of factor analysing the data collected for all original items and the processes of scale development, some themes and items were discarded. The most prominent factors of the FFM incorporated into the final version of the Risk Type Compass are Neuroticism (Emotion scale), and Extraversion and

Conscientiousness (Cognition scale). This study considers the relationship between the Risk Type Compass themes and a measure of Agreeability.

This research involved 105 legal professionals who completed a brief Agreeability scale derived from the International Personality Item Pool (IPIP), and the correlations of this scale are presented in Table 8.12. below.

Table 8.12. *Correlations between the Risk Type Compass and Agreeability*

	RTC	Agreeability
Subtheme	Apprehensive	0.117
	Sensitive	.425**
	Intuitive	.379**
	Astute	-.373**
	Eager	-0.122
	Resilient	0.098
	Confident	-0.164
	Forgiving	0.129
	Optimistic	.362**
	Equable	-.197*
	Audacious	0.089
	Explorative	0.15
	Hasty	-0.07
	Spontaneous	-0.012
	Focused	0.079
	Methodical	0.167
	Perfectionist	0.155
	Conforming	.299**
Scale	Emotion	-0.04
	Cognition	0.126
RTi		-0.118

**p<.05. **p<.01*

These findings indicated that, despite the omission of Agreeability items in the Risk Type Compass, some relationships do exist between the Risk Type Compass's subthemes and this measure of Agreeability, although these relationships are not in a consistent direction in the context of the Risk Type Compass's framework (e.g. the subthemes of Intuitive and Astute would contrast in the Emotion scale but are in the same direction when correlated against agreeability). These findings evidence the distinctiveness of the Risk Type Compass, but also point towards some conceptually consistent inter-factor patterns.

There are some implications for the Risk Type Compass in terms of nuanced interpretation that concerns the Optimistic, Astute, Sensitive, Intuitive and Conforming subthemes. There is a semantic coherence in the positive relationships between these Risk Type Compass subthemes and language associated with the interpretation of FFM Agreeability scores. The Agreeability construct concerns charm, tact and interpersonal skills, none of which are in direct conflict with the Risk Type Compass themes under discussion. In terms of personal interaction, there are connotations within which Agreeability might be implied simply because of the Risk Type Compass subthemes Astute, Optimistic and Conforming would all be regarded as interpersonally positive and Sensitive and Intuitive are neutral rather than negative in this respect.

Table 8.13. *Risk Type Compass Subthemes and Agreeability Terminology*

Risk Type Compass Subtheme	Compatible Agreeability Terminology
Sensitive	Dreamy, tender, touching, affectionate, sensitive
Intuitive	Sensitive, feeling, natural
Astute	Open, unsuspicious, innocent, confiding, accepting
Optimistic	Cheerful, hopeful, upbeat, happy
Equable	Genial, tranquil, even-tempered, easy-going
Conforming	Harmonious, obliging, compatible

Even within a scientific psychology, language is a melting pot of overlapping semantics and nuance. For the psychology professionals, a coach or personality psychologist, their understanding of personality terminology and the meaning of personality scales will be a process of continuous refinement based on feedback discussions with clients, candidates or patients. Language is used tentatively, suggestively and exploratively seeking shared meaning and insights. All the correlations identified in this section allow consideration about whether a particular inference might be justified in a particular feedback conversation.

Risk and Engagement, Burnout and Values

Values and personality are known to affect people's perceptions and behaviours within their environment, yet their joint influence on occupational outcomes has remained largely unresearched. Outcomes these measures could impact include engagement and burnout, both of which have received considerable interest in the literature due to their importance in employment arrangements. The police service has been a significant target interest in relation to these outcomes, due in part to high turnover and sizable rates of absence due to staff sickness.

An initial study by Schaufeli and Bakker (2010) on 291 members of the general population (33.7% male, 64.9% female; average age 33.3) explored the interactions between RTC measures and Engagement, which is defined as “a positive, fulfilling work related state of mind that is characterized by vigour, dedication and absorption” (Schaufeli, Salanova, González-Romá, & Bakker, 2002, p. 74). Table 8.14. below presents the correlations between the RTC studies and the Work Engagement measure in the initial study.

Table 8.14. *RTC Correlations Engagement (N = 291)*

Work Engagement	Emotion	Cognition	RTi	RSi
Vigor	.338**	.07	.175**	.255**
Dedication	.232**	.11	.074	.219**
Absorption	.199**	.003	.131*	.117*
Work Engagement Total	.285**	.068	.140*	.219**

**p<.05. **p<.01*

Findings demonstrated several significant relationships between the RTC and work engagement, most notably through the Emotion scale. The next study incorporated these measures alongside measures for Burnout and Values. Burnout is considered the theoretical opposite of engagement (González-Romá, Schaufeli, Bakker, & Lloret, 2006), and is a type of work-related stress where employees become physically and emotionally exhausted due to prolonged and chronic stress in an employee's work life. Values are basic, fundamental ideas and beliefs that influence how people think, make choices and act (Schwartz, 1992).

The current study sought to explore the interactions between personality, values, burnout and engagement through a collaboration with the University of West England (UWE). The study included 93 participants (53.8% non-police and 46.2% police; 38.7% Male and 58.1% Female). Personality was measured using the Risk Type Compass (Trickey, 2019), which provided Risk Type and scores on the Emotion scale, Cognition scale, Risk Tolerance Index and Risk Stability Index. Work engagement was measured using the Utrecht Work Engagement Scale (Schaufeli, Bakker & Salanova, 2006), burnout was measured using the

Oldenberg burnout survey (Demerouti, Bakker, Vardakou & Kantas, 2003), and values were measured using the PVQ-21 (Schwartz, 2003).

Due to the multitude of variables, various findings emerged from the analysis. In line with previous findings, police officers were typically more risk averse than the general population, with Wary Risk Types over-represented by nearly 50% in the police officer sample. Unsurprisingly, engagement strongly predicted burnout (-.816**). Personality demonstrated strong predictive relationships with both engagement and burnout, most notably the Emotion scale, which had notable correlations with both engagement (.485**) and burnout (-.557**). See Table 8.15. below.

Table 8.15. *RTC Correlations with Burnout and Engagement (N = 93)*

	Emotion scale	Cognition scale	RTi	RSi
Disengagement	-.433**	-0.038	-.318**	-.265*
Exhaustion	-.598**	-0.03	-.424**	-.373**
Burnout Total	**-.557****	**-0.038**	**-.401****	**-.344****
Vigor	.569**	0.021	.398**	.358**
Dedication	.408**	-0.08	.221*	.326**
Absorption	.327**	-0.042	0.193	.250*
Engagement Total	**.485****	**-0.04**	**.301****	**.350****

**p<.05. **p<.01*

Additional regression analyses demonstrated that, whilst the Emotion scale predicted 23.5% of the Engagement score, adding the values of Achievement, Tradition and Conformity contributed a further 11.8% of the variance. For Burnout, the Emotion scale predicted 31% of the score, although further addition of values provided no further predictive capability. Personality also predicted values, albeit in the form of the Cognitive scale, correlating with Conformity (.465**), Stimulation (-.340**), Security (.289**), and Hedonism (-.286**).

Table 8.16. *RTC Correlations with Values (N = 93)*

	Emotion scale	Cognition scale	RTi	RSi
Benevolence Scale	0.059	-0.016	0.029	0.052
Universalism Scale	0.099	0.006	0.07	0.091
Self Direction Scale	-0.033	-.230*	-0.181	0.155
Stimulation Scale	-0.09	-.340**	-.297**	0.201
Hedonism Scale	0.106	-.286**	-0.126	.290**
Achievement Scale	-0.042	-0.153	-0.136	0.106
Power Scale	-0.084	-0.053	-0.096	-0.032
Security Scale	0.001	.289**	0.199	-0.197
Conformity Scale	-0.192	.465**	0.19	-.493**
Tradition Scale	-0.169	.238*	0.049	-.259*
Self Enhancement Factor	-0.046	-0.138	-0.128	0.078
Self Transcendence Factor	0.077	-0.03	0.031	0.09
Openness To Change Factor	0.024	-.205*	-0.127	0.181
Conservation Factor	-0.042	0.18	0.094	-0.152

**p<.05. **p<.01*

In sum, the current study has shown that both personality and values have a predictive influence on engagement, while only personality effects burnout. The Emotion scale had the strongest influence on engagement followed by achievement and tradition. Furthermore, personality and values have a significant relationship, supporting previous literature suggesting they are correlated by distinct values. Daring individuals tended to place more importance on self-direction, stimulation and hedonism, whereas measured individuals placed more importance on tradition, security, and conformity. Significant differences were found between police and non-police on all variables. Police officers were more likely to be calm, less daring, more engaged, and less burnt out. They were also more likely to value

conformity and tradition, and less likely to value self-direction and universalism. Interestingly, only the benevolence value predicted engagement in police officers, despite there being no difference in the prevalence of this value between police and non-police.

As many police officers join the force to help people, and police are more likely to be engaged than non-police, being able to practice the motivating values for an individual's career choice may contribute to increased engagement.

Risk and Online Shopping

The internet has substantially changed the landscape in how we access and engage with services. Online shopping is a major example of this, with UK-based shoppers spending an estimated £110.6 billion in 2022 alone. Despite the range of improvements in accessibility, convenience, speed and choice, this form of shopping also encompasses numerous risks that are either less prevalent or completely absent from traditional shopping. Examples of novel or increased dangers associated with online shopping include identity fraud, financial scams, and data breaches.

Research by Daroch, Nagrath, and Gupta (2021) sought to identify and assess the key drivers limiting the online shopping behaviours of consumers. Analysis of 152 online shopping users enabled Daroch et al. (2021) to create a multi-factor measure of online shopping aversion. The current research represents a collaboration between PCL and University College London and sought to determine if and how risk-relevant personality characteristics could predict aversion to online shopping. A total of 60 participants were administered the Risk Type Compass and Daroch et al.'s (2021) online shopping scale. Table 8.17. below presents the range of correlations between the two measures.

Table 8.17. *Correlations between the Risk Type Compass and Aversion to Online Shopping (Daroch et al., 2021)*

Risk Type Compass		Frequency of online shopping	Fear of bank transaction and no faith	Traditional shopping is convenient than online shopping	Reputation and service provided	Bad experience	Insecurity and insufficient product information	Lack of Trust	**Aversion to Online Shopping Behaviour**
Emotion Subthemes	Apprehensive	0.275	.372*	.348*	-0.281	.363*	.453**	.358*	**.429****
	Sensitive	.355*	0.238	.323*	-0.156	.291*	.333*	0.253	**.339***
	Intuitive	.332*	0.107	0.134	-0.278	-0.006	0.219	0.191	**0.107**
	Astute	.339*	.383**	0.064	-.318*	-0.054	0.223	.325*	**0.203**
	Eager	-0.232	-0.128	-0.233	0.021	-0.078	-0.072	-.440**	**-0.285**
	Resilience	-.370*	-.483**	-.396**	0.157	-0.160	-.567**	-.483**	**-.552****
	Confidence	-.443**	-0.263	-.509**	.381**	-0.270	-.500**	-.434**	**-.433****
	Forgiving	-.453**	-.488**	-.325*	0.095	0.030	-.519**	-.463**	**-.501****
	Optimistic	-.375**	-0.256	-.415**	0.185	-0.223	-.452**	-.409**	**-.433****
	Equable	-.333*	-0.285	-.399**	0.122	-0.181	-.456**	-.328*	**-.423****
Cognition Subthemes	Audacious	-.300*	-0.127	-.419**	0.019	-0.090	-.499**	-.315*	**-.398****
	Conforming	-0.185	0.019	-0.025	0.212	0.018	0.002	0.133	**0.109**
	Explorative	0.122	0.089	-0.161	0.014	-0.142	0.049	0.022	**-0.021**
	Focused	-.315*	-0.240	-0.089	.439**	-.308*	-.459**	-.366*	**-0.253**
	Methodical	0.008	0.188	0.134	.295*	-0.125	0.194	-0.035	**0.202**
	Perfectionistic	-0.144	-0.090	-0.130	.384**	-0.162	-0.144	-0.224	**-0.090**
	Hasty	-0.136	-0.149	-.480**	0.083	-0.115	-.313*	-0.226	**-.338***
	Spontaneous	-0.098	-0.195	-0.181	0.219	-0.021	-0.150	-0.269	**-0.183**
Scale	EC %ile	-.475**	-.442**	-.420**	0.267	-0.231	-.541**	-.496**	**-.523****
	DM %ile	-0.012	0.096	.309*	0.207	0.040	0.226	0.170	**.302***
	RTi	-.359*	-.392**	-.490**	0.094	-0.199	-.535**	-.473**	**-.564****
	RSi	-.430**	-0.250	-0.174	.347*	-0.154	-.332*	-0.268	**-0.223**

**p<.05. **p<.01*

Analysis indicated that a range of personality characteristics predicted online shopping behaviour in the participants. At scale level, the key driver seemed to be emotion, as the Emotion scale reported a correlation of '-0.564'. The Cognition scale reported a positive, albeit weaker, positive correlation. This ensured that, when combined to generate the Risk Tolerance Index, scores on the RTi correlated with online shopping aversion at '-.564'. This provided clear evidence that, as risk tolerance increases, aversion to online shopping decreases significantly.

Risk and Pro Social Rule Breaking

Rules and policy are part of organisational life. They are designed to influence, standardise, and control various aspects of workforce behaviour, including legal compliance, customer service and interpersonal interactions. Adoption to certain workplace rules will be considered non-negotiable, with examples including use of safety equipment and adherence to data protection law. Other rules will be more flexible, or defined with arbitrary criteria, and may be enforced less diligently as a result.

External influences play a major role in rule breaking. Commercial competition, customer dissatisfaction, or major unprecedented events may generate problems that organisational policy is ill-equipped to address in the moment, leaving staff with little option but to stray from company guidelines. Judging subsequent actions using a right/wrong binary can be unhelpful and fail to account for nuance. In some instances, employers may even endorse staff rule breaking as a desirable act of initiative under difficult circumstances.

Unsurprisingly, employee reticence to admit to rule breaking makes it a challenging concept to measure. This has prompted researchers to adopt more nuanced approaches to rule breaking. Dahling, Chau, Mayer, and Gregory (2012) have demonstrated that the intention of these behaviours is not necessarily counterproductive, and Morrison (2006) has argued that the primary intention of rule breaking may be to promote the welfare of the organisation or one of its stakeholders. These perspectives facilitated the development of the concept 'pro social rule breaking'. After excluding counter-productive work behaviour, Dahling et al.'s (2012) subsequent scale development and factor analysis resulted in 13 items grouped into three categories:

Efficiency – to more efficiently perform job duties for the organisation.

Co-Worker Aid – to help another employee with job-related duties.

Customer Aid – to provide better customer service.

The advances in conceptualisation and creation and validation of the pro social rule breaking measure provides ample ground to explore the influence personality plays in predicting rule breaking behaviour in the workplace. This led to a collaboration between PCL and Aston University.

The study's sample comprised of 41 participants from the UK recruitment sector. 76.4% were male, 53.9% were aged 25-34, and participants' mean tenure within the sector was 8 years (5 years in the current organisation). All participants completed the Risk Type Compass and Pro Social Rule Breaking scale. Table 8.18. below presents the findings of the analysis exploring the relationships between the PSRB scale and the Emotion and Cognition scales.

Table 8.18. *Correlations between Pro Social Rule Breaking and Risk Type Compass*

Pro Social Rule Breaking	Emotion scale	Cognition scale	RTi	RSi
Company	.310*	-.393*	.473**	0.02
Co Worker	0.119	-.505**	.383*	-0.18
Client	0.045	-.313*	0.216	-0.152
Total	**0.184**	**-.441****	**.399****	**-0.106**

**p<.05. **p<.01*

As predicted, pro social rule breaking had a sizeable relationship with the Risk Type Compass. This was particularly true for the Cognition scale, with participants closer to the 'daring' end of the spectrum significantly more likely to report engaging in pro social rule breaking. This also supports the perception that rule breaking is a conscious choice influenced by an employee's underlying personality. Analyses also indicated significant insight into the Risk Types. Adventurous and Wary Risk Types were the most and least

likely to report pro social rule breaking respectively, demonstrating how their opposing positions on the compass also manifest as opposing positions on the PSRB scale. A further breakdown of the Cognition subthemes is provided in Table 8.19. below:

Table 8.19. *Correlations between Pro Social Rule Breaking and Cognition subthemes*

RTC Subtheme	Pro Social Rule Breaking Factor			Total
	Efficiency	Co-Worker	Customers	
Audacious	.401**	.396*	0.275	.396*
Explorative	-0.041	0.109	-0.047	-0.002
Hasty	0.088	0.239	0.064	0.135
Spontaneous	0.189	.373*	0.208	0.274
Focussed	-0.001	0.094	-0.017	0.022
Methodical	-0.281	-.384*	-0.176	-0.304
Perfectionistic	-0.25	-.408**	-0.144	-0.285
Conforming	-.552**	-.525**	-.484**	-.580**

**p<.05. **p<.01*

Further analysis at the subtheme level provides important insight into the drivers of pro social rule breaking behaviour. The 'Conforming' subtheme provides the greatest 'negative' predictive strength, which aligns with the highlighted interpretation that high scorers will abide by rules and respect superiors and the status quo. Conversely, the Audacious subtheme provides a positive prediction with the concept, where high scorers are more likely to actively welcome change, seek variety and new ventures.

In conclusion, rule breaking represents a nuanced and varied set of behaviours that is heavily influenced by aspects of personality that are effectively measured by the Risk Type Compass. Organisations must take note of the motives and manifestations that rule breaking may have and understand the role personality can play in mediating this interaction.

Risk and Mental Toughness

Mental toughness has risen to a prominent position in the literature pertaining to understanding sporting success from a psychological perspective (Crust & Keegan, 2010; Mahoney, Gucciardi, Ntoumanis, & Mallet, 2014). Mental toughness is a multidimensional trait that Crust (2007, p. 271) summarises as:

> *"Coping effectively with pressure and adversity so that performance remains little affected, recovering or rebounding from setbacks and failures as a result of increased determination to succeed, persisting or refusing to quit, being competitive with self and with others, being insensitive or resilient, having unshakeable self-belief in controlling one's own destiny, thriving on pressure and possessing superior mental skills"*

Athletes, coaches, and sports psychologists have consistently referred to mental toughness as one of the most important psychological characteristics related to sporting success (Crust, 2007). Greater levels of mental toughness enable athletes to perform effectively and thrive in demanding situations (Weinberg, 2010; Crust, 2009). Unsurprisingly, it has been reported consistently in elite athletes (Mahoney et al., 2014). Mentally tough athletes are characteristically described as self-confident, challenge-seeking, and low in anxiety (Clough, Earle, & Sewell, 2002).

Research conducted in conjunction with the University of Gloucestershire by PCL sought to explore the relationship between the Risk Type Compass and mental toughness. A sample of 70 amateur athletes were administered the RTC and a 14-item Sports Mental Toughness Questionnaire (SMTQ; Sheard, Golby, & Van Wersch, 2009). The sample was 65.71% female and had an average age of 28.69 (SD = 9.04). The most common sports that participants in the sample competed in were horse riding (17), rugby (10), hockey (7) and football (6). Table 8.20. provides a breakdown of SMTQ average scores by Risk Type.

Table 8.20. *Risk Type breakdown of SMTQ Averages*

Risk Type	Emotion Scale	Cognition Scale	N	%	SMTQ Average
Wary	High Emotional	High Measured	14	20	36.21
Intense	High Emotional	Average	12	17.1	36.17
Excitable	High Emotional	High Daring	10	14.3	36.8
Prudent	Average	High Measured	7	10	41.14
Axial	Average	Average	5	7.1	44
Carefree	Average	High Daring	5	7.1	43.2
Deliberate	High Calm	High Measured	4	5.7	46
Composed	High Calm	Average	7	10	46
Adventurous	High Calm	High Daring	6	8.6	46.33

**p<.05. **p<.01*

Analyses indicated several statistically significant differences in mental toughness between Risk Types. The Intense Risk Type reported the lowest levels of mental toughness, closely followed by the Wary Risk Type. In contrast, the highest levels of mental toughness were reported by Adventurous Risk Types, closely followed by Deliberate and Composed Risk Types. The pattern of Risk Type scores supported further analysis at the scale level, as the Emotion scale appeared to have significant predictive power. Additional correlational analysis confirmed this, as the SMTQ scores correlated with the Emotion scale at '0.673' ($p<0.01$). Figure 8.4. plots this relationship visually.

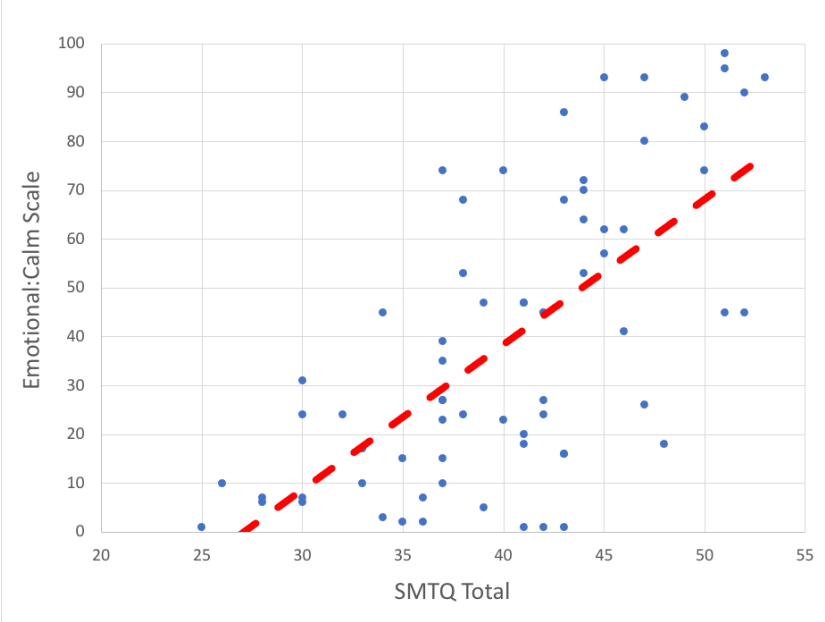


Figure 8.4. *Relationship between the SMTQ Total score and the Emotion Scale (with line of best fit)*

The relationship presented in Figure 8.4. above effectively illustrates the significant positive relationship between the Emotion scale and the SMTQ. This contrasted with correlation between the Cognition scale and the SMTQ, which was '-0.121' and non-significant. A final analysis was conducted at subtheme level to identify the most influential elements of the RTC driving this powerful correlation (see Table 8.21. below). The '+' and '-' symbols before each subtheme name denote how they contribute to their scale.

Table 8.21. *RTC Subtheme breakdown of SMTQ correlations*

	RTC	SMTQ Total
Emotion Subtheme	Apprehensive	-.470**
	Sensitive	-.643**
	Intuitive	-0.146
	Astute	-0.05
	Eager	-0.084
	Resilient	.310**
	Confident	.544**
	Forgiving	.359**
	Optimistic	.582**
	Equable	.408**
Cognition Subtheme	Audacious	.279*
	Conforming	0.084
	Explorative	.308**
	Focused	.510**
	Methodical	0.109
	Perfectionistic	.322**
	Hasty	.378**
	Spontaneous	.486**
Scale	Emotion	.673**
	Cognition	-0.121
	RTi	.550**

**p<.05. **p<.01*

The subtheme breakdown provided some important additional information. Correlations with Emotion subthemes were in line with expectations given the relationship with the scale. However, subthemes encompassed by the Cognition scale provided repeated moderate relationships with the SMTQ, albeit not always in the direction of the scale (e.g., positive correlations on both the Spontaneous and Perfectionistic subthemes). This not only accounts for the insignificant correlation with the Cognition scale, but further justifies the important role subthemes play as supplemental information.

In conclusion, the relationship between risk-taking and mental toughness is large and significant. Every competitive and non-competitive encounter demands a constant stream of conscious and unconscious strategic decisions from athletes, and understanding how these vary entirely through the prism of ability and experience is insufficient. The RTC adds considerable insight into athletes' levels of mental toughness, appetite for risk and decision making. This understanding may potentially be reflected constructively in programmes of development, training and game strategies.

Given that sport is judged on the finest of margins, this could represent the difference between success and failure.

A full report on this research can be found HERE.

RTC and Psychological Capital

The millennium's turn brought Seligman and Csikszentmihalyi's (2000) famous call to action in shifting psychology's focus. Despite acknowledging psychology's significant achievements, they questioned the discipline's primary focus on pathology, and instead argued that psychology should contribute to our empirical understanding of the factors required for human flourishing: "As a side effect of studying positive human traits, science will learn how to buffer against and better prevent mental, as well as some physical,

illnesses. As a main effect, psychologists will learn how to build the qualities that help individuals and communities, not just to endure and survive, but also to flourish."

The emergence of 'Psychological Capital', often shortened to 'PsyCap', represents one significant outcome of this call to action. PsyCap serves as an umbrella term for four inter-related constructs that have been researched for decades. Luthans, Youssef, and Avolio (2015, p. 2) define PsyCap as "an individual's positive psychological state of development that is characterized by:

Efficacy – having confidence to take on and put in the necessary effort to succeed at challenging tasks

Optimism – making a positive attribution about succeeding now and in the future

Hope – persevering toward goals and when necessary, redirecting paths to goals in order to succeed

Resilience – when beset by problems and adversity, sustaining and bouncing back and even beyond to attain success."

Each of these constructs contribute to individuals' positive psychological state in different and nuanced ways but do share commonalities. The most notable of these is the shared sense of control, intentionality, and agentic goal pursuit (Luthans & Youssef-Morgan, 2017). They also share the common theme of "positive appraisal of circumstances and probability for success based on motivated effort and perseverance" (Luthans, Youssef, & Avolio, 2007, p. 550).

Interest in PsyCap has surged in recent years, fuelled by an expanding list of positive and negative outcomes associated with the concept. Avey et al. (2011) conducted a meta-analysis on 51 independent samples using data from over a thousand employees. Greater PsyCap was discovered to predict increases in a variety of desirable outcomes, such as job satisfaction, organisational commitment, well-being, organisational citizenship behaviours, and employee performance. Reduced PsyCap, on the other hand, predicted unfavourable attitudes towards change, stress, anxiety, and turnover intentions.

Even more importantly, evidence has indicated approximately 40% of positivity is under the individuals control, making it open to intentional development and purposeful shaping (Lyubomirsky, King, & Deiner, 2005). Unlike positive traits, which are characterized by relative stability over time and applicable across situations and account for approximately half of the variance in one's positivity and happiness, positive state-like capacities are more malleable and thus are open to change and development (Luthans et al., 2007). This finding has been supported by various longitudinal studies (Avey et al., 2010; Peterson, Luthans, Avolio, Walumbwa, & Zhang, 2011).

Experimental studies indicate that not only can PsyCap be developed, but this development can occur through relatively short training interventions. A 'psychological capital intervention' (PCI) targets all four components of PsyCap through a mixture of construct-specific development and more integrative, writing, discussion, and reflective exercises. Given the increasing popularity of these workshops, PCL were keen to research the extent to which more stable traits, in the form of personality, interact with, and help proportion, the state-like capacities that the PCI is targeting.

To explore this topic further, PCL has collaborated with several universities to research the interactions between personality and psychological capital, including Northumbria University, the University of East London, the University of Nottingham, and Coventry University.

The first sample (S1) was comprised of 83 police officers from UK-based police services. The second and third samples (S2 and S3) encompassed 124 and 291 participants respectively from various professional backgrounds. The fourth sample (S4) contained 123 professionals from the UK fire and rescue service. All participants completed the Risk Type

Compass and a Psychological Capital questionnaire developed by Luthans et al. (2007). Scores across each of the four factors are averaged to create a total 'PsyCap' score. Table 8.22. below presents PsyCap averages by Risk Type.

Table 8.22. *PsyCap averages by Risk Type*

Risk Type	PsyCap Total			
	Sample 1	Sample 2	Sample 3	Sample 4
Wary	4.60	4.35	4.26	4.07
Intense	5.03	4.02	4.25	4.41
Prudent	5.45	4.43	4.74	4.65
Excitable	4.76	4.61	4.28	4.21
Axial	5.40	5.00	4.64	4.60
Deliberate	5.28	5.17	5.09	4.91
Carefree	5.36	4.82	4.85	4.84
Composed	5.93	5.25	4.54	4.91
Adventurous	5.28	5.27	5.30	4.96

Several findings emerge from the initial analysis. Risk Types towards the top of the compass consistently reported the lowest levels of PsyCap, whilst those towards the base of the compass reported the highest. A further key finding concerns the consistency of these PsyCap scores across the four samples. This provides clear evidence of replicability that is facilitated by the exceedingly high levels of reliability reported previously in the technical manual. Additional analysis was conducted to explore the various relationships that the RTC and its subthemes had with PsyCap and its four factors. Tables 8.23-8.8.27 presents correlations for the RTC and its subthemes with each of the four PsyCap factors and the scale total across the four samples.

Table 8.23. *RTC and the PsyCap Efficacy Factor Correlations*

RTC Scale	Self Efficacy			
	Sample 1	Sample 2	Sample 3	Sample 4
Emotion	.361**	.329**	.425**	.430**
Cognition	0.04	-.228*	-0.113	-0.158
RTi	.277*	.389**	.371**	.447**

*p<.05. **p<.01

Table 8.24. *RTC and the PsyCap Hope Factor Correlations*

RTC Scale	Hope			
	Sample 1	Sample 2	Sample 3	Sample 4
Emotion	.369**	.456**	.332**	.386**
Cognition	-0.02	-0.153	0.102	-0.104
RTi	.363**	.444**	.148*	.436**

*p<.05. **p<.01

Table 8.25. *RTC and the PsyCap Resiliency Factor Correlations*

RTC Scale	Resiliency			
	Sample 1	Sample 2	Sample 3	Sample 4
Emotion	.356**	.492**	.399**	.554**
Cognition	-.337**	-0.158	-0.047	-.221*
RTi	.505**	.542**	.305**	.561**

*p<.05. **p<.01

Table 8.26. *RTC and the PsyCap Optimism Factor Correlations*

RTC Scale	Optimism			
	Sample 1	Sample 2	Sample 3	Sample 4
Emotion	.597**	.423**	.333**	.488**
Cognition	0.209	-0.055	-0.055	-0.056
RTi	.332**	.426**	.266**	.620**

*p<.05. **p<.01

Table 8.27. *RTC and the PsyCap Total Correlations*

RTC Scale	PsyCap Total			
	Sample 1	Sample 2	Sample 3	Sample 4
Emotion	.531**	.510**	.455**	.547**
Cognition	-0.005	-.181*	-0.033	-0.152
RTi	.446**	.540**	.332**	.614**

*p<.05. **p<.01

The correlational analyses outlined above provide two key pieces of insight that are important for both researchers and practitioners alike. Given the significant evidence of the RTC's stability (e.g., test-retest reliability in Chapter 5), these findings provide guidance into the degree to which PsyCap could be considered 'fixed', and by extension, the degree to

which PsyCap can be changed through targeted interventions. This can be done at an individual level using the guidance provided by these multiple research studies. The second key insight concerns the consistency of findings generated by the RTC measurements. Whilst a degree of variation in correlation coefficients can be expected between different samples, changes are limited in size and broader trends typically repeat. This provides further evidence of the RTC's high levels of reliability, and subsequent replicability, as these enable consistent findings to manifest.

In conclusion, there is abundant evidence that PsyCap (1) can be developed, and (2) carries numerous benefits for organisations, yet like any good teacher, practitioners must gauge the requirements of their clients and adapt their service accordingly. Failing to do this unavoidably results in a 'one-size-fits-all' approach that can drastically reduce the effectiveness of the subsequent intervention. Incorporating the RTC as a non-clinical diagnostic tool can therefore provide a substantial benefit to trained RTC users and their clients.

A full report on this research can be found HERE.

Teams & Groups

Value of Diversity

There is a tendency in all organisations not to challenge the way in which problems are framed and the ways in which decisions made and this can be a serious problem. Irving Janis (1918-1990), the Yale research psychologist famous for his theory of 'group- think', identified the tendency of groups to minimise conflict and reach consensus at the cost of critical scrutiny of ideas. Efforts to reduce 'group-think' can be complex and cumbersome, as well as efforts to reduce 'risk polarisation': the tendency for groups that are predominantly either cautious or disposed towards risk to amplify those dispositions in the decisions they make; also referred to as 'risky shift'.

'Red Team Strategies', which is the process of adding a deliberately opposing voice to a team to introduce an adversarial discussion, have been used in both military and civilian organisations to improve decision making by challenging the consensus. Social Defence Theory (SDT) attributes group success to "the combination of personality patterns that contribute to effective reactions in times of danger" (Ein-Dor, 2013). Risk Type dispositions each have characteristic advantages that increase 'inclusive fitness'. The diversity of risk dispositions in our species, and the communication capability afforded by the development of language, creates possibilities for group collaboration and survival unmatched by competing species. The risk dispositions originally used to support SDT were defined in terms of attachment theory (e.g. Harris, 1998; Field, 1996), but the adoption of highly reliable Risk Type Compass metrics strengthens the evolutionary argument and the logic regarding the advantage of diverse risk dispositions in the face of danger or uncertainty.

Risk Dispositions & Team Dynamics

Risk dispositions have a very significant influence on team dynamics. Individuals of the same Risk Type will more easily find common ground and are more likely to see things in similar ways. Reaching agreement is uncomplicated by differing perceptions of the amount of risk involved. On the other hand, different Risk Types, especially if opposite and extreme, will find it very difficult to appreciate the other's points of view. One advantage of approaching these issues from the Risk Type perspective is that these differences can easily be identified and articulated. It is perfectly feasible for team members to be aware of the team's Risk Type composition. In some cases, members may agree to make this explicit so that everyone is open about these differences in emphasis and able to take them into account.

The fact that there are similar proportions of each of the Risk Types in the population, and the point that these are complementary to each other, fosters positive attitudes and mutual respect between Risk Types. Team events have proved to be a very constructive way of harnessing the benefits of Risk Type diversity.

The following case studies are included to illustrate the use of Risk Type Compass in team environments and the positive effects of team events on mutual understanding and decision-making processes.

Mining Company Board

In this study, board members asked the question 'Is our exposure to risk okay?' - the board wished to dive into their attitudes to risk and its effects on their decision making processes. Sharing Risk Types in an open setting was a precursor to setting risk appetite thresholds for strategic objectives.

The Board and Executive Committee were predisposed to caution on regulatory issues: health and safety, environmental protection, diversity, inclusion, etc. They were overly cautious with respect to diversification into other commodities and outside their home market. Risk Type Compass helped to generate a conversation and some modified strategic choices, as well as stronger risk reporting. Figure 8.4. below shows the Risk Type distribution of the Mining Company Board members.

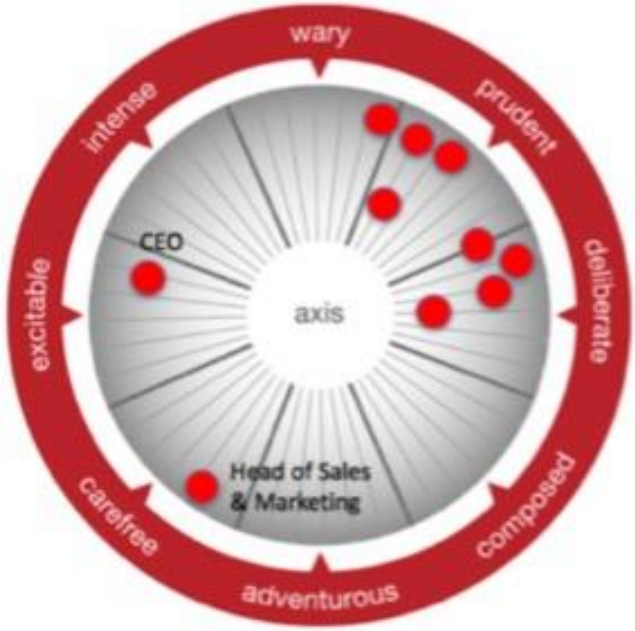


Figure 8.4. *Risk Type Distribution of Mining Company Board Members*

The risk dispositions of board members reflect the nature of mining and the dangers involved. The emphasis on engineering detail and rigorous safety requirements are reflected in the clustering of Prudent and Deliberate Risk Types. At the opposite side of the spectrum, the Head of Sales & Marketing will be open-minded and innovative. The natural dispositions of the CEO, who is an Excitable Risk Type but close to the Intense boundary, will be cautious while also being excited by innovative alternatives to traditional approaches. The challenge for the CEO is in enthusing the board as a whole about embracing new opportunities and technical innovation.

Commercial Team (Historic Trust)

On the face of it, the Risk Type distribution of this team represented an ideal placement for a commercial team: it is a remarkably homogeneous, free-wheeling, creative group sharing excitement about new ideas, and there will be no shortage of ideas.

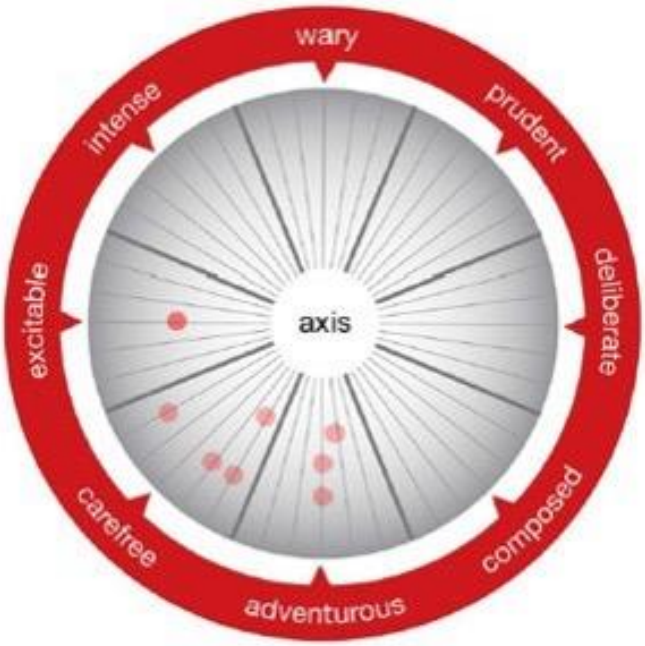


Figure 8.5. *Risk Type Distribution of Commercial Team Members*

The problem we uncovered with this team was the absence of any representation of the more detail-oriented and systematic Risk Types, which left them in an almost permanent cycle of discussion without reaching firm conclusions. They were able to recount a string of past interests, concerns and enthusiasm that never reached fruition.

Using the Risk Type Compass helped to highlight this homogeneity and create a shared language moving forward. Knowing the attitudes and Risk Types that were missing from the team, they were able to acknowledge their flaws and take actions to improve.

Insurance Company Risk Team

This team were struggling with attempts to change a longstanding conservatism, inflexibility and resolute resistance to any view of risk management other than a persistent resistance to innovation - this view is exemplified by the long-standing Prudent and Deliberate Risk Type team members.

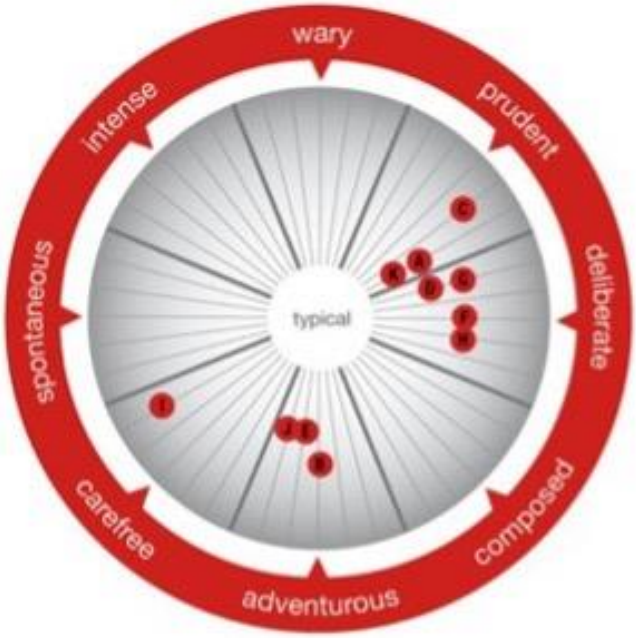


Figure 8.6. *Risk Type Distribution of Insurance Company Risk Team Members*

A new Chief Risk Officer with a radically different orientation, a Carefree Risk Type, had been appointed, and her newer appointments to the team were closer to her disposition. The challenge for the CEO was bringing this team together as a cooperating group and realising the potential strength in their diversity.

Working with the Risk Type Compass allowed the creation of a common language and fostered a culture of appreciation for members with differing views. Instead of pitting the new members against the old members, the team were able to appreciate the views of their opposing Risk Types, creating a more effective team environment.

Board Members of a Charity

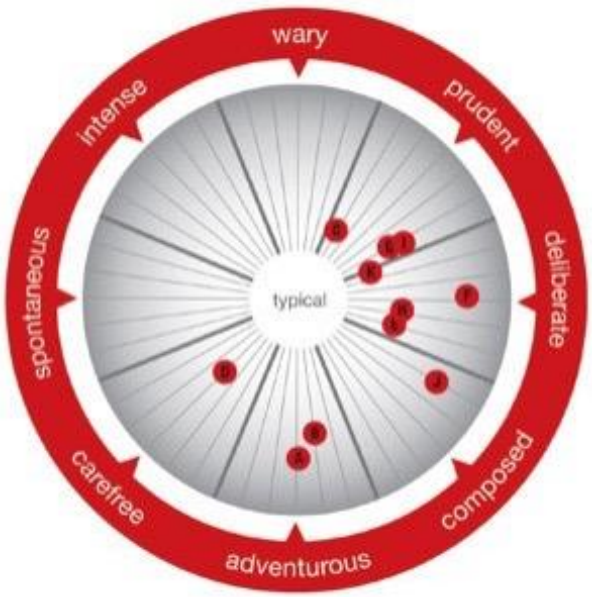


Figure 8.7. *Risk Type Distribution of Charity Organisation Board Members*

There are two immediately noticeable features to this grouping of Risk Types. Firstly, there is no representation within three segments of the Compass and only one within that entire 180-degree segment of the Compass. The effect of this will be that, as a whole, they are all

optimistic and relatively relaxed; but a lack of urgency is likely to blunt any critical edge to debate. Secondly, the board divides in terms of the formality, organisation and detail of the Prudent and Deliberate Risk Types and the flexibility and open-mindedness of the Carefree and Adventurous Risk Types. These two distinctive features in particular provided the basis for a board development exercise.

Russell Group University

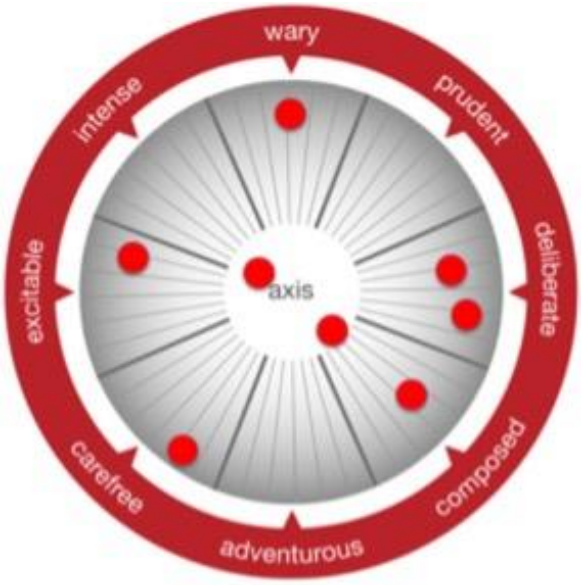


Figure 8.8. *Risk Type Distribution of Russell Group University Academics*

This study involved a major transformational change project, working with senior academic staff to put students at the heart of the service offering. All change involves risk so there is a direct relationship between Risk Type and individual perceptions of the challenge - see Resistance to Change research earlier in this Chapter. The Risk Type Compass results were used as a basis for individual team coaching. Risk Type Compass enabled the process for change to be much richer and more inclusive.

Traders

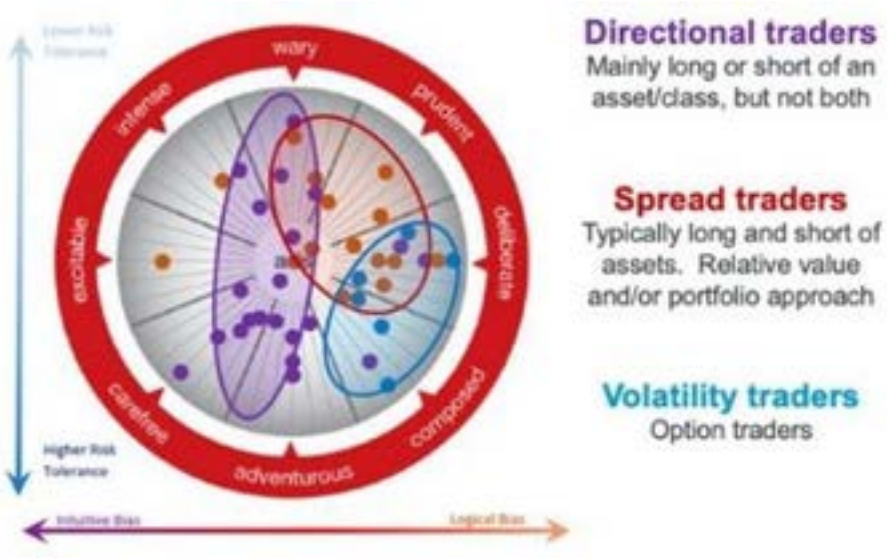


Figure 8.9. *Risk Type Distribution of Directional, Spread and Volatility Traders*

This data was provided by coached traders. Although they are widely spread throughout the Compass, taken as a whole they gravitate towards the lower right. Two thirds of the sample fall within the Carefree, Adventurous, Composed and Deliberate segments; more risk taking in terms of both emotion and cognition. However, there is an interesting grouping of traders according to the kind of trading they are involved with.

Summary

Decision making teams need to be able to operate in circumstances that may be stressful and when decisions may be critical for the organisation's future competitiveness and survival. The creation of a high-performance team may or may not have been the driving force in 'team selection'. Even if it was, the knowledge, expertise and techniques available to assist in pursuance of that goal is limited. The effectiveness of teams and their mode of functioning is inevitably influenced by the risk dispositions of their members. Risk Type will play a very significant part in this, although it may not be recognised as such.

Each Risk Type views the world through their own particular lens, and that 360-degree perspective is a very powerful asset. Diametrically opposed viewpoints can raise tensions, but that is no reason to opt for the cosy alternative of a built-in like-minded consensus. That may in fact be the most dangerous option of all.

Industries & Sectors

Attraction, Selection, Attrition (ASA)

Culture differs considerably across industries and professions. The atmosphere in a tax office, for example, is very different to the atmosphere in a recruitment firm, marketing firm, or a branch of the military. These differences are palpable and widely understood. To a considerable extent this is because different professions attract different personalities and retain those that fit.

The 'people make the place' model of culture, developed by psychologist Benjamin Schneider (1987), reflects these points. In his view, people are attracted to a job by the reputation of the organisation or the profession and their affinity with those qualities. Selection processes further refine the fit between individual and organisation, filtering out those that are less compatible. Attrition reflects the further depuration of the workforce as people leave, fail their probationary period, or are dismissed. The staff that stay become increasingly acculturated and established and emerge as the evolving embodiment of the organisation's culture, its routines, practices and the shared awareness that makes life predictable and dependable.

The studies described in this section explore differences in the prevalence of Risk Types in a variety of professions. In instances of currently employed participants, we can assume that they have:

(1) been attracted to;

(2) been selected by; and

(3) remained in their job roles.

The Attraction-Selection-Attrition (ASA) model would support the view that they have been, and continue to be, at least partially successful in their job. Our expectation that this will differ significantly and in line with the ASA hypothesis is discussed.

Chi-Square Goodness of Fit Analyses

The Chi-Square Goodness of Fit test is used to determine whether the distribution of cases (i.e. participants) in a single categorical variable follows a known or hypothesised

distribution. In the instances below, Risk Type represents the categorical variable, and the Risk Type distribution in our general population sample of 13,614 individuals represents the hypothesised distribution. The Chi-Square Goodness of Fit test represents a framework of analysis that compares the Risk Type distribution of specific samples (e.g. job roles or industries) against the general population sample to determine if there are statistically significant differences between the two distributions.

If Risk Type does play an influential role in the ASA context, there is an increased likelihood that there will be significant difference between the Risk Type distributions of the specific and general population samples.

If Risk Type does not play an influential role in the ASA context, there is an increased likelihood that there will be no significant difference between the Risk Type distributions of the specific and general population samples.

Each industry-specific analysis generates a table. The first data column outlines the number of Risk Types in the specific sample (Observed N). The second column uses the general population sample to hypothesise the number of Risk Types, assuming no industry influence (Expected N). The third column gives the difference between these two values (Residual): the closer to 0 the Residual value is, the more closely the observed and expected frequencies align. This would represent a 'better fit' and provide support for the conclusion that Risk Type does not play an influential role in the ASA context. The following sections will present the findings of our analyses, before interpreting them using the Risk Type Compass's psychological insight.

General Management

This is a very broad category, and it also draws from a wide range of sectors. Within this sample, the breadth of the role, the seniority of the role within an organisation, and the number and variations in the people they manage and have responsibility for will vary widely. The common elements are responsible for the performance of individuals and of the systems involved. The findings of the Chi-Square Goodness of Fit analysis of General Management are presented in Table 8.14. below.

Table 8.14. *General Management Chi-Square Goodness of Fit*

Risk Type	General Management (n=1,250)		
	Observed N	Expected N	Residual
Wary	116	145	-20
Prudent	116	128.9	-12.9
Deliberate	179	195.4	-16.4
Composed	164	141.8	22.2
Adventurous	189	150.9	38.1
Carefree	152	127.5	24.5
Excitable	130	130.5	-0.5
Intense	93	107.7	-14.7
Axial	111	122.4	-11.4

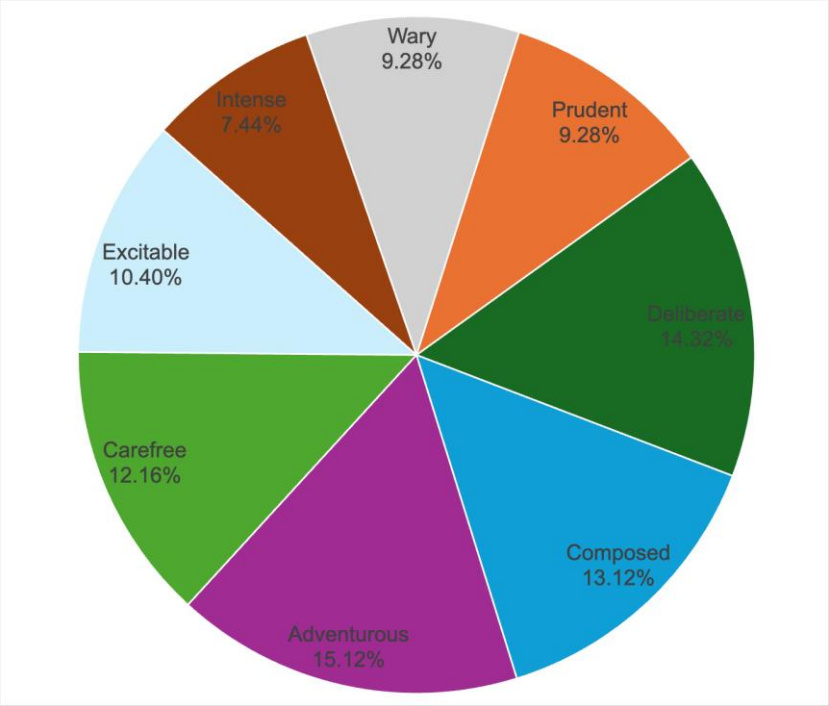


Figure 8.10. *Risk Type Distribution of General Management (n=1,250) [Axial=8.88%]*

A Chi-Square Goodness of Fit test was conducted to determine whether our General Managers sample had the same distribution of Risk Types compared against our general population sample of 13,614. The minimum expected frequency was 107.7 (Intense). The Chi-Square Goodness of Fit test indicated that the Risk Type distribution of General Managers was statistically significantly different from the proportions found in the general population ($\chi 2(8) = 29.391$, p=.000).

The most understanding feature of this distribution of Risk Types is a greater prevalence in all the Compass segments where the Calm factor from the Emotion scale has an influence (Deliberate, Composed, Carefree and Adventurous). Of these four, Carefree Risk Types are the lowest percentage and the most influenced by moderate to low Emotion scores. Also in this vein, the least represented Risk Type is the Intense Risk Type, which is defined by high Emotion scores.

In general, this pattern of Risk Types implies some emphasis on flexibility and innovative problem solving (Carefree); leadership capability, capacity to accommodate to unexpected turns of events and the ability to be assertive and hold to one's own corner (Adventurous); calm even-temperedness (Composed); and vigilance regarding standards and compliance (Deliberate). These findings are broadly in line with popular conceptions of managerial roles, although the diversity of sectors within our sample would be expected to reduce the sharpness of focus and differentiation.

Information Technology

IT roles are an interesting combination of technical know-how, innovation and creativity. IT staff often have an enthusiasm for cutting-edge technical developments and, in this rapidly developing sphere, need the motivation to keep up with events and to continuously update their own skills and knowledge.

There is a hardware systems maintenance side of the profession, which calls for astute problem-solving skills within an area where frontiers are constantly moving and where awareness of trends and innovations are essential. At the systems design and programming side of things, the professional will be challenged to deliver on complex projects that rely on creativity and a readiness to deal with the risks that inevitably accompany groundbreaking innovation. On the other hand, the core of programming solutions is likely to be derived from

tried, tested and established practices; checking 'how everyone else does it' provides a solid basis from which to build. The findings of the Chi-Square Goodness of Fit analysis of IT are presented in Table 8.15. below.

Table 8.15. *IT Chi-Square Goodness of Fit*

Risk Type	IT (n=599)		
	Observed N	Expected N	Residual
Wary	54	69.5	-15.5
Prudent	50	61.8	-11.8
Deliberate	41	93.6	-52.6
Composed	55	67.9	-12.9
Adventurous	107	72.3	34.7
Carefree	81	61.1	19.9
Excitable	105	62.5	42.5
Intense	52	51.6	0.4
Axial	54	58.7	-4.7

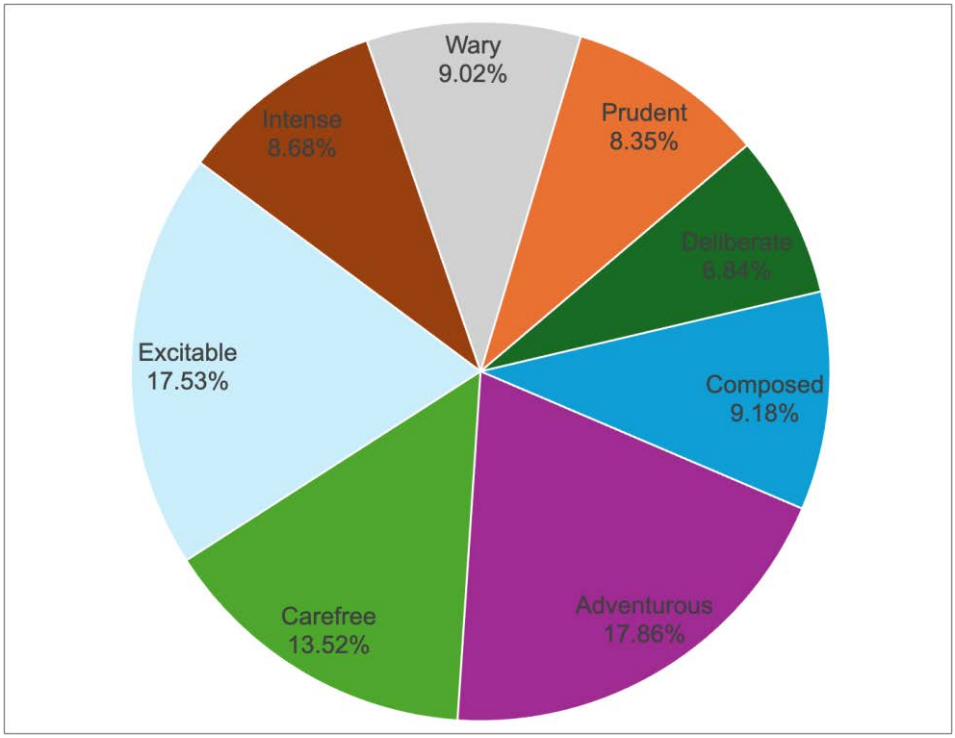


Figure 8.11. *Risk Type Distribution of IT (n=599) [Axial=9.02%]*

A Chi-Square Goodness of Fit test was conducted to determine whether our IT sample had the same distribution of Risk Types compared against our general population sample of 13,614. The minimum expected frequency was 51.6 (Intense). The Chi-Square Goodness of Fit test indicated that the Risk Tye distribution of IT professionals was statistically significantly different from the proportions found in the general population ($\chi 2(8) = 90.131$, p=.000).

The balance of Risk Types within this IT sample is weighted towards flexibility, innovation, individuality and risk tolerance. Just three Risk Types make up more than 50% of the

Compass: The Excitable, Carefree and Adventurous Risk Types, all of which are comfortable with uncertainty and ambiguity and in working within the undefined territory between established and familiar protocols and the aspirations expressed in customer requirements. The Composed and Deliberate Risk Type reflects the calmness, optimism and patience required to live with the long-term uncertainties of any 'work in progress'. The common ground for the remaining 26% of the sample (Intense, Wary and Prudent Risk Types) represents discomfort with risk in terms of emotion (anxiety) and discomfort with uncertainty. This group is characterised by their cautious attention to detail and emphasis on security, accompanied by a conservative approach to design and structure.

Air Traffic Controllers

This is well-recognised as one of the most stressful jobs. Air Traffic Controllers (ATCs) are key to aviation safety. They maintain the flow of aircraft in and out of airports and in flight. Their work is highly prescribed by well-defined operating procedures designed to address all the possible eventualities that could arise in managing airline traffic. ATCs have to be fully conversant with this extensive range of potential air traffic scenarios and the safety procedures associated with each of those situations.

Effectiveness requires total concentration and vigilance and carries huge responsibilities. When smooth running operations are disrupted and a potential crisis is building, ATCs have to remain a calm and reassuring presence as they get things back on track. The findings of the Chi-Square Goodness of Fit analysis of Air Traffic Controllers are presented in Table 8.16. below.

Table 8.16. *Air Traffic Controllers Chi-Square Goodness of Fit*

Risk Type	Air Traffic Controllers (N = 219)		
	Observed N	Expected N	Residual
Wary	2	28.4	-26.4
Prudent	21	25.2	-4.2
Deliberate	155	38.2	116.8
Composed	26	27.7	-1.7
Adventurous	3	29.5	-26.5
Carefree	1	24.9	-23.9
Excitable	0	n/a	n/a
Intense	5	21.1	-16.1
Axial	6	23.9	-17.9

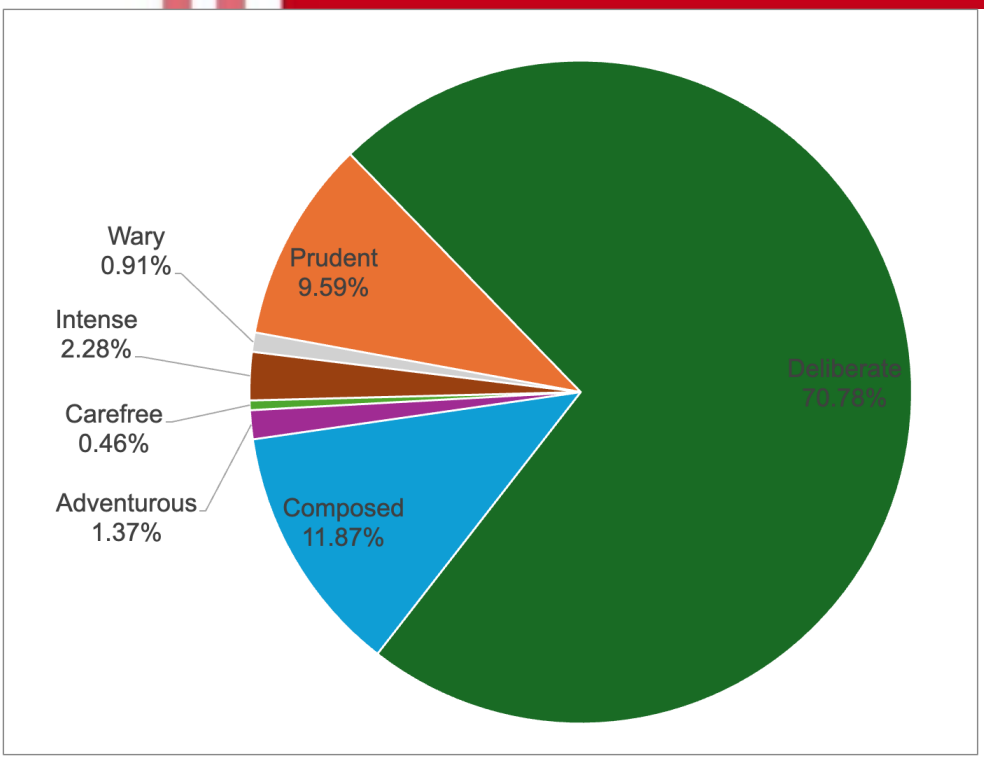


Figure 8.12. *Risk Type Distribution of Air Traffic Controllers (n=219) [Axial=2.74%]*

A Chi-Square Goodness of Fit test was conducted to determine whether our Air Traffic Controllers sample had the same distribution of Risk Types compared against our general population sample of 13,614. The minimum expected frequency was 21.1 (Intense). It should also be noted that the complete absence of Excitable Risk Types in the ATC sample led to its exclusion from the analysis. The Chi-Square Goodness of Fit test indicated that the Risk Type distribution of Air Traffic Controllers was statistically significantly different from the proportions found in the general population ($\chi 2(7) = 454.562$, $p=.000$).

The extreme demands of the ATC role are reflected in the dramatic Risk Type distribution of personnel. This is a role that requires very specific qualities. The demands, even at face value, are likely to discourage most career seekers; the filtering of appropriate staff is aided by the unattractiveness of this as an option for the vast majority of people. The predominance of Deliberate Risk Types and the neighbouring Risk Types (Prudent and Composed) tells a very clear story. The fact (not apparent in this graphic) is that many more than expected of this 94% cluster near the perimeter of the Compass, categorising them as amongst the strongest examples of their Risk Type. There are zero Excitable Risk Types in the sample and only one Carefree Risk Type, two Wary Risk Types and three Adventurous Risk Types. Less than a quarter of the expected number fall within the Axial group.

The Deliberate Risk Type is described as:

"Combining calm self-confidence with detailed preparation and planning. They are even-tempered, cautious and coolheaded. Although not afraid of risk, they work to eliminate uncertainty through careful planning, attention to detail and by considering the options with painstaking care. Neither anxious and emotional nor spontaneous and impulsive, the Deliberate Risk Type is calculated and sure-footed."

Clearly, these characteristics align extremely well with the requirements of the Air Traffic Controller role.

Legal Professionals

To be effective, legal professionals need to master a great deal of detailed and complex information and to have high level reasoning skills. The emphasis on tradition, principles,

established processes and attention to detail takes priority over flexibility and creativity. Legal documents have to be constructed with care and precision and legal processes strictly define any course of action. Ingenuity and creative thinking also play a part but any innovation has to be a logical development of the basic legal foundations.

The findings of the Chi-Square Goodness of Fit analysis of Legal Professionals are presented in Table 8.17. below.

Table 8.17. *Legal Professionals Chi-Square Goodness of Fit*

Risk Type	Legal Professionals (n=150)		
	Observed N	Expected N	Residual
Wary	35	17.4	17.6
Prudent	17	15.5	1.5
Deliberate	16	23.4	-7.4
Composed	9	17	-8
Adventurous	10	18.1	-8.1
Carefree	13	15.3	-2.3
Excitable	10	15.7	-5.7
Intense	19	12.9	6.1
Axial	21	14.7	6.3

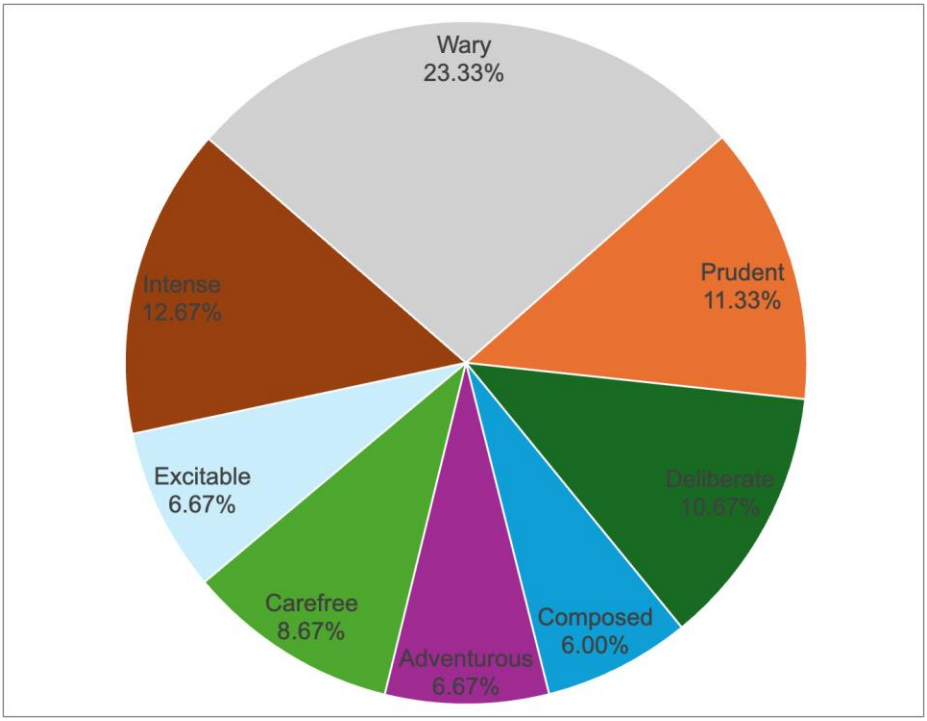


Figure 8.13. *Risk Type Distribution of Legal Professionals (n=150) [Axial=14%]*

A Chi-Square Goodness of Fit test was conducted to determine whether our Legal Professionals sample had the same distribution of Risk Types compared against our general population sample of 13,614. The minimum expected frequency was 12.9 (Intense). The Chi-Square Goodness of Fit test indicated that the Risk Type distribution of Legal Professionals was statistically significantly different from the proportions found in the general population ($\chi 2(8) = 35.681$, p=.000).

This pie chart (Figure 8.13.) maintains the symmetry of the Risk Type Compass graphic. This is significant in that it represents a strong bias towards the risk averse end on both of the underlying Risk Type Compass scales. More than half of the sample are either Intense or Prudent Risk Types, or a combination of them both - the Wary Risk Type. From both an emotional and a rational point of view, the term 'Wary' is not an unreasonable description of the profession as a whole. It is exemplified in the care, cautiousness and attention to detail on which legal professional practices depend. It is what makes this a 'traditional' profession.

Police Officers

Policing is a very varied job, both in the sense that deployment can change from day to day and sometimes hour to hour, and in the sense that there are many opportunities for further training and specialisation. There's a seemingly never-ending list of characteristics that can contribute to success. Ethical and professional responsibility, communication skills, creativity and critical thinking are high on the agenda, but there are many other valuable qualities. In dealing with people from all walks of life, compassion and a sense of humour are important. The procedural side of the job requires attention to detail. Ability to work with others, to support colleagues emotionally as well as collaboratively, all require a capacity for teamwork. The findings of the Chi-Square Goodness of Fit analysis of Police Officers are presented in Table 8.18. below.

Table 8.18. *Police Officers Chi-Square Goodness of Fit*

Risk Type	Police Officers (n=216)		
	Observed N	Expected N	Residual
Wary	34	25.1	8.9
Prudent	20	22.3	-2.3
Deliberate	25	33.8	-8.8
Composed	21	24.5	-3.5
Adventurous	16	26.1	-10.1
Carefree	23	22	1
Excitable	26	22.5	3.5
Intense	31	18.6	12.4
Axial	20	21.2	-1.2

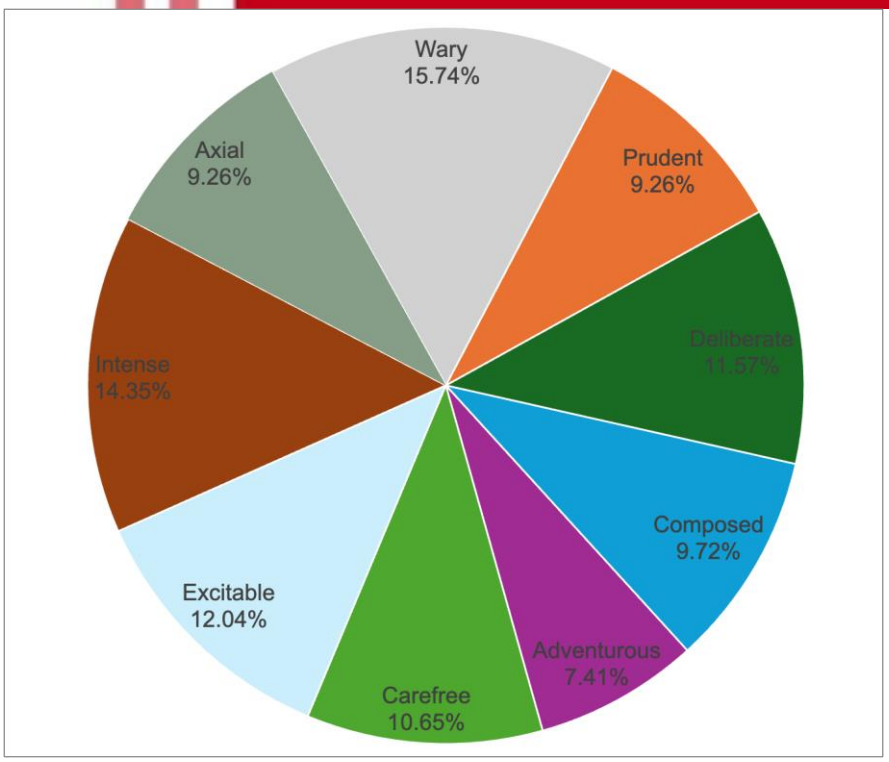


Figure 8.14. *Risk Type Distribution of Police Officers (n=216) [Axial=9.26%]*

A Chi-Square Goodness of Fit test was conducted to determine whether our Police Officers sample had the same distribution of Risk Types compared against our general population sample of 13,614. The minimum expected frequency was 18.6 (Intense). The Chi-Square Goodness of Fit test indicated that Risk Type distribution of Police Officers was statistically significantly different from the proportions found in the general population ($\chi 2(8) = 18.971$, $p=.015$).

Inevitably, the extreme variety of challenges that have to be addressed by the police force is reflected in these findings. The distribution of Risk Types is somewhat similar to that of the wider population. The most distinctive differences are at the top and bottom of the Compass: there are more of the Wary Risk Type (the most risk averse) and fewer of the Adventurous Risk Type (the most extreme in risk tolerance). This may reflect caution within the recruitment process and sensitivities about reliability of staff at the expense of the more adventurous. There may also be a vocational factor in that the policing role is likely to attract those with a preference for order and disciplined behaviour; characteristics strongly associated with the Wary Risk Type. With such a broad range of Risk Types available, the police force's task of addressing a wide range of demands is made more feasible.

Auditors

The highest profile auditors work in finance verifying a company's financial reporting and the effectiveness of their internal controls. Financial auditors are trained in accounting, finance or a related field. However, many aspects of an organisation's operations other than financial may be the subject of an audit. Audits may be made of quality control systems, security, anti-bribery, engineering, food safety, environmental systems, health and safety or other business processes.

The outstanding requirement of any auditor is that they are systematic, thorough and detailed. The findings of the Chi-Square Goodness of Fit analysis of Auditors are presented in Table 8.19. below.

Table 8.19. *Auditors Chi-Square Goodness of Fit*

Risk Type	Auditors (n=254)		
	Observed N	Expected N	Residual
Wary	39	29.5	9.5
Prudent	35	26.2	8.8
Deliberate	61	39.7	21.3
Composed	34	28.8	5.2
Adventurous	16	30.7	-14.7
Carefree	15	25.9	-10.9
Excitable	16	26.5	-10.5
Intense	13	21.9	-8.9
Axial	25	24.9	0.1

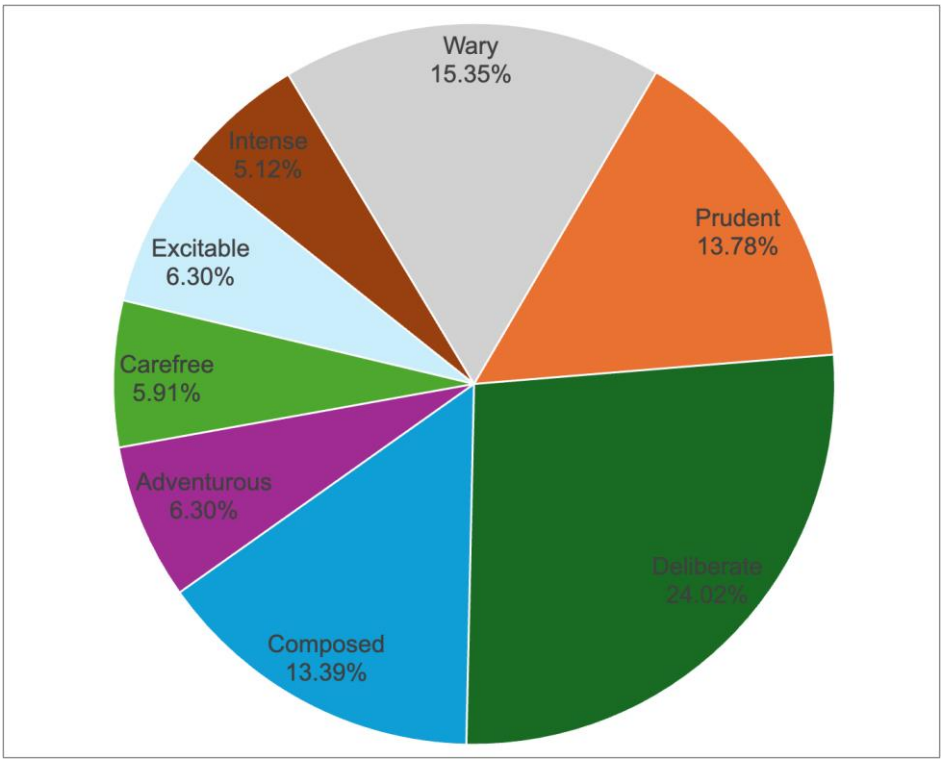


Figure 8.15. *Risk Type Distribution of Auditors (n=254) [Axial=9.84%]*

A Chi-Square Goodness of Fit test was conducted to determine whether our Auditors sample had the same distribution of Risk Types compared against our general population sample of 13,614. The minimum expected frequency was 21.9 (Intense). The Chi- Square Goodness of Fit test indicated that the Risk Type distribution of Auditors was statistically significantly different from the proportions found in the general population ($\chi 2(8) = 37.773$, p=.000).

This is a very distinctive distribution, dominated by the Composed, Deliberate, Prudent and Wary Risk Types. The implication is that auditors have strong inclinations towards security, detail and order. The Deliberate Risk Type, accounting for 24% of the sample, combine the qualities of both the Composed and Prudent Risk Types; they are calm, purposeful, organised and check things carefully. This is traditional auditing. There is an interesting

counterbalance between the Composed Risk Type (13%) and the Wary Risk Type (15%); these are opposite ends of the same underlying scale concerned with emotionality – or lack of it.

This speaks to the difference between optimism and flexibility (Composed) and pessimism and rigidity (Wary) and suggests a wide range of auditing styles. Three of the under-represented Risk Types (Adventurous, Carefree and Excitable) seem a poor match with the traditional finance domain. However, there are new auditing opportunities in emerging areas of technology, for example, where development of more flexible and innovative systems of auditing might be required.

Mental Health Professionals

Mental Health Professionals often work in the community with people having issues and illnesses, either assisted in independent living or at home with their family. They play a part in a team partnership with other professionals including doctors, education authorities, housing departments, the police, and so on. Providing support and guidance is a very open-ended brief. Training and experience combined with personal initiative are required to address a very wide spectrum of issues. Mental Health Professionals need to be resourceful, resilient and to have the self-awareness to gauge their own vulnerabilities and limitations.

The findings of the Chi-Square Goodness of Fit analysis of Mental Health Professionals are presented in Table 8.20. below.

Table 8.20. *Mental Health Professionals Chi-Square Goodness of Fit*

Risk Type	Mental Health Professionals (n=257)		
	Observed N	Expected N	Residual
Wary	57	29.8	27.2
Prudent	21	26.5	-5.5
Deliberate	22	40.2	-18.2
Composed	15	29.1	-14.1
Adventurous	21	31	-10
Carefree	9	26.2	-17.2
Excitable	33	26.8	6.2
Intense	53	22.1	30.9
Axial	26	25.2	0.8

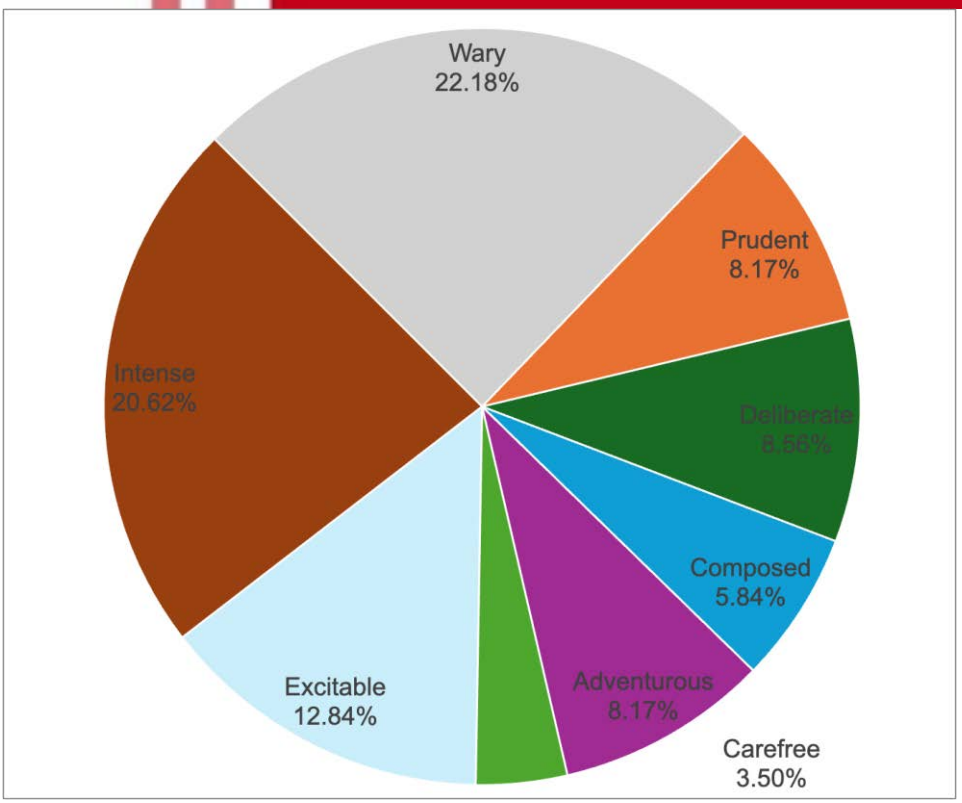


Figure 8.16. *Risk Type Distribution of Mental Health Professionals (n=257) [Axial=1012%]*

A Chi-Square Goodness of Fit test was conducted to determine whether our Mental Health Professionals sample had the same distribution of Risk Types compared against our general population sample of 13,614. The minimum expected frequency was 22.1 (Intense). The Chi-Square Goodness of Fit test indicated that the Risk Type distribution of Mental Health Professionals was statistically significantly different from the proportions found in the general population ($\chi 2(8) = 100{,}004$, p=.000).

This striking distribution of Risk Types shows the emotionality of those working in this field. This is understandable from the perspective of empathy and the insight required by Mental Health Professionals into the condition and needs of their clients. It is likely that such emotions will have played a part in attracting recruits to this role. At the other end of the scale, the Carefree Risk Type contributes the smallest segment (3.5%) to this distribution. This may be in recognition with the long-term commitment required in this sector which would run counter to the excitement seeking characteristics of this Risk Type.

The Excitable Risk Type (12.84%), which combines the emotional sensitivity of the Intense Risk Type with the flexibility of excitement seeking of the Carefree Risk Type, may be attracted to the worthiness of the cause and the positive light cast upon Mental Health Professionals. Although the Prudent (8.17%), Deliberate (8.56%) and Composed (5.84%) Risk Types are under-represented, it is likely that their contribution will be an important one. The rational, orderly, systematic approach of the Prudent Risk Type, the calm imperturbability of the Composed Risk Type and the combination of those qualities in the Deliberate Risk Type would be a strong stabilising influence and a counterbalance to the strong emotions that permeate this role.

Recruiters

Recruitment involves building a client base of prospective employers and establishing a network of contacts and online resources through which to find a credible shortlist of applicants. It is a vital and fast paced profession dealing with continuously changing opportunities as well as the vicissitudes of the employment market. The energetic pursuit of leads, which focus on performance and results, and the competitive environment give

outgoing, articulate, astute, persuasive and mentally nimble people an advantage. Rewards are closely linked to results so drive and initiative are important assets. The findings of the Chi-Square Goodness of Fit analysis of Recruiters are presented in Table 8.21. below.

Table 8.21. *Recruiters Chi-Square Goodness of Fit*

Risk Type	Recruiters (n=314)		
	Observed N	Expected N	Residual
Wary	23	36.4	-13.4
Prudent	18	32.4	-14.4
Deliberate	21	49.1	-28.1
Composed	27	35.6	-8.6
Adventurous	59	37.9	21.1
Carefree	49	32	17
Excitable	60	32.8	27.2
Intense	32	27.1	4.9
Axial	25	30.7	-5.7

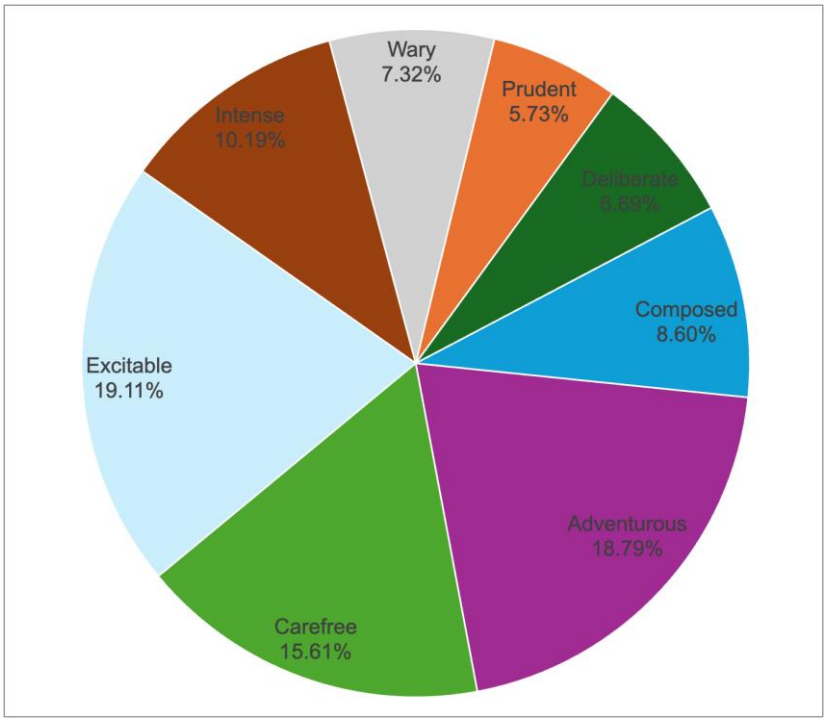


Figure 8.17. *Risk Type Distribution of Recruiters (n=314) [Axial=7.96%]*

A Chi-Square Goodness of Fit test was conducted to determine whether our Recruiters sample had the same distribution of Risk Types compared against our General Population sample of 13,614. The minimum expected frequency was 27.1 (Intense). The Chi- Square Goodness of Fit test indicated that the Risk Type distribution of Recruiters was statistically significantly different from the proportions found in the general population ($\chi 2(8) = 74.836$, $p = .000$).

Recruitment professionals are dominated by the proactive, driven hustlers represented in this distribution by the Excitable (19.11%), Carefree (15.61%) and Adventurous (18.79%) Risk Types. In contrast, the Composed Risk Types (8.60%) will show less sense of urgency and the Prudent Risk Types (5.73% and the smallest segment overall) will be restrained by inflexibility and fear of getting too close to the boundaries of compliance and integrity. The Deliberate Risk Type (6.69%) are likely to be a stabilising influence, but probably best suited to specialist recruitment in the more traditional professions. The drive of the Intense Risk

Types (10.19%) is often powered by self-doubt and fear of failure, and, in this highly competitive environment, this could lead to early burnout or to the escape route of promotion to more executive responsibilities.

Organisational Risk Culture

Field research developed two useful tools for the development of organisational culture using the Risk Type Compass as a strategy. This work might be described as action research. Results were very favourable but not quantified. A brief description is included here in order to complete the scope of our work with Risk Type Compass and to illustrate its utility in relation to Risk Culture.

Organisational culture embodies the values, processes, procedures and customs that define what is considered proper, or “the way we do things around here”. It reflects observable attitudes, feelings, experiences, meanings, and behaviours. It is determined by the individuals of whom that culture is composed. All models of organisational culture reflect this, either explicitly or implicitly. Schneider’s theory of culture, that ‘the people make the place’ is the clearest example of this approach. He describes the mechanism that links individuals to culture in his ‘Attraction, Selection, Attrition hypothesis’ (ASA). The culture of the organisation attracts like-minded people (attraction); the selection processes further refine the intake (selection); and appointees that prove to be a poor fit leave or are dismissed (attrition). Culture maintains a momentum that accommodates gradually to absorb the influences of the outside world but resists sudden or radical change.

The risk sensitivity of an organisation will reflect the nature of the business and the kinds of risk involved: Air Traffic Control centres, hospitals, civil engineering firms or investment banks, for example. Risk Culture will also reflect an organisation’s appetite for risk and the personality and talent of the executives. Manager profiles in the banking sector, for example, have been found to be linked to bank business models and policy choices (Hagendorff, Saunders, Steffen, & Vallascas, 2015).

Data from many sectors and organisations (including the Chi-Square Goodness of Fit analyses earlier in this Chapter) clearly illustrate their distinctiveness.

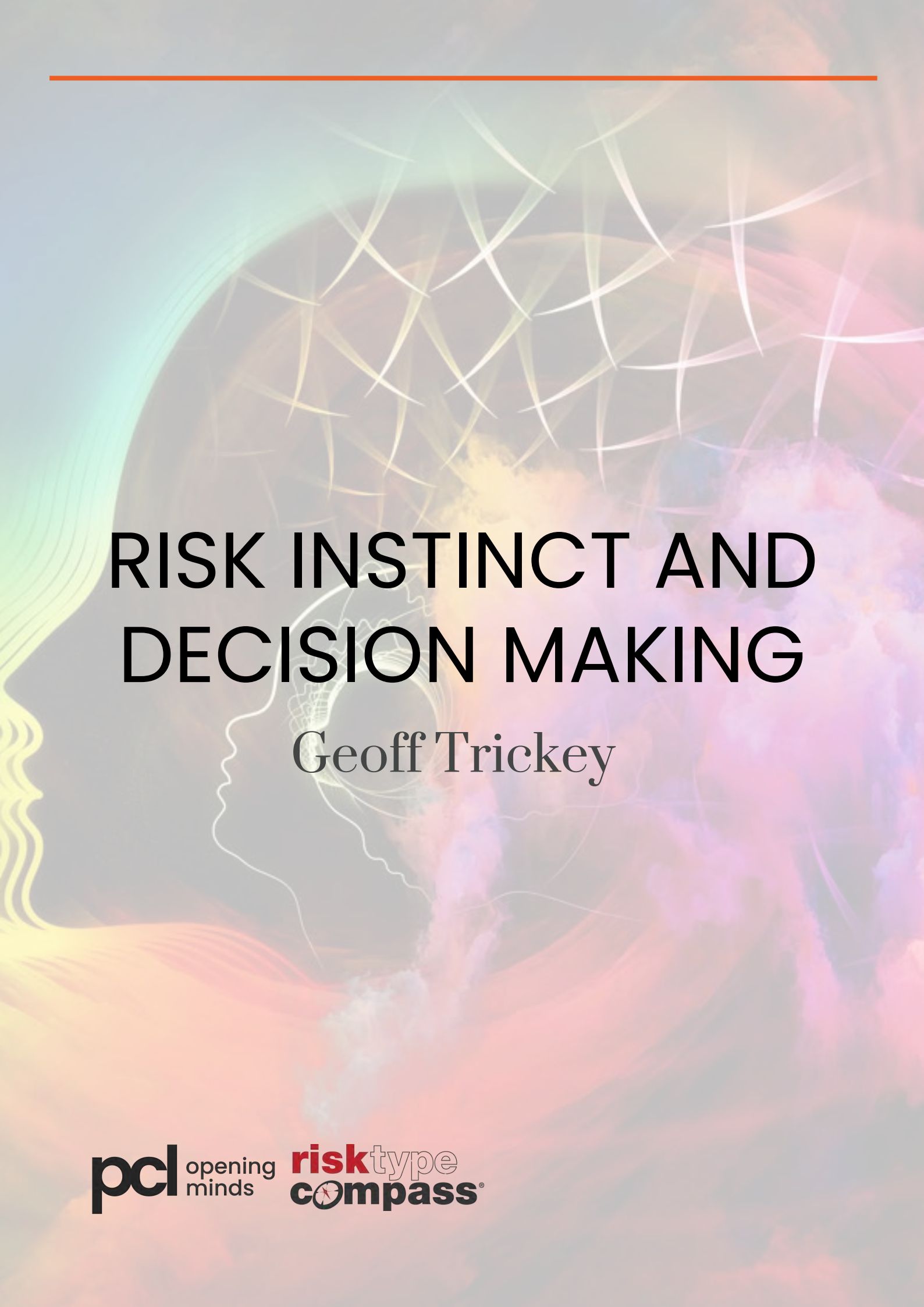
Figure 8.18. *Risk Type Compass Organisational Fingerprints*

Summary

The current chapter gives readers an introduction to the large and growing body of evidence on the insight provided by the Risk Type Compass. There are consequences of this insight at every level, from individuals, teams, organisations and beyond.

Multiple distinct research projects evidence various relationships with constructs of considerable importance to individuals that include resilience, creativity and performance. Team reports can provide awareness of group composition, enabling the user to understand the implications of intra-team interaction in light of work demands. The Risk Landscape offers understanding at a top-down level and can help predict repercussions of company policy, with change resistance representing one major example.

Our understanding is constantly growing, and this growth is demonstrated by the increasing number of case studies, articles and white papers published in PCL's knowledge bank – a freely available resource on our website. Covering all this content in the technical manual would be impossible, which is why in-depth breakdowns of this work is made publicly available by PCL online. For more information, visit www.psychological-consultancy.com/knowledge-bank.



RISK INSTINCT AND DECISION MAKING

Geoff Trickey

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RISK INSTINCT AND DECISION MAKING

Deciding our way through life

- 'Decide to survive' - a fundamental principle of evolution. Everything that lives must somehow make choices and decisions if it wants to prolong its existence.
- In our own 'mind space', decision making involves Cognition (thinking and reasoning) and Emotion (instinctive 'gut feelings') pitching logic and reason against passions.
- Innumerable permutations of thinking and feeling make us very diverse as decision makers, as represented by the 'circumplex' model.
- PCL research reveals the risk instincts that drive individual decision making, the dynamics of teams and the cultural landscape across entire organisations.

Decision making, the process by which choices are made, is fundamental to survival. Everything that lives, including the very simplest of life forms, somehow make decisions. Single cells sense the paucity of nutrients and react, white blood cells sense bacteria and devour them, and 'decisions' of cotton plants keep leaf temperatures optimal whether in sunlight or in shade. In nature, decisions are not made consciously. Humans may be the only creatures that do this, yet many of our decisions remain instinctive and intuitive.

'Decide to Survive' is the basic challenge of evolution

Each of us make thousands of decisions each day, most of which we are unaware of. Unconscious, reactive decision making reflects an evolutionary heritage widely shared with other creatures. The question being researched at PCL for more than a decade is:

What drives decision making in humans

The outcome has been a psychometric measure of Emotion and Cognition that supports a taxonomy of different styles of risk taking (Risk Types).

Turning point for Homo Sapiens

Although we are now capable of 'conscious thought', our pre-language ancestors were 'unconscious deciders' relying on biological systems to monitor and take care of bodily needs and immune systems, combined with emotionally driven motivations and instinctive reactions that completed the ancestral survival kit. An evolved version of all this still makes a vital contribution to the way we make decisions now.

Recently, in evolutionary time scales, a highly consequential turning point for Homo Sapiens came in the form of an unprecedented language capability, not only transforming communication but enabling a capacity for symbolic thinking and a new-found state of self-awareness. We became the conscious decision makers we now are - a hugely consequential turning point for our species.

This language-based cognitive awakening added logic, reason, objectivity, and the power of analogy and metaphor to our thought processes; an 'upgrade' in decision making power that was truly transformational. It became a basis for writing, scientific enquiry, mathematics, and dramatically enhanced capacity for communication, sharing and collaboration.

The complexities of people and individual differences have been a major theme of psychological research

Emotion vs Cognition dualism

Cognition, acquired and mediated by language, opened the door to symbolic reasoning. We are now equipped with a mind space in which both thoughts (Cognition) and feelings (Emotion) are continuously articulated.

These '**voices in the mind**' provide a constant dialogue, a debate between our wide-ranging thoughts and ancient spontaneous 'gut feelings' and ideas that symbolically embrace the physical world, making sense of it, scanning for opportunities and hazards and guiding reactions and decision making.

Dualism in one form or another has fascinated enquiring minds throughout our history; from Plato, Socrates, Descartes, other philosophers and anthropologists; through to modern research in behavioural economics, neuroscience, and applied psychology.

Dualist theorists have characterised our divided minds in many ways; as 'System 1 vs System 2' (Stanovich & West, 2000), as 'Fast vs Slow' (Kahneman, 2011), as 'Go vs Know' (Metcalf & Mischel, 1999) and as 'Experiential vs Analytic' (Slovic, 2004); each is in its own way referring to the struggle we experience seeking to reconcile contributions of instinctive emotions and cognitive knowledge in our human mind space.

Complexity in people and the decisions they must make

Understanding people and their individual differences has been the major theme of psychological theory and research for over 200 years. In the context of teams and organisations, the critical nature of decision making must take centre stage.

Researchers ask: What is the relationship between the diversity of people and the decisions they make? How are decisions arrived at by teams, groups, committees or boards, given the differing risk natures of those taking part?

How, in a sprawling organisation, can we track the impact of people with risk dispositions ranging from the impulsive and reckless to the doggedly risk averse and resistant to change? Or, between those that are creative and flexible to those that are rigidly committed to the status quo?

Exploring evolutionary psychology

Individual differences in decision making styles reflect innumerable possible combinations of Emotion and Cognition. Each has its own evolutionary history, and each is managed independently within the brain by separate neural networks.

For three decades, PCL has been helping businesses to navigate this territory, maximising the potential of individuals and the performance of teams. Research has increasingly focused on decision making and developing a taxonomy of eight 'Risk Types', an approach that models the dualistic nature of decision making. The Risk Type Compass (RTC) model.

The RTC model uses reliable psychometric scales to quantify the two dominant influences in a person's mental life: Emotion (their feelings) and Cognition (their thought processes).

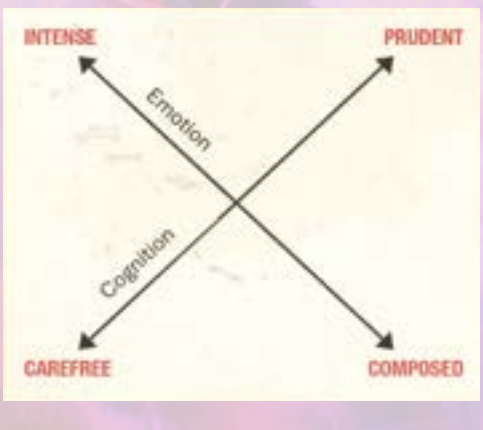

Figure 1. The Risk Type Compass (RTC) model.

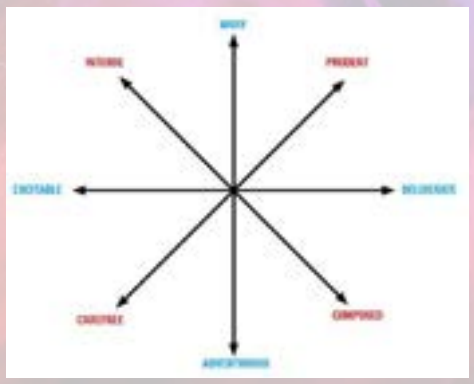

Figure 2. Risk Type Compass scales

The additional vertical and horizontal axes account for those that are high or low on two scales. Figure 2. The independence of those two scales (orthogonality 0.007) supports a circumplex model incremented through 360° of risk dispositions.

This is segmented into eight distinctive 'Risk Types' and the population as a whole is very evenly distributed between them (Figure 3). How much risk any individual is comfortable with - the boundaries between what, for them, is too reckless and what is too passive, are deeply rooted and can aptly be described as instinctive. As we stray beyond personal comfort zone boundaries, 'gut feelings' of anxiety and unsettling uncertainties push us into the decisions we take and the responses we make.

Deciding our tomorrow

Current decision making environments are increasingly complex. High-level group decision making, whether in professional bodies, government committees or public services, face unprecedented technical innovation, social change and more. The impact of decisions in this turbulent environment permeates society and influences our lives. We have every reason to ensure that the processes involved in making those decisions is rigorous and alert to unintended biases.

Group decision making is only effective when the issues under discussion are dissected, pulled apart, stress tested, and argued through a variety of different perspectives. In the past, the exceptional diversity of risk instincts within our species has been a major factor in our success and survival. Nature hedges its bets through diversity, keeping as many options as possible open. Within any enterprise or endeavour, differences in Risk Type ensure diverse viewpoints and healthy debate, challenging dogma, rigid-mindedness, and susceptibility to groupthink.

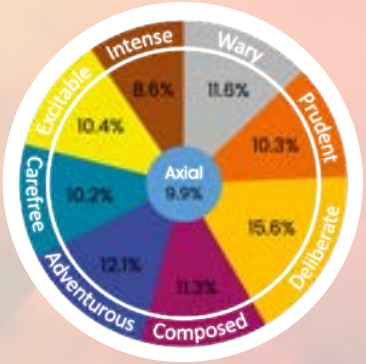

Figure 3. Risk Type proportional distributions

Business matters

In the search of success, whether on the sports fields, the committee room, on an arctic expedition or around the board room table, the 'risk instincts' of the individuals involved must influence the outcomes.

Group decision making must maximise the potential of its diverse members as well as recognising potential limitations. Welcoming a variety of input in debate offers significant benefits, as a team's capacity to de-construct viewpoints, consider radical options and identify complementarity, all hedge against complacency. To ensure longevity, an organisation must monitor trends, anticipate and take risks, adapt and accommodate to change, and stay relevant.

The RTC offers insight into the decision making dynamics at different organisational levels. The 'Risk Landscape' takes us beyond individuals and teams, to the mapping of decision making styles across divisions or sections of large organisations. Its visual display invites exploration and interrogation: **Is the organisation predominantly risk-taking or risk-averse?**

In detail, which sections, divisions, and functions are the most risk-taking and which are most risk-averse? How do these different dynamics relate to team performance and effectiveness?

Shaping Business Culture

Industrial psychologist, Benjamin Schneider (1990), pragmatically defined organisational culture as: '**The people make the place**'.

Risk Types within an organisation

Figure 4. Decision making styles

Taking this literally, the 'Risk Landscape' graphically models sections, functions or whole organisations and provides a digital 'heat map' of risk dispositions with the ability to zoom in for more detailed examination. This 'birds-eye' scrutiny allows detailed auditing and planning for team optimisation.

Extreme imbalances, under-representations, or counter intuitive Risk Type groupings become immediately evident - such as a predominantly risk-taking finance department, or a risk-averse sales team, where a lack of diversity might increase vulnerability to 'tunnel vision' or resistance to change. These insights can highlight opportunities to improve through development, staff transfers, or reorganisation.

The insights available through the Risk Landscape, based on highly reliable measures of Emotion and Cognition, provide a solid foundation for planning and development, for building mutual respect for diverse decision making styles that will play a significant part in ensuring organisational survival.

Personal response

How can we as humans optimise our decision making abilities?

As an individual:
First: Be clear about your own 'risk instincts', their benefits and limitations.
Second: Build confidence by increments, practice and consolidate to achieve 'second nature' fluency.
Third: Be aware that 'basic instincts' may short-circuit and disrupt progress into unfamiliar territory.
Fourth: Remember instincts are intuitive, 'second nature' is language based – you 'instructing' instinct.

Within a group:
First: Understand the upper and lower boundaries of your own 'comfort zone'.
Second: Appreciate the Risk Types of other group members.
Third: Speak up openly and candidly to represent your own viewpoint, however daunting the consensus.

How do the complexities of the modern world impact how we make decisions?

Rapidity of technological and cultural change, complexity, waves of passing enthusiasms, instability.

How can the RTC model positively impact an organisation's bottom line?

Maximising effective decisions. Risk taking, innovating, maximising Risk Type diversity, support psychological safety. Ameliorating and managing resistance to change.

Is there an optimal mix of Risk Types that organisations should aim to create within teams?

Yes, but you have to find the balance. Ideally, teams need performance coaching. As in sports, learn to use available talents to best effect. Manage 'organic change' by identifying allies, modelling 'centres of influence' and investing in the necessary risk management talent.

Bio

Geoff is a Chartered Psychologist with a BSc in psychology and an MSc in educational psychology from UCL. He is a former Honorary Research Fellow at UCL, a Fellow of the Royal Society of Arts, and an Associate Fellow of the British Psychological Society. Geoff founded PCL in 1992, overseeing its growth to an established global presence.

Further reading

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Appendices

Foreword to the 4th Edition by Robert Hogan

Preface to the 4th Edition

Foreword to the 4th Edition by Robert Hogan

The effort to manage risk in business (and in life) has been described as "the world's largest industry1". The challenge of reducing risk can be approached from two different perspectives. The first and most common approach focuses on the actual risk: identifying, measuring, and reducing disruptive, dangerous, or costly incidents, and monitoring and predicting trends in financial risk. The second approach is less common. It focuses on people: their dispositions, vulnerabilities, behaviours, and decision making. This approach lies in the realm of personality psychology, something outside the mainstream of risk management practices.

Most risk management practices concern designing strategies and procedures to control workplace behaviour, or developing statistical and actuarial practices to predict behaviour, and regulations to control behaviour. In this context, considering the people side of the equation may have seemed messy, challenging and dauntingly unfamiliar. The Risk Type Compass offers a new approach: it focuses on human factor issues by providing a coherent conceptual framework, reliable measurement, and an accessible working vocabulary to support a range of professional practices as described and illustrated in this manual.

The design of the Risk Type Compass is striking in terms of: (a) its psychological reasoning; and (b) its technical test development perspective. It offers an innovative conceptualization of personality as related to the perception of risk, the reaction to risk, and the propensity for risk taking. These are dispositions that likely have a persistent effect on decision making at all levels, whether by individuals or teams. This should be of interest because the success and survival of individuals and organizations depends on maintaining a balance between seizing opportunities and weighing the risks involved.

The range of potential applications of this measure is indicated by the research described in this manual. This innovative and purposeful personality tool represents a significant addition to the psychometric tool kit. It will be of interest to a wide sphere of psychologists and risk professionals and will make a potent contribution to unravelling the nuanced complexities of risk.

DR ROBERT HOGAN, 2017

Hogan Assessment Systems, Tulsa, USA

1 John Adams, in his book 'RISK' (Routledge, 1995)

Preface to the 4th Edition

Development of the Risk Type Compass (RTC) has been a major preoccupation at Psychological Consultancy Limited since 2010. Originally developed to address the challenges posed by the FSA – the regulatory body – when, following the 2008 financial crisis, they decided that financial intermediaries should take into account the risk 'comfort zone' of anyone being advised about a financial product. This tacit recognition that people differ significantly in their reluctance or their enthusiasm about taking risks demonstrated the fact that, although a plausible and astute recognition of individual differences, at that time there was no reliable method available to deliver an appraisal of individual risk preferences. The RTC became, and remains to this day, the only high-quality peer reviewed psychometric assessment addressing propensity for risk taking.

In designing and developing the RTC we were aiming to 'square the circle' in creating something of professional quality yet suitable for general use by non-psychologists. The challenge was to produce something rigorous in terms of measurement, that was accessible, meaningful and suitable for use by financial intermediaries. The 'compass' design, which emerged almost spontaneously from the original research project, was symptomatic of our search for something relatable. Like so much in the development, this 'circumflex' model was a consequence of a desire to 'follow the science' whilst ensuring that the output remained intuitive and accessible. This absorption of the four-factor solution described earlier in this manual was typical of our approach. The 'compass' format was the first of many 'Eureka' moments experienced during those formative years. Insight and the increasing sophistication of RTC interpretation reflected our of understanding of personality theory as well as of the theoretical aspects of risk in the worlds of banking, finance, industry, employment, health and safety, board room effectiveness, governance, all forms of group decision making – including in
sport – and, of course, in personal life.

During the intervening years the RTC has been adopted in for a widening circle of applications and in any different countries. We have husbanded a continuous programme of research in collaboration with both industry and academia. Our Student Support Project (SSP), managed by our Head of Research, Dr. Simon Toms, has collaborated with many UK universities working with post graduate students in a win/win situation, supporting the successful completion of RTC featured dissertations.

Collaborating Universities:

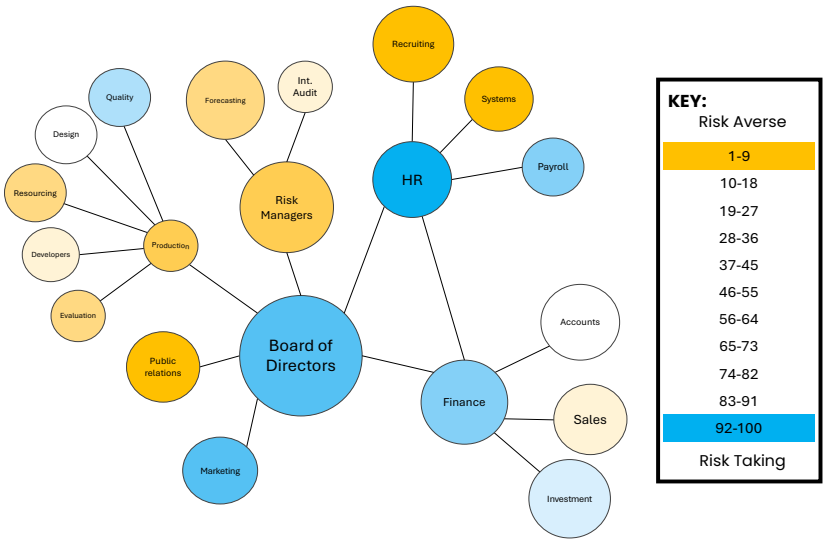
- University College London
- London School of Economics
- Hertfordshire University
- Manchester University
- Glasgow University
- Coventry University
- University East London
- Nottingham University
- University of the Arts London
- Worcester University
- University of East Anglia
- University of West England
- Northumbria University
- Edinburgh University
- Sussex University
- Birkbeck University
- University of Gloucestershire
- Aston University

We have built up a database of over 18,000 additional RTC administrations and increased the 'balanced' RTC norm-group from 4,000 to 16,000. The breadth of understanding and the richness of RTC profile interpretation has grown extensively. These advances have driven, and benefited from, the extension and diversity of our client base, supported by conference presentation on five continents, webinars, social-media activity and professional publications. The focus of assessments has also changed significantly, focussing increasingly at Board and C-suite level and becoming established in sport contexts where we anticipate growth in both the UK and US. These are achievements that exemplify the values and philosophy of PCL of which, as a research-oriented consultancy practice, we are very proud.

The orthogonality of the two contributing RTC scales, Emotion and Cognition, is critical to the functional symmetry of the RTC. On first publication, we had referred to these scales as being "conceptually orthogonal". However, small adjustments to the items aimed at achieving a balance in item numbers, had the effect of increasing orthogonality significantly, and to a very satisfactory level (r = 0.007). This independence between the scales parallels findings of neuroscience that identifies independent networks in the brain; 'System 1 (Impulsive) and System 2 (Reflective), in effect a dualist model (Bechara, 2005). These findings also tie the RTC into the work of behavioural economics and the "Thinking Fast and Slow" narrative of Daniel Kahneman (2011).

Interestingly, the Covid pandemic, between 2020 and 2024, created a 'natural' experiment, enabling the comparison of RTC scores under 'normal' conditions with a substantial sample of assessments during the pandemic – analysis of raw scores indicates a small, yet significant, change in Emotion scale scores, which was not replicated in Cognition scores. This statistically significant difference supports the general observation of higher than usual levels of anxiety in the general population, something that we had predicted during the earlier days of the pandemic might be exacerbated by the determination of the media and the government (through the activities of the 'Nudge' Unit – The Behavioural Insights Team. to frighten the population into compliance with the now largely discredited restrictions. The PCL podcast is still available on YouTube (here).

Another PCL development that has seen rapid progress since the previous RTC Preface involved the development of the RTC Landscape. This is a digital report illustrating the Risk Culture of an organisation based on an RTC survey that can be explored and interrogated in a number of ways in order to evaluate the balance of Risk Types within and between teams, divisions, or sectors of an organisation.



One clear insight from all our RTC developments is that there are benefits in diversity of Risk Types within a team. This diversity ensures a creative tension between individuals who see things from a different perspective, based on their Risk Type. This muti-viewpoint decision making resists 'group think' and encourages a willingness to challenge conclusions constructively. RTC base events highlight which Risk Types are represented, where there are 'factions' of like-minded members within the group, and which parts of the Risk Type Compass are most or least represented. The big benefit this approach is that it maximises the benefits of different viewpoints that, in other circumstances, might be a source of friction, confrontation or disharmony – and it assists in realising the full potential of the group in delivering carefully considered conclusions.

The most recent iteration of the Risk Type Landscape technology is a version for team sports that is populated by RTC data from the participants (the players). This depicts graphically the risk propensity of each individual, their contribution to their team segment (defence, midfield, forward, striker etc.) and the overall risk rating for that team. It is also possible to generate a similar analysis for the Emotionality of teams, individuals and groups. Perhaps of greater diagnostic relevance is the addition of RTC data to the spreadsheet of performance data (e.g. distance covered, goals scored, passes completed, tackles won and lost). This, in effect, transforms retrospective performance data, making it predictive by association with RTC scores, i.e. RTC score correlations with the various performance metrics allows reasonable inferences to be drawn directly from RTC scores.

The Risk Type Compass has now been the subject of three peer reviews. A review by the British Psychological Society (BPS) was completed soon after the last manual update, where we report all the metrics (including reliability metrics) in the technical manual. The reliability of the Risk Type Compass received a particularly high rating, a 33-star rating out of a possible 36. In fact, this is the highest for any previous reviewed test. Two further reviews are available on the BUROS Mental Measurement Yearbook website.

This, probably final, revision of the Risk Type Compass Manual has been a work in progress over several years, with ongoing research and consultancy projects continuously adding to our understanding of risk and the significance of individual differences in decision making to individuals, teams and organisations. I would like to record my appreciation for the contributions of all PCL staff who have assisted in the progress made in the development of our understanding of the relevance of our work; the insights, techniques, strategies and deployment techniques that have continually discovered new areas for RTC deployment. Many people were very directly involved with the research and the compilation of this manual. Over the past decade, all PCL professional, technical and administrative staff have all made invaluable contributions. IU need also to thank the numerous Psychology departments in UK University that have contributed to our on-going programme of research, as well as the people in the organisations that made many of the studies reported in these pages possible.

Geoff Trickey, CEO, Psychological Consultancy Limited

November 2024