NEUROECONOMICS

BEFORE YOU BEAT THE MARKET

IDNA – Investor DNA Assessment





Smirnova, Sophie

2nd Baccalaureate

Research Project

January 2026

The investor's chief problem—and even his worst enemy—is likely to be himself.

— BENJAMIN GRAHAM

Abstract

Investing is commonly viewed as a niche field reserved for elite businesspeople with life-long knowledge and experience in the market. It is widely believed that in order to benefit from investing one must know complex strategies or analyses from the field. But what if I told you that there is only one thing stopping you–only one thing you must truly master to obtain long-term success–*yourself*. This research project challenges the hypothesis that one needs in-depth knowledge to invest successfully. It explores fields such as behavioral finance and psychology to learn what really drives human behavior when it comes to money and how one can become aware of such tendencies. Through extensive research, this project helped develop an online assessment tool in the form of a website–the IDNA *(Investor DNA Assessment)*. A tool which helps you recognize which behavioral biases rule your decision making and how those prevent you from achieving your goals. Finally, this research proves anyone could take up investing at any age, with or without experience. Lastly, this project questions the reader himself, and motivates him to research his own self. So, what are you waiting for, *Reader*?

Resum

El món de les inversions es considera habitualment un àmbit especialitzat reservat a gent de negocis amb anys de coneixements i experiència en el mercat. Es creu que, per beneficiar-se de les inversions, cal dominar estratègies o anàlisis complexes pròpies d'aquest àmbit. Però, i si et digués que només hi ha una cosa que et frena —només una cosa que realment has de dominar per assolir un èxit financer a llarg termini—*tu mateix*? Aquest projecte de recerca qüestiona la hipòtesi que cal tenir coneixements profunds per invertir amb èxit. Explora àmbits com les finances conductuals i la psicologia per entendre què impulsa realment el comportament humà quan es tracta de diners i com podem prendre consciència d'aquestes tendències. A través d'una recerca extensa, aquest projecte ha permès desenvolupar una eina d'avaluació en línia en forma de lloc web: l'IDNA *(Investor DNA Assessment)*. Una eina que ajuda a identificar quins biaixos conductuals influeixen en la teva presa de decisions i com aquests poden impedir-te assolir els teus objectius. Finalment, aquesta recerca demostra que qualsevol persona pot començar a invertir a qualsevol edat, amb experiència o sense. En darrer terme, aquest projecte interpel·la el mateix lector i l'anima a conèixer-se i investigar-se a si mateix. Així doncs, a què estàs esperant, *Lector*?

Resumen

El mundo de las inversiones se considera habitualmente un campo especializado reservado para personas de negocios con años de conocimientos y experiencia en el mercado. Existe la creencia generalizada de que, para beneficiarse de las inversiones, es necesario dominar estrategias o análisis complejos propios de este campo. Pero ¿y si te dijera que solo hay una cosa que te lo impide —solo una cosa que realmente debes dominar para alcanzar el éxito financiero a largo plazo—*tú mismo*? Este proyecto de investigación cuestiona la hipótesis de que es necesario tener conocimientos profundos para invertir con éxito. Explora campos como las finanzas conductuales y la psicología para comprender qué impulsa realmente el comportamiento humano cuando se trata del dinero y cómo podemos ser conscientes de estas tendencias. A través de una investigación extensa, este proyecto ha permitido desarrollar una herramienta de evaluación en línea en forma de página web: el IDNA *(Investor DNA Assessment)*. Una herramienta que ayuda a identificar qué sesgos conductuales influyen en tu toma de decisiones y cómo estos pueden impedirte alcanzar tus objetivos. Finalmente,

esta investigación demuestra que cualquier persona puede empezar a invertir a cualquier edad, con experiencia o sin. En última instancia, este proyecto interpela al propio lector y le anima a conocerse e investigarse a sí mismo. Entonces, ¿a qué estás esperando, *Lector*?

Index

Introduction **7**
Glossary **8**
Chapter I–The birth of investing **10**
Where it all began 11
Investing vs speculation 13
An aside on how a trade happens 14
The perfect investor 16
Chapter II–The psychology of money **21**
The seven deadly sins 21
Greed 21
Envy 22
Ego 23
Overconfidence 23
Fear 24
Impatience 25
Narrative fallacy 26
Risk and luck 26
The dangers of the Internet 28
Chapter III–Behavioral finance **31**
Behavioral biases 31
Dual-Process Theory 33
Chapter IV–Let's harvest some fruits **35**
How to build your portfolio? 35
Ethics and morals 37
Chapter V–Before you beat the market **38**
Practical part–a tool for investors 38
The compounding paradox 38
The IDNA 39
The making of IDNA 57
Conclusion **59**
Bibliography **60**

Introduction

According to Benjamin Graham—the father of value investing—"An investment operation is one which, upon thorough analysis, promises safety of principal and an adequate return". In other words, investing is the process of committing money to assets in hopes of generating a profit. Among young people my age, it's a rather niche topic. As a seventeen-year-old myself, I wasn't particularly interested in investing until none other than social media brought it upon me. In this digitalized day and age, it is undoubtedly the case that you yourself, *Reader*, have been exposed to numerous—often misleading—ads and all kinds of "investment guides" online. They all dance around the same idea—becoming a highly profitable investor in as little as a day. Nevertheless, if investing were as simple as adhering to a specific set of strategies, instructions, or analyses, wouldn't we all be rich or wealthy? This particular observation piqued my interest in this topic.

According to columnist Morgan Housel—author of *Psychology of Money*—the most important factor in investing is your behavior. He argues that financial success is not about how smart you are or what you know, but rather about how you act and manage your emotions over time. Having read his book, I wondered how much weight our personality has on our daily decisions. "*Who am I*?"—a question that followed the stream of my thoughts and brought me to the **main question** of this research project: **How do behavioral biases affect our investment decisions?** My **initial hypothesis** went as follows: **Although behavioral biases influence our investment decisions, they still carry less weight than strategies and analyses.**

Pursuing this question is not the only goal of my research project. Not only am I looking to dive deeper into the enigmatic area of finance that investing is, but I'm also looking forward to building a community of young people who are also intrigued by this field. My goal is to open these doors to young people and help them set off into their investing journey by learning investment strategies based on their behavioral biases. Moreover, I'll tackle disinformation online, self-improvement, self-discovery, and responsible economic growth (Goals 4 (quality education) and 8 (decent work economic growth) of the 17 United Nations Goals).

One of my main goals, thus, is to learn about myself—my own behavioral biases—and help others do the same. "Who am I?" I still ask myself.

And who are *you*, Reader?

Glossary

In this abstract you will find terms that are crucial to understanding what investing is. These terms are listed in chronological order as to their appearance in the text. It is highly recommended to consult the glossary as the text is read.

Broker[1] *(noun)*
An entity (firm or individual) that acts as an intermediary between a trader and an exchange. In other words, in order to buy a company's share, you must first contact a broker who will do that for you, charging a fee.

Share[2] *(noun)*
A share represents ownership in a company, giving investors the right to earn dividends and take on a portion of any losses. To set an example, if you were to buy a share worth 1000€ with a dividend of 2%, the company would pay you 20€. Companies can pay you monthly, quarterly (four times a year), semiannually or annually, depending on the company. Investing in shares allows the company to use your money for their own purposes.

Initial Public Offering (IPO)[3] *(noun)*
The first time a private company sells its shares to the general public to raise money.

Dividend[4] *(noun)*
A portion of a company's profit paid out to its shareholders (investors) as a reward for owning a share. It is usually represented in a percentage (called interest rate).

Trading[5] *(noun)*
The buying and selling of financial assets (like shares) to make a quick profit from price changes. Unlike investing, which is long-term, trading involves short-term, frequent transactions.

Stock[6] *(noun)*
A stock (also known as equity or a share) is a tiny slice of ownership in a company. When you buy a stock, you become a partial owner, or shareholder, meaning you own a small fraction of that business. If the company grows or makes profits, your stock can increase in value, allowing you to profit, though you risk losing money if the company performs poorly.

Stock Exchange[7] *(noun)*
A stock exchange is a regulated, organized marketplace—often an electronic platform—where buyers and sellers meet to trade shares of publicly listed companies. It acts as a "stock supermarket" ensuring fair pricing, transparency, and safety in trading.

Bond[8] *(noun)*
While stocks represent part ownership in a company, bonds represent a loan–a promise to repay any borrowed money, along with a set amount of interest. They are usually issued by governments or big companies.

Intrinsic Value[9] *(noun)*

Intrinsic value is the true, fundamental worth of an asset based on its actual earning power and assets (what something is truly worth), rather than its fluctuating market price (what others are willing to pay for it at a given moment).

Stock Index[10] *(noun)*
A stock index is a "scoreboard" that measures the performance of a specific group of stocks, acting as a snapshot of the overall market or a particular sector. Instead of tracking thousands of companies individually, investors use indices like the S&P 500 or Dow Jones to instantly know if the market is going up or down.

Portfolio[11] *(noun)*
A collection of financial assets—like stocks, bonds, cash, and real estate—owned by an individual or organization to grow their wealth over time. Instead of holding just one investment, a portfolio spreads risk across different assets.

Securities[12] *(noun)*
A security is a tradable financial asset. The term commonly refers to any form of financial asset.

Shareholders[13] *(noun)*
A shareholder (or stockholder) is an individual, company, or institution that owns at least one share of a company's stock.

Market capitalization[14] *(noun)*
Market capitalization, more colloquially called market cap, is the total value of a company's outstanding shares (shares held by shareholders) on the stock market. Market Cap = Per Unit Share Price x Total Number of Shares.

Investment fund[15] *(noun)*
An investment fund is a pool of money collected from many investors to buy a diversified portfolio of securities (like stocks, bonds, or real estate) managed by a professional.

Hedge fund[16] *(noun)*
A hedge fund is a private, actively managed investment fund that pools money from wealthy investors or institutions to use complex, high-risk strategies to generate high returns, regardless of whether the market goes up or down. They have little regulation and are not available to the general public.

Mortgage[17] *(noun)*
A mortgage is a long-term loan used to buy a home or land. You borrow money from a lender (like a bank) and pay it back with interest over a set period, typically 15 to 30 years. The property (your home or land) itself acts as collateral for the debt, which means that if payments fail, the lender (the bank) can take the property.

Net worth[18] (*noun*)
Net worth is simply everything you own (cash in bank accounts, investments (stocks, retirement funds), the market value of your car, etc.) minus everything you owe (mortgages, student loans, credit card debt, etc.).

Chapter I

The birth of investing

Where it all began

In order to understand what investing truly is, we must take a leap back into the past.



Figure 1 – The Code of Hammurabi

The birth of investing dates back to 1700 BC, in the ancient city of Babylon (modern-day Iraq), which was governed by King Hammurabi. Back in his day, King Hammurabi–the sixth king of the First Babylonian Dynasty–proclaimed a certain set of rules or laws to unify his empire. And so was the birth of the **Code of Hammurabi**–282 laws inscribed upon a 2,25-meter slate that featured the principles of justice, social hierarchy, and commercial law. For instance, law 102 states: "*If a merchant entrusts money to an agent (broker[1]) for some investment, and the broker suffers a loss in the place to which he goes, he shall make good the capital to the merchant*", meaning that if a merchant entrusted his money to someone who happened to lose said amount of money, he was obligated to make up for his loss. Nevertheless, law 103 then follows: "*If, while on the journey, an enemy takes away from him anything that he had, the broker shall swear by God and be free of obligation."* These statements clearly document how merchants would supply capital for an agent to trade and how consequently the profits would be shared and the losses accounted for.

However, investing as we know it only appeared in the 17th century–the golden age of maritime trade. In this day and age, maritime trade is fairly safe, yet back in the 17th century, it was an operation that implied substantial risk. The Age of Discovery brought about dangerous voyages all over the globe and thus advanced shipbuilding, which required nothing other than money. And so was the birth of–this time–the **Dutch East India Company**, or VOC for short. VOC traded spices in Asia and was in need of funding for the hazardous and challenging voyages. And so, in 1602, it was the first company to ever introduce public share[2] ownership through the world's first recorded Initial Public Offering (IPO[3]). In other words, for the very first time, the public could chip in their money to help fund high-risk maritime travels and thus receive a high reward if the ship were to be successful.

In its early years, VOC paid out their dividends in the spices themselves, namely pepper, mace, and nutmeg, since the company didn't have enough liquidity to pay their shareholders. Nevertheless, once the company's cash flow stabilized, the VOC paid an average annual dividend[4] of roughly 18%. In its peak years, such as 1669, this spiked as high as 40% of the original investment. To set an example, an investor who put 100 guilders* into the 1602 IPO and reinvested their dividends would have seen that investment grow to over 24,000 guilders by 1671.

* Former currency used in the Netherlands, Germany and Austria. As of 2026, 100 guilders is roughly equivalent to $5,800-$6,200, whereas 24.800 guilders is roughly equivalent to $1.4 million-$1.6 million.

As we sail away from the VOC, we find ourselves in the Industrial Revolution (18th-19th century), concretely in the United States of America. In 1792, the USA was subject to a great financial crisis, during which there were no rules or trading[5] safeguards. Most of the trading was based on empty promises, which were rather unsafe and unprudent. Notwithstanding, as the panic erupted, twenty-four New York merchants and brokers decided to reunite under a buttonwood tree on Wall Street and agree to only trade with each other. The Buttonwood Agreement aimed to build trust between the twenty-four merchants and secure safe trading principles. In other words, they formed a club, agreeing to trade directly and exclusively with each other under a series of common rules and regulations. And so, only sixteen years after the USA's foundation, was the **New York Stock[6] Exchange[7] (NYSE)** born–one of the world's largest stock exchanges. The London Stock Exchange followed in 1801.



Figure 2 – The buttonwood tree on Wall Street–the symbol of the agreement



Figure 3 – Benjamin Graham (1894-1976)

The 20th century was welcomed with some of the most influential figures in economics and finance. Benjamin Graham–the founding father of *Security Analysis**–and David Dodd–American educator and financial analyst–developed a crucial strategy that quite literally revolutionized investing. **Value investing** is an investment strategy that involves picking stocks and bonds[8] that appear to be trading far less than their intrinsic value[9] and holding them until the market realizes their value. In other, much simpler words, value investing is an investment strategy that involves buying what look like "cheap" stocks and selling them when their price rises. In fact, value investing is so successful it almost defines trading nowadays. Ask any newbie what investing is, and they'll surely answer, "Buy cheap, sell high". Yet it's not as simple as it sounds, and we'll see why in the next chapter.

As we follow our timeline, we find ourselves in 1953 with the creation of the **S&P 500** (Standard and Poor's 500)–a stock market index[10] tracking the performance of 500 of the largest publicly traded companies in the United States. Buying stocks from the S&P 500 allowed people to buy many different stocks at once, diversifying their portfolio[11].

In 1971, the first electronic stock exchange was born–**NASDAQ** (National Association of Securities Dealers Automated Quotations)–which accelerated trading 100-fold.

* *Security Analysis* is a book written by Benjamin Graham and David Dodd and first published in 1934. It's considered the "bible" of value investing. It established the foundational principles for analyzing stocks and bonds to identify undervalued securities[12] based on their real value (intrinsic value) rather than market speculation, which we'll talk about in further chapters. Today, the book is known best under the title *The Intelligent Investor*.

Nowadays, with the apparition of the Internet, investing has become highly accessible. As of 2026, it is gaining more and more popularity as people peek into the so-secretive world of investing. But how misinformative is the Internet? Do we really know what investing is, or do we grasp the misleading concept that the Internet makes of investing?

Let's untangle the web.

Investing vs speculation

According to the Cambridge Dictionary, **speculation** is defined as the activity of guessing possible answers to a question without having enough information to be certain (Lexicographers and editors at Cambridge University Press, n.d.). Thus, how speculative are we in our daily lives? Every day we make assumptions–lucky guesses–that are purely speculative. What might the weather be like? How busy is traffic today? What might my friend be upset about? Speculation is a natural way for our brain to predict outcomes of the future based on past experiences and thus simplify our life and decision-making.

In finance, speculation refers to trading stocks by making assumptions about whether the price of said stock is going to go up or down. Yet, wasn't that what investing was about? Speculation implies guessing the value of a stock with zero previous analysis–a crucial mistake first-time investors make. It is without a doubt that you have seen at least one advertisement in your lifetime regarding trading courses that supposedly make a trader out of you in three days or less (purely by teaching you to make "educated guesses"), or worse, promote speculation as a trading strategy. We may as well address speculation as gambling. By guessing the trend[13] of a stock's value, we are gambling our money away; the only difference being that the user doesn't know that they're in a casino.

Absolutely anyone could be subject to the dangers of speculation, and thus that's why it is so important to educate yourself on what is speculation, what is trading, and what is investing. Let's make a clear example to see these three key differences:

Imagine that there is a company called TechCo with a share price of $100. You start hearing rumors about how TechCo will blow up the market. Let's say, a week later, a friend or a family member tells you how you should invest in TechCo. Social media algorithms don't lag behind, and thus your phone blows up with recommendations regarding videos that constantly reinforce how great TechCo's growth is. Your natural response is to buy TechCo's shares in fear of missing out on the benefits everyone is about to enjoy. That psychological pressure, that trust that you had in your friend or family member, and that subconscious reinforcement from social media–*that* led to a speculative motion to buy TechCo's stock without proper reasoning.

Or let's say you are a beginner trader who has been noticing TechCo's growth for a week. You applied some basic analysis that led to a conclusion that in the next couple of days, TechCo will continue to grow. You buy the share with a goal to sell it in a couple of days for **a quick profit**. All in all, you bought at $100 and, in the next few days, sold at $110. That is **trading**.

Now let's say you conduct thorough research on TechCo. You dive into it–find the good and the bad–and conclude that TechCo not only has good management and business ethics that might lead to overall success, but also great company sales, expansion to diverse markets, and long-term financial stability. These components lead you to the conclusion that if you bought a $100 share as of today and held on for a period of 5-10 years, you would obtain enormous **long-term benefits**. Now *that* is **investing**.

In this experiment, TechCo turned out to be beneficial. Yet, what if it weren't? What if the share price were to reach thousands and not a mere $100? What if one bad, speculative decision led to the loss of your everything? What if you had kids? A *mortgage*[17] to pay? Debts to close?

Speculation–experienced economist or not–is essentially dicing with death.

An aside on how a trade happens

We have covered in the previous chapters that a trade can only be done via a broker. We know that once you want to buy or sell a certain share, you contact your broker, who will then go into the stock exchange and acquire or sell the share for you. Notwithstanding, how do stocks appear on stock exchanges, who sets up the price to be paid, and who decides whether the market will be **bullish** (increasing in value) or **bearish** (decreasing in value)?

Let's come back to TechCo. In order for TechCo's stocks to be traded at a stock exchange, it must meet certain financial requirements, such as a specific minimum price per share, a required number of shareholders[13], a certain market capitalization[14], etc.

Once the requirements are met, the company can proceed with its initial public offering (IPO). TechCo would contact investment bankers, who would evaluate TechCo and set a primary price. Now TechCo can officially trade at secondary markets, that is, stock exchanges like NYSE, NASDAQ, etc. (Whiteman & Bass, 2025). But why does the price of the stock fluctuate? Why do we say that the price of a stock has gone up or down?

The answer is simple. When us–buyers–want to buy a share, a **bidding** takes place. Let's say our sellers are selling TechCo's stocks for $100. You see yourself fit to buy it. Yet it's not that simple, namely because another buyer just said he is willing to pay $120. And while you contemplate whether to meet the price or back down, you hear another voice–someone just announced they'd pay $130. And just like that, following the **law of supply and demand**, the more demand (people willing to buy the stock) and the lower supply (people selling the stock), the higher the price will be. Inversely, if there is high supply and low demand, the price will go down to incentivize people to buy the stock. As a result, when you go on a trading platform and see that TechCo's stock is worth $100, it is not its intrinsic value but the price it was last sold at in a similar bidding. And this brings us to the conclusion that the number we see is not the real worth of the stock, but what the markets make of it–the price of the stock depends on investors's sentiment–their feelings and predictions—marketing, global situations, rumors, fears, and so on. That's where investors decide to dig into the companies and figure out the intrinsic value of their stocks and see whether the commotion has real weight or not and whether their money's worth it.

But let's face it, in this digitalized era, you don't actually participate in a bidding. In order to "bid", you place an order on your trading platform. Here are the different types of orders one can place and thus participate in a bidding:

- **Market order** → is an order to buy or sell a stock immediately. Say TechCo's stock is currently worth $100 and you place a market order; you will acquire the stock at $100. To identify a market order, ask yourself, **"Do I want to buy now?"**

- **Buy limit order** → is an order placed below the current price that acts as a restriction and buys a stock only when the price drops to the restriction value or less. To set an example, if I place a buy limit order of $90 at TechCo's, I participate in a bidding, and my order will be executed only if the price drops to $90 or less. Ask yourself, **"Do I want to buy at a cheaper price?"**

- **Sell limit order** → is an order placed above the current price that also acts as a restriction and sells the stock at said price or higher. If I place a sell limit order of $120 at TechCo's, my order will only execute if the stock's price shoots up to $120 or more. Ask yourself, **"Do I want to sell at a higher price?"**

- **Buy stop order** → is an order placed above the current price that acts to buy the stock at the restriction's value or higher. Say the current price is $100. If I wanted to buy the stock at $130, I would place a buy stop order--in essence, "stopping" the stock from getting away from you as it rises (Schwab, 2024). Ask yourself, **"Do I want to buy at a higher price?"**

- **Sell stop order** or **stop-loss order** → is an order to sell the stock if it drops to your restriction of choice below the current price. If I place a stop-loss order at $80, my TechCo's stock will sell immediately. Ask yourself, **"Do I want to sell at a lower price?"**



Figure 4 – An example of a sell limit order and a buy limit order, alongside a market order



Figure 5 – An example of a buy stop order and a sell stop order, alongside a market order

The perfect investor

Now that we are familiar with the basic concepts of investing, how do we become investors? How do we sculpt the perfect investor out of ourselves? Well, in order to do that, we must first get familiar

with the types of trading and investing. As for trading, here are the four main types of trading based on the time factor.

- **Scalping** → "Time is money". Scalpers are traders who thrive on exploiting small, short-term price movements, often holding positions for only **minutes** or even **seconds**. Their primary objective is to capture numerous small profits throughout the trading day, which can compound into substantial gains over time (IG Group, n.d.).

- **Day trading** → Day trading is a strategy that involves opening and closing (buying and selling) your positions **within a single trading day***. Such traders also capitalize on short-term price fluctuations that compound over time (IG Group, n.d.).

- **Swing trading** → Swing traders aim to capture medium-term price movements, typically holding positions for several **days to weeks**. This style allows traders to capitalize on market swings while avoiding the intense pressure and risk of day trading (IG Group, n.d.).

- **Position trading** → Position traders take a long-term approach, holding positions for extended periods, often **months or even years**. This style is well-suited for traders who prefer a more methodical and patient approach, as they aim to capture significant price movements over an extended time frame (IG Group, n.d.).

As for investing, traditionally there are no "types". Yet, according to Benjamin Graham, there are two types of investing: **passive (or defensive) investing** and **active (or enterprising) investing**. Passive investing focuses on **minimizing risk** and maximizing profits in the **long run**. It minimizes effort and focuses on portfolio diversification. The goal of an active investor, on the other hand, is to achieve **higher returns than the market** by picking "attractive" securities (**value investing**).

Trading and investing can also be classified by what it is that you are trading or investing in. Subsequently, here are the types of financial markets:

- **Stock market** → The stock market is where traders buy and sell shares of publicly listed companies. When you buy a share, you **own a small part of the company** and may be entitled to dividends, depending on the company's performance. The stock market is one of the oldest financial markets around and is ideal for those interested in building wealth over time (AvaTrade, n.d.).

- **Forex market** or **foreign exchange market** → the largest and most liquid market in the world. Here, traders seek to benefit from the fluctuations of exchange rates of **currency** pairs such as EUR/USD. To set an example, you may see a pair such as EUR/USD = 1.1000, which means that one euro = 1.10 US dollars. Essentially, you are buying euros and selling dollars when the price of said currency fluctuates. The Forex market operates 24 hours a day, five days a week (AvaTrade, n.d.).

* A trading day is the specific timeframe when a stock exchange is open for buying and selling securities. For European-listed securities, a trading day starts at 6:00am and ends at 8:00pm (UTC), Monday to Friday.

- **Cryptocurrency market** → a rapidly growing market where traders buy and sell **digital assets** like the famous Bitcoin or Ethereum. This market is highly volatile, offering high risk but also potentially high rewards (AvaTrade, n.d.). Bitcoin, for instance, first launched in 2009, and as of March 31, 2026, one bitcoin (BTC) is worth $58,067.17. Had you invested a mere $100 in 2010, you would have had roughly $42,800,000 in 2023 (TonyLiberty-FluentInFinance, 2023).

- **Commodities market** → The commodities market involves the trading of **physical goods** such as gold, silver, crude oil, and agricultural products (AvaTrade, n.d.).

- **Indices market** → Indices trading involves speculating on the performance of a **group of stocks**, which represent a specific segment of the market or an economy. A stock index allows you to invest in a broad market rather than individual stocks (AvaTrade, n.d.). I have previously mentioned stock indices such as the S&P 500, where instead of tracking individual stocks, you track a group of stocks from the top 500 US companies.

- **Bond market** → The bond market, also known as the **debt** market, involves trading government and corporate bonds. Bonds are generally considered less risky than stocks and provide a stable income through regular interest payments (AvaTrade, n.d.).

- **ETFs (Exchange-Traded Funds) Market** → ETFs are investment funds[15] that trade on stock exchanges, much like stocks. They typically track an index (such as the S&P 500) (AvaTrade, n.d.). ETFs will let you invest in a **large number of securities at once**, providing diversification within a single investment. Essentially, buying ETFs is like buying a basket of different securities at once. The difference between an index fund and an ETF is that an index fund only lets you track the market; in other words, you can't essentially buy an index fund. In order to invest in an index fund, you have to buy an ETF that tracks an index fund. Another way to invest in an index fund is via **mutual funds**, which are essentially legal entities–managed by professionals–that pool money from multiple investors to purchase a diversified portfolio of securities (Step guide, n.d.). Mutual funds are fairly expensive.

- **Derivatives market** → The big idea in a derivatives market is that you do not buy the asset itself, but rather you are trading a **contract whose price depends on that asset**. For example, instead of buying TechCo's stock itself, you trade a contract linked to TechCo's price. That contract is called a **derivative** because its value is *derived* from something else. There are three main types of derivatives:

    - **Futures** → A future is an **agreement** that revolves around an **obligation** to buy or sell something at a fixed price on a future date (Movsesyan, 2025). The important word here is obligation. To set an example, imagine that TechCo's shares cost $100. You are worried that the price may rise, so you sign a contract agreeing to buy TechCo's shares at $100 in three months. If, by chance, the price does rise to say $120–good for you–you gained a $20 profit. If, let's say, it drops to $90, you are obliged to buy the shares anyway, which provides you a loss of $10.

    - **Options** → An option gives you the **right, but not the obligation**, to buy or sell (Movsesyan, 2025). Let's say TechCo's stocks are at $100 yet again. You

buy an option that lets you buy it at $100 next month, paying a $5 fee for this right, called a premium. If the stock, for instance, rises to $120, you gain a $15 profit (120-100-5). If the stock falls to $90, you simply have the option not to do anything, but you lose $5.

- **CFD** → is an agreement to pay the difference in price between when you open and close the trade, without ever owning the asset (Movsesyan, 2025). For instance, if TechCo's stock is at $100 and you think the price will rise to $120, you open a CFD buy trade. If it does rise to said price, you'll gain a $20 profit. If it falls to, say, $90, you lose $10. This is purely price speculation, with no asset ownership.

Figure 6 on page 18 shows a comparison table between previously mentioned markets.

Back to the initial question: how do we sculpt the perfect investor out of ourselves? Who is the perfect investor? Let's take yet another step back.

Homo economicus or **"economic man"**–first defined by philosopher John Stuart Mill in 1836–is a theoretical model in economics that represents an idealized human being who behaves rationally and makes decisions solely based on self-interest, without the influence of emotions or irrational impulses (Campbell & Emanuel, 2024). In other words, homo economicus represents a man who always acts objectively, rationally, and with a cold heart.

In the mind of a perfect investor, every choice revolves around the calculation of risk and the maximization of returns given the level of risk. The perfect investor mustn't misunderstand, ignore, or emotionally distort the information given to him. They make stable choices and have consistent preferences–in a way that if an investor prefers stock A over B and stock B over C, they will always prefer stock A over C–the so-called **transitivity**. The perfect investor feels no satisfaction as well as no disappointment or social pressure. Thus, their ultimate goal and objective is solely to maximize wealth.

No emotions.

No impulsive decisions.

No fear or greed.

Notwithstanding, there has been some controversy in regard to this old-fashioned mindset. In 1970, economist Robert Shiller and psychologists Daniel Kahneman and Amos Tversky established a new concept called "**behavioral finance**", which nowadays is a field that studies how and why **human biases** influence financial markets and how these biases can impact our judgment about how we spend our money and decide to invest it. In other words, it combines elements of economics and psychology to understand how and why people behave the way they do in the real world.

In the next chapter, we'll talk about the psychology of money–the main concepts that fuel our thirst for wealth–and **why humans can't always be rational**.

Market	Risk Level	Profit Potential	Typical Volatility	Time Horizon
Stock Market	Medium	Medium to High	Medium	Short-term (day trading) to Long-term (years)
Forex Market	High	High	High	Short-term (minutes to hours)
Cryptocurrency Market	Very High	Very High	Very High	Short-term (hours), Medium-term (months) & Long-term (years)
Commodities Market	Medium	Medium	Medium	Medium-term (months) to Long-term (years)
Indices Market	Medium	Medium	Medium	Short-term (days) to Medium-term (months)
Bond Market	Low	Low to Medium	Low	Long-term (years)
ETFs Market	Low to Medium	Medium	Low to Medium	Medium-term (months) to Long-term (years)
CFDs	High	High	High	Short-term (minutes to days)
Futures	High	High	High	Short-term (days) to Medium-term (months)
Options	Medium to High	Medium to High	Medium to High	Short-term (days) to Medium-term (months)

Figure 6 – Financial markets

Chapter II

The psychology of money

You're not a spreadsheet. You're a person. A screwed up, emotional person. [...] With it comes something that often goes overlooked: Do not aim to be coldly rational when making financial decisions. Aim to just be pretty reasonable. Reasonable is more realistic and you have a better chance of sticking with it for the long run, which is what matters most when managing money. To show you what I mean, let me tell you the story of a guy who tried to cure syphilis with malaria. [...] In the early 1900s Wagner-Jauregg began injecting patients with low-end strains of typhoid, malaria, and smallpox to trigger fevers strong enough to kill off their syphilis. [...] But Wagner-Jauregg was onto something. Fevers are not accidental nuisances. They do play a role in the body's road to recovery. We now have better, more scientific evidence of fever's usefulness in fighting infection. A one-degree increase in body temperature has been shown to slow the replication rate of some viruses by a factor of 200. [...] But that's where the science ends and reality takes over. Fever is almost universally seen as a bad thing. They're treated with drugs like Tylenol to reduce them as quickly as they appear. [...] Why does this happen? If fevers are beneficial, why do we fight them so universally? I don't think it's complicated: Fevers hurt. And people don't want to hurt. That's it. A doctor's goal is not just to cure disease. It's to cure disease within the confines of what's reasonable and tolerable to the patient. [...] It may be rational to want a fever if you have an infection. But it's not reasonable. That philosophy—aiming to be reasonable instead of rational—is one more people should consider when making decisions with their money.

MORGAN HOUSEL – The Psychology of Money

The seven deadly sins

Psychology of Money: Timeless Lessons on Wealth, Greed, and Happiness by Morgan Housel is an award-winning book exploring how **behavior, rather than math, drives financial decisions**. Until now, we have opened the doors to the so-secretive world of investing by learning investing's origins, functions, and types. Yet, we haven't explored the one who does the work of investing–*us*. We haven't taken a look inside our own minds–how we act and why we do so. So, let's tackle one of our main goals–discovering *who* we are.

Greed

"At a party given by a billionaire on Shelter Island, Kurt Vonnegut informs his pal, Joseph Heller, that their host had made more money in a single day than Heller had earned from his wildly popular novel *Catch-22* over its whole history. Heller responds, "Yes, but I have something he will never have … enough."" (Housel, 2020, 37).

Greed is an incredibly powerful force when it comes to human behavior, and thus is the first *sin* one can commit. Greed is defined as the **intense and selfish desire for something**, especially wealth, power, or food. It is not a modern phenomenon; in fact, it has been around for centuries. Evolutionary psychology suggests humans have an inherent drive to accumulate resources to ensure survival. Once essential, the instinct to hoard resources can manifest as greed in a world where accumulation often extends far beyond necessity. Thus, a fear of not having enough can also lead to greedy behavior. Social comparison plays a substantial role here, too. The desire to keep up with or surpass others can

fuel greed. When individuals compare themselves to their peers, they may feel compelled to amass more wealth to achieve a sense of superiority or status. Social media exacerbates this by constantly showcasing others' successes and possessions, creating a perpetual cycle of comparison and competition. In societies where material possessions and financial achievements often measure success and self-worth, individuals may develop greedy tendencies as they strive to meet certain expectations. Personal insecurities, low self-esteem, and a desire for control can also contribute to greed (Yemi, 2024).

As mentioned earlier, a greedy person might have money, fame, and power. But he will never achieve one thing–**enough**. They simply have no sense of "enough".

Housel's book mentions that Warren Buffet–-one of the best-known investors in the world–states: "To make money they didn't have and didn't need, they risked what they did have and did need. And that's foolish. It is just plain foolish". In other words, investors who had no sense of "enough" risked all their assets to obtain money and power they certainly didn't need.

In order to acknowledge greedy behavior, an investor should remember these points:

- **1. The hardest financial skill is getting the goalpost to stop moving** → It gets dangerous when the taste of having more—more money, more power, more prestige—increases ambition faster than satisfaction. In that case, one step forward pushes the goalpost two steps ahead; you feel as if you're falling behind, and the only way to catch up is to take greater and greater amounts of risk (Housel, 2020, 41).

- **2. Social comparison is the problem here** → To make it on the list of the top ten highest-paid hedge fund[16] managers in 2018, you needed to earn at least $340 million in one year. The hedge fund manager who makes $340 million per year compares himself to the top five hedge fund managers, who earned at least $770 million in 2018. Those top managers can look ahead to people like Warren Buffett, whose personal fortune increased by $3.5 billion in 2018. And someone like Buffett could look ahead to Jeff Bezos, whose net worth increased by $24 billion in 2018. The ceiling of social comparison is so high that virtually no one will ever hit it (Housel, 2020, 41).

- **3. "Enough" is not "too little"** → The idea of having "enough" might look like leaving opportunity and potential on the table. Yet that's not right. "Enough" is realizing that the opposite—an insatiable appetite for more—will push you to the point of regret. The only way to know how much food you can eat is to eat until you're sick. Yet, for some reason, the same logic doesn't translate to business and investing, and many will only stop reaching for more when they break and are forced to (Housel, 2020, 42).

- **4. There are many things never worth risking, no matter the potential gain** → Reputation is invaluable. Freedom and independence are invaluable. Family and friends are invaluable. Being loved by those who you want to love you is invaluable. Happiness is invaluable. And your best shot at keeping these things is knowing when it's time to stop taking risks that might harm them. Knowing when you have enough (Housel, 2020, 43).

Envy

Envy–our second sin–is a complex emotion characterized by sadness, resentment, or **inferiority caused by another person's possessions**, achievements, or qualities, often accompanied by a **desire to possess them**. Researchers identify different kinds of envy, including emulative (wanting to improve oneself) and destructive/malicious (wanting to destroy the other's advantages). Moreover, it is widely described in psychology and literature as a source of unhappiness.

In finance, envy plays a crucial role in our financial decision-making. Social comparison, as I've mentioned before, fuels envy and often goes hand in hand with greed. The longing for what other people have has its origin in the essential hunger for survival, as well as greed. In the modern era, though, we struggle to recodify these behaviors and put ourselves under substantial danger should we decide to risk our assets when feeling envious or greedy.

In finance, when momentum creates a big short-term force that generates return potential, social media reinforces said change in the markets and impulses natural social comparison between people. As Housel mentions, you can't expect people to sit still and contemplate how others achieve great benefits. Profits will always be chased, and so we must acknowledge envy and greed and learn to regulate them.

Ego

An unhealthy ego is an **inflated or a deflated sense of self-worth**, and it manifests in different ways. For instance, a person with an unhealthy ego might constantly need validation or entitlement for something. In other words, they must constantly be praised and believed to have deserved specific outcomes. They dislike criticism and admitting mistakes. An unhealthy ego can manifest itself through selfish, manipulative, and narcissistic behaviors.

In finance, an unhealthy ego is often caused by envy and social comparison. An investor might overtrade if they think that they possess the ability to always beat the market or lose stocks on purpose just to avoid admitting that they were wrong. They may refuse to seek professional guidance and might even make unreasonable purchases driven by the need for validation.

Furthermore, ego and social status are deeply intertwined. Individuals with an inflated ego are often in pursuit of validation and thus social recognition. The constant pursuit of a high status–the position or rank within your society–might lead to several problems, such as hypersensitivity to criticism, overspending, and the infamous reckless risk-taking.

Overconfidence

An unhealthy ego traces the path onto the fourth sin–overconfidence. Despite overconfidence being highly relative to ego, an overconfident person might not necessarily possess an inflated ego. Young people, for instance, are often victims of overconfidence. Lack of experience, little to no fear, idealism, and high expectations are just the tip of the iceberg, but said points are usually the cause of the confident nature of young people, especially kids. There are three main types of overconfidence:

- **Overestimation** → valuing your own performance too highly (Healy, 2008). In finance, this could lead to, for example, excessive trading.

- **Overplacement** → believing oneself is better than others (Healy, 2008). This contributes to an inflated ego and has severe consequences.

- **Overprecision** → excessive certainty in decisions. Overprecision is the most frequent type of overconfidence (Healy, 2008). In finance, this could lead to the underestimation of risk and overestimation of luck, which we'll discuss shortly.

Overconfidence, in general, might lead to poor risk assessment, low accuracy, and more.

Fear

"To get why investors sell out at the bottom of a bearish market you don't need to study the math of expected future returns; you need to think about the agony of looking at your family and wondering if **your investments are imperiling their future**"–Housel. And Housel is right. It is truly the fear of investing your entire savings that drives your decisions. It is the fear of the unknown. The fear of error. Of humiliation. Of disappointment.

There are thousands of fears, namely phobias such as arachnophobia (fear of spiders), claustrophobia (fear of closed spaces), agoraphobia (fear of open spaces and crowds), and more. Yet, there is one that we all share to some extent–peniaphobia. Peniaphobia is the fear of poverty and financial loss. An extreme peniaphobe may keep checking his bank accounts or savings in fear that they might miraculously disappear. Now, it is clear we are not extreme peniaphobes. Yet, as Housel mentions, when the market goes down, people panic. When an option to obtain a short-term profit appears, people sell in fear of long-term commitment. Some people don't invest at all, as they view it as risky gambling.

Fear drives people to make decisions that are simply not *reasonable*. Herd behavior, for instance, is a term used to describe how people follow the crowd when faced with difficult and nerve-racking decisions. In finance, for instance, you might hear rumors about how people are selling their stocks due to an upcoming crisis. You panic sell, only to discover that the stock value has actually increased.
Take the **2008 financial crisis**. In 2008, the demand for housing rose. And so people wanted to acquire a house to later sell it for a higher price. In order to acquire the house, banks gave out loans to people with all kinds of financial histories. Those with poor finances were given subprime mortgages, which were loans with higher interest rates. These were highly profitable for the banks but risky, since those paying the debt were quite unreliable. Home prices went through the roof, and more and more people took out loans. Moreover, the banks would later sell said loans to investors under the name of mortgage-backed securities (MBS). In other words, investors bought packages of home loans and earned money from people's monthly mortgage payments. Said actions made the housing prices rise even more.

Said phenomenon–when the price of something rises far above what it is really worth because people expect it to keep going up–is called a **bubble**, or in this case a **housing bubble**.

Until the unimaginable happened–the bubble burst.

Housing prices suddenly dropped.

And it was *Fear* who was the first to act. People didn't think about herd behavior or panic selling. They didn't think about market analysis or long-term or passive investing. They thought about losing jobs. They thought about their retirement savings disappearing. They thought about their spouses, their kids. And it was none other than panic that drove people into oblivion. The domino effect spread like a house on fire. People couldn't sell their houses anymore, since they would be losing money. Mortgages weren't repaid. Investors didn't profit. Banks started failing. Stock markets crashed worldwide. Some lost jobs. Others lost years of retirement. A couple lost their kids's college savings funds. And so on.

Take another example–the **COVID-19 crisis**. Here, the panic spread in a heartbeat. I'm sure most of us remember the start of the pandemic in March 2020. The news about a brand new virus from China spread like wildfire–rising deaths, vaccines, global lockdowns, etc. Consequently, businesses started shutting down, and unemployment rates spiked. People thought, "It's the end of the world–the economy is collapsing!" and so they sold. The important bit, though, is that the economy's recovery was shockingly fast. Take a look at Figure 7.

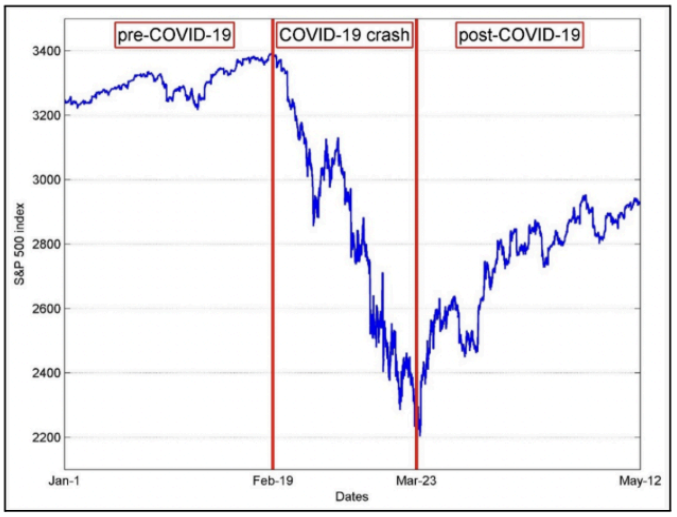


Figure 7 – The S&P 500 Index during the COVID-19 crisis. The chart shows a fantastic recovery just two months after the absolute minimal point of the graph

On top of the above, social media gave birth to FOMO. FOMO or "fear of missing out" is the anxious sentiment that others are having rewarding experiences while you are not. It is also characterized by a desire to stay constantly connected with social media to ensure you aren't missing exciting events or opportunities. In finance, this can drive people to make irrational decisions and might impel the herd behavior I've mentioned earlier. FOMO targets young people especially.

The conclusion is clear–fear clouds our minds and puts us on an adrenaline autopilot that makes all the unreasonable decisions.

Impatience

People long for short-termism. With the helping hand of social media, the bar of people's expectations has been set so high that, as of 2021, one in every seven people around the world (ca. 1,1 billion people) suffered from an anxiety disorder. We want things *now*–money, success, fame, etc. And the dread of not accomplishing those things in a short period of time is overwhelming to us humans. We wake up, eat, work, and go to sleep in a never-ending cycle, longing for fast winnings, instant dopamine, shorter online videos, and much, much more. We tend to run ahead of the clock without even stopping to think about what time it is. And all of this has generated collective impatience.

To prove my point, ask yourself, how do you feel knowing that if you start long-term investing now, you will only see substantial results thirty years from now? You might feel that restlessness of

wanting the benefits to come sooner–perhaps you've got a house to build or kids to raise–you might feel overwhelmed by the genuine amount of work, or you might simply feel disappointed. To not say less, there are others who just feel indifference or don't feel any discomfort when facing long-termism. Both behaviors are completely natural and vary from person to person. However, it's important to learn how to combat needless impatience and anticipatory anxiety.

Narrative fallacy

Narrative fallacy–coined by Nassim Taleb in his 2007 book *The Black Swan*–is the tendency that people have to create **compelling stories** out of what we see **to make sense of the world**. You see, our brain does not like probability. It treats uncertainty as a threat, triggering stress responses such as cortisol release. The brain is basically a prediction machine that navigates uncertainty and creates logical stories to avoid leaving fate in the hands of risk or luck–often creating prejudices or biased opinions–releasing dopamine. For instance, at a sporting event, you might think that the team that has won has trained more. That would be a construct of narrative fallacy. The reality is very different, in a way that the team's victory might be owed to other factors such as the referee's decisions, the team's well-being, other unpredicted events, or something as simple as luck.

In finance, investors often invest in stories–giving in to narrative fallacy–instead of focusing on the real, intrinsic value of the stock. Take Nokia, for instance. With the rise of this tech company, people thought it to be the future. Investors all bought in on the story. And by 1999, the company’s profit had indeed reached $4 billion. It seemed that they could do no wrong. Even in June 2007, when Apple introduced the first iPhone, Nokia still retained 50% of the customer base. But in 2010, things took a turn for the worse… It took only six years for Nokia to lose around 90% of its market value, and the company never recovered (Gaudet, n.d.). Nokia suffered from immense competition, lack of a vision, inferior technology, and many, many more aspects that did not cloud investors' judgments as much as narrative fallacy did.

Narrative fallacy does not only toy with one's overconfidence and sense of ego, but it also creates stories that fit with our standards of fear, greed, and envy. Mix in impatience to act on your predictions as fast as possible, and there we have it–all done!–the perfect recipe for the *Reckless Investor* cocktail.

Risk and luck

Bill Gates went to one of the only high schools in the world that had a computer. Most university graduate schools did not have a computer anywhere near as advanced as Bill Gates had access to in eighth grade. And he couldn’t get enough of it. Gates was 13 years old in 1968 when he met classmate Paul Allen. Allen was also obsessed with the school’s computer, and the two hit it off. Lakeside’s computer wasn’t part of its general curriculum. It was an independent study program. Bill and Paul could toy away with the thing at their leisure, letting their creativity run wild—after school, late into the night, on weekends. They quickly became computing experts. During one of their late-night sessions, Allen recalled Gates showing him a Fortune magazine and saying, “What do you think it’s like to run a Fortune 500 company?” Allen said he had no idea. “Maybe we’ll have our own computer company someday,” Gates said. Microsoft is now worth more than a trillion dollars.

A little quick math. In 1968 there were roughly 303 million high-school-age people in the world, according to the UN. About 18 million of them lived in the United States. About 270,000 of them lived in Washington state. A little over 100,000 of them lived in the Seattle area. And only about 300 of them attended Lakeside School. Start with 303 million, end with 300.

[...] Now let me tell you about Gates' friend Kent Evans. He experienced an equally powerful dose of luck's close sibling, risk. [...] Kent Evans and Bill Gates became best friends in eighth grade. Evans was, by Gates' own account, the best student in the class. [...] And unlike Paul Allen, Kent shared Bill's business mind and endless ambition. "Kent always had the big briefcase, like a lawyer's briefcase," Gates recalls. "We were always scheming about what we'd be doing five or six years in the future. [...] "We would have kept working together. I'm sure we would have gone to college together." Kent could have been a founding partner of Microsoft with Gates and Allen. But it would never happen. Kent died in a mountaineering accident before he graduated high school.

MORGAN HOUSEL – The Psychology of Money

"Bill Gates experienced one in a million luck by ending up at Lakeside. Kent Evans experienced one in a million risk by never getting to finish what he and Gates set out to achieve. The same force, the same magnitude, working in opposite directions. But both are so hard to measure, and hard to accept, that they too often go overlooked. For every Bill Gates there is a Kent Evans who was just as skilled and driven but ended up on the other side of life roulette." says Housel.

So, we can conclude that risk and luck are siblings. They are both the reality that every outcome in life is guided by forces other than individual effort. Thus, as a consequence, if our fortune could be determined by a simple game of heads or tails, can we really predict future outcomes? Looking back, no one could have predicted, for instance, the birth of Adolf Hitler or the rise of a worldwide pandemic. Yet, people still try to predict the future.

On the other side, you might acknowledge the fact that luck plays a substantial role in life, yet, for some reason, it is rather rude to suggest a person's successful outcome was due to luck. It makes you look jealous and mean. And attributing luck to your own success might be just too discouraging. In finance, moreover, we tend to look upon the failure of others as bad decisions, whereas we judge our own mistakes as unluckiness or risk.

"Risk and luck are doppelgangers," agrees Housel. This is not an easy problem to solve. The difficulty in identifying what is luck, what is skill, what is risk and what are just bad decisions is one of the biggest problems we face when trying to learn about the best way to manage money.

Here is some of Housel's advice:

- **Be careful when assuming that 100% of outcomes can be attributed to effort and decisions.**

- **Focus less on specific individuals and case studies and more on broad patterns →** Studying a specific person can be dangerous because we tend to study extreme examples—the billionaires, the CEOs, or the massive failures that dominate the news—and extreme examples are often the least applicable to other situations, given their complexity. The more extreme the outcome, the less likely you can apply its lessons to your own life, because the

more likely the outcome was influenced by extreme ends of luck or risk. You'll get closer to actionable takeaways by looking for broad patterns of success and failure. The more common the pattern, the more applicable it might be to your life (Housel, 2020, #).

For example, trying to emulate Warren Buffett's* investment success is hard, because his results are so extreme that the role of luck in his lifetime performance is very likely high, and luck isn't something you can reliably emulate (Housel, 2020, 33).

- Bill Gates once said, "**Success is a lousy teacher. It seduces smart people into thinking they can't lose**." But the same is true in the other direction. **Failure can be a lousy teacher, because it seduces smart people into thinking their decisions were terrible when sometimes they just reflect the unforgiving realities of risk.**



Figure 8 – Warren Buffett

The dangers of the Internet

Our minds–greed, envy, ego, overconfidence, fear, impatience, and narrative fallacy–and forces such as risk and luck are not the only variables that might harm your investments. There are external factors that subconsciously influence our decisions day and night, such as the double-edged social media.

The World Wide Web was made public in 1991–just thirty-five years ago. And it was truly revolutionary. The Internet has been by our sides all these years and has grown to be a "must" in our lifestyles. If we really look at it, we don't go a day without using the Internet--news, message apps, calls, entertainment, or something as simple as the weather app or the alarm clock. All in all, ever since its birth, the Internet has made our lives easier.

But what about the other side of the coin–the dark side of the moon? What has the Internet taken away from us?

* Warren Buffett–mentored by Benjamin Graham–is an American business tycoon and one of the most successful investors in history.

There are numerous disadvantages that the Internet has brought upon us, namely cyberbullying, addiction to social media, identity theft, an increase in mental health problems, and so on. But one of the disadvantages that brought more harm upon the users of the Internet is disinformation online–the infamous fake news. And the urge that we now possess to receive instant dopamine fuels this problem, in a way that people don't take time to verify the information they see online due to the desire to obtain as much information as possible in the shortest amount of time possible.

This particularly affects investing. Take a look at the following headlines from YouTube:



Figure 9 – "How I Learned To Trade in 2 Days" (2.5m views)

This headline, for instance, reinforces the message that learning to trade can take as little as two days, and that is simply not true. You may learn some basics of what investing is, but two days is not enough to fully dive into this ambit and learn how to analyze the market. This headline feeds into the desire that young people have to acquire knowledge and benefits as fast as possible, and thus it may be prejudicial to some viewers. Note that 2.5 million people bit into this headline to satisfy this desire.

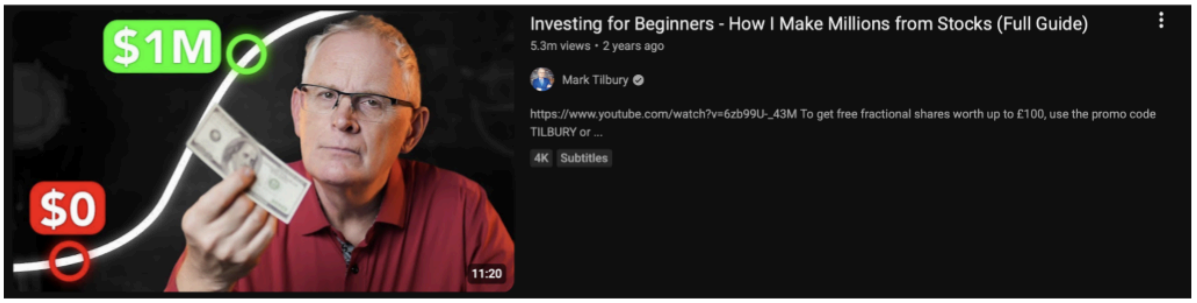


Figure 10 – "Investing for Beginners - How I Make Millions from Stocks (Full Guide)" (5.3m views)

This headline, specifically the thumbnail of the video, is a classic example of feeding off of impatience. The thumbnail represents a graph that rises from $0 to $1M. It is a clear bait for people to click on the video, since it represents that your finances can grow from $0 to $1M in as fast as the graph on the thumbnail shows. This generates impatience and anxiety in people. Moreover, the headline states, "How to make millions from stocks?", yet who guarantees you that you can make millions from stocks that fluctuate daily? Surely not an eleven-minute video.

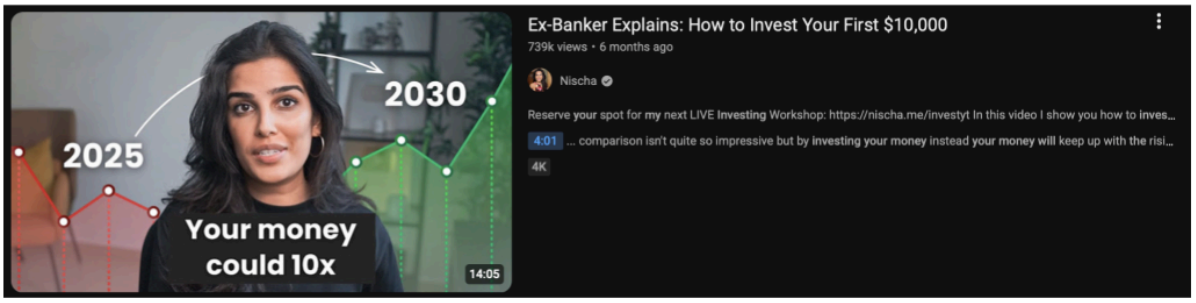


Figure 11 – "Ex-Banker Explains: How to Invest Your First $10,000" (739K views)

In this case the thumbnail is yet again misinformative. It represents and states implicitly, "Your money could grow ten times in between 2025 and 2030". This also feeds off of people's greed and impatience to earn such a big amount of money in such a short time span when talking about investing. It is truly curious, moreover, how nobody mentions that your money could lose ten times its value in the same time, or how these thumbnails promote the concept of invincibility. We are not invincible–loss might be at any corner.

Now, I am not implying that these people are disinforming their enormous audiences. The information in such videos is usually legitimate but *empty*. Such videos don't share specific tactics on how to invest or where to invest and when, or else we'd all be rich by now. They benefit from sharing general information that is already deductible and accessible to the public, such as "Invest as early as possible," "Diversify your portfolio," "Be financially responsible," and so on. This information does not teach you to be an investor in two days; it does not mean you will earn millions from stocks; it will not make your finances grow ten times in five years.

We, humans, are very gullible creatures.

Chapter III

Behavioral finance

Up until now, we've ventured into the human mind and explored our deepest sins. Yet, simply acknowledging them is not enough to truly understand how they affect our decision-making. And thus, behavioral finance was born.

Behavioral finance is the study of how psychology, emotions, and **cognitive biases** influence financial decision-making. It argues that traditional economic theories that worship rationality might not always be in the right. Instead, cognitive biases are the ones to take the wheel.

But what are cognitive biases, and how do we spot them?

Behavioral biases

Humans have innate biases that influence the way we view the world and make decisions, including decisions about money. A **bias** is a disproportionate weight or unfair preference for or against an idea, thing, or group, usually in a way that is closed-minded, prejudicial, or unfair. It occurs when personal feelings or preconceptions interfere with objective judgment. You see, our brains attempt to simplify information to speed up decision-making by creating shortcuts–a.k.a. biases (Stanley, 2023).

There are seven common cognitive biases that impair our objective judgment and affect our financial decisions:

- **Confirmation Bias** → the tendency to **seek out information that confirms or supports what we already think** and reject information that doesn't. To put an example, while researching a particular company's stock you think you'd like to buy, you come across 10 positive headlines and 10 negative ones and click only on the ones that support your decision. This might be a problem, since limiting yourself to information that confirms what you already think may cause you to miss other important information or potential warning signs. To prevent falling into this bias, one should challenge themselves to include differing perspectives in their research. One may still make the same decision; however, they'll be more informed and aware of potential issues (Stanley, 2023).

- **Loss Aversion** → People don't like to lose, and loss aversion is the **tendency of people to prefer avoiding losses**, as opposed to acquiring equivalent gains. Research suggests that someone who loses $100 will feel twice the pain versus the satisfaction of gaining $100. In other words, a person would have to gain $200 for their feelings to equalize. This could be a problem for numerous factors. For instance, if you only invest in low-risk, low-return investments to avoid loss, your money may not grow enough to reach long-term goals like retirement. Or, for example, loss aversion brings people to sell out of fear during market downturns. To prevent it, one must remember that when the market is down, they've only "lost" if they sell at that moment. One might also speak to a professional to become more informed and potentially hold on to their portfolio to ride out the volatility or discuss

additional options before making a decision—there may be other options that could potentially lead to higher gains (Stanley, 2023).

- **Overconfidence Bias** → Overconfidence bias is defined as a **tendency to have a misleading assessment of ourselves**, a belief wrapped in ego that we're better than we actually are. People are overconfident about many things: their ability to drive well, their sense of humor, and their certainty that "they are absolutely right" about specific things. This bias can, for instance, lead us to believe we can accurately time the market (even though markets are unpredictable). To prevent it, before making investment decisions or strategy changes, especially impulsive ones, one should consider doing some additional research or talking their ideas through with family, friends, or a professional (Stanley, 2023).

- **Recency Bias** → A tendency to **place too much emphasis on experiences that are freshest in your memory, even if they are not the most relevant or reliable**. For example, the financial crisis in 2008 led investors to exit the stock market. The experience of having gone through such a negative event increased their bias toward the belief that the event could recur. In reality, the economy recovered, and the market bounced back in the following years. To prevent this bias, one can take some simple measures, such as looking at historical events to understand the financial market, having a clear goal in mind, and so on (Stanley, 2023).

- **Anchoring Bias** → Anchoring bias is a cognitive shortcut where people **rely too heavily on the first piece of information they receive (the "anchor") when making decisions**. **All subsequent information, estimates, or negotiations are judged in relation to this initial reference point**, often leading to flawed or illogical judgments (Stanley, 2023). To set an example, in car dealerships, the initial price offered for a used car sets the standard for the rest of the negotiation. In a way that a price lower than the initial price seems like a good deal, even if it is still higher than the car's actual value. As a result, our perception of reality is distorted, and our decisions are biased. One can overcome the anchoring bias by questioning the "anchors", taking time for reflection, conducting independent research, and so on.

- **Herd Mentality Bias** → Herding is when **people follow the crowd instead of their own instincts and/or analysis** (Stanley, 2023). To set an easy example, imagine two restaurants. Restaurant A is packed, whereas restaurant B is empty. A classic example of the herd mentality bias is where people often choose restaurant A, following the "herd". Overcoming this bias requires a shift toward independent, evidence-based decision-making, researching fundamentals before seeking outside opinions, keeping an open mind, etc.

- **Ambiguity Aversion** → People **tend to be more comfortable with things that are predictable and shy away from uncertainty**. You might be tempted to load up on investments that offer predictable returns, like bonds with a fixed rate of return versus a growth stock with no dividend and uncertain returns. **The fear of the unknown** could prevent you from making any decision at all, keeping you entirely out of the markets and missing out on potential opportunities (Stanley, 2023). Overcoming ambiguity aversion requires training one's brain to reframe uncertainty. One can build this mental flexibility by taking small, controlled risks and using mindfulness to calm the discomfort of not knowing.

Dual-Process Theory

Dual process theory covers a wide range of different theories used to explain **how people think**. At its core is the idea that humans have **two different types of processing or ways of thinking**. These dual processes give rise to the name dual process theory. Type 1 is evolutionarily older, more automatic, instinctive, implicit and unconscious. Type 2 is evolutionarily newer, intentional, effortful, explicit and conscious (Carrier, 2019).

- **Type 1–Our Automatic Processor** → Humans constantly function. The majority of time we do so without really thinking about it. We know what our senses are telling us and we know what they mean we should do. If we're hungry, we should eat. And, if we're a bit tired, we should sleep. If we see some information we dislike, we should ignore it… or perhaps not. We don't think about walking. And we don't calculate the trajectory of our steps. We don't use our knowledge of physics to help us throw a ball. All of these things come naturally. There are internal processes in our thinking and **decision making that help us survive without conscious effort**. It's this automatic process that's known as Type 1. We use it to get along in our daily lives without really needing to try too hard or think too much (Carrier, 2019).

  Key characteristics include:

  - It's unconscious
  - It's automatic
  - It's uncontrolled
  - It's fast
  - It requires low effort
  - It's intuitive and associative

- **Type 2–Our Controlled Thinking** → Sometimes we, as humans, find ourselves in situations where we either don't have mental shortcuts that we can use, or where we need to be more than just reasonably accurate. In these circumstances we need to focus on our thoughts. We need to **consciously think our way through key factors and reach logical, calculated, informed decisions**. To do this we need to slow our thinking down. We ignore our mental shortcuts; we start from the building blocks of information that we have and use logic to reach decisions and conclusions. This way of thinking is known as Type 2 processing. It often produces better (or at least more reasoned) answers for us, but it's effortful and it's slow. This process is excellent in some environments and situations, but dreadful in others. If you rely on Type 2 to calculate the moment when a leaping tiger will reach you and plot your escape, then you'll never finish your calculations (Carrier, 2019).

  Key characteristics include:

  - It's conscious
  - It's mostly voluntary
  - It's controlled
  - It's slow
  - It requires high effort
  - It's logical and rational

In trading and investing, people tend to act up on the first type of thought processing. Imagine a person looking at a bearish chart. It is no doubt that looking at red numbers might be uncomfortable. Not only that, it might be utterly scary and unnerving. What if you just spent your last savings? What if it took you months to gather all that money? The what-ifs are infinite. That is the moment type one thinking takes control of the wheel. A person sees a tiger instead of the chart, and instead of holding on patiently to the security, they sell out as fast as possible just to avoid even more loss. This is a classic example of the *seven deadly sins* acting up (such as fear, greed, impatience, etc.), as well as the wrongful thinking strategies.

Now, we are heading toward the end of the theoretical part of this project.

We have seen a lot of theory. We have discovered what investing is, as well as trading. We've taken a look inside the psychology behind it, we've ventured into the unpredictable world of risk and luck, and we've faced the dangers of the digitalized era. Likewise, we've encountered a field that represents a combination of psychology and finance–behavioral finance.

And yet, what awaits ahead? There is no doubt that we have done useful research and acquired substantial information any person should know–whether they'll follow the career path of investing or just invest for the sake of a retirement fund. And yet–there lies a subtle feeling of uncertainty.

What do I do now?

Where do I invest? How do I invest? When do I invest? How do I apply all this knowledge? All those questions must be pooling into your mind if you are at least slightly intrigued by the topic and the opportunities your investments might bring to you. Thus, this will be the topic of the next chapter–how to build your portfolio.

Chapter IV

Let's harvest some fruits

How to build your portfolio?

Your portfolio is the combination of all of your investments. Every investor has their own portfolio and their own set of strategies. Typically your portfolio will be distributed into a X% stock investment and a Y% bond investment, in a way that your portfolio might look like 75/25 (75% stocks, 25% bonds), 50/50, 25/75, and so on. Below I've listed some of the most well-known investors and their asset allocation percentiles:

- **Benjamin Graham**–the father of value investing → Graham's recommendation is: At least 25% in stocks, at least 25% in bonds, never more than 75% in stocks and never more than 75% in bonds. The examples mentioned above–75/25, 50/50 and 25/75–are Graham's asset allocation strategies.

  Graham's *net worth*[18] at the time of his death in 1976 was approximately $3 million (approximately **$16.6 million** today when adjusted for inflation).

- **Warren Buffet**–Graham's *student* → 90% in a low-cost S&P 500 index fund and 10% in short-term government bonds. Notwithstanding, Buffet has not yet undisclosed his real asset allocation strategy.

  Buffet's net worth today is **143.5 billion USD**, as in $143,500,000,000.

- **John Templeton**–one of the past century's top contrarian investors* → 80-100% in globally diversified stocks and 0-20% in bonds.

  Templeton's net worth at the time of his death in 2008 was approximately **1 billion USD**.

- **Charlie Munger**–Buffet's partner → 90-100% in equities (in his case it was the *Berkshire Hathaway* stock (an American multinational conglomerate (a company made out of different companies) managed by Buffet).

  Munger's net worth at the time of his death in 2023 was approximately **2.6 billion USD**.

- **Thomas Rowe Price Jr.**–father of *growth investing*** → 80-100% in equities expected to grow.

* A *contrarian investor* involves doing the opposite of what most investors are doing–If everyone is selling in panic, a contrarian might buy; If everyone is excited and buying aggressively, a contrarian might sell or avoid buying what they consider overpriced stocks.

** *Growth investing* is an investment strategy focused on buying companies that are expected to grow their revenue.

Rowe Price Jr.'s net worth at the time of his death in 1983 is not publicly documented, as he was a private investor and had sold his holdings in his firm prior to his passing. Today, the firm he founded–*T. Rowe Price*– manages over **1.8 trillion USD**, as in $1,800,000,000,000.

Now, our goal here is not to *copy* these investors. At the end of the day, these were professionals with decades of experience and knowledge. Our goal here is to understand the different aspects a portfolio might have. For now, a beginner whose expertise in the area is not yet so vast, it's recommended to:

- ❖ Invest in diversified stocks such as the stock index fund S&P 500, instead of picking individual stocks/companies.

- ❖ Hold on to the stocks (no panicked selling due to news or market drops).

If by any chance one is interested in the area after experimenting with the index fund for some time, one can even start learning fundamental or technical analysis*. Nevertheless, that is never compulsory for everybody. Investing should just be a simple monthly routine such as paying your rent.

In order to start, it is recommended to first try out a demo account. A demo account is an account with fake money one can use to practice trading/investing and essentially to learn. For casual, long-term investors, you should practice for at least a month and get comfortable with your tools. For traders, one should be successful for at least half a year before launching a real account. I strongly recommend a website called ***Investopedia*** (https://www.investopedia.com). As the name suggests, it is a sort of *Wikipedia* for investors. Not only does it offer useful information such as global news and its impact on the charts, but it also has a great investing simulator. The simulator provides some guides for beginners and is basically a demo account with $100,000 USD.

A demo account is great to learn how an investing platform operates. Yet, the most important part, which is the psychology behind the screent–how your brain acts when faced with danger–is only subject to real money accounts. With a demo account, you won't feel fear, as opposed to a real-life experience. You won't feel pressure or stress. After all, you have nothing to lose.

Now, to actually place an order and start investing, I recommend a website called ***Interactive Brokers (IBKR)*** (https://www.interactivebrokers.ie/en/home.php), as Investopedia is merely a financial Wikipedia of sorts. To open an account, you must be eighteen. Nevertheless, if you are a minor, your parent or guardian might open a custodial account for you–an account legally operated by your parent or guardian until you reach adulthood. Interactive Brokers is also rich with learning programs, independent of whether you possess an open account or not. You can also open a demo account on IBKR called a *paper account*.

Last but not least, on your investing journey, you might come across ***TradingView*** (https://www.tradingview.com/). TradingView is a free platform used to analyze charts and learn technical analysis (and is, for instance, used by Investopedia).

* *Technical analysis* and *fundamental analysis* are two ways you can evaluate stocks. FA focuses on factors such as reviewing the company's business model, estimating the intrinsic value of the stocks, evaluating the industry, financial statements, GDP, inflation, interest rates, etc. Whereas TA focuses on analysing the graphics, a.k.a. charts (whether they are bearish/bullish, their patterns or visual shapes, the volume of trades, etc.) instead of looking at a company's financial health.

All in all, an active investor or trader must have three platforms in mind when carrying out trades or investing:

- A direct-access **broker platform** required to execute trades, such as Interactive Brokers.
- A **charting platform** used for technical analysis such as TradingView.
- A **news source**, such as Investopedia, IBKR, or paid subscriptions such as Benzinga PRO (https://www.benzinga.com/pro/)

Note that a passive investor whose goal is to, for instance, save up, does not need to analyze the market on a daily basis since they must hold on to the stock for an extended period of time. Thus, they might not need a charting platform for technical analysis.

Ethics and morals

As an aside, it is important to remember what investing truly is. To invest means to finance a company. In other words, it means to lend money to a company, helping it grow its revenue and achieve its goals. That said, it's fundamental to know where you are investing. If you don't invest in an index fund but rather pick your individual stocks, you must know what you are picking.

Imagine a high-yield stock–a stock that will bring you enormous benefits. Yet, it comes to your knowledge that the company operates in the military industry and fabricates weapons. Is it ethical to finance a company that sympathizes with war? As of right now, you might think to yourself: *"I could never do such a thing!*" But in the real world, this is where greed emerges and sometimes takes over. For instance, think to yourself: in a world with several ongoing wars, it could be quite beneficial to you to invest in weaponry. You could pay your mortgage, pay out your debts, secure a future for your kids... Yet, we must not fall into this spiral of thought. We must conserve our morals. There are plenty of other examples, such as investing in oil and gas with an upcoming global warming or investing in companies that use child labor or slavery.

Finally, the stock you chose must resonate with you. What I mean by that is you must *care* for it. Do your research and find something you are genuinely intrigued by. If that stock falls and you *do* care, you'll fight for it. If you simply *don't care*, what difference does it make if it falls or rises? What motivation do you have to fight for your investments?

Money?

Money is a poor compass.

Chapter V

Before you beat the market

Practical part–a tool for investors

So, *Reader*, the end is near. And as we approach it, I would like to ask you yet again:

Who are you?

As I recall it, at the beginning of this research project, I established a few goals, one of which being to find out my own behavioral biases and their impact on my decision-making. That said, I also asked myself:

Who am I?

And to find an answer, I decided to build a website where one could face their own behavioral biases and discover the depths of their *sins*. Having said that, I wholeheartedly present to you the ***IDNA***. But before that, I'd like you to take a look at something I call the **compounding paradox**.

The compounding paradox

One of the initial questions posed at the beginning of this project was "How do behavioral biases affect our investment decisions?", and my hypothesis went as follows: "Although behavioral biases influence our investment decisions, they still carry less weight than strategies and analyses."

The compounding paradox challenges this hypothesis–the idea that it's important to know different types of analyses to know how to invest and how to obtain a benefit from it. Compounding is the process when the benefits from an investment are re-invested to obtain a bigger profit. The paradox here is that many people try to learn an immense amount of knowledge and ways to *trade*–to constantly buy and sell. But what a person really has to do is let themselves flow into compounding and *invest*. Take a look at these charts (Figures 21 and 22):



Figure 21 – A chart showing the performance of SPY (an ETF investment fund tracking the S&P 500 index) for one single day (September 4th 2026)



Figure 22 – A chart showing the all-time performance of SPY (an ETF investment fund tracking the S&P 500 index), from 1993 to 2026

Figure 21 shows daily performance of the ETF (September 4th 2026), whereas figure 22 shows its all-time growth.

The conclusion that one can make from analyzing these two charts, is that it does not matter how low or how high the price went as of *today*, what matters in essence is its long-term growth.

It doesn't take a degree to see that the September 4th chart's looking pretty dull. But when we look at the ETF's overall performance (a.k.a. the all-time chart), we can clearly see that it doesn't matter whether today or tomorrow the charts are red–the fund will grow long-term nevertheless. If one invests the same amount every month and lets compounding do its work, one will see growth despite today's performance. And, in the end, that's what *investing* is–long-term benefits. Not fast, impatient and greedy results but rather slow, steady growth that requires little to no effort.

So based on that conclusion–that a person needs no knowledge of strategies to invest monthly into ETFs (since he is safe to invest at whatever the market's current value is)–the secondary conclusion is that the only thing a person should dive into and *really* learn is himself. His own biases and behaviour tendencies that might tempt him to sell or to buy or to withhold from investing whatsoever. So based on that conclusion, I've elaborated a self-assessment one could make to answer one of the most important questions of this project.

Who are you, Reader?

The IDNA

The **IDNA (Investor DNA Assessment)** is a self-assessment quiz created by me that analyzes how developed your behavioral biases are. The quiz consists of analyzing your levels of a certain **behavioral bias** and a ***deadly sin*** that's consequently linked to it:

- **Loss aversion** (avoiding loss) → **Greed** and **Fear**. Greed isn't only about wanting more; it's also about strongly resisting giving up what you already have.
- **Herd mentality bias** (following the crowd) → **Envy**. Envy makes people compare themselves to others and imitate what others are doing, leading to crowd-following behavior.
- **Confirmation bias** (searching for information that confirms what we already believe) → **Ego**. A strong ego becomes attached to being right, causing people to seek evidence that supports their views and ignore contradictory information.

- **Overconfidence bias** (overestimating your knowledge and skills) → Driven by **Overconfidence**.

- **Ambiguity aversion** (sticking to the predictable rather than to the uncertain) → **Fear**. Fear of the unknown drives preference for familiar risks over uncertain situations, even when the unknown option may be superior.

- **Recency bias** (favoring recent information over long-term evidence) → **Impatience** as well as **Greed**. Impatient people overweight recent events and short-term results instead of considering longer-term evidence. Greed can occur when recent gains create a desire to chase returns and more benefits.

- **Anchoring bias** (relying on the first bit of information received) → **Narrative fallacy**. People create narrative fallacies to support the first bit of information received (the *anchor*) and judge inaccurately all the subsequent information.

Analyzing a total of **seven behavioral biases** and **seven *deadly sins***.

Inspired by the MBTI (Myers-Briggs Type Indicator) personality test, after completing the quiz, the person will be assigned **one core investor archetype (out of 16 possible ones) and one secondary investor archetype** to provide the best results. Not only that, one will also be assigned to **one of the four possible investor families**.

The quiz consists of a total of **56 questions (8 questions per bias)**. Each question will have a scoring system of a **1-5 scale (strongly disagree–disagree–neutral–agree–strongly agree)**. More on that later.

Here is a short summary of all the archetypes and families (an amplified version of each archetype can be found on the website):

Family I → Conviction-Driven Investors

Conviction-Driven Investors believe that success in investing comes from **independent thinking**. Their decisions are primarily shaped by **confirmation bias** and **overconfidence bias**, as well as attachment to their own views.

When it comes to investing, they enjoy researching companies, building long-term investment portfolios, and challenging conventional wisdom. They are difficult to influence, and can become attached to their own ideas, often ignoring contradictory evidence. A conviction-driven investor might read annual reports and financial statements, hold investments for years and rarely follow market hype.

In everyday life, they tend to be analytical, self-reliant, intellectually curious, and comfortable defending unpopular opinions. Not only that, they are independent and curious individuals. They are often found reading books, listening to podcasts, or diving deep into niche topics. They typically prefer quality over quantity, think several years ahead, and value competence and expertise.

MBTI types most commonly associated with this family include INTJ (Architect), INTP (Logician), ENTJ (Commander), and ISTJ (Logistician).*

Core motivation: "I trust my judgment."

* It is important to mention that MBTI is a personality type test, whereas your IDNA is a *behavioral finance profile*. There is no established scientific evidence that specific MBTI types consistently correspond to particular investing behaviors. The archetypes in this quiz are based on decision-making patterns and cognitive biases, rather than personality types. So, although each family has certain MBTIs assigned to them, **any personality type could exhibit said behaviors.**

The Prophet

Core biases: (1) Confirmation Bias • (2) Overconfidence Bias
Anti-biases (These are biases that should be relatively low. Anti-biases are very useful, since they can distinguish two people with similar results in their primary and secondary biases, but which are in reality completely different archetypes (having different anti-biases)): Herd Mentality Bias • Loss Aversion



In everyday life, The Prophet is naturally curious and intellectually ambitious. They are comfortable standing alone when they believe they are right and are rarely influenced by popular opinion.

As an investor, The Prophet is drawn to big ideas and long-term trends. They seek to understand where the world is heading over the next decade and position themselves accordingly. Their investment decisions are driven by conviction–unshakable belief–rather than consensus–collective agreement.

The Scholar

Core biases: (1) Overconfidence Bias • (2) Confirmation Bias
Anti-biases: Herd Mentality Bias • Recency Bias



Curiosity defines nearly every aspect of their personality. They have emotional resilience, independent reasoning, and confidence in their knowledge.

When investing, The Scholar deliberately searches where others are unwilling to look (misunderstood businesses, and situations where sentiment has become excessively pessimistic, etc.). Scholars often do contrarian investing–an investing strategy which consists in going against the crowd. As a result, they sometimes reject good ideas simply because they have become part of collective consensus.

The Inquisitor

Core biases: (1) Ambiguity Aversion • (2) Confirmation Bias
Anti-biases: Overconfidence Bias • Recency Bias

The Inquisitor is the researcher of the Conviction Family. They believe that every investment decision should be built upon evidence rather than intuition.



In everyday life they are methodical, detail-oriented, and often become the person friends might consult before making important decisions. They dislike superficial explanations and rarely accept simple answers to complicated questions.

As investors, The Inquisitor constructs decisions through careful analysis. Their portfolios are usually well researched and thoughtfully constructed. Their greatest weakness is not poor analysis—but excessive analysis.

The Market Sage

Core biases: low across all dimensions
Anti-biases: high scores in any biases



The Market Sage represents the ideal of behavioral discipline. Unlike the other members of the Conviction Family, The Market Sage is defined by **balance**.

The Market Sage approaches investing as a lifelong practice rather than a competition. They are comfortable changing their minds when presented with better evidence, equally comfortable admitting mistakes, and rarely become emotionally attached to any single investment. Rather than chasing extraordinary returns, The Market Sage focuses on making consistently good decisions over decades. In everyday life they might appear calm, measured, thoughtful, and emotionally resilient.

Family II → Emotion-Driven Investors

Emotion-Driven Investors are motivated primarily by **protecting themselves from loss, regret, and uncertainty**. Their decisions are strongly influenced by **loss aversion** and **ambiguity aversion**, making them cautious and risk-aware.

When it comes to investing, they often spend considerable time evaluating potential downsides and risks before taking a decision, and may hesitate to act until they feel comfortable with the available information. They may miss attractive opportunities because they wait for perfect conditions. They excel at preserving capital during uncertain markets, but may underperform during strong bull markets.

In daily life, they are generally conscientious, responsible, patient, and dependable. They dislike unnecessary surprises and often prefer routines, planning, and stability over spontaneity. These individuals are calm, careful decision-makers who rarely act impulsively.

MBTI types commonly associated with this family include ISFJ (Defender), ISTP (Virtuoso), INFJ (Advocate), and ISFP (Adventurer).



Core motivation: "I won't feel pain."

The Guardian

Core biases: (1) Ambiguity Aversion • (2) Loss Aversion
Anti-biases: Overconfidence Bias • Recency Bias

The Guardian believes that successful investing begins with avoiding unnecessary risks. Rather than chasing exceptional returns, they focus on preserving capital and building wealth steadily over time. They are naturally skeptical of investments they do not fully understand, and rarely feel comfortable making decisions based on incomplete information. Security, stability, and predictability are their guiding principles.



Outside investing, The Guardian is dependable, organized, and thoughtful. They enjoy planning ahead, creating contingency plans, and reducing uncertainty wherever possible. Their greatest strength is risk management. However, their desire for certainty can prevent them from acting when opportunities arise.

The Archivist

Core biases: (1) Loss Aversion • (2) Anchoring Bias
Anti-biases: Overconfidence Bias • Herd Mentality Bias

The Archivist develops deep attachments—not only to investments, but also to the decisions behind them. They are patient by nature, but that patience can become emotional attachment.



In everyday life, The Archivist values loyalty and commitment. They dislike wasting resources and might often keep possessions, relationships, and routines longer than others. They may also notice their reluctance to let go of things that have clearly run their course.

As investors, The Archivist holds positions for years and rarely trades. They often know the companies they own extremely well and genuinely believe in their long-term potential.

The Watchman

Core biases: (1) Recency Bias • (2) Ambiguity Bias
Anti-biases: Overconfidence Bias • Confirmation Bias

The Watchman constantly scans the environment for signs of change. They believe markets can shift rapidly and that investors who fail to react quickly are often punished. Their heightened awareness makes

them exceptionally responsive to new information, but it also makes them vulnerable to reacting to short-term noise instead of meaningful long-term trends.

In daily life, The Watchman is observant, responsible, and highly aware of their surroundings. They enjoy staying informed through news, podcasts, and market commentary, and they rarely feel comfortable being "out of the loop." Friends might often see them as practical, cautious, and dependable in a crisis.

The Judge

Core biases: (1) Ambiguity Bias • (2) Anchoring Bias
Anti-biases: Recency Bias • Herd MentalityBias



The Judge strives for precision in every important decision. They dislike acting on incomplete information and believe that patience, discipline, and careful evaluation produce better outcomes than speed. Rather than fearing investment risk itself, they fear making avoidable mistakes. This often leads them to delay action while searching for additional confirmation that their decision is correct.

Outside investing, The Judge is organized, methodical, and highly principled. They might enjoy creating systems, checklists, and structured routines that reduce uncertainty. They tend to think before speaking, carefully weigh alternatives, and rarely make impulsive purchases or commitments. Others might see them as dependable, objective, and fair, although they can sometimes appear overly cautious or slow to decide.

Their greatest strength is discipline. Their greatest weakness is perfectionism.

Family III → Crowd-Driven Investors

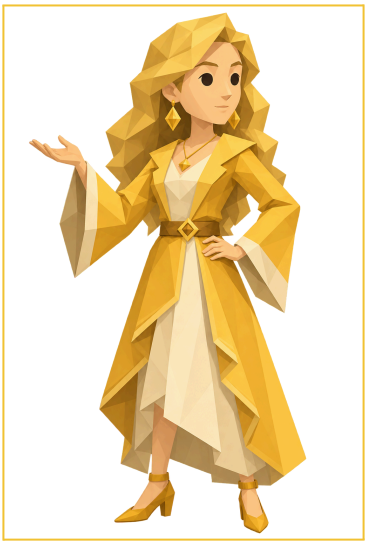
Crowd-Driven Investors naturally look to **other people for signals about what to buy, sell, or avoid**. Their behavior is largely influenced by **herd mentality** and **recency bias**–as well as comparison–causing them to place significant weight on the actions of other investors.

When it comes to investing, they often rely on recent market trends and the opinion of others. Consequently, a crowd-driven investor might adjust their portfolio based on market sentiment. They often discover investment ideas through social media, news headlines, friends, or popular market commentators, and they can be quick to join fast-moving trends. While their openness allows them to identify emerging opportunities early, it also makes them vulnerable to making mistakes or changing strategies too frequently.

Outside investing, they tend to be socially aware, adaptable, curious, and highly connected to current events. They enjoy discussing ideas with others and often seek reassurance before making important decisions. They generally thrive in collaborative environments and enjoy being part of communities.

MBTI types frequently associated with this family include ENFP (Campaigner), ESFP (Entertainer), ENFJ (Protagonist), and ESFJ (Consul).

Core motivation: "What are others doing?"



The Influencer

Core biases: (1) Herd Mentality Bias • (2) Recency Bias
Anti-biases: Confirmation Bias • Ambiguity Aversion

The Influencer thrives on connection, collaboration, and shared ideas. They rarely discover investment opportunities in isolation; instead, they are inspired by conversations, financial media, online communities, and the enthusiasm of other investors. They believe collective attention often points toward genuine opportunity, making them naturally drawn to companies and sectors generating excitement.



Outside investing, The Influencer is charismatic, outgoing, and highly social. They enjoy networking, sharing ideas, and staying informed about what is happening around them. Friends might often see them as optimistic, approachable, and enthusiastic. .

The Trendsetter

Core biases: (1) Recency Bias • (2) Herd Mentality Bias
Anti-biases: Ambiguity Aversion • Loss Aversion

The Trendsetter believes that markets reward investors who recognize change early. Rather than predicting distant futures, they focus on identifying current momentum and adapting quickly. They see trends as valuable information rather than noise and are comfortable changing their opinions when new evidence emerges.



In everyday life, The Trendsetter is energetic, adaptable, and naturally drawn toward innovation. Others might often view them as progressive, flexible, and quick to embrace change.

The Disciple

Core biases: (1) Herd Mentality Bias • (2) Confirmation Bias
Anti-biases: Overconfidence Bias • Recency Bias

The Disciple is inspired by ideas larger than themselves. They are drawn to visionary founders, revolutionary technologies, and compelling narratives that promise to reshape the future. Once they

become convinced by a story, they actively seek information that reinforces it and often become enthusiastic advocates for the companies or industries they believe in.

Outside investing, The Disciple is loyal, passionate, and deeply committed to causes they value. They enjoy belonging to communities built around shared beliefs and often become trusted voices within those groups. Their optimism and enthusiasm naturally inspire others.

The Herald

Core biases: (1) Herd Mentality Bias • (2) Loss Aversion
Anti-biases: Overconfidence Bias • Confirmation Bias



The Herald constantly searches for what is working now. They believe recent winners often continue winning and are comfortable adjusting their portfolio as leadership changes. Unlike The Trendsetter, who focuses on identifying emerging momentum, The Herald focuses on following proven success. They are practical rather than visionary, preferring evidence of performance over speculation.

In everyday life, The Herald is energetic, optimistic, and action-oriented. They enjoy measurable progress, visible achievements, and adapting quickly to changing circumstances. They often seek feedback before making important decisions and appreciate environments where performance is rewarded.

Family IV → Opportunity-Driven Investors

Opportunity-Driven Investors are motivated by the belief that **exceptional returns require recognizing opportunities before everyone else does**. Their decisions are most commonly influenced by **overconfidence bias**, **anchoring bias**, and, depending on the individual, **recency bias**. They are optimistic, action-oriented, and comfortable accepting uncertainty when they believe the potential reward justifies the risk.

When it comes to investing, they enjoy searching for the “next big thing” and emerging industries, such as new technology. They often make quick decisions, and invest in what they consider companies with great potential. Their willingness to act decisively often allows them to capitalize on opportunities before the market catches on. Nevertheless, that can also lead them to underestimate risks or become captivated and influenced by compelling narratives. They also might be drawn to speculation.

In everyday life, they are energetic, entrepreneurial, competitive, and naturally drawn toward innovation and new experiences. They often start projects, embrace calculated risks, and are willing to make decisions with incomplete information. Their greatest strengths are decisiveness and vision, but they may underestimate risks, become attached to compelling narratives, or act before fully validating their assumptions. They often perform best in rapidly changing environments where adaptability is rewarded.

MBTI types commonly associated with this family include ENTP (Debater), ESTP (Entrepreneur), ESTJ (Executive), and INFP (Mediator).

Core motivation: "High risk, high reward"

The Monarch

Core biases: (1) Overconfidence Bias • (2) Loss Aversion
Anti-biases: Herd Mentality Bias • Ambiguity Aversion



The Monarch approaches investing with confidence, ambition, and a strong belief in their own judgment. They are comfortable making bold decisions and rarely shy away from opportunities simply because they appear risky.

Outside investing, The Monarch is competitive, decisive, and highly goal-oriented. They naturally assume leadership roles, enjoy solving difficult problems, and thrive in environments where performance is rewarded. They dislike indecision and often prefer making an imperfect decision over waiting too long. Friends might frequently describe them as ambitious, charismatic, and confident, though occasionally intimidating.

The Critic

Core biases: (1) Anchoring Bias • (2) Confirmation Bias
Anti-biases: Herd Mentality Bias • Recency Bias



The Critic is fascinated by ideas, innovation, and the future—but unlike many visionary investors, they refuse to accept a compelling narrative at face value. They enjoy dissecting investment stories, identifying hidden assumptions, and determining whether excitement is supported by evidence.

In everyday life, The Critic is imaginative, intellectually curious, and highly reflective. They might enjoy reading across different disciplines, debating complex ideas, and questioning conventional explanations. Others often appreciate their ability to challenge assumptions without dismissing creativity. They value originality but also demand logical consistency.

Their challenge is that they can become anchored to their initial analysis, unconsciously filtering new information through their original framework.

The Jester

Core biases: (1) Recency Bias • (2) Overconfidence Bias
Anti-biases: Ambiguity Aversion • Loss Aversion

The Jester thrives on action. They enjoy making decisions, exploring opportunities, and responding quickly to changing market conditions. Investing is exciting, intellectually stimulating, and often entertaining. They are naturally optimistic and believe that opportunities are everywhere for those willing to move quickly.



Outside investing, The Jester is energetic, spontaneous, and highly adaptable. They might enjoy new experiences, dislike routine, and often pursue multiple interests simultaneously. Friends might know them as adventurous, humorous, and willing to take risks others avoid. They recover quickly from setbacks and rarely dwell on past mistakes.

As investors, they enjoy fast-moving industries, emerging companies, and investments with exciting growth potential. Unfortunately, this enthusiasm can lead to excessive trading, emotional decisions, and confusing activity with progress.

The Disciplinarian

Core biases: moderate on all dimensions
Anti-biases: no extreme highs or lows



The Disciplinarian shows moderate results across all dimensions. Unlike the Market Sage who shows low levels across all dimensions, the Disciplinarian shows moderate levels–showing no drastic outbursts in any biases–proving balance and discipline.

They might enjoy creating routines, measuring progress, and continuously refining their decision-making process. They are rarely influenced by social pressure or emotional extremes and often become role models for consistency and reliability. Others might admire their patience, composure, and ability to remain focused during uncertainty.

As I've mentioned earlier, the IDNA is primarily a quiz. That said, there are a total of 56 questions (8 questions per bias (7 biases total)). Each question is a **statement**, to which the respondent must choose between the next answers: strongly disagree, disagree, neutral, agree, strongly agree. Moreover, to make the IDNA accessible to a broader public and not just to experienced investors, the questions are general statements that measure **underlying behavioral tendencies**, and not investing expertise. You can find the statements below (which are also displayed on the web upon doing the quiz).

CONFIRMATION BIAS
(Evaluates how much you seek information that supports your preexisting beliefs.)

1. Once I form an opinion, it is difficult to change my mind.
2. I enjoy hearing opinions that challenge my own.
3. I often trust my first judgment.
4. I usually look for information that supports what I already believe.
5. I can easily admit when I was wrong.
6. I tend to defend my decisions even after receiving new information.
7. I actively search for different viewpoints before making important decisions.
8. I feel uncomfortable when someone proves me wrong.

LOSS AVERSION
(Evaluates how much you tend to avoid losses)

9. Losing something bothers me more, than gaining something similar makes me happy.
10. I prefer a guaranteed reward over a risky one.
11. I often avoid taking risks.
12. I think more about what I could lose than what I could gain.
13. I recover quickly after making mistakes.
14. I would rather avoid regret than pursue a big opportunity.
15. I am comfortable taking calculated risks.
16. I dislike situations where I could lose something valuable.

AMBIGUITY AVERSION
(Evaluates how much discomfort you feel with uncertainty.)

17. I like knowing exactly what to expect.
18. I feel uncomfortable making decisions with incomplete information.
19. I enjoy trying unfamiliar things.
20. I usually wait until I feel certain before acting.
21. I prefer familiar options over unknown ones.
22. Uncertainty makes me hesitate.
23. I feel comfortable making important decisions without knowing every detail.
24. I prefer clear rules over figuring things out as I go.

OVERCONFIDENCE BIAS
(Evaluates how much you overestimate your own judgment.)

25. I trust my instincts more than advice from others.
26. I believe I make better decisions than most people.
27. I often rely on my own judgment.
28. I rarely doubt my decisions.
29. I frequently ask others to challenge my thinking.
30. I feel confident making decisions even with limited information.
31. I believe I notice opportunities before most people.
32. I sometimes underestimate how difficult things will be.

HERD MENTALITY BIAS
(Evaluates how much you are influenced by other people's choices.)

33. I often look at what other people are doing before deciding.
34. Popular choices usually feel safer.
35. If many people recommend something, I am more likely to try it.
36. I prefer making important decisions independently.
37. I have FOMO (Fear Of Missing Out).
38. I often ask friends for advice before making important decisions.
39. I usually trust my own judgment over the crowd.
40. I sometimes change my opinion because most people think differently.

RECENCY BIAS
(Evaluates how much weight you give to recent events.)

41. Recent experiences strongly influence my decisions.
42. I often believe current trends will continue.
43. A recent success makes me more confident.
44. A recent mistake makes me hesitant to try again.
45. I usually focus on long-term patterns before deciding.
46. I react quickly to breaking news.
47. I find it difficult to ignore recent events.
48. I prefer making decisions based on long-term evidence.

ANCHORING BIAS
(Evaluates how heavily you rely on the first piece of information you receive.)

49. My first impression usually stays with me.
50. I compare new options to the first one I considered.
51. I often judge whether something is expensive based on the first price I see.
52. I easily change my opinion when new facts appear.
53. I often stick with my original plan even after circumstances change.
54. My first idea usually feels like the best one.
55. I find it difficult to let go of my original expectations.
56. I regularly rethink important decisions when new information appears.

Now for the **scoring system**.

Each statement can yield a **minimum of 1 point** and a **maximum of 5 points** → strongly disagree (1), disagree (2), neutral (3), agree (4), strongly agree (5). However, questions 2, 5, 7, 13, 15, 19, 23, 29, 36, 39, 45, 48, 52 and 56 are **reverse questions**. Meaning that the scoring system is inverted: strongly disagree (5), disagree (4), neutral (3), agree (2), strongly agree (1).

At the end of the quiz, the respondent obtains **seven results** ranging from a **minimum of 8 to a maximum of 50 per bias**. To convert each result to a 0-100 scale, the quiz implements the next formula:

$$\boxed{\text{Bias Score} = \frac{\text{Raw Score} - 8}{32} \times 100}$$

To set an example, if somebody obtains a score of 31/50 on a certain bias (raw score), implementing the formula would give a result of 72/100 for said bias (bias score).

But how do we calculate the respondents' primary and secondary archetypes?

The result of every archetype is a combination of its two primary biases and anti-biases. That said, **70%** from the score comes from the archetypes' **two dominant biases** and **30%** comes from low scores on its **anti-biases**. Every archetype score adds up to a **100%**.

Before looking at the formulas, please take into account the variables for each behavioral bias:

CB = Confirmation Bias
LA = Loss Aversion
AA = Ambiguity Aversion
OB = Overconfidence Bias
HM = Herd Mentality Bias
RB = Recency Bias
AB = Anchoring Bias

Each archetype score is composed of 35% primary vias, 35% secondary bias, 15% anti-bias #1 and 15% anti-bias #2. Below the formulas, one can find an example on how the scoring system works.

The Prophet

$$0.35CB + 0.35OB + 0.15(100 - HM) + 0.15(100 - LA)$$

The Scholar

$$0.35CB + 0.35OB + 0.15(100 - HM) + 0.15(100 - RB)$$

The Inquisitor

$$0.35AA + 0.35CB + 0.15(100 - OB) + 0.15(100 - RB)$$

The Market Sage

(Unlike the other archetypes, the Market Sage should reward **low overall bias**, especially the biases associated with emotional or social decision-making.)

$$100 - \frac{CB + LA + AA + OB + HM + RB + AB}{7}$$

The Guardian

$$0.35AA + 0.35LA + 0.15(100 - OB) + 0.15(100 - RB)$$

The Archivist

$$0.35LA + 0.35AB + 0.15(100 - OB) + 0.15(100 - HM)$$

The Watchman

$$0.35RB + 0.35AA + 0.15(100 - OB) + 0.15(100 - CB)$$

The Judge

$$0.35AA + 0.35AB + 0.15(100 - HM) + 0.15(100 - RB)$$

The Influencer

$$0.35HM + 0.35RB + 0.15(100 - CB) + 0.15(100 - AA)$$

The Trendsetter

$$0.35RB + 0.35HM + 0.15(100 - AA) + 0.15(100 - LA)$$

The Disciple

$$0.35HM + 0.35CB + 0.15(100 - OB) + 0.15(100 - RB)$$

The Herald

$$0.35HM + 0.35LA + 0.15(100 - OB) + 0.15(100 - CB)$$

The Monarch

$$0.35OB + 0.35LA + 0.15(100 - HM) + 0.15(100 - AA)$$

The Critic

$$0.35AB + 0.35CB + 0.15(100 - HM) + 0.15(100 - RB)$$

The Jester

$$0.35RB + 0.35OB + 0.15(100 - AA) + 0.15(100 - LA)$$

The Disciplinarian

$$100 - \left(\frac{|CB - 50| + |LA - 50| + |AA - 50| + |OB - 50| + |HM - 50| + |RB - 50| + |AB - 50|}{7} \times 2 \right)$$

The IDNA website contains four main windows explaining the sixteen different archetypes, the four main families, the seven behavioral biases and what the research is about overall. The quiz is mainly composed of three sections. The first gathers basic information used for general statistics, such as age, sex, country of residence, investment knowledge and investment experience. The second is a compilation of seven simple non-obligatory questions which help explain and provide a further understanding of the biases analyzed. The third section is the main quiz itself.

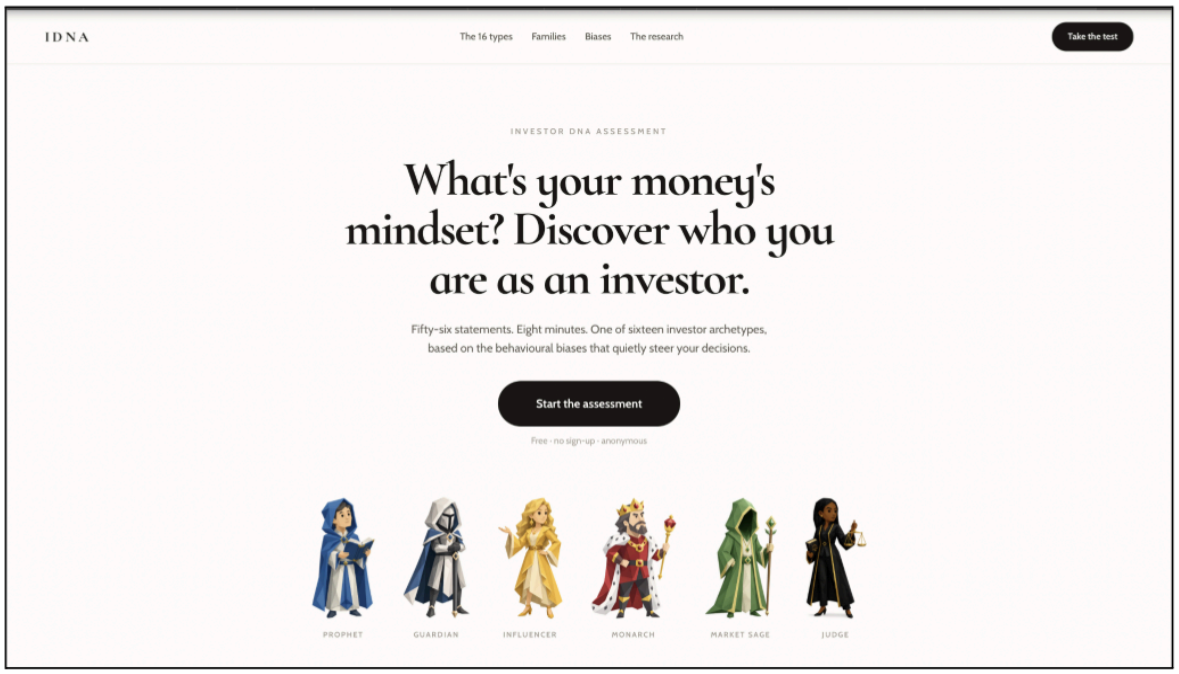


Figure 12 – IDNA website's homepage

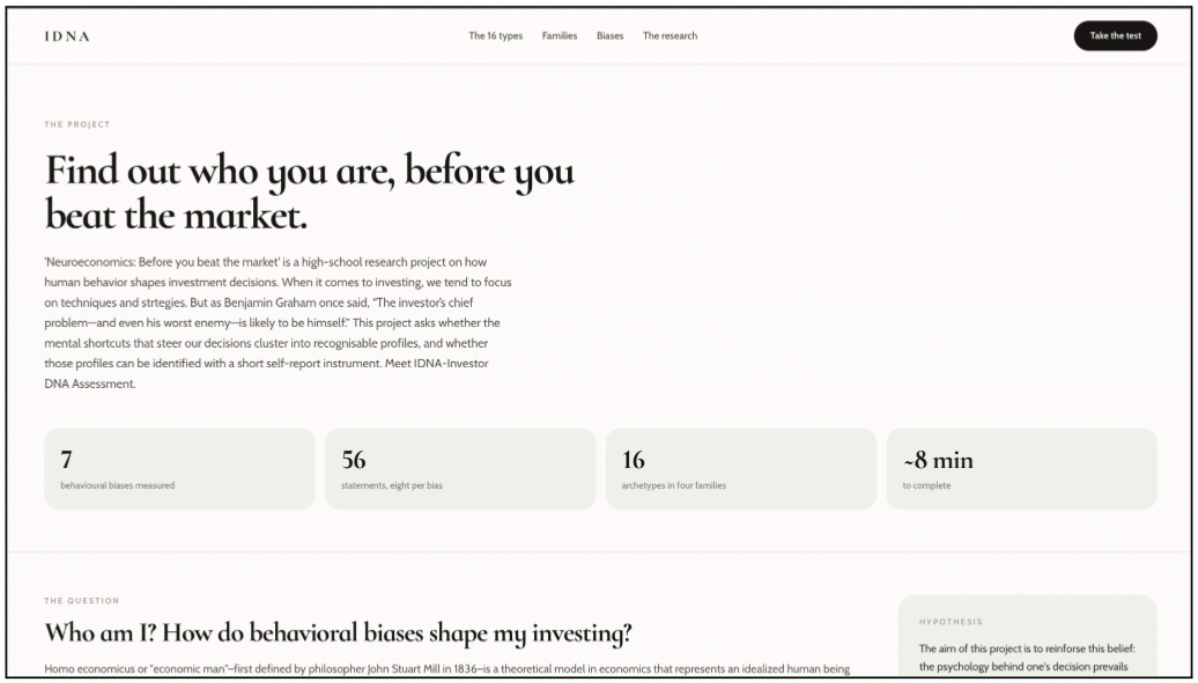


Figure 13 – an abstract from 'The research' page

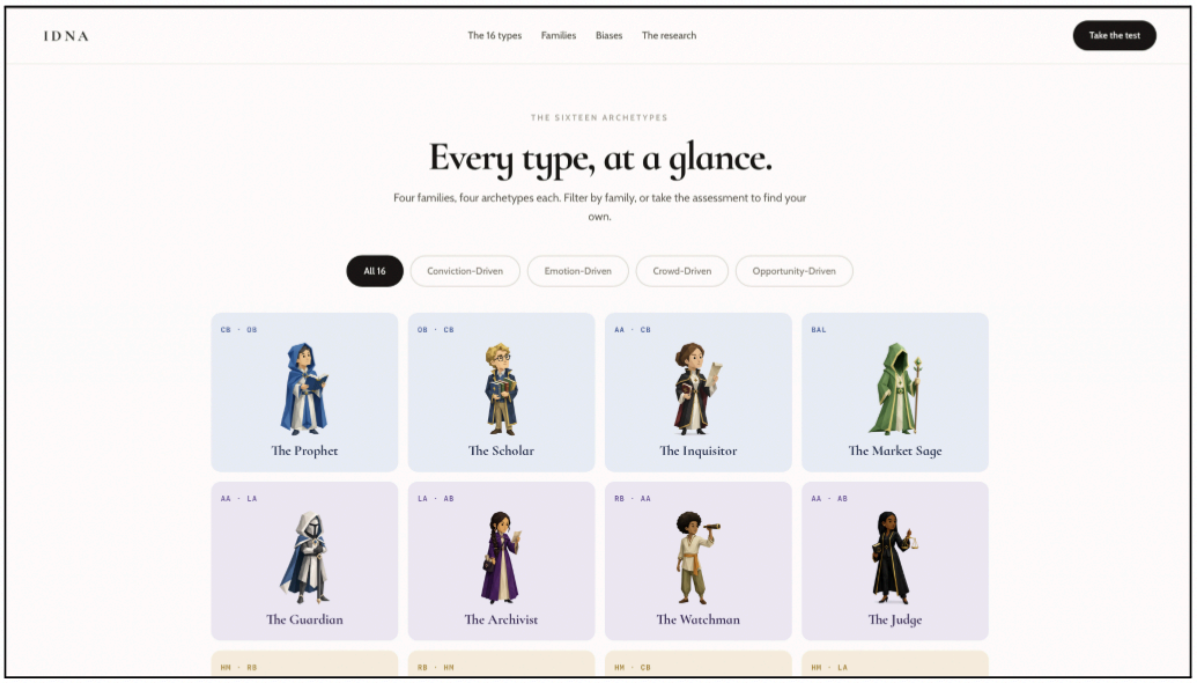


Figure 14 – an abstract from 'The 16 types' page

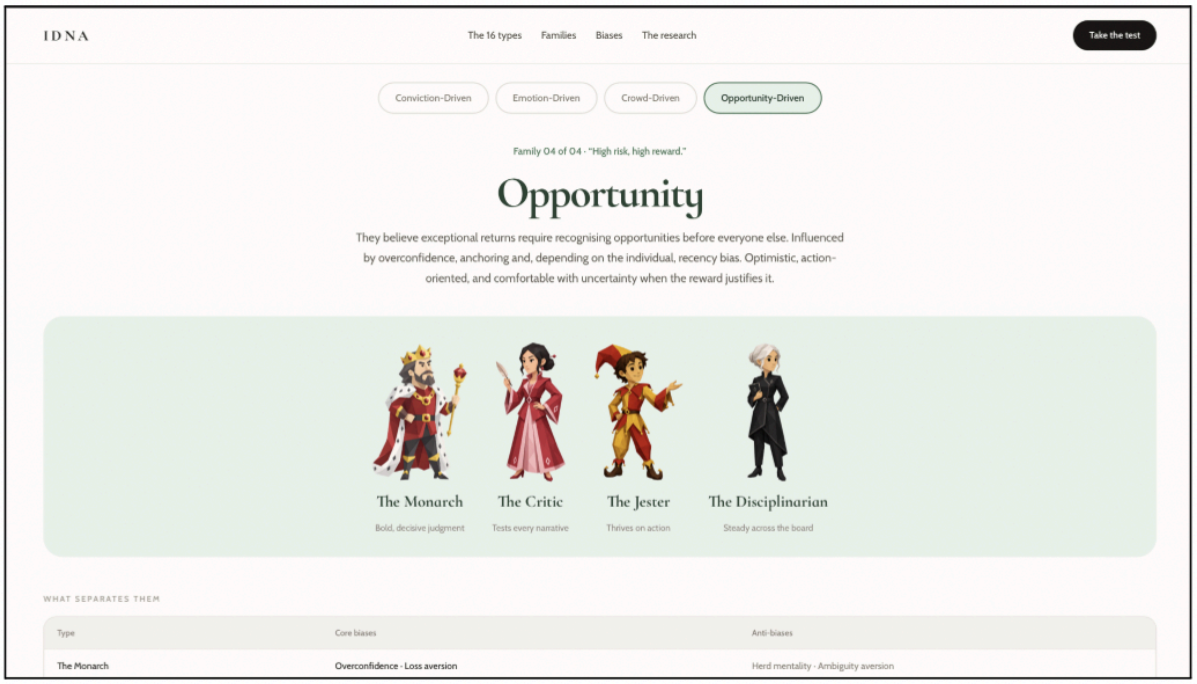


Figure 15 – an abstract from the 'Families' page, portraying the Opportunity-driven family

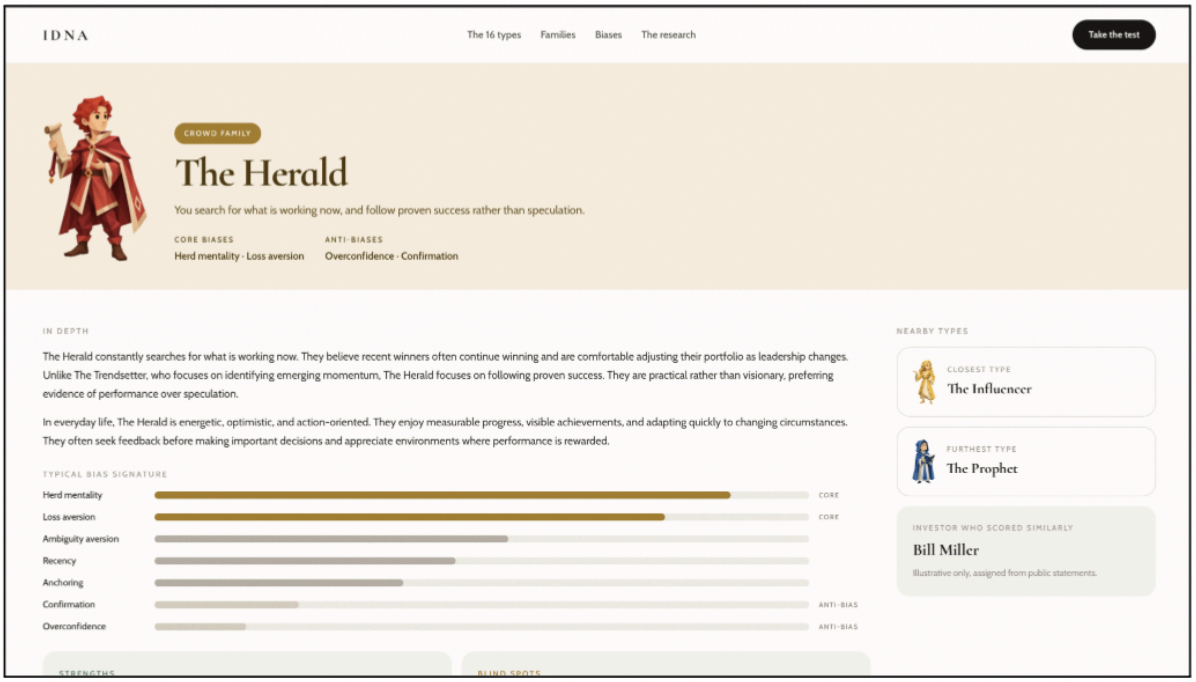


Figure 16 – an abstract showing the individual page each archetype possesses (in this case from the Herald)

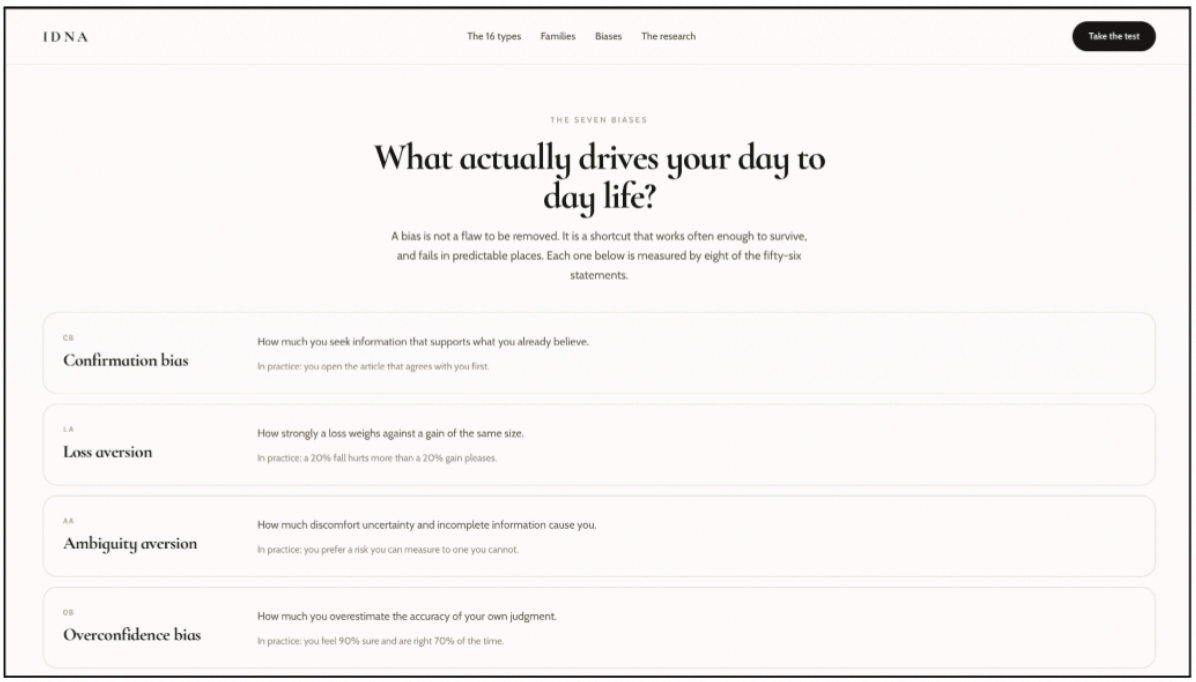


Figure 17 – an abstract from the web explaining the principles of each bias

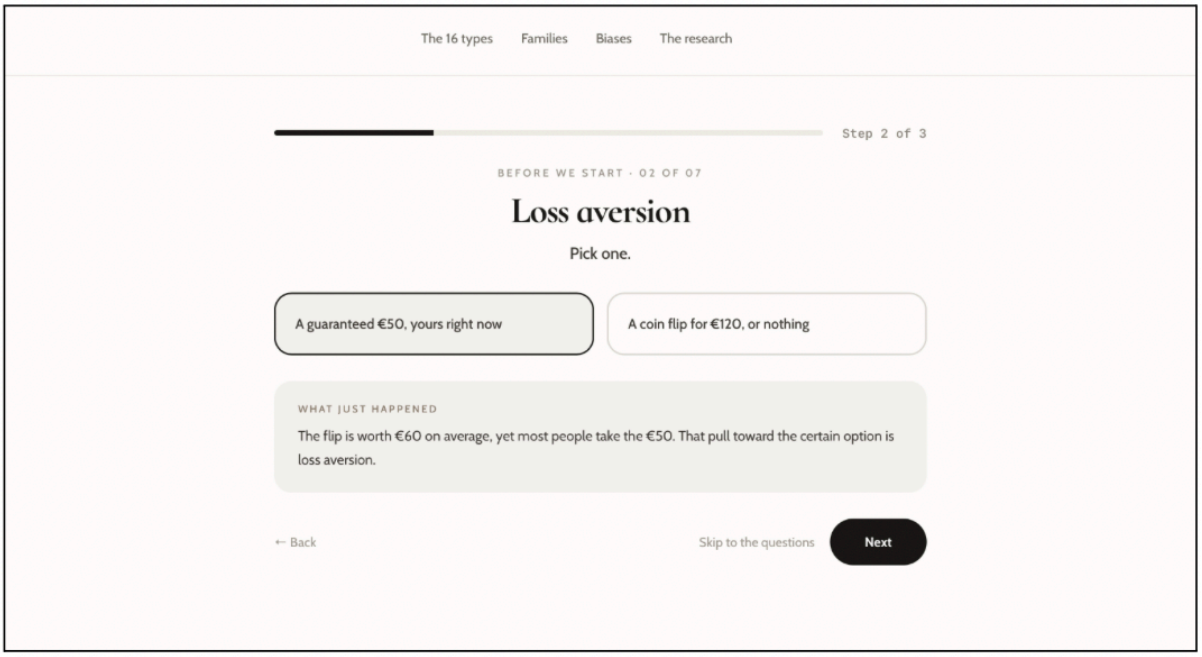


Figure 18 – an abstract from the second section of the quiz explaining what loss aversion is

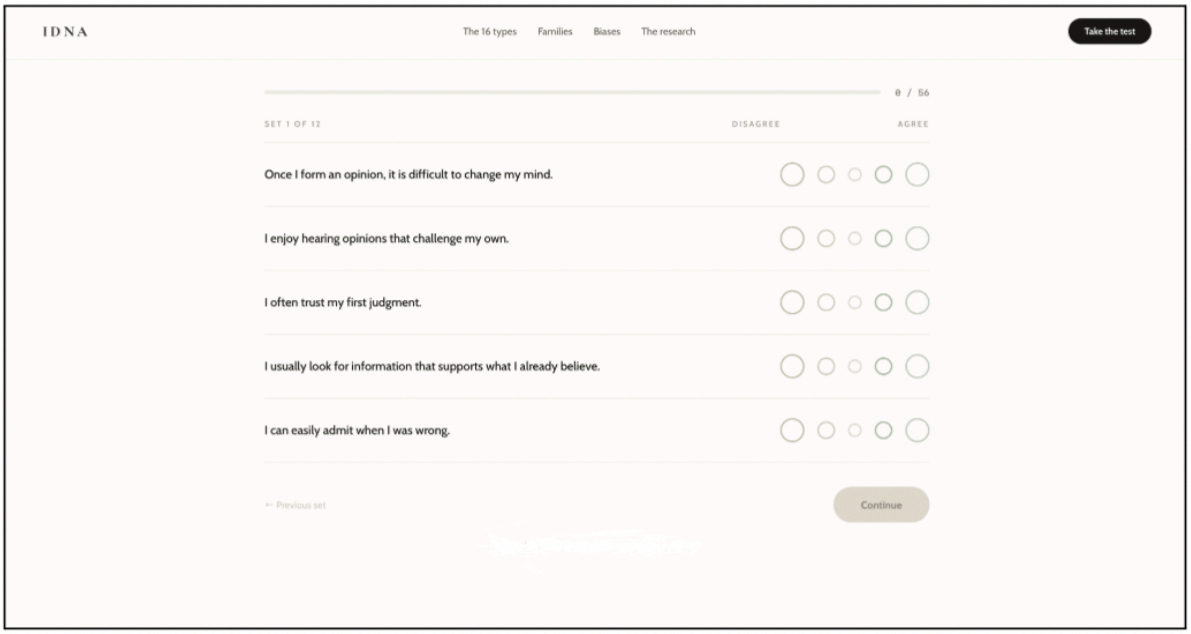


Figure 19 – an abstract from the main body of the quiz

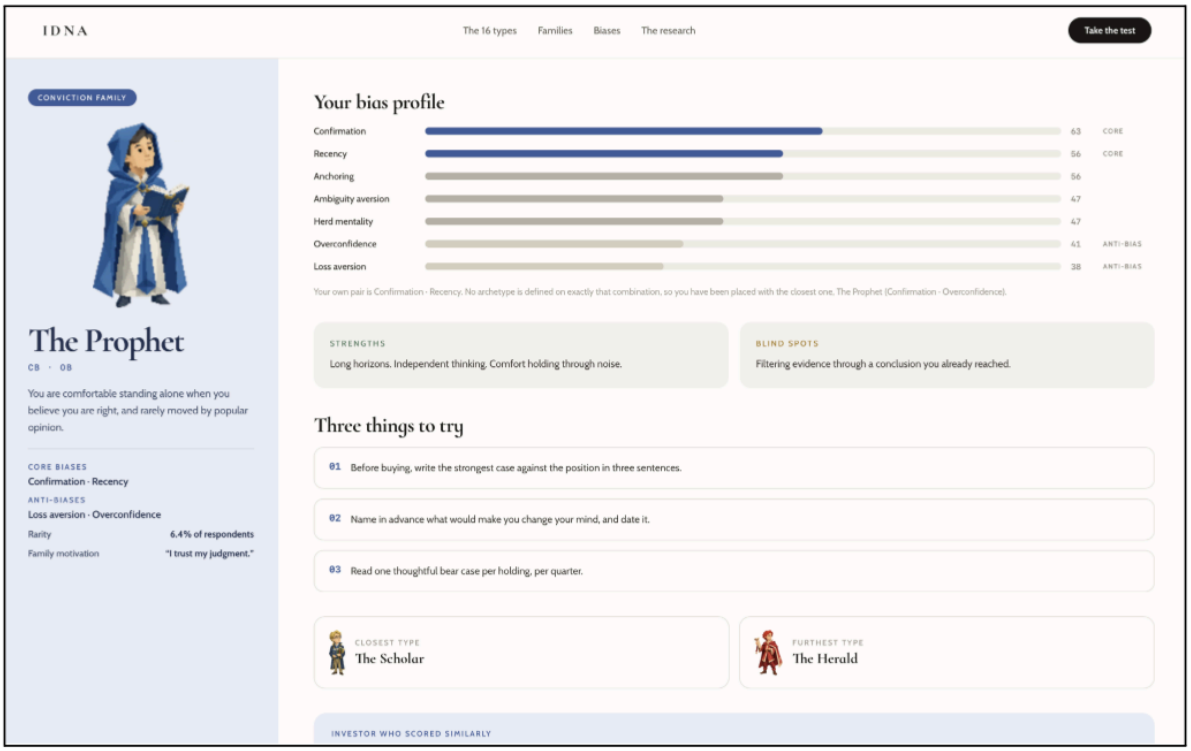


Figure 20 – a randomly generated results page

And what about you, *Reader*?

Confront your own biases at idnabias.com.

The making of IDNA

With new AI tools emerging on the market, I've decided to try to implement them in the creation of this project.

The first step to the creation of IDNA was to design the web wireframes. A **wireframe** is essentially a blueprint–a sketch that draws the structure of the web. So to make that design I used **Claude Design**–a new tool that allows a person to create a simple web design with a couple of clear instructions and explanations of what the project was about. To create the illustrations of each archetype, I used **Chat GPT** alongside an app called **ibisPaint X** to manually retouch and resize each illustration.

Once the wireframes were done, it was time to create the web itself. With the help of a family member who is a software engineer, I learned what **vibe coding** was. Vibe coding is essentially coding via an AI tool. To create the web, I needed various platforms.

To start off, I needed a **domain**. A domain is the web address seen at the top of each website. And so I used a platform called **Vercel** to purchase an available domain–*idnabias.com*. After that, I needed a platform to create the code itself. So I installed **Visual Studio Code**, a platform which allows you to connect to **Claude Code** (an AI tool that generates the web code based on the wireframes previously

created and numerous prompts and instructions). The code was built using **Next.js**. Next.js is a framework, meaning that it's a template created by Vercel to build apps and webs. Next.js is written, in my case, with **JavaScript**.

To manage my code and project–to know which changes were made by who and when–I had to use another platform called **GitHub**. GitHub is a commonly used platform by developers to store their projects and organize their work between teammates.

But to create the code is not enough. One must **deploy** the code, which essentially means to 'publish' it to the Internet to make it visible for anyone. To deploy the code I used **Vercel**.

Once Claude Code created the first version of the web, I still had to make manual changes such as changing the text on the web or uploading the archetype illustrations. Not only that, I also created a separate page–idnabias.com/stats–that shows general statistics of the page, such as how many people have taken the quiz and the general information regarding the latter.

Truth be told, as a first-timer, I thought it to be easier–to create websites via AI tools–than it actually was. As a person with no substantial coding experience whatsoever, I needed external help to learn how to navigate around Visual Studio Code and other tools, and how to connect all those platforms (Vercel, GitHub, Claude Code, etc.) to Visual Studio Code to create the website. Not only that, it took considerable time to generate the illustrations and edit them, as well as generating the quiz itself and perfecting the web's design and user interface/experience.

Conclusion

So, who are you, *Reader*?

It's quite alright if you haven't figured that out just yet. The aim of this project was to dig into yourself and thus learn about yourself. This research project–as well as the IDNA–is a mere glimpse into the world of the emerging field of neuroeconomics. And so it is a long path to figure out who sits behind the driver's seat of your brain.

At the beginning of this project I doubted the weight of our brain's behavioral biases. I thought there was a way around them–a way to become a cold, rational being, invincible to the market's allure. I argued that investing was a field where a person with no extensive knowledge on financial and technical analyses would be like a blind person without a cane. And yet, this project proved otherwise–a person with no knowledge of oneself becomes the blind with no cane. No matter how many strategies one possesses, if a person is reluctant to possess the same amount of knowledge in his own psychology, he will ultimately succumb to his brain's will and desires.

And so how do behavioral biases affect our investment decisions? The answer is now plain and simple. **Behavioral biases have an immense impact on our decisions, and thus most of the weight of our decision-making**. Via this project, I have proved that one does not need any knowledge to invest monthly and obtain a great long-term result. The formula is simpler than ever–one must invest into an ETF and reinvest his/hers earnings, to let compounding do its trick. So, the only possible barrier is–you. It is you, who may withhold from investing out of fear. It is you who might suddenly sell. It is you who might get greedy and impatient. And so to battle yourself–to truly *beat the market*–one must tackle these behavioral biases head on. This is where the creation of the IDNA–the first tool for investors eager to analyze their behavioral biases–comes into play.

This project has not only improved my research skills and awareness when it comes to mis- and disinformation online, but also my writing skills–the ability to tell a story and to get across one's opinions. I have advanced immensely in new, emerging technologies, such as AI platforms–especially vibecoding and website building. Not only that, I have also solidified my knowledge in investment finance, as well as behavioral finance and human psychology. Moreover, I dove into social media, introducing my project to the public and the community around me. I have challenged my creativity, as well as my innovation and entrepreneurship.

But most importantly, I have achieved my ultimate goal–I have learned a kernel of *who* I was.

And I hope you did too, *Reader*.

As Aristotle once said:

"Knowing yourself is the beginning of all wisdom."

Bibliography

CHAPTER I

- Amaha Health. (2026, March 17). *Peniaphobia: When Financial Fear Goes Beyond Worry*. Amaha Health. Retrieved April 8, 2026, from https://www.amahahealth.com/blog/peniaphobia-fear-of-poverty-meaning-causes-symptoms-treatment/?pageName=resources_article
- Campbell, J., & Emanuel, S. (2024). *Homo economicus (economics) | Economics | Research Starters*. EBSCO. Retrieved April 3, 2026, from https://www.ebsco.com/research-starters/economics/homo-economicus-economics
- Foytlin, J. (2022). *(Figure 2) Meet the Famous Buttonwood Tree of Wall Street*. The Wall Street Experience. Retrieved March 7, 2026, from https://www.thewallstreetexperience.com/blog/meet-the-famous-buttonwood-tree-of-wall-street/
- IG Group. (n.d.). *Trading Styles explained: Scalping, Day Trading, Swing & More*. IG Group. Retrieved March 25, 2026, from https://www.ig.com/uk/learn-to-trade/ig-academy/shorts/types-trading-styles
- Kagan, J., & Chavarria, A. (2025, September 28). *(Figure 3) Benjamin Graham: The Father of Value Investing and His Legacy*. Investopedia. Retrieved February 12, 2026, from https://www.investopedia.com/terms/b/bengraham.asp
- King, L. W. (2008). *The Code of Hammurabi*. The Avalon Project. Retrieved February 17, 2026, from https://avalon.law.yale.edu/ancient/hamframe.asp
- Lexicographers and editors at Cambridge University Press. (n.d.). *Speculation*. Cambridge Dictionary. Retrieved March 23, 2026, from https://dictionary.cambridge.org/dictionary/english/speculation
- Miller, P. (2016, February 9). *A Brief History of Investments*. Paul Miller Advisor. Retrieved February 13, 2026, from https://www.paulmilleradvisor.com/blog/brief-history-investments
- Movsesyan, M. (2025, December 13). *What are Financial Derivatives*. IFC markets. Retrieved April 2, 2026, from https://www.ifcm.co.uk/introduction/what-are-financial-derivatives?
- Sarr, J. (2012, September 27). *(Figure 1) The Code of Hammurabi vs. the Law of Moses*. Evangel Classical School. Retrieved March 7, 2026, from https://evangelcs.org/news/2012/the-code-of-hammurabi-vs-the-law-of-moses/
- Schwab, C. (2024, June 11). *(Figures 4 & 5) Limit Orders, Stop Orders, & Market Orders*. Charles Schwab. Retrieved March 25, 2026, from https://www.schwab.com/learn/story/3-order-types-market-limit-and-stop-orders
- Scott, G. (2025, July 14). *Value Investing Definition, How It Works, Strategies, and Risks*. Investopedia. Retrieved March 17, 2026, from https://www.investopedia.com/terms/v/valueinvesting.asp
- Step guide. (n.d.). *What is a mutual fund and how does it work? | TD Canada Trust*. TD Bank. Retrieved April 2, 2026, from https://www.td.com/ca/en/personal-banking/personal-investing/learn/what-is-mutual-fund
- TonyLiberty-FluentInFinance. (2023, December 16). *If you invested $100 in Bitcoin in 2010, you'd have $42800000 today. Makes you wonder what the next big opportunity will be. What are you the most bullish on over the next decade? : r/FluentInFinance*. Reddit. Retrieved April 1, 2026, from

https://www.reddit.com/r/FluentInFinance/comments/18jfgmq/if_you_invested_100_in_bitcoin_in_2010_youd_have/
- Whiteman, L., & Bass, F. (2025, July 2). *How Are Stock Prices Determined?* The Motley Fool. Retrieved March 24, 2026, from https://www.fool.com/investing/how-to-invest/stocks/how-are-stock-prices-determined/

CHAPTER II

- Burns, S. (n.d.). *Figure 8 - 5 Steps To Becoming A Millionaire According To Warren Buffett*. New Trader U. Retrieved May 13, 2026, from https://www.newtraderu.com/2026/05/05/5-steps-to-becoming-a-millionaire-according-to-warren-buffett/
- Coal, N. (n.d.). *Narrative Fallacy*. Conversion Uplift. Retrieved April 30, 2026, from https://conversion-uplift.co.uk/glossary-of-conversion-marketing/narrative-fallacy/
- Computer Hope. (2025, July 9). *What Are the Disadvantages of the Internet?* Computer Hope. Retrieved May 15, 2026, from https://www.computerhope.com/issues/ch001810.htm
- Ekman, P. (n.d.). *What is Fear? | What Causes Fear?* Paul Ekman Group. Retrieved April 8, 2026, from https://www.paulekman.com/universal-emotions/what-is-fear/
- Gaudet, C. (n.d.). *Where Did Nokia Go Wrong? (And Six Lessons You Can Learn from Them) » Predictable Profits*. Predictable Profits. Retrieved April 30, 2026, from https://predictableprofits.com/where-did-nokia-go-wrong-and-six-lessons-you-can-learn-from-them/
- Healy, P. J. (2008, April). *The trouble with overconfidence*. PubMed. Retrieved April 7, 2026, from https://pubmed.ncbi.nlm.nih.gov/18426301/
- Housel, M. (2020). *The Psychology of Money: Timeless Lessons on Wealth, Greed, and Happiness* (M. Housel, Ed.). Harriman House.
- Lento, C., & Gradojevic, N. (2021, July 16). *Figure 7 S&P 500 Index Price Spillovers around the COVID-19 Market Meltdown*. MDPI. Retrieved April 28, 2026, from https://www.mdpi.com/1911-8074/14/7/330
- Taleb, N. N. (2008). *The Black Swan: The Impact of the Highly Improbable*. Random House Publishing Group. https://online.fliphtml5.com/fzqli/oyju/
- World Health Organization (WHO). (2025, September 30). *Mental disorders*. World Health Organization (WHO). Retrieved April 28, 2026, from https://www.who.int/news-room/fact-sheets/detail/mental-disorders
- Yemi. (2024, August 15). *The Psychology of Greed: Why People Pursue Money at Any Cost*. Risevest. Retrieved April 6, 2026, from https://risevest.com/blog/the-psychology-of-greed-and-money

CHAPTER III

- Carrier, J. (2019, July 11). *Dual Process Theory: A Simple Summary*. PeopleShift. Retrieved June 11, 2026, from https://people-shift.com/articles/dual-process-theory/
- Houston, K. A. (2026). *When Ego Enters the Portfolio:What Behavioral Finance Reveals About Confidence and Bias in Investing*. Innermost Wealth Management. Retrieved April 7, 2026, from https://www.innermostwealth.com/blog/behavioral-finance-ego-investing#:~:text=Personality.,question%20as%20early%20successes%20accumulate.

- Stanley, M. (2023). *Behavioral Finance*. Morgan Stanley. Retrieved May 24, 2026, from https://www.morganstanley.com/cs/pdf/619598-3174306-MSVA-Behavioral-Guide-r7.pdf

CHAPTER IV

- AvaTrade. (n.d.). *(Figure 6) How to Choose a Trading Market*. AvaTrade. Retrieved March 31, 2026, from https://www.avatrade.com/education/trading-for-beginners/trading-markets
- Benzinga Pro. (n.d.). *Benzinga Pro | Fast Stock Market News*. Benzinga Pro. Retrieved June 12, 2026, from https://www.benzinga.com/pro/
- Boyle, M., & Gratton, P. (2025, August 15). *The World's 11 Greatest Investors*. Investopedia. Retrieved June 12, 2026, from https://www.investopedia.com/world-s-11-greatest-investors-4773356#toc-john-templeton
- Interactive Brokers. (n.d.). *Interactive Brokers Ireland: Home*. Interactive Brokers Ireland: Home. Retrieved June 12, 2026, from https://www.interactivebrokers.ie/en/home.php
- Investopedia. (n.d.). *Investopedia*. Investopedia. Retrieved June 12, 2026, from https://www.investopedia.com
- TradingView. (n.d.). *TradingView*. TradingView — Track All Markets. Retrieved June 12, 2026, from https://www.tradingview.com

CHAPTER V

- Smirnova, S. (2026, September 1). *IDNA-Investor DNA Assessment*. idnabias. https://www.idnabias.com

OTHER

- Claude AI retrieved from https://claude.com/
- GitHub retrieved from https://github.com/
- Language Tool retrieved from https://languagetool.org/?referrer=editor
- Vercel retrieved from https://vercel.com
- Visual Studio Code retrieved from https://code.visualstudio.com/

t