

# THE GC MATRIX

The Research & Science behind the World of GCology.  
Version 3.0

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## Part 1: The General Description of the Instrument

### 1. General Description

The GC Index Authors: Dr John Mervyn-Smith, Nathan Ott and Professor Adrian Furnham

The GC Index is an Organimetric (Organisation-metric) that measures the proclivity for people to make an impact at work. Whilst The GC Index does have psychometric underpinnings it is not a personality measure, indeed it is independent of personality.

Personality questionnaires use questions of behaviours and distil them into a picture of personality. The GC Index uses questions of personalities and distils them into a picture of real and potential impact.



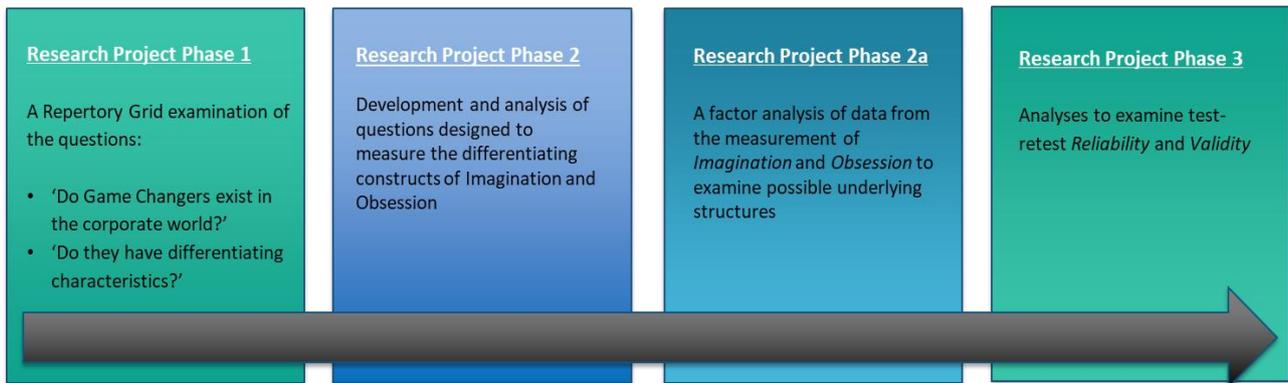
### 2. Description

#### 2.1. History and Development of The GC Index

The GC Index® grew out of a practical need by corporations to identify ‘Game Changers’. Those individuals who had the potential to transform corporate/business functioning to some degree; to initiate and drive transformational change.

This need was the subject of many conversations between senior corporate executives and consultants from the business insight and talent firm eg.1.

## 2.2. Overview of Research Projects:



### 2.2.1. Research Project Phase 1

#### A Repertory Grid examination of the questions:

- 'Do Game Changers exist in the corporate world?'
- 'Do they have differentiating characteristics?'

Understanding and defining these individuals in terms of traditional capability frameworks proved unsatisfactory and so a research project was undertaken (Phase 1) that aimed to answer these questions:

1. Do individuals who can drive transformational change ('Game Changers') exist in corporate settings?
2. If they do, are they perceived to display characteristics that differentiate them from colleagues: 'High Potentials', Successful C-level leaders.

The GC Index® then, had its origins in 'business needs'.

The first phase of this research project is described in the document: The GC Index- Technical Specification.

The preliminary research (with data collected from 20, 1:1 Repertory Grid Interviews- See Appendix 1) and ANOVAs suggested that Game Changers, compared to C-level executives and High Potential executives, were perceived as:

- More likely to 'see the bigger picture' ( $p < 0.01$ )
- More driven and obsessive ( $p < 0.01$ )
- Risk-takers ( $p < 0.01$ )
- More creative ( $p < 0.01$ )
- Less strategic ( $p < 0.1$ )

A closer examination of these data suggested that those characteristics being described fell under two broad headings of Imagination and Obsession.

At this stage then, we proposed to examine two constructs that appeared to be associated Game Changers: Imagination- a capacity for original thought; and Obsession- a drive to convert ideas into reality.

### **2.2.2. Research Project Phase 2**

#### **Development and analysis of questions designed to measure the differentiating constructs of Imagination and Obsession.**

Phase 2 of this research project undertook the measurement of individual differences relative to these two constructs of Imagination and Obsession. Items were formulated by Dr John Mervyn-Smith and Nathan Ott and tested by Professor Furnham.

We were interested to see if there are individual differences in the self-perception of Imagination and Obsession. We entertained an ongoing hypotheses that Game Changers would perceive themselves as *higher* on Imagination and Obsession.

The findings of this study suggested that the items revealed individual differences with the ongoing hypothesis that Game Changers scored *high* on Imagination and Obsession (See Appendix 2).

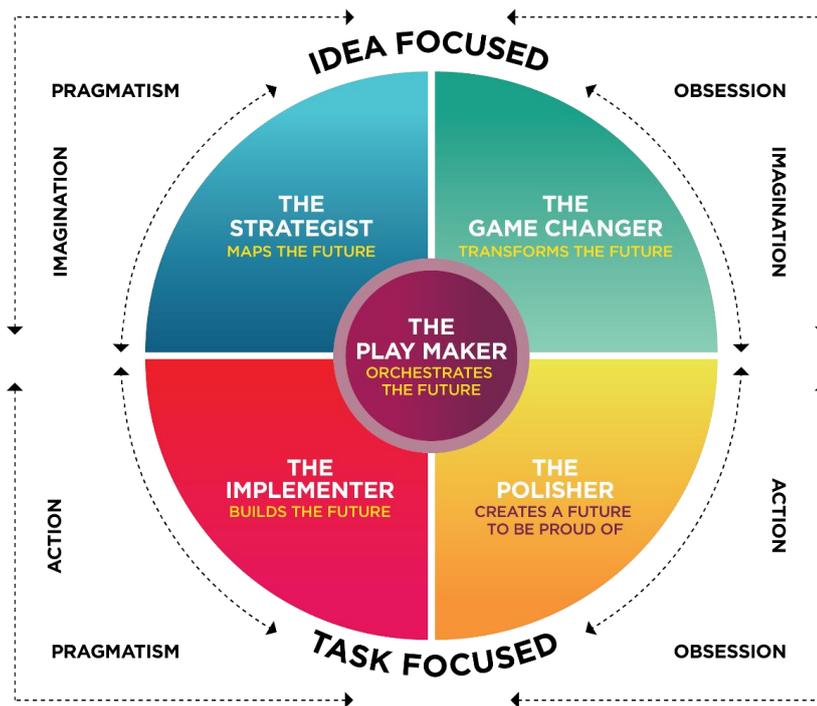
### **2.2.3. Research Project Phase 2a**

#### **A factor analysis of data from the measurement of Imagination and Obsession to examine possible underlying structures**

These findings were presented at a number of conferences and led to discussions with interested Learning and Development specialists in a number of organisations and this led to further research.

More specifically, the suggestion was that we should examine the data to see if it revealed a picture of other ways/proclivities for making an impact at work other than the Game Changer proclivity. For example, could we make any meaningful sense of why people score *low* on Imagination and Obsession.

The GC Index model is based upon the findings from factor analyses conducted on an initial sample of n=1000 and then re-examined with a sample of n=7880. The demographics of the sample at n=5999 are presented in Appendix 3.



The framework describes 5 proclivities- not independent- for making an impact and contribution in the world of work. The GC Index then, measures proclivities not competence. A profile on all 5 will provide a basis for a clinical/expert assessment by learning & development specialists for development, needs, and growth possibilities.

These five proclivities suggest individual differences in the following ways:

**Strategists:**

- Bring energy to making sense of patterns and trends in events and data; looking for causal relationships.

**Game Changers:**

- Bring energy to new ideas and possibilities; to creative thought

**Play Makers:**

- Bring energy to seeking consensus in groups that leads to shared endeavour

**Implementers:**

- Bring energy to delivering tangible outcomes

**Polishers:**

- Bring energy to improving processes, products, solutions

Note: with all five proclivities we can speculate about the underlying drives and motivations. Our interest was in describing behaviours, so the GC Index is presented as an organimetric which measures Energy for Impact. We feel this is a critical difference when comparing to typical psychometrics measuring personality.

### 3. Classification

#### 3.1. Content Domains

- Conversion of energy into impact and contribution in an organisational setting, through 5 main proclivities.

#### 3.2. Main areas of use

- Work and occupational, *covering a wide range of application areas: starting at Individual Development through to any organisational business decision. See Appendix 6*

#### 3.3. Intended populations

- Adults (18+) in an organizational/work oriented setting. A Young People Index is also available (12-18 years).

#### 3.4. Scales measured by the instrument

- Include:
  - The 5 main proclivities described above (see page 6)

#### 3.5. Response Mode

- Online questionnaire, through PC/Tablet/Mobile interface

#### 3.6. Demands on the test taker

- Manual ability – not necessary/irrelevant
- Handedness - not necessary/irrelevant
- Hearing - not necessary/irrelevant
- Visual ability – necessary information given
- Command of test language – necessary information given
- Reading ability – necessary information given (reading age 12 years)
- Writing ability - not necessary/irrelevant

Test Takers with special needs are supported with suitable adjustments advised through The GC Index

#### 3.7. Items format

- 5-point Likert scale
  - 5= Strongly agree
  - 4= Agree
  - 3= Neither agree nor disagree
  - 2= Disagree
  - 1= Strongly disagree

### **3.8. Ipsativity**

- Not relevant

### **3.9. Total number of test items/number of items per scale**

- Game Changer: N= 21
- Implementer: N= 14
- Strategist: N= 12
- Polisher: N= 11
- Play Maker: Derived score
- Total N= 58 items

### **3.10. Intended Mode**

- Controlled mode: the test is made available only to known test-takers yet no direct human supervision of the assessment session is needed.

### **3.11. Administration Mode**

- Computerised web-based application – unsupervised/self-assessment. Test-takers to access through a link with username and password. Designed to operate on a one-time-only basis.

### **3.12. Time required for administering the instrument**

- Preparation time - 3 minutes
- Administration time- 15 minutes
- Scoring is automated
- Analysis: 1 min automated in 90% of cases; 40 mins semi-automated for 'unique' profiles whose analysis then gets incorporated into the automated expert system
- Review: 60-90 minutes recommended as part of a Coaching/Development/Team application.

### **3.13. Different Forms**

- There is one form of The GC Index, items from this form have been translated
- All reports are in currently in English, however the questionnaire is presented in a number of languages: English, Spanish, French, German, Turkish. In progress Chinese, Japanese, Arabic.

## **4. Measurement and Scoring**

### **4.1. Scoring procedure**

- Computer scoring with direct entry of responses by test taker

### **4.2. Scores/Scales**

- Raw scores are converted, and presented, as STEN scores, reflecting a normal distribution of raw scores for 4 of the proclivities (see Appendix 4)
- The STEN score for the Play Maker proclivity is based upon an algorithm reflecting the STEN scores for the other 4 proclivities (see Appendix 4).
- Also refer to description and interpretation of STEN scores in The GC Index (see sample Profile Reports).

### **4.3. Score/Scales**

- See 4.2

### **4.4. Score transformation for standard scores**

- Normalised – standard scores obtained by use of normalisation ‘look-up’ table/calculation.

## **5. Computer Generated Reports**

### **5.1. Reports are available in:**

- Hard and soft form and consist of text, graphics and data
- The interpretation of data is complex reflecting the number of profiles that can be generated with a 1-10 score for each of the 5 proclivities
- The report structure is construct based with a focus upon impact and approach to leadership.

### **5.2. Name or description of report:**

- The GC Index Personal Profile Report

### **5.3. Media:**

- Incorporates: Text only, unrelated text and graphics, integrated text and graphics and graphics only.

### **5.4. Complexity:**

- Simple: a list of paragraphs giving scale descriptions
- Medium: a mixture of simple descriptions and some configural descriptions
- Complex: contains descriptions of patterns and configurations of scale scores, and scale interactions.

### **5.5. Report Structure:**

- Factor based: the report is constructed around higher order factors.
- Construct based: the report is built around two orthogonal constructs
- Criterion based where data interpretation reflects empirical studies of impact at work

### **5.6. Sensitivity to context and modifiability:**

- Report content is generic and fixed, relying upon the accredited user to review/interpret the implications of the report within a given context.

### **5.7. Degree of finish:**

- The report is produced to publication quality

### **5.8. Transparency**

- The report has clear linkage between constructs, scores and text

### 5.9. Style and tone

- The report is guidance based with suggested hypotheses

### 5.10. Intended recipients

- Qualified system users from GC Index accreditation

### 5.11. Distributors service

- Individual GC Index report are not customised
- Team Reports based upon individual profiles are customized.

## 6. Supply Conditions and Costs

### 6.1. The GC Index supplies/makes available the following to accredited users

- User manual- hard and soft copies
- Training videos
- Technical Specification
- Publications/books
- Ongoing supervision and support – live and web learning centre
- Knowledge and learning exchange forums

*A link has been provided to access all the above*

### 6.2. Methods of Publication

### 6.3. Start-up costs

- Accreditation (2021): £995 + VAT. This includes all the material listed above as well as 3 practice links that are reviewed as part of the accreditation process

### 6.4. Recurrent costs

- Global pricing available – example 2021 UK Price List - A single GC Index report £100 + VAT. Accredited users will receive discounts for volume use

### 6.5. Professional qualifications required for use of the instrument

- Users will be experienced psychologists, coaches, HR professionals, training and development experts, recruitment consultants, organisational development practitioners, business leaders, change consultants. All must go through and pass The GC Index accreditation.
- Accreditation includes:
  - 1-day workshop focused upon theoretical understanding and practical applications
  - 3 trial uses of the instrument
  - ½ day workshop presenting practice trials
  - On-going supervision on request.

## Part 2: Evaluation of the Instrument

### 7. Rationale and presentation of The GC Index Model

#### 7.1. History and Development of The GC Index

The GC Index® grew out of a practical need by corporations to identify 'Game Changers'. Those individuals who had the capability to transform corporate/business functioning to some degree; to initiate and drive transformational change.

Transformational change was defined as a radical departure from existing processes and procedures and reflecting creative, original thinking. It was understood to contrast with change of an incremental nature that builds upon what has gone before. It is seen as possibility-driven change rather than problem-driven change.

This need was the subject of many conversations between senior corporate executives and consultants from the business insight and talent firm eg.1.

Understanding and defining these individuals in terms of traditional capability frameworks proved unsatisfactory and so a research project was undertaken (Phase 1) that aimed to answer these questions:

1. Do individuals who can drive transformational change ('Game Changers') exist in corporate settings?
2. If they do, are they perceived to display characteristics that differentiate them from colleagues: 'High Potential' Leaders, Successful C-level Leaders.

The GC Index® then, had its origins in perceived 'business needs'. We wanted to help organisations to identify these individuals if, indeed, they did exist.

#### 7.1.1. Research Project: Phase 1

##### Identifying 'Game Changers'

The Phase 1 Research Project was commissioned by eg.1 Ltd ([www.eg1.co.uk](http://www.eg1.co.uk)). It involved gathering data through a series of Repertory Grid interviews (n=50) using the online tool posted by the University of Calgary: <http://pages.cpsc.ucalgary.ca/~gaines/WebGrid/WebGridIV.html>. These interviews were conducted by Dr John Mervyn-Smith and Dr Liz Ratcliffe of Native Consultancy.

Consistent with this methodology, interviewees (volunteers from a range of organisations, including NWR, Deloitte, Barclays, Grant Thornton, Novartis and experienced as managers) were asked to compare and contrast 'Game Changers', 'C-Level Executives' and 'High Potential' Leaders with a reputation for making an impact in their role. These were people with whom they had had direct experience in a work setting. The Repertory Grid approach seeks to gather data, in an objective and systematic way, that reflects the constructs that an individual has that underpins the ways in which they differentiate between elements in their world, in this instance, people.

Once constructs have been elicited through random comparisons, e.g. Strategic- *Tactical*, interviewees are invited to rate all of their chosen sample (n=9) using a 5-point scale anchored by the construct: *1=Tactical; 5=Strategic*.

Across the interviews, themes were observed in terms of the ways in which interviewees chose to compare and contrast individuals in the three categories.

While our analyses delivered some statistically significant findings an underlying conceptual core was not readily evident. We considered that we had a list of characteristics that provided little insight above and beyond what we could have gleaned from experience. We considered that we had failed to discern the *essence* of the 'Game Changer', even though all of our interviewees had reported that they had worked with them.

It was some months before we revisited our findings afresh and speculated that, at the heart of these characteristics were two core constructs:

1. Imagination- a capacity for original thought
2. Productive Obsession – a drive to turn ideas into reality.

### **7.1.2. Research Project: Phase 2A**

#### **A search for statistical clusters within the data that made conceptual sense**

The Scatterplot in Appendix 2 illustrates that it's possible to measure the constructs of Imagination and Obsession in a way that demonstrates individual differences when it comes to these characteristics.

This led to conversations and conference presentations to those interested in the identification of 'Game Changers'. We persisted with the hypothesis that 'Game Changers' are 'high' on Imagination- a capacity for original thought- and Obsession- a drive to turn ideas into reality.

These conversations led to what became a significant phase in the development of The GC Index®. More specifically, these clients asked questions of the data presented in Professor Furnham's analyses that prompted us to interrogate the data further.

We were interested to see whether an analysis would yield statistically significant clusters that made conceptual and experiential sense of the data. Put simply, our clients were asking, for example: 'what does it mean to be low on Imagination and low on Obsession?'

Consistent with the view that there are four combinations of Imagination and Obsession that made conceptual sense, a statistical search was made for four coherent factors using a factor analytic approach. This approach yielded four distinct factors that, with reference to the items loading on each factor, made 'sense'.

At this stage the view was that the instrument could differentiate between four sets of scores. These are presented below.

SCORES	FACTOR
HIGH ON IMAGINATION AND OBSESSION	A FACTOR THAT DESCRIBED WHAT WE TERMED AS GAME CHANGERS
HIGH ON IMAGINATION BUT LOW ON OBSESSION	A FACTOR THAT DESCRIBED WHAT WE TERMED AS STRATEGISTS
LOW ON IMAGINATION BUT HIGH ON OBSESSION	A FACTOR THAT DESCRIBED WHAT WE TERMED AS POLISHERS
LOW ON IMAGINATION AND LOW ON OBSESSION	A FACTOR THAT DESCRIBED WHAT WE TERMED AS IMPLEMENTERS.

### 7.1.3. Research Project Phase 2b

#### The Emergence of Play Makers

Further development of The GC Index<sup>®</sup>, conceptually and practically, came from a pilot study with a public sector organisation (n=70).

It was observed in this pilot with an Executive Leadership Team (n=9), that two people, 'sat' in the middle of the plot of Imagination and Obsession, with no obvious 'dominant' inclination.

Their interpretation of this observation led us to postulate that there is a fifth role/contribution that we call the 'Play Maker' (see Appendix 2 for a more detailed description).

Without a dominant inclination to deliver tasks or to generate ideas, these 'Play Maker' individuals, we considered, had the potential to make a contribution through facilitating and orchestrating the activities of others with an involving and consensus-seeking approach.

An algorithm to establish a Play Maker score has been determined on the basis of scores on the other four factors.

## 8. Test Materials

### 8.1 Test Materials of Paper and Pen Tests

- Not Applicable

### 8.2 Computer Based Tests (CBT) or Web Based Tests (WBT)

- The GC Index is a wholly web based interface where the user can take The GC Index on any electronic device that has an internet browser including: Microsoft Edge, Google Chrome, Safari, FireFox, Opera, Vivaldi. The GC Index is provided to the user on a unique token basis.

## 9. Norms

### 9.1. Norm-referenced interpretation

- Not applicable

### 9.2. Criterion referenced interpretation

- Not applicable

## 10. Reliability

It is important to stress that The GC Index® is designed for use in organisational development, whether this is with individuals, teams or organisations as a whole.

It has not been designed as a 'cut and paste' instrument that can be delivered without behavioural validation, discussion and interpretation.

Moreover, it's highly likely that, over time an individual's contribution may change as a function of situation (the demands of a role) and aspiration. For instance, the Play Maker may be seen by some as an aspirational role that can be achieved through the development of certain capabilities and the management of more 'natural' inclinations.

Nonetheless, a measure of test/re-test reliability is important to establish the stability and coherence of an instrument over short periods of time and without the influence of significant events in the meantime.

### 10.1 Test- Retest Reliability

A sample of n=200 repeated the questionnaire with an average gap of 13.46 months. Analyses of raw scores yielded the following results for the 4 factors:

The Demographics for the sample:

Age range: 22-63

Gender distribution: 58% male; 42% female

	r
Factor 1- Game Changer	0.80
Factor 2- Implementer	0.73
Factor 3- Strategist	0.74
Factor 4- Polisher	0.73

### 10.2 Cronbach's Alpha

The examination of internal consistency yielded the following:

Reliability Statistics

#### **Factor 1- Game Changer**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.815	.824	21

#### **Factor 2- Implementer**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.709	.722	14

#### **Factor 3- Strategist**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.752	.760	12

#### **Factor 4- Polisher**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.731	.736	11

## Factor 5 – Play Maker

The Play Maker STEN is the product of an algorithm based upon the STENs for score on the other 4 proclivities because of the social desirability distortion that came from seeking to measure this proclivity directly.

## 11 Validity

### 11.1 Face Validity

Face validity is the simplest form of validation in that it assesses whether or not the tool appears to measure what it claims to measure. This is usually achieved simply by asking people whether or not the results of their profile seem to be an accurate presentation of how they see themselves.

This approach to establishing face validity is consistent with the developmental setting within which the tool is used. To add weight to this approach, people were also asked to describe examples of behaviours that were consistent with their profiles (concurrent validity). So, for example, we would expect, for the instrument to be valid, that people with high Game Changer scores could describe behaviours consistent with their profile, in this instance, a capacity for original thought.

Given this respondents were asked if their results were an accurate reflection of the ways they see themselves and their approach to their work. Some of this data was collected in groups giving a 3rd party view. (We haven't adopted 3rd party data collection as a systematic basis for validation).

This question revealed that of the people asked (n = 200):

- 194 respondents (97%) reported that their profile was an accurate description of the way they see themselves and were able describe behaviours at work that were consistent with their profiles.
- Six respondents reported that they considered that some of their profile was accurate but with aspects that didn't 'fit'. Three of these respondents, on further exploration of their profiles, came to recognise behaviours at work that were reflected in their profile.
- No respondents completely rejected their profile as inaccurate.

### 11.2 Construct Validity

The data from our Phase 1 research supported the theory that 'Game Changing' behaviour is a product of two constructs: Imagination and Obsession.

Our Phase 2 research demonstrated that people differed in terms of their responses designed to measure these constructs.

Factor analyses of these responses (examined for a sample of 100 subjects) revealed four distinct factors. An examination of the item loading on these factors helped us to discern the behavioural themes associated with each statistical factor. These themes were consistent with the combinations of the core constructs of Imagination and Obsession presented on page 5.

Factor analyses have been repeated with a sample of n=7879

It is the conceptual and statistical coherence of these constructs that underpins the construct validity of The GC Index® instrument.

A further demonstration of construct validity (convergent) is shown with correlations to Belbin Team Roles Appendix 5

### **11.3 Criterion Validity**

If The GC Index is a valid measure of *Energy for Impact*, then it is reasonable to hypothesise that individual GC Index scores would correlate with other measures of impact.

It is possible to generate a number of hypotheses and we have examined our data base to test them. We present examples below but, at this stage, note that some many of our findings have a commercial value and cannot yet be presented.

#### **11.3.1 Criteria Validity Study 1**

We would expect that Strategist scores would be represented in the corporate world in a predictable way if The GC Index were a sensitive measure of Strategic Capability. The data below support that view, showing that Board Directors have significantly higher Strategist scores. While we might debate the direction of causality, we are comforted that Strategist scores 'pick up' differences as a function of level. An ANOVA of these data revealed this trend of increasing Strategist scores by level to be statistically significant ( $P < 0.05$ )

#### **The GC Index Strategist scores by function\***

	<b>N</b>	<b>MEAN</b>	<b>SD</b>
<b>BOARD</b>	<b>321</b>	<b>6.24</b>	<b>1.913</b>
<b>DIRECTOR</b>	<b>1182</b>	<b>5.99</b>	<b>1.94</b>
<b>BUS OWNER</b>	<b>248</b>	<b>5.46</b>	<b>2.13</b>
<b>MANAGEMENT</b>	<b>1538</b>	<b>5.42</b>	<b>1.85</b>
<b>NON-MANAGEMENT</b>	<b>1011</b>	<b>4.93</b>	<b>1.84</b>
<b>ALL EXCEPT THE ABOVE</b>	<b>1412</b>	<b>4.79</b>	<b>1.76</b>

\*When individuals complete The GC Index they are asked to report the level of their role.

### **11.3.2 Criteria Validity Study 2**

Knowing a company culture and the key success factors in senior leadership should give a basis for mapping GC Index proclivities to these roles.

Within an energy company, an 'a priori' GC Index profile hypothesis was confirmed on observation of leaders classed as 'deal doers' (Game Changers) and 'deal doer-networkers' (Game Changer-Playmakers). Differences to expected scores using The GC Index general population was computed using a ChiSq statistic which revealed statistically significant differences ( $P < 0.05$ ). See Appendix 4 for full details.

These leaders were subject to full Executive Assessment by a Global Search Firm (referenced in the document as SHREK). By mapping the capability areas on to the GC Index proclivities, clear differences were found in mean scores of top vs bottom ranked candidates. See Appendix 4 for full details.

### **11.4 Divergent Validity**

As part of our exploration of divergent validity, we undertook a study that examined the possible correlations between GC Index data and Strengths Finder (Clifton Strengths published by Gallup).

Our 'a priori' hypothesis was that no correlations would be found above chance given the very different 'spaces' occupied by both tools, Energy for Impact and Personal Strengths, respectively. Indeed this had been shown in practice by a GC Index partner who regularly used both tools to get a much more rounded assessment in their client's development programmes.

#### **11.4.1 Demographics for the sample**

- N=173
- Gender: males=65%; females=35%
- Age range: 28-65
- Ethnicity: the sample represented 5 continents

All individuals were in work in roles from non-management to senior executive.

#### **11.4.2 Analyses**

GC Index STEN scores and Strengths Finder scores were correlated using the Pearson Correlation statistic. The analyses failed to reveal any statistically significant ( $P < 0.05$ ) correlations.

#### **11.4.3 Conclusions**

The data analyses suggest that The GC Index and Strengths Finder are measuring different aspects of human behaviour/characteristics. For more details about this study contact Dr John Mervyn-Smith who led the research in this regard.

## **12 Computer Generated Reports**

- Example computer generated reports are available to download from [www.thegcindex.com](http://www.thegcindex.com) or are available upon request.

## Appendix 1:

### Repertory Grid Interviews to examine the questions:

- 'Do Game Changers exist in the corporate world?'
- 'Do they have differentiating characteristics?'

### Methodology

1. Twenty Repertory Grid interviews were conducted by 2 interviewers, using the online tool from the University of Calgary:

<http://pages.cpsc.ucalgary.ca/~gaines/WebGrid/WebGridIII.html>

This approach grew out of George Kelly's work on personal constructs:

([Kelly, George \(1991\) \[1955\]. \*The psychology of personal constructs\*. London; New York: Routledge in association with the Centre for Personal Construct Psychology. ISBN 978-0415037990. OCLC 21760190.](#) Originally published as: [Kelly, George \(1955\). \*The psychology of personal constructs\*. New York: W. W. Norton & Company. OCLC 217761.](#)

2. The 20 Interviewees were 'selected volunteers'. More specifically, we approached a group of interviewees who had more than 10 years of work experience in a range of roles and organisations and asked them to volunteer for this study. Our Interviewees came from the following organisations: Accenture, Anite, Arcadis, AstraZeneca, Barclays, BP, CGI, CRA International, Deloitte, EC Harris, Grant Thornton, HCL, Mercer, MunichRe, Network Rail, Novartis, Oliver Wyman, Rio Tinto, Saffron Digital, Sapient Global Markets, Tesco. We discarded two sets of data which contained 25% + of missing ratings.
3. Interviewees, using the Rep Grid approach, were asked to consider 9 people that they had worked with: 3 that they would regard as Game Changers; 3 that they would regard as successful C-level leaders and 3 that they would regard as high potential leaders.
4. Random triads were used to illicit constructs which we added to for the sake of consistency across the interviews. Data were gathered by asking interviewees to rate each of their 9 individuals on a 5-point scale anchored by the construct, for example: 1=Cautious to 5=Risk Taking.
5. Data from consistent constructs across the group were subjected to ANOVAs. Data from idiosyncratic constructs (e.g. flexible/inflexible), were discarded.
6. These ANOVAs suggested that Game Changers were seen as different in the following ways:
  - More likely to 'see the bigger picture' (p<0.01)
  - More driven and obsessive (p<0.01)
  - Risk-takers (p<0.01)
  - More creative (p<0.01)
  - Less strategic (p<0.1)

## Appendix 2:

### Development and analysis of questions designed to measure the differentiating constructs of Imagination and Obsession.

Professor Adrian Furnham and his team at UCL ([www.ucl.ac.uk](http://www.ucl.ac.uk)) were initially commissioned to search and review the academic literature that focused upon the individual differences of imagination and obsession.

Dr John Mervyn-Smith, with the support of Professor Adrian Furnham and Nathan Ott, developed the items (questions) that constituted the initial The GC Index® questionnaire designed to identify 'Game Changers'. We sought first to find all the scales that seem directly related to our two concepts. We found a number of these.

Having found these measures we then did three things:

1. We went through these trying to identify the questions which seemed to best measure our two constructs.
2. We slightly modified each question so that it was in a common format for our purposes.
3. We added some questions of our own which we felt picked up the full and nuanced meaning of our test.

Once we developed these we tested them on over 250 people (BPS Adequate Sample Size). The results from this first survey were subject to three statistical analyses. First, we were concerned with the distribution of the scores. If most people either agreed or disagreed with a question it was removed as it appeared to have little discrimination. In psychometric jargon this is called 'floor effects' and 'ceiling effects' and indicated that most people tend to give similar responses.

Next, we did a factor analysis on each of the two scales. This we did for two reasons: first to find out if there were any obvious sub-dimensions of our scales which might later help us refine different types of Game Changers and then determine which items were very similar to each other (highly correlated) and therefore redundant.

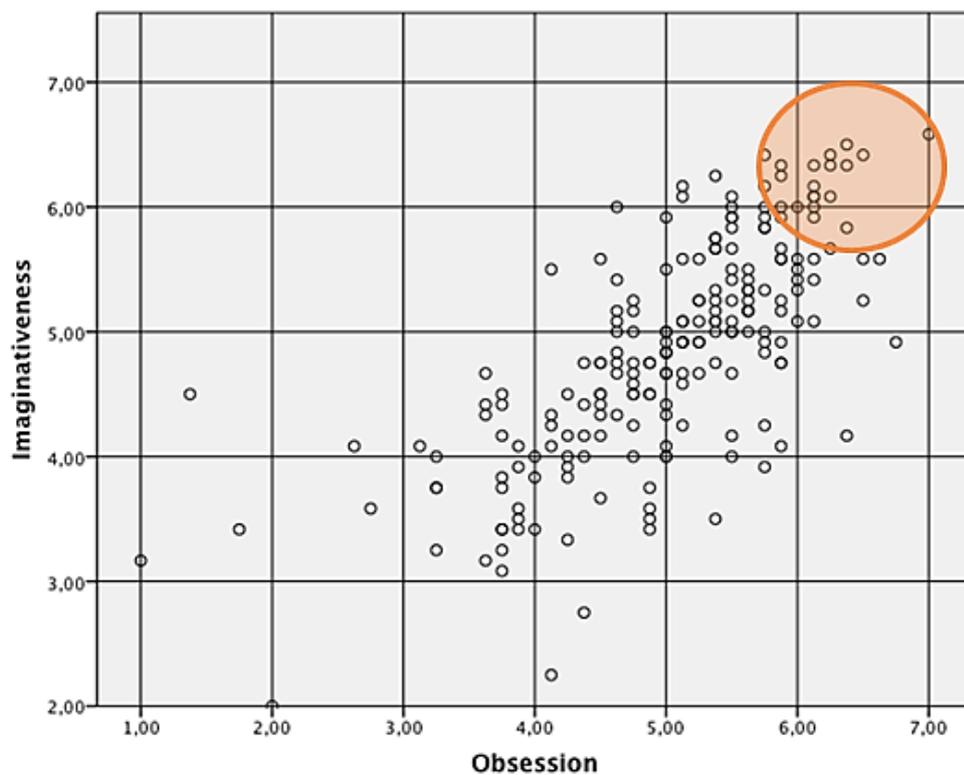
After doing this we had the first draft of our measure. Then going back to our data we plotted the number of people that fell into the different quadrants.

After closely observing individual answers to the first draft, we asserted that the items comprising the scale may be too socially desirable. This would explain the large number of people scoring highly on both Imaginativeness and Obsession.

In order to reduce social desirability, we replaced some of the items with the goal to capture the two concepts with less obvious social desirability. We tested the two scales on 209 people and repeated the analysis conducted in the first survey. The final scale(s) yielded by the analysis are depicted in the table below.

Again we plotted the overall score on Imagination against the overall score of Obsession. To be classified as a 'Game Changer' one must score highly (at least 6 out of 7) on both Imaginativeness and Obsession. Out of the 209 people taking the survey we were able to identify 11 individuals fulfilling this criteria ( $\approx 5\%$ ).

Given the distribution of scores it was decided to structure the questionnaire so that responses to items were made on a 5-point scale: 'Strongly Disagree' to 'Strongly Agree'.



## Appendix 3

### Demographics

AGE	16-24	25-35	36-45	46-55	56-64	65+	TOTAL
MALE	775	967	935	744	234	32	3687
FEMALE	364	660	685	440	128	9	2286
PNS/Other	5	6	6	7	2	0	26
<b>TOTAL</b>	<b>1144</b>	<b>1633</b>	<b>1626</b>	<b>1191</b>	<b>364</b>	<b>41</b>	<b>5999</b>

LEVEL	BOARD DIR	DIRECTOR	MANAGER	NON-MANAGER	BUS OWNER	FTE	UNEM	RETIRED	OTHER	TOTAL
MALE	265	855	962	568	154	472	89	6	316	3687
FEMALE	68	460	675	500	117	207	51	1	207	2286
OTHER/PNS	3	5	6	8	0	3	0	0	1	26
<b>TOTAL</b>	<b>336</b>	<b>1320</b>	<b>1643</b>	<b>1076</b>	<b>271</b>	<b>682</b>	<b>140</b>	<b>7</b>	<b>524</b>	<b>5999</b>

Average of GC	Average of IMP	Average of STRAT	Average of POL	Average of PM
5.47	5.59	5.39	5.3	5.23
StdDev of GC	StdDev of IMP	StdDev of STRAT	StdDev of POL	StdDev of PM
1.8985	1.9484	1.9321	1.9794	1.621
Count of GC	Count of IMP	Count of STRAT	Count of POL	Count of PM
5999	5999	5999	5999	5999

XLSTAT 2019.3.1.61082 - Factor analysis - Start time: 02/09/2019 at 16:09:18 / End time: 02/09/2019 at 16:10:08

Observations/variables table: Workbook = BPS FACTOR ANALYSES DATA 02 Sept 2019.xlsx / Sheet = 4 Factor 7000+ / Range = '4 Factor 7000+'!\$A\$1:\$AS\$7880 / 7879 r

Filtering / N first rows: Number of observations: 50

Correlation: Pearson (n)

Extraction method: Principal factor analysis

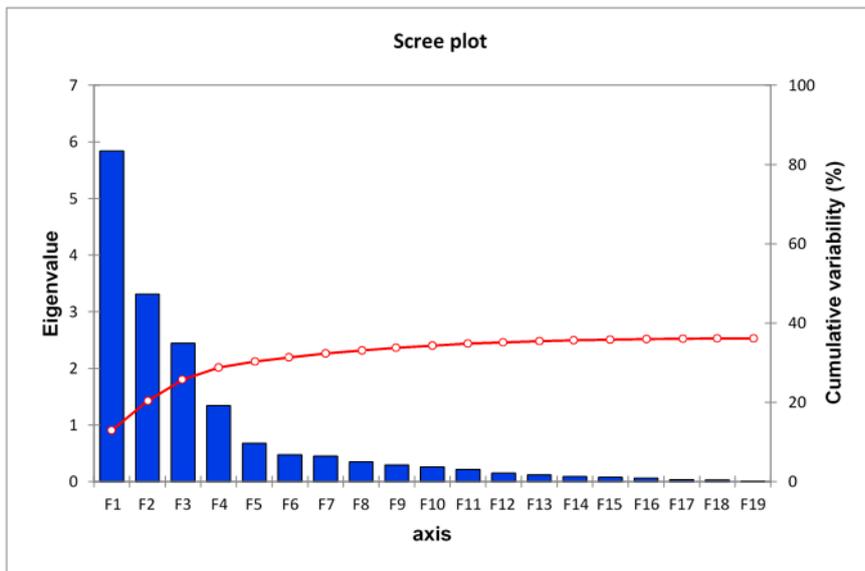
Number of factors: 4

Initial communalities: Squared multiple correlations

Stop conditions: Convergence = 0.0001 / Iterations = 50

Eigenvalues:

	F1	F2	F3	F4	F5	F6
Eigenvalue	5.840	3.318	2.444	1.349	0.677	0.475
Variability (%)	12.978	7.373	5.432	2.998	1.505	1.056
Cumulative %	12.978	20.351	25.783	28.781	30.286	31.343



## Appendix 4

### Validity Case Study – Global Energy Company

#### Context

NC is a global energy company. As part of a restructuring process they had redefined the capabilities that they wanted in their General Managers.

#### Initiative

A leading executive search and leadership development company - SHREK- was commissioned to assess the existing GMs and high potential/future talent- 'Top Talent' against these capabilities. Their approach included: structured interview, the Hogan Leadership Assessment, and the Cognitive Process Profile (CPP).

Individuals then completed The GC Index as a separate exercise.

#### Data and Analyses

Tables 1 and 2 below present:

- The existing GM cohort (Table 1) ranked in order of their SHREK assessments
- The Top Talent cohort (Table 2) also ranked in order of their SHREK assessments

Each individual was assessed against five capability areas, required for the new GM role, and presented in the first row:

1. Put the customer first/Build Talent
2. Drive for results
3. Shape Strategy/Foresight
4. Inspire/Lead Innovation/Resilience
5. Disrupt and Challenge

The 5 GC Index proclivities were mapped onto the 5 capability areas.

Column 2 in Tables 1 & 2 presents:

- each individual's top two GC Index proclivities (based upon their Sten scores for each proclivity and The GC Index hierarchy or proclivities when scores are equal)

Columns 3-7 in Tables 1& 2 present:

- The individual's GC Index Sten scores for each of the 5 GC Index proclivities.

**Interpretation of colour-coded Sten scores**

- Red font scores suggest a potential weakness given the nature of the role with low scores reflecting a low energy for impact and high scores suggesting energy for impact that the role would not satisfy.
- Green font scores suggest an energy for impact that the role requires; a potential strength.
- Black font scores moderate energy for impact when it comes to the related GC Index proclivity/role competency.

**Table 1: The existing GM cohort ranked in order of their SHREK assessments**

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**TABLE 1: GENERAL MANAGER COHORT**

NAME	LEADERSHIP IMPACT	PLAY MAKER	IMPLEMENTER	STRATEGIST	POLISHER	GAME CHANGER
		PUT CUSTOMER FIRST BUILD TALENT	DRIVE FOR RESULTS	SHAPE STRATEGY FORESIGHT	INSPIRE LEAD INNOVATION RESILIENCE	DISRUPT AND CHALLENGE
GL		5	6	9	6	7
HT		7	4	5	6	6
DD		4	5	9	4	6
CC		5	3	5	7	7
IM		5	3	5	5	7
HO		3	7	6	2	9
PS		5	5	3	4	7
DC		6	5	4	4	7
SK		6	4	4	5	7
GD		5	6	4	3	5

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**Key:**

- = Strategist
- = Game Changer
- = Play Maker
- = Polisher
- = Implementer

Table 2: The Top Talent cohort ranked in order of their SHREK assessments

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**TABLE 2: TOP TALENT**

NAME	LEADERSHIP IMPACT	PLAY MAKER		IMPLEMENTER	STRATEGIST	POLISHER	GAME CHANGER
		PUT CUSTOMER FIRST	BUILD TALENT	DRIVE FOR RESULTS	SHAPE STRATEGY FORESIGHT	INSPIRE LEAD INNOVATION RESILIENCE	DISRUPT AND CHALLENGE
VR	 	7		5	6	5	6
TT	 	7		5	6	6	6
TR	 	3		8	8	8	4
LK	 	7		4	4	6	6

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**Key:**

-  = Strategist
-  = Game Changer
-  = Play Maker
-  = Polisher
-  = Implementer

## Observations

### **The GM cohort (Table 1):**

1. 90% of this group (9/10) have a Game Changer profile. This is consistent with the nature of the GM role historically. More specifically, GMs, within a regional, decentralised structure, had been given a good deal of autonomy. They were expected to be entrepreneurial 'deal doers'.
2. 40% have Game Changer/Play Maker profiles. Again, this is consistent with the historical nature of the GM role: these individuals would bring a networking and collaborative approach to their 'deal doing'.
3. The GC Index Sten scores are colour coded with red font scores suggesting a 'weakness' when it comes to performing in the new GM role. Those scores coded in black font suggest only moderate energy for impact in GC Index terms.
4. Individuals ranked in the first 5 have an average of 1.8 red font scores. Those ranked 6-10 have an average of 2.8 red font scores.

### **The Top Talent Cohort (Table 2):**

1. Three of the four individuals in the Top Talent cohort have Play Maker in their profile. This is consistent with the new requirements of the GM roles in a centralised structure. Specifically, individuals are expected to deliver, not shape, strategic objectives through remote teams. They will need to understand the 'why' of the corporate strategy, but the focus will be upon delivery.
2. The increase in red and black scores for the individuals ranked 3 and 4 is consistent with the SHREK rankings.

## Conclusions

The GC Index mapped capability consistencies with SHREK rankings suggest both validity and potential utility in Executive Assessment. The SHREK process put the candidate through ~4 hours assessment, whilst The GC Index took just 20 mins to get a good indication of potential on the job.

Similar cases with emerging data are building more streamlined 'success indicator' assessments to aid various stages in talent identification processes.

## Appendix 5

### Validity Case Study – Comparison with Belbin Data

#### Context

The GC Index is a measure of *Energy for Impact*. It could be argued that The Belbin Team roles\* also reflect an individual's energy for impact and contribution albeit within the confines of a team.

While Belbin not a strong marker tool psychometrically, it does occupy the same space for practical use in organisations, and, as such, is close as we can get to convergent checks for Construct Validity. See (Belbin, M. (1981). *Management Teams*.. ISBN 978-0-470-27172-8.)

Moreover, both The GC Index and The Belbin Team roles describe impact/contribution in terms of ideas, task and people. We might then, expect a degree of correlation in the following ways:

<b>Impact and Contribution</b>	<b>The GC Index Represented by</b>	<b>Belbin Team Roles Represented by</b>
Contribution through ideas	<ul style="list-style-type: none"> <li>• Strategist</li> <li>• Game Changer</li> <li>• A combination of both</li> </ul>	<ul style="list-style-type: none"> <li>• Plant</li> <li>• Resource Investigator</li> <li>• Monitor Evaluator</li> </ul>
Contribution through task	<ul style="list-style-type: none"> <li>• Implementer</li> <li>• Polisher</li> <li>• A combination of both</li> </ul>	<ul style="list-style-type: none"> <li>• Implementer</li> <li>• Completer Finisher</li> <li>• Shaper</li> </ul>
Contribution through people	<ul style="list-style-type: none"> <li>• Play Maker</li> </ul>	<ul style="list-style-type: none"> <li>• Coordinator</li> <li>• Team Worker</li> </ul>

## **Methodology**

In order to test these hypotheses, we surveyed all members of The GCologist community (n=400) asking them to share their Belbin roles if they had them.

81 people in that sample had done both The GC Index and The Belbin and gave us their top 2 Belbin roles.

## **Data and Analyses**

Table 1 below presents the observed and expected frequencies for our samples top 2 GC Index scores and their top two Belbin roles hence a total frequency count of n=162 for our sample of 81.

These data were subjected to a Chi-Squared test which produced a p statistic of  $p < 0.0001$ .

A closer examination of the data suggests the following:

1. That *Plant*, as suggested, correlates with the GC Index energy of *Strategist* and *Game Changer* but is not, in GC Index terms, a unitary construct. More specifically, a *Plant* profile was observed amongst *Game Changer/Strategist*, *Strategist/Polishers* and *Game Changer Polishers*.
2. There are no such patterns when it comes to the relationship between *Resource Investigator* and GC Index profiles.
3. There is some suggestion that *Monitor Evaluators* are likely to have a *Polisher* profile but this would need further investigation to determine the significance of this relationship.
4. The *Completer Finisher* role is always associated with either a GC Index *Polisher* or *Implementer* profile but, again, more research is needed to determine the strength of this relationship. Interestingly, this role does not appear amongst the energy for ideas GC Index roles.
5. The observed data suggest that *Coordinators* are likely (91%) to have energy for ideas in their GC Index profile. But there is no evident relationship with *Play Maker* as anticipated.

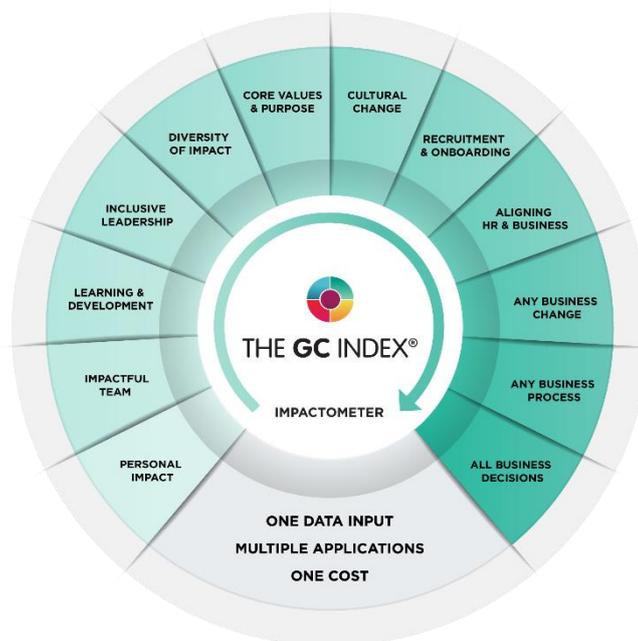
Table 1:

OBSERVED	COORD	SHAPER	PLANT	RESOURCE	COMP	MON	TEAM	IMPLEM	
				INVESTIG	FINISHER	EVAL	WORKER		
STRAT/GC	4	6	12	10	0	0	2	0	34
STRAT/PM	4	0	0	4	0	0	0	0	8
STRAT/IMP	8	8	0	4	4	2	2	0	28
STRAT/POL	0	4	8	6	2	2	0	2	24
GC/PM	2	2	0	4	0	0	0	0	8
GC/POL	4	4	6	6	0	0	0	0	20
IMP/PM	0	2	0	2	2	0	0	2	8
IMP/POL	2	4	0	2	4	2	2	4	20
POL/PM	0	4	2	4	2	0	0	0	12
	24	34	28	42	14	6	6	8	162
EXPECTED	COORD	SHAPER	PLANT	RESOURCE	COMP	MON	TEAM	IMPLEM	
				INVESTIG	FINISHER	EVAL	WORKER		
STRAT/GC	5	7	6	9	3	1	1	2	36
STRAT/PM	1	2	1	2	1	0	0	0	8
STRAT/IMP	4	6	5	7	2	1	1	1	28
STRAT/POL	4	5	4	6	2	1	1	1	24
GC/PM	1	2	1	2	1	0	0	0	8
GC/POL	3	4	3	5	2	1	1	1	20
IMP/PM	1	2	1	2	1	0	0	0	8
IMP/POL	3	4	3	5	2	1	1	1	20
POL/PM	2	2	2	3	1	0	0	1	12
	24	34	28	42	14	6	6	8	162

## Appendix 6

### One data point, multiple business applications, one cost

- The GC Index is unique.
- Personality or People Diagnostic tools cannot measure what The GC Index measures, which is how individuals and teams impact and contribute to a Business Cycle
- The GC Index is the world's first Organimetric – connects people and business with data that organisations have not had before.
- The only People Diagnostic that businesses can use in all of their business processes and business decision making.
- An empowering tool that helps people articulate where they want to make an impact and contribution to a role/team/organisation (and where they don't).
- The only People Diagnostic that enables Leadership Teams to align their organisation to its business objectives.



## Appendix 7 The Psychology of The GC Index

### THE PSYCHOLOGY OF THE GC INDEX®



#### OVERVIEW



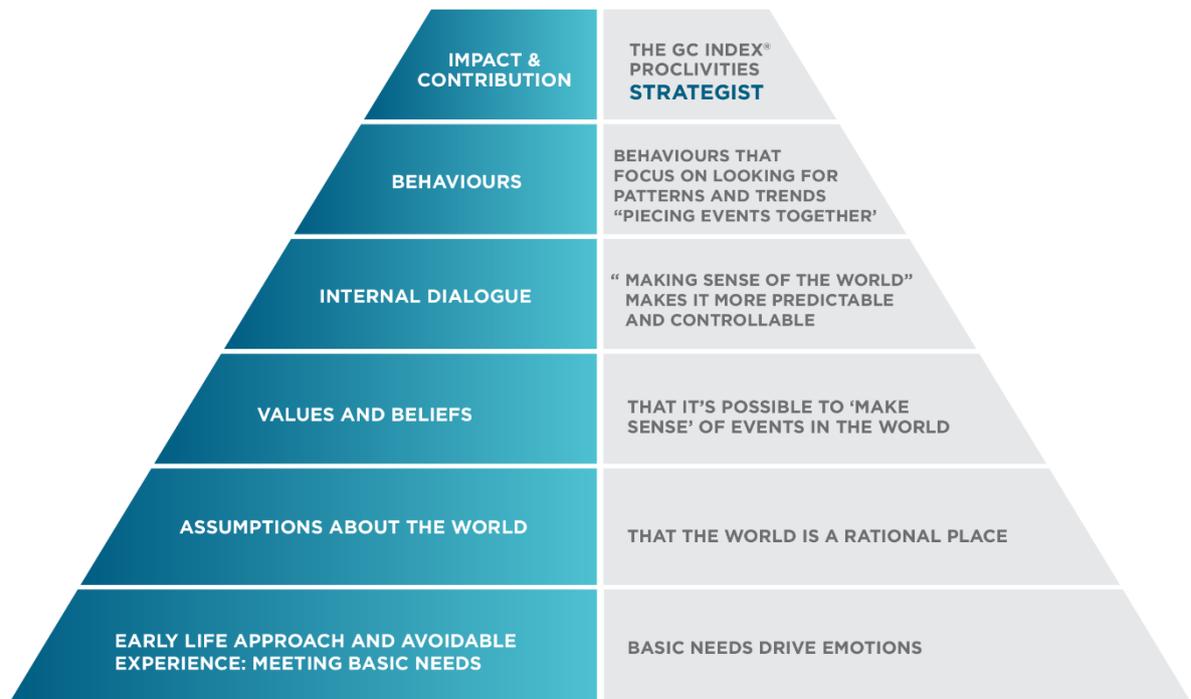
## Appendix 7 (cont.)

### The Psychology of the Strategist

#### THE PSYCHOLOGY OF THE GC INDEX®



#### STRATEGIST



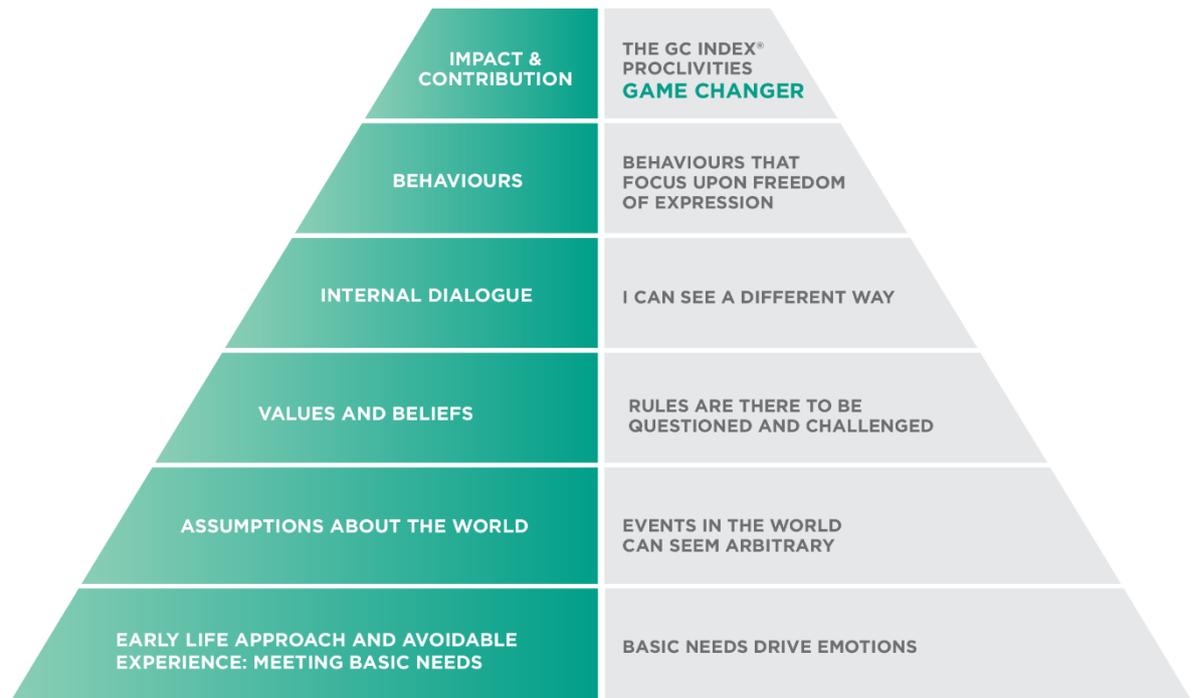
## Appendix 7 (cont.)

### The Psychology of the Game Changer

#### THE PSYCHOLOGY OF THE GC INDEX®



### GAME CHANGER



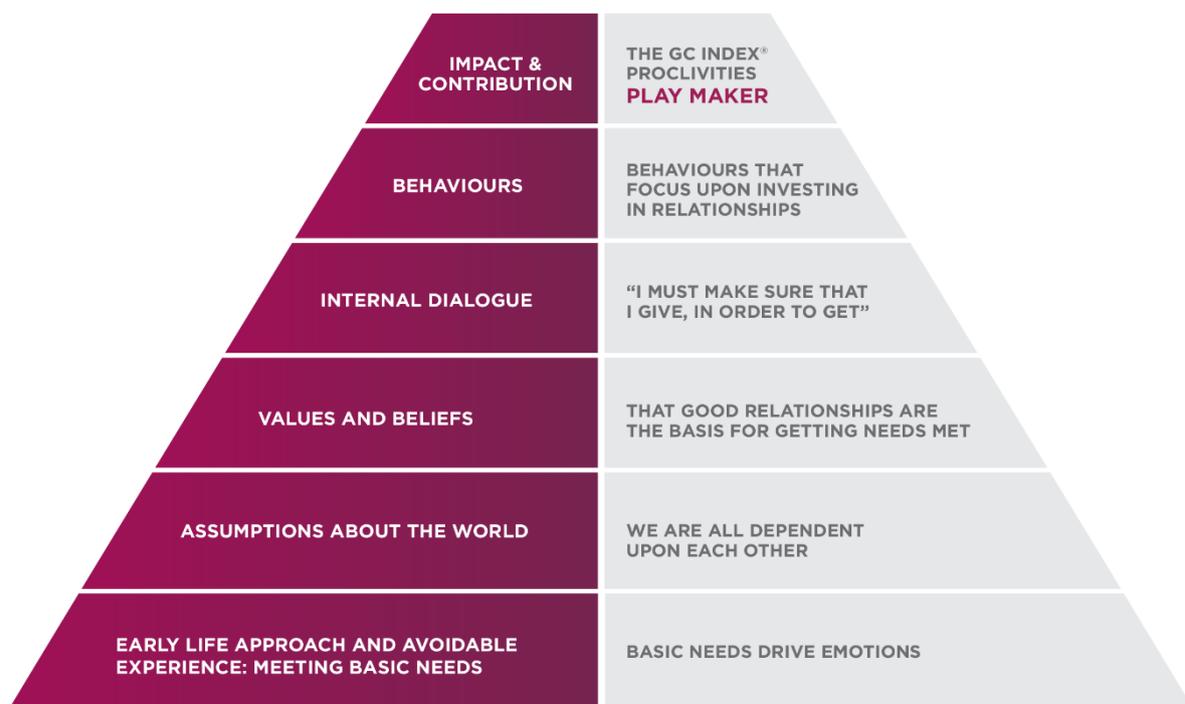
## Appendix 7 (cont.)

### The Psychology of the Play Maker

#### THE PSYCHOLOGY OF THE GC INDEX®



#### PLAY MAKER



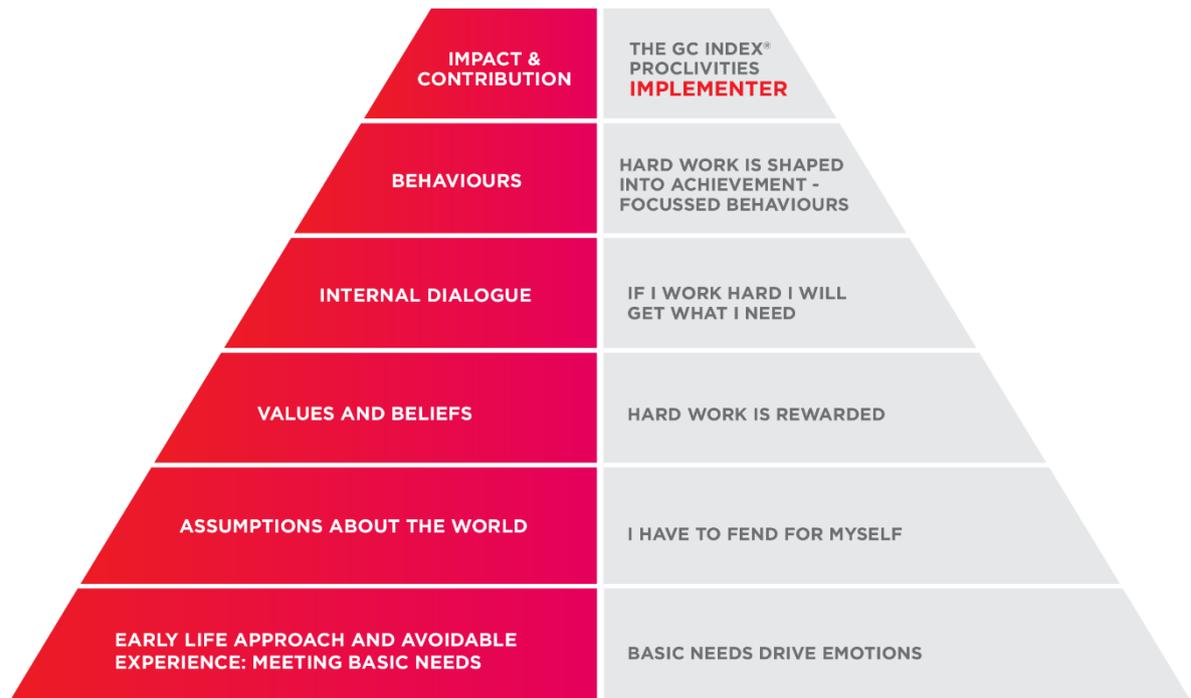
## Appendix 7 (cont.)

### The Psychology of the Implementer

#### THE PSYCHOLOGY OF THE GC INDEX®



### IMPLEMENTER



## Appendix 7 (cont.)

### The Psychology of the Polisher

#### THE PSYCHOLOGY OF THE GC INDEX®



#### POLISHER

