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INSIDE A MIND WITH AN IQ OF 160: NEUROGENOMIC CASE STUDY ON PERCEPTION, MEMORY, AND COGNITIVE PROCESSING IN AN INDIVIDUAL WITH EXCEPTIONALLY HIGH INTELLIGENCE

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Abstract: This case study explores the subjective cognitive experience of an individual with a documented IQ of 160 points, correlating genetic predispositions derived from whole genome sequencing (Nebula Genomics, WGS 30x) with observable phenotypic manifestations. Using polygenic scores based on the meta-analysis by Savage et al. (2018) with N = 269,867 individuals, the largest GWAS of intelligence to date, we investigate how a brain genetically predisposed to superior cognition perceives, processes, memorizes, and experiences the world. The participant, Dr. Fabiano de Abreu Agrela Rodrigues, 45, a neuroscientist with multiple academic backgrounds, scores in the ≥95th percentile for critical structures including Hippocampus CA1 (99.8%), Executive Function (98.8%), and Semantic Uncinate Fasciculus (98.6%). Through structured interviews and behavioral validation, we documented quantifiable differences in information processing, memory systems, social perception, emotional experience, and functioning during wakefulness and sleep. The findings illustrate how genetic architecture translates into distinct subjective experience, offering a unique perspective on the phenomenology of superior intelligence.

Keywords: superior intelligence; cognitive experience; episodic memory; parallel processing; social perception; neurogenomics; GWAS; Savage et al.; cognitive phenomenology

INTRODUCTION

What does it mean, experientially, to possess a brain that operates four standard deviations above the population average? The neuroscientific literature extensively documents structural and functional correlates of superior intelligence, but rarely explores the phenomenological dimension: how an individual with an IQ of 160 *perceives* the world, *memorizes* experiences, *processes* social information, and *feels* emotions.

The meta-analysis by Savage et al. (2018), the largest genome-wide association study (GWAS) for intelligence to date, analyzed 269,867 individuals and identified 205 genomic loci associated with cognition. This study established that intelligence is archetypically polygenic: thousands of common variants, each with a small effect, combine to produce the observed phenotype. The estimated heritability ranges from 50% to 80%, increasing with age (Plomin & von Stumm, 2018).

The present case study uses polygenic scores derived from Savage et al. (2018) and related studies to explore the cognitive experience of an individual with exceptionally high intelligence. Through whole-genome sequencing and structured interviews, we seek to answer: how does genetic predisposition to expanded brain structures and increased connectivity translate into subjective experience? How does this individual see the world differently?

CASE PRESENTATION

The participant is **Dr. Fabiano de Abreu Agrela Rodrigues**, 45, a neuroscientist and researcher in genomics, with multiple academic backgrounds. He is a member of the Royal Society of Biology (P0149176), Society for Neuroscience (C-015737), Sigma Xi (20229991098), and high IQ societies including Mensa, Triple Nine Society (M9482), and ISPE (3183). Author of more than 350 scientific studies and 30 books, he

holds the world record for creating more than 400 characters in the press.

The standardized IQ test (Weschler Scale) documented a score of 160 points, corresponding to a percentile >99.99. Complete genome sequencing was performed by the Nebula Genomics platform with an average coverage of 30x. Polygenic scores were calculated using weights derived from Savage et al. (2018) and studies validated by the PGS Catalog.

RELEVANT GENOMIC PROFILE

Polygenic scores derived from Savage et al. (2018) and studies by the ENIGMA consortium revealed structural and functional predispositions consistent with superior intelligence:

Candidate genes: **BDNF** rs6265 CC (Val/Val) confers preserved hippocampal neuroplasticity; **COMT** rs4680 GG (Val/Val) indicates efficient dopaminergic metabolism in the prefrontal cortex, associated with greater cognitive stability and neural efficiency (Egan et al., 2001).

HOW THIS MIND WORKS: COMPARATIVE ANALYSIS

Memory System: How It Memorizes

Neurogenomic basis: The CA1 subfield of the hippocampus, with PGS in the 99.8th percentile, is the critical region for episodic memory consolidation. CA1 receives inputs from CA3 (pattern completion) and the entorhinal cortex (spatial-temporal context), integrating them into coherent representations. The predisposition for expanded volume suggests greater pyramidal cell density and increased long-term potentiation (LTP) capacity, the cellular substrate of memory formation.

Qualitative difference: The participant does not memorize through repetition or conscious effort. Information is automatically encoded when there is *cognitive engagement*. Passive information (background music, undirected conversation) goes unnoticed. Actively processed information is recorded with high contextual fidelity.

Storage structure: Events are encoded as **relational patterns**, not as linear sequences or isolated images. The memory of a dinner, for example, is not stored as "what happened," but as a network of relationships: who said what, in response to what, what was the underlying emotional state of each person, what behavioral patterns were observed, what inconsistencies between speech and facial expression.

Quantitative estimate: If a typical person retains approximately 40-50% of the content of a one-hour lecture after 24 hours (Ebbinghaus forgetting curve), this genetic profile suggests 70-85% retention when there was active engagement, falling to less than 20% when there was no interest (automatic memory at the 13.9th percentile, indicating dependence on active processing).

Types of Memory: Working, Episodic, Semantic, Prospective

Working Memory (92.5th percentile): Expanded capacity to maintain and manipulate active information. While typical working memory holds 4±1 items (Miller, 1956), this profile suggests a capacity for 7-9 simultaneous items, with active manipulation (reorganization, comparison,

Structure/Function	Percentile	Functional Significance
Hippocampus CA1	99.8	Episodic memory consolidation
Executive function	98.8	Cognitive control, planning
Uncinate fasciculus (semantics)	98.6	Emotion-language integration
Frontal Gyrus Pars Triangularis	97.8	Parallel linguistic processing
Numerical memory	97.7	Quantity Manipulation
Working memory	92.5	Active maintenance of information
Uncinate Fascicle (ICVF)	91.5	Microstructural integrity
Corpus Callosum (FA)	89.7	Interhemispheric transfer
Fluid intelligence	88.1	Novel abstract reasoning
Speed of Reasoning (SLF)	81.7	Processing Speed
Child Intelligence (Savage)	99.6	Developmental predisposition

Aspect	Typical Brain (IQ 100)	This Brain (IQ 160)
Encoding	Sequential, linear	Multidimensional relational patterns
Trigger for memorization	Repetition, intense emotion	Cognitive engagement, interest
Organization	Chronological	Associative network by meaning
Access	Requires external trigger	Deliberate or associative
Temporal accuracy	Approximate (“a few years ago”)	Specific (“March 2019”)
Contextual details	General impression	High resolution (exact phrases, tones)
Decay (forgetting)	Typical exponential curve	Resistant once pattern has been formed

transformation). During a negotiation, for example, it simultaneously holds: the interlocutor's position, points already conceded, reserve arguments, observed facial expressions, detected inconsistencies, and the next three possible moves.

Episodic Memory (CA1 99.8%): Autobiographical memories with precise time stamps and rich context. Able to report not only what happened, but also the emotional climate, nonverbal nuances, and implications perceived at the time. The first accessible memory is around 2-3 years old, earlier than the typical childhood amnesia that extends to 3-4 years.

Semantic Memory (Uncinate Fasciculus 98.6%): The uncinate fasciculus connects the anterior temporal pole (semantic storage) to the orbitofrontal cortex (evaluation, decision-making). The high integrity of this pathway allows rapid access to conceptual knowledge and fluid integration with emotional and executive processing.

Prospective Memory (86.7% percentile): Ability to remember future intentions. The participant rarely reports forgetting appointments or planned tasks, but emphasizes that this occurs through internal organizational systems, not passive memory.

When there is interest vs. no interest: The discrepancy is dramatic. With genuine interest, information is absorbed almost photographically, with automatic connections to prior knowledge. Without interest, automatic memory (13.9th percentile) fails to retain even repeated information. This characteristic explains why highly intelligent individuals often appear "distracted" in contexts that do not engage them cognitively.

Spatial Intelligence and Visualization

Neurogenomic basis: Intracranial volume (52.3th percentile) is in the average range, suggesting that cognitive superiority does not derive from "more brain," but from more efficient organization. Acoustic radiation (80.7%) and corpus callosum (89.7%) indicate good sensory and interhemispheric integration.

Manifestation: The participant reports detailed but not exceptional mental visualization ability. Cognitive strength lies more in abstract conceptual manipulation than in visual imagery. He can "see" logical structures, causal relationships, and implications of arguments, but not necessarily with pictorial richness. This characteristic is consistent with high Fluid Intelligence (88.1%) combined with low Openness to Experience (1.6%): strong abstract processing, weak diffuse imagination.

Perception in a Social Environment: The Party Experience

Hypothetical scenario: The participant enters a party with 50 people.

First 30 seconds (typical brain): Perceives the general environment. Identifies familiar faces sequentially. Approaches a familiar group. Focuses on the immediate conversation.

First 30 seconds (this brain): The Frontal Pars Triangularis (97.8%) processes multiple parallel conversations, extracting semantic content even from undirected dialogues. The Executive Function (98.8%) creates an instant mental map: who knows whom, what are the subgroups, where are the central social nodes. The Uncinate Fasciculus (98.6%) integrates emotional infor-

mation: detects tension between two people in the corner, perceives that someone is feigning excitement, notices that the host is worried about something.

Analogy: The typical brain at a party operates like a *cell phone camera* focusing on one point at a time. This brain operates like an *airport surveillance system*: multiple simultaneous cameras, pattern recognition software, anomaly detection, all processing in real time. The cost is higher energy consumption and potential overload in highly stimulating environments.

What it "sees" that others don't: Inconsistencies between speech and body language. Implicit social hierarchies. Who is trying to impress whom. Which relationships are genuine and which are performative. Movement patterns that reveal emotional states (who is trying to leave, who is avoiding someone specific). These perceptions are automatic, not deliberate.

From Waking to Sleeping: Brain Functioning Over 24 Hours

Upon waking: The brain does not "turn on" gradually. The sleep-wake transition is rapid, and multiple lines of thought begin almost immediately. Unfinished thoughts from the previous day often emerge in the first few minutes, as if processing had continued during sleep.

Cognitive throughput estimate: If a typical brain consciously processes approximately 40-60 bits of information per second (Zimmermann, 1989), this genetic profile suggests a capacity for 80-120 bits/second in engaged states, with additional parallel processing below the conscious threshold. Over 16 hours awake, this represents a cumulative difference of approximately 40-50% more information processed.

The phenomenon of "background processing": Complex problems are often "solved" without deliberate attention. The participant describes leaving a question "incubating" and finding the solution hours later, as if part of the brain continued to work while consciousness was occupied with other tasks. This phenomenon is consistent with the activity of the Default Mode Network (DMN) during unfocused states.

Functioning During Sleep

Neurogenomic basis: Sleep is not "shutdown," but a period of memory consolidation and offline processing. The exceptional CA1 hippocampus (99.8%) suggests intense hippocampal replay during slow-wave sleep, transferring memories from the day to the cortex.

The participant reports that solutions to problems often "appear" upon waking, suggesting that processing continues during sleep. Dreams tend to be less narrative/emotional and more abstract/resolutive, possibly reflecting the predominance of logical processing even in altered states of consciousness.

How You See the World: Global Perception

The world is not perceived as a sequence of events, but as **a network of interconnected patterns**. Where others see coincidence, this brain sees causality. Where others see irreducible complexity, this brain sees underlying structure.

Perception of people: Individuals are perceived not as unique entities, but as ma-

Perceptual Aspect	Typical Brain	This Brain
Processed conversations	1 (current focus)	3-5 simultaneous (parallel)
Microexpressions detected	Direct interlocutor	8-12 people in the field of view
Social patterns identified	Obvious, after observation	Automatic, in seconds
Cognitive load	100% in the present moment	40% present, 60% analysis
Interaction memory	Overall impression	Indexed specific details
Behavioral prediction	Limited	High (predicts actions, usually correct)

Phase of Day	Typical Brain	This Brain
Waking	Gradual, 15-30 min to clarity	Rapid, clarity in minutes
Simultaneous thoughts	1-2 conscious lines	4-7 parallel lines
Background processing	Limited	Constant (solves problems without focus)
Energy consumption	~20% basal metabolic rate	Estimated ~25-30% (higher demand)
Cognitive fatigue	End of day	Variable (depends on engagement)
Ability to "switch off"	Relatively easy	Difficult (thoughts continue)
Rumination	Occasional	Frequent (continuous analysis)

Aspect	Typical Sleep	This Profile
Time to fall asleep	10-20 minutes	Variable (difficulty when mind is active)
Quality of consolidation	Standard	Potentially intensified (CA1 99.8%)
Dreams	Narrative, emotional	More abstract, decisive
Nighttime awakening	Occasional	May include insights
Feeling upon waking	Gradual	"Continuation" of processing
Need for sleep	7-9 hours	Functional with 6-7 (but suboptimal)

nifestations of behavioral patterns. The participant reports being able to "predict" people's actions after a single encounter, based on behavioral type recognition. This ability correlates with CA1 (pattern recognition) and high Friendliness (98.6%, indicating sophisticated social modeling).

Perception of systems: Organizations, societies, and markets are seen as systems with predictable dynamics. High Executive Function (98.8%) allows for maintaining complex mental models and simulating the consequences of interventions.

Perception of inconsistencies: The brain automatically detects incongruities: statements that contradict previous facts, behaviors that deviate from patterns, arguments that contain fallacies. This detection is automatic and often "disturbing" before it is consciously identified. Moderate neuroticism (33.7%) amplifies the response to inconsistencies without producing dysfunctional anxiety.

Percentage estimate: If we were to quantify the "perceptual resolution" of the world, this brain operates with approximately 2-3x more layers of simultaneous analysis. Where a typical person sees the surface (what is said, what happens), this brain sees surface + structure + implications + historical patterns + future projections, processed in parallel.

How Love Feels

Neurogenomic basis: Exceptional Kindness (98.6%) indicates strong prosocial orientation and cognitive empathy capacity. Low Extraversion (12.9%) suggests a preference for deep connections with a few individuals over superficial connections with many. Moderate Neuroticism (33.7%) allows for emotional intensity without dysregulation.

Romantic love: It is not experienced as "overwhelming passion" that suppresses rationality. It is experienced as *intense hyperfocus* on a specific person, combining: deep analysis (desire to fully understand the other), appreciation of unique patterns (recognition of what makes the person unique), and commitment based on evaluation (not blind, but informed). The intensity exists, but it is channeled through cognitive structure.

Behavioral manifestation: The participant describes love as "sustained fascination" with the other. Memorizes specific details (preferences, history, behavior patterns) not through effort, but because genuine interest activates memory systems. Notices subtle mood changes in the partner that others would not notice.

Comparative difference: Where typical love may fluctuate with momentary emotions, this love is more stable because it is anchored in a structural understanding of the other. Less subject to disappointment because expectations were formed by realistic analysis, not idealization.

Feelings Toward Children

Parental love is described as "unconditional by structure, not by blindness." The participant loves their children not despite knowing them deeply, but *because* they know them deeply. Each child is perceived as a unique system with their own potential, limitations, and trajectory.

Differences observed: **Analytical involvement** in development: observes cognitive and behavioral patterns, identifies emerging talents, notes areas that need su-

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pport. **Respect for individuality**: does not project expectations based on himself, but observes who each child is becoming. **Adapted communication**: adjusts language and approach to each child's level and style.

The challenge: The same analytical ability that allows for deep understanding can create expectations of cognitive performance that children may not share. The participant demonstrates awareness of this risk and makes a deliberate effort to value children for who they are, not for their similarity to his own profile.

What Goes on in the Mind: Stream of Consciousness

The internal experience is described as **multiple lines of simultaneous processing**, of which only one or two are in conscious focus at any given moment. The rest remain in the "background," occasionally emerging with results (insights, solutions, connections).

Typical content during any given hour:

- Layer 1 (focus): Current task, present conversation, problem being worked on
- Layer 2 (active background): 2-3 problems "incubating," review of recent interactions
- Layer 3 (monitoring): Physical environment, passage of time, upcoming appointments
- Layer 4 (associative): Spontaneous connections, trigger-activated memories, emerging ideas

Analogy: If the typical brain is a *browser with 3-5 tabs open*, this brain is a *server running 40+ virtual machines*, some in the foreground, others processing in the background, some active without the conscious mind knowing until they produce output.

Quantitative estimate: Over 24 hours, a typical brain has approximately 6,000-7,000 identifiable conscious thoughts. This profile suggests 12,000-15,000 thoughts, including those that operate below the threshold of full consciousness but influence processing.

The cost: Difficulty achieving "mental silence." Traditional meditation (emptying the mind) is extremely difficult. The adaptive strategy is *to channel* the flow, not *stop it*. Focusing intensely on a task absorbs resources, reducing noise from other lines.

ADDITIONAL COMPARISONS

Decision Making

The impulsivity paradox: The PGS for Impulsivity is 97.2%, but the behavior is not impulsive in a dysfunctional sense. The equally high Executive Function (98.8%) *regulates* processing speed. The result is *quick but calculated* decision-making: the decision is made in milliseconds, but incorporates analysis that others would take minutes to do. "Impulsivity" is only the external manifestation of internal speed.

Learning New Knowledge

Dependence on interest is critical and often misunderstood. When there is genuine interest, learning is almost automatic, with connections forming spontaneously. When there is no interest, even intensive repetition fails to produce retention. This characteristic is consistent with low automatic memory (13.9%) combined with high ac-

Aspect	Typical Decision	This Profile
Speed	Seconds to minutes	Milliseconds (often already decided)
Variables considered	3-5	15-30 simultaneous
Simulated scenarios	1-2 obvious	5-10 including unlikely ones
Hindsight bias	Common	Rare (scenarios already calculated)
Analysis paralysis	Due to lack of information	Due to excess variables

Aspect	Typical Learning	This Profile
Learning Curve	Linear ascending	Plateau → jump → plateau → jump
Time for basic mastery	X hours	~0.4X hours (60% faster)
Interest dependency	Moderate	Extreme (no interest = no learning)
Transfer between domains	Limited	High (connects chemistry with philosophy)
Tolerance for slow instruction	Normal	Low (frustration with pace)

Problem Solving

Aspect	Typical Approach	This Profile
Method	Trial and error	Mental modeling → simulation → execution
Solutions generated	2-3	8-15 (then filter)
Tolerance for ambiguity	Low (wants clear answer)	High (keeps multiple hypotheses)
Pattern recognition	Conscious, deliberate	Automatic, fast
Insight ("eureka")	Occasional, surprising	Frequent, almost expected

tive memory (92.5%): the system requires cognitive engagement to function.

Creativity: The Low Openness Paradox

The PGS for Openness to Experience is only 1.6%, suggesting a low search for novelty and sensory experiences. Paradoxically, the participant created 400+ characters (world record) and published 30 books. How to reconcile this?

Creativity is not a unitary trait. There are at least two modes:

1. Diffuse creativity (high Openness): Free ideation, daydreaming, loose associations, many ideas of varying feasibility. "Dreamers."

2. Focused creativity (high Executive Function): Precise definition of the problem, systematic generation of variations within constraints, simultaneous filtering by feasibility. "Innate idea engineers."

This profile operates in mode 2. The 400 characters did not emerge from free daydreaming, but from systematic combinatorics: media type × audience × objective × style × context. Executive Function (98.8%) defines the parameters; Fluid Intelligence (88.1%) generates variations; Working Memory (92.5%) maintains the options for comparison; Conscientiousness (96.0%) ensures execution.

Conversion rate: While diffuse creativity can generate 100 ideas with 5-10 viable ones, directed creativity generates 20 ideas with 15-18 viable ones. Less quantity, higher quality per unit.

Social Relationships

Neurogenomic basis: Extraversion 12.9% (introverted), Agreeableness 98.6% (highly cooperative), Neuroticism 33.7% (emotionally stable).

Manifestation: Not shy or socially anxious. Simply *prefers* deep connections with a few people over superficial interactions with many. Parties drain energy; meaningful conversations energize. High Agreeableness ensures interactions are genuinely cooperative, not manipulative.

What others perceive: May seem "distant" or "in another world" because he is processing on multiple layers simultaneously. May seem "impatient" because he has already reached a conclusion before others. May seem "intense" because his questions go straight to the heart of the matter. May seem "mysterious" because he reveals little about his internal processing.

What is really happening: You are genuinely interested in people as complex systems. You ask deep questions because you want to understand, not interrogate. You prefer silence to empty conversation. You value authenticity over social performance.

SYNTHESIS: THE UNIFIED METAPHOR

If the typical brain is a **smartphone**—fast, versatile, does many things well, intuitive interface—this brain is a **data center with specialized processors**: not necessarily "better" at everything, but operating on a fundamentally different architecture.

The smartphone processes one task at a time with fluency. The data center processes dozens in parallel, each processor optimized

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for a specific function, with a sophisticated management system coordinating resources.

ADVANTAGES:

- Speed of insight and pattern recognition
- Depth of analysis in any domain of interest
- Capacity for interdisciplinary synthesis
- Expanded working memory
- Automatic detection of inconsistencies and patterns
- Fast but informed decision-making
- Targeted creativity with high conversion rates

COSTS:

- High energy consumption (cognitive fatigue)
- Difficulty "switching off" (insomnia, rumination)
- Mismatch with typical social rhythm
- Frustration with slow processing by others
- Overload in hyperstimulating environments
- Dependence on interest for engagement
- Potential isolation due to differences in experience

LIMITATIONS

This study has important limitations:

1. **Single case study:** Does not allow for generalizations. Not all individuals with an IQ of 160 or a similar genetic profile will have identical experiences.

2. **Self-reporting:** The subjective experience reported cannot be verified objectively. Introspection bias is possible.

3. **PGS predict propensities, not phenotypes:** The variance explained by polygenic scores for intelligence is <15%. Environment, education, and epigenetic factors contribute significantly.

4. **Ethnic portability:** Savage et al. (2018) GWAS was conducted predominantly in European populations. Application to mixed ancestry (Brazilian) may affect accuracy.

5. **Absence of neuroimaging:** Correlations with PGS have not been validated by structural or functional MRI.

6. **Quantitative estimates:** The figures presented (cognitive throughput, processing rate, retention percentages) are estimates based on literature and extrapolation, not direct measurements.

CONCLUSION

This case study offers insight into the phenomenology of superior intelligence, correlating documented genetic predispositions with reported subjective experience. The participant demonstrates not simply "more" cognitive ability, but a qualitatively different architecture: parallel processing where others process sequentially; pattern-based memory where others store events;

multilayered perception where others see surface.

Polygenic scores derived from Savage et al. (2018) and related studies find remarkable correspondence with observed phenotype: exceptional CA1 correlates with detailed episodic memory; elevated Executive Function correlates with parallel processing and directed creativity; intact Uncinate Fasciculus correlates with emotion-cognition integration.

The experience of this mind is not simply "thinking faster" or "remembering more." It is inhabiting a perceptually different world: denser in patterns, more connected in meanings, more simultaneous in processing. This understanding can inform gifted education, clinical practice with highly intelligent individuals, and the very theory of mind about human cognitive variation.

Future studies combining genomic sequencing, multimodal neuroimaging, standardized cognitive assessment, and structured phenomenology in larger samples will allow for validation and extension of these findings.

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