

DNA Behavior[®]

Psychometric Measurement

Methodology Outline

September 2025

DNA Behavior Psychometric Measurement Methodology

The Objective

The current DNA Natural Behavior Discovery Process (the Discovery) is a personality inventory that was released for commercial use in 2009. The Discovery supersedes the original Path model, which was used from 2001.

The Discovery was designed to provide a reliable psychometric measure of a person's natural, enduring "hard-wired" traits that are inherently instinctive, applicable across work, finances, life, relationships, and decision-making.

Further, the same Discovery is used as the starting point for all services provided under the Business DNA® and Financial DNA® brands.

To learn more about the scientific approach underlying the development of the Discovery, you can review the detailed documents listed under "Learn More" below.

Behavior In Context

Level 1: Natural Behavior

A person's Natural Behavior is initially developed and imprinted between conception (DNA) and the age of three years old¹ as the neural pathways develop based on a unique combination of genetics and responses to the environment and life experiences. Then, their Natural DNA Behavior is further shaped through rapid brain development by the time they are five years old². Then by the age of seven, much³ of their subconscious mind is programmed through ongoing brain development caused by further exposure to the environment and life experiences. Daniel Kahneman referred to this as **System 1 Behavior** in his book Thinking, Fast and Slow (2011).

In the provision of all services, we want leaders and advisors to know their own natural behavior and that of their clients as the first step, because it is the core of who they are and a reliable guide to how they tend to behave when making key life, financial, and business decisions. In particular, it reflects their go-to behavior when under pressure, often caused by money and relationships. Furthermore, it reflects their natural talents for performing tasks consistently and for how they naturally operate.

¹Source: <https://www.firstfiveyears.org.au/child-development/epigenetics-child-development-and-genes>

²Source: <https://www.readingfoundation.org/early-learning>

³Source: The Biology of Belief by Dr Bruce Lipton, Ph,D published in 2005.

For clarity, DNA Behavior's position is that the Level 1 Natural Behavior reflects an intertwining of genetic biology and early life experiences. We are not endeavoring to link behavioral traits to genetics or to specific life events. However, we are adopting an outcome-focused approach that aims to measure stable behavioral tendencies arising **from the interaction between genetic predispositions and early-life environmental experiences**, particularly during the first 3–7 years of development. Further research on **Integrating Genetics and Early Life Development** can be provided on request.

Level 2: Learned Behavior

Learned Behavior is more situational and is based on experiences, education, values, and beliefs that develop and continuously evolve from age seven onward. The most significant developmental period is between seven and fifteen years old, with further brain and emotional development. **This is the behavior that can be developed with consciousness and is what Daniel Kahneman referred to as System 2 behavior.** Given that the learned behavior is more situational and often reflects a person's conscious choices and preferences, it is not generally considered hard-wired.

Therefore, we have advocated that a different assessment model is used to identify learned behavior. Further, we deploy 14 distinct learned-behavior assessment models based on the life or performance situation being addressed (see below for a list).

Practical Discovery Approach

We do not believe that natural and learned behaviors can be measured with the same assessment instruments, given that it is not possible to accurately identify “who a person naturally is” and “who they have learned to become through nurture” with a single assessment.

Depending on the situation, we recommend that leaders, advisors and clients complete the Discovery and also a learned behavior assessment. In this way, we can gain a full understanding of the individual's personality (and financial personality), which is more dynamic.

In an ideal world, we seek to help people capitalize on their natural strengths and manage (or modify) their struggles as needed for specific situations to maximize performance. The deployment of the Discovery and a separate learned behavior assessment helps pinpoint and track performance development and the evolution of preferences.

As simple examples:

1. A person may have a natural behavior trait that is spontaneous, but they have learned how to be more organized, as that is required for reliably delivering work on time. Nevertheless, under pressure with multiple deadlines and opportunities they may fail to be structured and planned in their approach.
2. A person may have natural results traits, but they have learned how to be more approachable and compassionate for building relationships. Nevertheless, under

pressure, they will behave logically and with a task focus that may not display relational warmth.

Methodology Steps for the DNA Natural Behavior Discovery (Level 1)

Forced Choice Scoring Model:

1. The Forced Choice Scoring (Ipsative) Model was selected over a Likert rating scheme (with ratings of one to five for statements) to achieve a higher degree of reliability and minimize situational bias in all life environments, including how people approach work, finances, relationships and decision-making. Our experience was that the Likert rating model was more susceptible to overinflation of strengths and more prone to faking. More can be learned by reviewing the **Forced Choice Assessment Model Methodology paper**.
2. The Discovery inventory requires participants to select “most like” and “least like” from a triad of rating items, with the remaining item left out.
3. Our goal is to mitigate situational, educational and demographic biases using fewer words in each rating item. Therefore, the rating items are singular words or phrases. Each item is considered understandable to a fifteen-year-old person, regardless of age, gender or culture.

Questions (Rating Items):

1. The 138 words and phrases used in the DNA Behavior Assessment were originally selected in August 2008 by subject-matter experts (SMEs). These SMEs also developed a preliminary model to predict which items were assigned to which factors.
2. The development of the rating items followed a review of the Financial DNA Path 6 assessment (PATH), which measured six factors and sixteen sub-factors. The PATH had been deployed over a multi-year period, from April 2001 to August 2008.
3. However, for commercial reasons, a decision was made to build an inventory using the Forced Choice Scoring Model, which would measure eight factors and twenty-four sub-factors. This required the addition of:
 - Two new primary factors being: Trust and Pioneering
 - Eight new sub-factors
4. As a consequence of the decision to expand the psychometric measurement of primary factors and sub-factors, additional questions (rating items) were required.
5. Now in the primary inventory used for the Discovery (referred to as the “Full Scan”), there are 138 rating items, each comprising 46 triads (46 questions). The responses to these 46 questions (138 rating items) produce 2,349,060 scoring combinations.
6. In 2023, DNA Behavior also developed the “Quick Scan,” which requires only 11 or 17 of the 46 questions to be completed to obtain an acceptable psychometric measurement

for lower-stakes use. The 17-question Quick Scan achieves 94% average T-Score similarity with the Full Scan across the 8 primary factors. The DNA Digital Scan (2024), which requires no questionnaire, achieves 70–75% and is used only for early, low-stakes engagement.

Allocation to Primary Factors and Sub-Factors:

1. Each rating item was designed to contribute to the measurement of one of the eight primary factors, and in a few cases, there was double loading of an item to two factors.
2. Each subfactor is an independent element of behavior that is partially reflective of the primary factor to which it relates. Therefore, the subfactors share rating items with primary factors to which they are related.
3. The measurements can be seen in the **Factor and Sub-Factor Report**.
4. Each factor and sub-factor measurement reflects the associated high and low side traits. Therefore, 64 behavioral traits are reported.
5. The inventory is structured so that:
 - Each primary factor comprises 20 or more rating items
 - Each sub-factor comprises 6 to 12 rating items
 - The Trust factor shares rating items with some of the other factors – and is highly correlated to the Patience Factor
6. To review how the DNA Factors compare to other known psychometric systems (eg, DISC, MBTI, etc.), review the **DNA Behavioral Product Comparison Study**.
7. As a further reference, four of the DNA Primary Factors compare to the Big 5 Personality Traits (Costa and McCrae, 1985) are as follows:

DNA Behavior Factors (Traits)	Big Five Personality Traits
Creative (Imaginative)	Openness to experience
Planned (Structured)	Conscientiousness
People (Outgoing)	Extraversion
Low Take Charge (Co-operative)	Agreeableness
Not directly measured- but three traits are combined to measure Emotional Decision-Making	Neuroticism

Psychometric Validation Process:

1. The Discovery was independently validated in 2009 by a highly qualified team of SMEs with over 100 years of combined academic and practical experience in profile development. From an academic perspective, the validation study was undertaken by a

team including Dr Justin DeSimone, PHD, who was at Georgia Institute for Technology and is currently a Teaching Professor at the University of Alabama (I/O Psychology).

2. The validation process is documented in the **DNA Natural Behavior Validation Report, January 2025, initially prepared in 2009.**
3. From a psychometric measurement basis, each rating item's raw score from the sample participants underwent a norming process to assess its correlation with a primary factor and a sub-factor. The outcome is a population-weighted T-scores, which are shown in the **DNA Factor and Subfactor Report.**
 - Confirmatory factor analyses (CFAs) were conducted on both the major factors and sub-factors in order to provide data regarding the contribution of each item to its respective factors. M-Plus statistical software was used to conduct the CFAs. These analyses employed polyserial correlations and maximum likelihood estimation to obtain standardized path coefficient estimates.
 - Exploratory Factor Analyses (EFAs) were conducted on both the major factors and subfactors in order to provide data regarding which items were most related to one another. EFAs were conducted using Mplus and polyserial correlations. All EFAs were (obliquely) Varimax rotated in an effort to maximize simple structure of the factors.
 - The SMEs used the results of the CFAs and EFAs to inform decisions on which items needed to be changed, as well as which items needed to be added to or removed from each major factor and subfactor. All coefficients used in the final model were statistically significant. Four items displayed negative coefficients and were eliminated from the final model. In conclusion, this means that 134 out of 138 items, or 97.10%, significantly relate to the major factors and sub-factors (item accuracy). Reliability is measured separately using Cronbach's alpha (below).
 - Convergent validity for each major factor of the Discovery was determined by correlating scores for that factor with the PATH factor or sub-factor that is most conceptually related to it. Each major factor of the Discovery showed strong correlations with its corresponding PATH factor. For this analysis, the Pearson Correlation methodology was used. Correlations of .70 or above indicate strong convergence. With a sample of 270, correlations of this size are statistically significant well beyond the conventional threshold ($p < .001$), meaning they are very unlikely to have occurred by chance.
 - Cronbach's alpha coefficient was used to assess the internal consistency of each major factor of the Discovery. For new measures, alpha coefficients above .70 are favorable and alpha coefficients above .80 are considered excellent. With the exception of the Pioneer factor, all alpha coefficients exceeded .80.

- The initial sample in 2009 involved 270 participants who had completed the DNA Discovery and its prior version, known as Financial DNA Path 6 Personality Inventory (PATH). The sample of individuals who completed the two inventories was comprised of:
 - An equal number of males and females
 - Persons from different educational, socio-economic and racial backgrounds
 - Persons over the age of 16 years
 - Persons whose primary language is English
 - 75% of persons who had previously completed the PATH 3 to 8 years previously.

The summary of the convergent validity and internal reliability testing is shown in the following table:

PATH Factor or Subfactor	DNA Behavior	Convergent Validity of DNA Behavior with PATH	Internal Reliability using Cronbach's Alpha Coefficient
Dominance	Commanding	.71	.82
Extroversion	People	.80	.86
Compassion	Patience	.87	.92
Conscientiousness	Structure	.84	.91
Compassion	Trust	.82	.88
Ambitious	Pioneering	.70	.62
Daring	Risk	.73	.82
Innovation	Creativity	.74	.83

4. From a psychometric measurement basis, each rating item's raw score from the sample participants underwent a norming process to assess its correlation with a primary factor and a sub-factor. The outcome is a population-weighted T-score in the range of 20 to 80 that reflects population relativity, as shown in the **Factor and Subfactor Report**. The number of unique report T-Score combinations is approximately 3,704,945,600,000,000,512,144,136 (circa 4 trillion).
5. The norming of the Discovery adheres to the professional and technical guidance established in the 1999 Standards for Educational and Psychological Testing.
6. The process was repeated in 2013 with 10,000 participants, with no material change to the results. The measurements have now been used with over 3.25 million participants.
7. The Discovery has primarily been deployed in English language across 125 countries. However, it has been successfully deployed in 14 languages without re-adjustment to the underlying scoring.
8. Since 2009, we have monitored the Discovery for Test-Retest validity. In particular, we have monitored the consistency of the T-scores for the participants which is then a reflection of consistency in item selection when answering the questions.

Layout of the Factor and Subfactor Report

1. The ordering of the factors in the current Factors and Subfactors Report is statistical, historical and training-based. The layout is designed to respect psychometric strength while providing understandability and practicality for teaching. Our clients are used to the order of factors and sub-factors.
2. The first five factors (Command, People, Patience, Structure, Trust) are a cluster because they are the primary basis of the ten Unique DNA Styles. They are also the foundation of the Results and Relationships Axis (refer below).
3. There is a high statistical correlation between the traits below so that a person higher on one will likely be higher on the other. The correlation influences the Unique DNA Style model (refer below):
 - Take Charge (High Command) and Fast Paced (Low Patience) – Initiator, Influencer, Strategist Styles
 - Cooperative (Low Command) and Patient (High Patience) – Community Builder and Relationship Builder Styles
 - Outgoing (High People) and Spontaneous (Low Structure) – Engager and Influencer Styles
 - Reserved (Low People) and High Planned (High Structure) – Strategist and Reflective Thinker Styles
4. There is a low positive statistical correlation between the following factors:
 - Outgoing (High People) and Patient (High Patience) – Community Builder Style
 - Patient (High Patience) and High Planned (High Structure) – some Reflective Thinker and Relationship Builder Styles
5. There is a high negative statistical correlation between the following factors:
 - Take Charge (High Command) and Patient (High Patient) – only the Facilitator style has this combination.
 - Outgoing (High People) and Planned (High Structure) – only the Stylish Thinker style has this combination.
6. The Adapter style will generally be middle range on each of the first five factors. However, for an Adapter one of the three bottom factors may be outside middle range.
7. The bottom three factors (Pioneering, Risk and Creativity) are a cluster because they relate to Growth and Stability. These three factors also contribute to determining the Unique DNA Styles. In particular, they statistically correlate with the Take Charge factor, but not necessarily with each other. Overall, the bottom three factors are considered crucial in gaining a comprehensive understanding of a person.

The Trust Factor

1. The Trust factor is a derivative of the first four factors. In serving clients, it could be seen that people with the following four factor combinations were low on Trust – so we decided to measure a separate Trust factor: High on Take-Charge (High Command – Factor 1), High on Reserved (Low People – Factor 2), High on Fast-Paced (Low on Patience -Factor 3) and High on Planned (High Structure – Factor 4).

2. However, to build the Trust factor psychometrically the item choices in the questionnaire mostly followed the Patience factor. So, statistically, the Trust factor is aligned to the Patience factor.
3. The four sub-factors underlying the Trust factor relate to the first 4 factors, e.g., Delegator sub-factor trait relates to Cooperative (Low Command), Open sub-factor trait relates to Outgoing (High People), Approachable sub-factor relates to Patient (High Patience) and Relaxed sub-factor relates to Planned (High Structure).

The Pioneering Factor

1. The Pioneering factor was a new additional factor. In PATH 6, two sub-factors correlated with goal setting, which were obscured by other factors. We believed that it was preferred to have a new factor with three sub-factors to fully reflect the different goal-setting propensities.

Unique DNA Styles:

1. Every participant is given one of 10 Unique DNA Styles. The Unique DNA Styles are statistically based using a combination of a person's T-Scores across the eight primary factors.
2. The Unique DNA Styles provide an overall framework for understanding how a person works, relates, and makes decisions. Nevertheless, no two people with the same Unique DNA Style will be the same, given the possible unique T-score combinations.
3. Given human uniqueness, there are 1286 different combinations of the Unique DNA Style (out of 10 unique styles) and the top two trait scores (out of 16 traits, being the left and right side of each of the 8 factors). Furthermore, there are 225 different combinations or ways that the 8-factor T-scores measure above or below 50.
4. We have limited the number of Unique DNA Styles used to 10 for training and memorability purposes.

Results and Relationships

1. The two dimensional model of results versus relationships is primarily statistical. In general, 40% of people are results-driven and 40% are relationship-driven. The remaining 20% share some of both behavioral propensities, or can more easily adapt.
2. We developed the model as a simple way to explain how people differ in their approaches to work, relationships, and decision-making, particularly, for leadership, building teams and serving clients. **The model is heavily explained in our book: DNA Behavior Leadership.**
3. Furthermore, we have a Team Member and Advisor Client Match tool in the DNA Web App that utilizes algorithms based on the Results and Relationships model.

4. Overall, the Results-Driven people are: High on Take Charge, Reserved, Fast Paced and Planned. These people are also more Skeptical (Low Trust).
5. Then, the Relationship Driven people are: High on Co-operative, Outgoing, Patience and Spontaneous. These people are more Trusting (High Trust).

Behavioral Insights:

1. Based on the DNA Discovery psychometric measurements, DNA Behavior has so far identified over 4,000 separately measurable behavioral and financial insights. Further, we have identified over 2,800 marketing and sales and insights. The insights draw on combinations of the factor and sub-factor T-scores. The types of insights include:
 - Talents
 - Financial Behavior (including behavioral biases)
 - Communication and Learning Style
 - Leadership
 - Teams
 - Sales talents
 - Coaching
 - Entrepreneurship
 - Work and career role benchmarks (SOC codes)
 - Gig role benchmarks
 - Risk management
 - Family
 - Planned Giving
 - Ministry Stewardship
 - Sports

Commercial experiences and needs drive the identification of the behavioral and financial insights. Over time, we expect to identify and measure further insights.

Learned Behavior Discovery Assessments:

The Learned Behavior Discovery Assessments that are available for deployment are:

1. Quality Life Planning Discovery
2. Quality Life Performance Discovery
3. DNA Behavior Goals Discovery
4. Financial DNA Learned Behavior Discovery
5. Money Energy Discovery
6. The Quantum Leap Capacity Discovery
7. Organizational Energy Discovery
8. Money Energy Opportunities Discovery
9. Family Continuity Discovery
10. Leadership Performance Discovery

11. Advisor Performance Discovery
12. Sales Performance Discovery
13. Employee Performance Discovery
14. Entrepreneurial Performance Discovery

Learn More:

- Learn more about the DNA Behavior Psychometric Methodology at:
www.dnabehavior/start
- Key Documents to Review:
 - DNA Natural Behavior Validation
 - DNA Behavioral Discovery Product Outline
 - Forced Choice Assessment Model Methodology
 - DNA Behavioral Product Comparison Study
- Learn more about the DNA Science at:
<https://kb.dnabehavior.com/gene/knowledge#dna-science-101>

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