

A New Paradigm for Practical Application of Behavioral Finance: Creating Investment Programs Based on Personality Type and Gender to Produce Better Investment Outcomes

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Offering cogent explanations of seemingly irrational investor and market behavior, behavioral finance has emerged as an important branch of economics in recent years. Indeed, the 2002 Nobel Memorial Prize in Economic Sciences was awarded to Vernon Smith and Daniel Kahneman, two seminal researchers in experimental economics and behavioral finance. Paralleling the groundbreaking work in academia, most practitioners agree that the interface between human emotions and financial decision-making contributed to both the stock market bubble of the mid to late 1990s and the recent bear market.

The behavioral finance literature falls into two primary areas: the identification of “anomalies” in the efficient market hypothesis that behavioral models may explain (e.g., DeBondt and Thaler [1985]) and the identification of individual investor behaviors or biases inconsistent with classical economic theories of rational behavior (e.g., Odean [1999]). Although Odean [1999] and Barber and Odean [2001] link certain biases with gender, trading behavior, and investor type, to date no study examines the link between personality measures, gender, and investor biases recently documented in the behavioral finance literature. Moreover, little attempt has been made to apply many of these documented biases. By identifying which personality types and genders are susceptible to behavioral biases and suggesting investment programs that mitigate the ill effects of these biases, this article ushers

in a new paradigm of practical application of behavioral finance.

We believe that the popular methods of client profiling have undermined investment outcomes for large numbers of investors. Investors and advisors continue to create investment programs that consist mainly of risk tolerance questionnaires, without considering other robust measures such as personality type and gender. Common client profiling techniques overlook the evidence that many investors lack behavioral control, even when they know their investment decisions contradict their stated goals. Behavioral biases (i.e., investment mistakes) are so deep-seated that, in short, some investors may need to be “saved” from their poor decision-making.

By profiling investors by personality type and gender, advisors can create programs that mitigate individual biases—encouraging investors to observe their long-term investment strategies, saving them the costs of rebalancing a plan in response to unexpected market movements. In our view, investment policy statements should include investor personality type and gender profiles, so that investment programs can be adjusted accordingly.

We administered to 100 investors a detailed Myers-Briggs Type Indicator® personality test and a questionnaire designed to uncover investor biases. The results indicate that personality types and genders are differentially susceptible to numerous investor biases, suggesting why investors are vulnerable to the

same investment mistakes (biases) over time.

The introduction is followed by a brief account of the rise and fall of *homo oeconomicus* (rational economic man), an overview of existing psychographic and gender models, and a description of our new paradigm. Then, after explaining Myers Briggs Type Indicator® and bias testing, we discuss the key findings of our research study. Next, we summarize how practitioners can apply this new paradigm of practical application of behavioral finance. Finally, we suggest topics for future study.

THE RISE AND FALL OF HOMO OECONOMICUS

Much of economic and financial theory is based on the assumption that individuals act perfectly rationally and appraise all available information when making economic decisions. Specifically, investors should find the most desirable combination of expected return and risk—located at the tangency point along the investor’s personal indifference curve—which represents maximum utility given available investment opportunities. Recently, however, numerous studies have called into question economic theory’s most basic assumption. Having documented many examples of irrational behavior and repeated errors in judgment, behavioral finance has prompted disillusionment with *homo oeconomicus*, or “rational economic man.” No longer can advisors take for granted an investor’s ability to execute the elegant Markowitz portfolio selection model.

In most cases, investors are unaware of their predisposition for error. And, more often than not, an irrational investor is a dissatisfied investor. But if investors come to understand themselves better and attempt to correct these biases, they can do what so many have found so difficult: adhere to a disciplined investment plan.

PSYCHOGRAPHIC MODELS USED IN BEHAVIORAL FINANCE

Psychographic models classify individuals by certain characteristics, tendencies, or behaviors. We believe that by segmenting individuals by personality type and gender and correlating these variables with specific investor biases, we can actualize the work that has identified these biases (e.g., Kahneman and Tversky [1979]). If certain groups of investors prove susceptible to investor biases, practitioners can recognize behavioral tendencies before investment decisions are made and, likely, produce better investment outcomes.

Two studies—Barnewall [1987] and Bailard, Biehl, and Kaiser (BB&K) [1986]—apply useful models of investor psychographics. However, both studies predate significant findings in the behavioral finance literature, including important biases discovered in recent years. Further, we believe that the models they apply cannot describe a wide range of investors; the psychographic model used in our study, the MyersBriggs Type Indicator® (MBTI®), is superior.

The Barnewall model—one of the first and most-used—distinguishes investors by their passivity or activity in creating wealth. Although it usefully describes certain individual investors, it has crucial limitations. Investors not only have created their wealth differently, they also span a multitude of personalities; moreover, they are gendered. The modern investment era demands a better model.

The BB&K model features some of the principles of the Barnewall model, but—by classifying investor personalities by level of confidence and method of action—it introduces additional segmentation. Like the Barnewall, the BB&K model is useful in working with certain clients and may explain in general terms why a person is predisposed to certain investor behaviors. But the BB&K model neither scientifically describes personality type nor links investor behaviors with recently identified investor biases, limiting its utility. As noted, neither study had the benefit of the behavioral finance literature that informs this article.

GENDER AND BEHAVIORAL FINANCE

Several studies have examined the link between gender and behavioral finance biases; of these, Barber and Odean [2001] is perhaps the most important and comprehensive. The study concludes that men are more subject than women to the overconfidence bias reflected in trading behavior. The researchers found that, over a six-year period, men on average traded 45% more than women. And single men on average traded 67% more than single women.

The present study is still more comprehensive, gender-testing for many of the other behavioral biases documented in the behavioral finance literature. The data suggest men and women are markedly different in their susceptibility to behavioral biases.

A NEW PARADIGM OF PRACTICAL APPLICATION OF BEHAVIORAL FINANCE

We believe the next phase in the practical application of behavioral finance is to correlate established investor

EXHIBIT 1

Paradigms of Practical Application of Behavioral Finance

Measure	Old Paradigm	New Paradigm
Correlates behavioral finance biases with psychographic measures	No	Yes
Number of aspects of personality tested	2 or 4	8
Rigorous test to determine personality type	No	Yes
Statistical testing to identify and measure biases	Limited	Yes
Gender-based bias testing	Limited	Yes

biases with the psychographic and gender profiles of specific investors, as planning with these correlations in mind would yield better investment outcomes. Anticipating this new chapter, we ask, “Are certain personality types or genders susceptible to biases identified in the behavioral finance literature, and can this information be helpful to investors and advisors?” Our study examines the responses of 100 investors given a detailed Myers-Briggs Type Indicator® personality test and a questionnaire designed to uncover investor biases. Exhibit 1 compares the new and old paradigms of practical application of behavioral finance.

MYERS-BRIGGS TYPE INDICATOR® AND BEHAVIORAL BIAS TESTING

Developed and refined over more than 50 years, the Myers-Briggs Type Indicator® (MBTI®) instrument test is the most popular psychographic model in industry use today. Approximately two million people take the MBTI® each year, and the MBTI is considered the most widely used personality test in history. The MBTI describes 16 personality types based on an assessment of four aspects of human personality: *how one interacts with the world and where one directs one’s energy* (Extraverted or Introverted—E versus I), *what kind of information one naturally notices* (Sensing or Intuitive—S versus N), *how one makes decisions* (Thinking or Feeling—T versus F), and *whether one prefers to live in a structured or a spontaneous way* (Judging or Perceiving—J versus P).

One’s personality type can be designated by a four-letter classification. For example, an *introverted, sensing, thinking, judging* person is labeled an ISTJ. The 16 personality types are ISTJ, ISFJ, INFJ, INTJ, ISTP, ISFP, INFP, INTP, ESTP, ESFP, ENFP, ENTP, ESTJ, ESFJ, ENFJ, and ENTJ. Readers can learn more about the use of personality types in the “Implications for Practitioners” section.

Our questionnaire was based largely on the work of Kahneman and Riepe [1998], in which they categorize behavioral biases as *biases of judgment, errors of preference, and living with the consequences of decisions*. Biases of judgment include *overconfidence, optimism, hindsight, and overreaction to chance events*. Errors of preference include *non-linear weighting of probabilities; people value changes, not states; value of gains and losses function; the shape and attractiveness of gambles; purchase price as a reference point; narrow framing; repeated gambles and risk policies; and short and long views*. Living with the consequences of decisions includes *regrets of errors and omissions and regret and risk taking*.

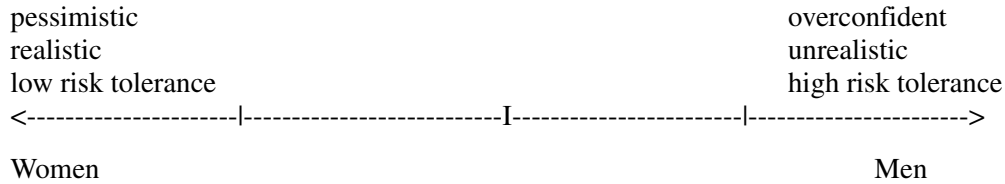
STUDY DESCRIPTION AND KEY RESULTS

During the summer of 2002, 100 investors were administered a Myers-Briggs Type Indicator® personality test and a behavioral finance bias questionnaire. All responses were anonymous, but we did request that participants list their gender (98% populated) and age range (95% populated). We first evaluated each respondent’s

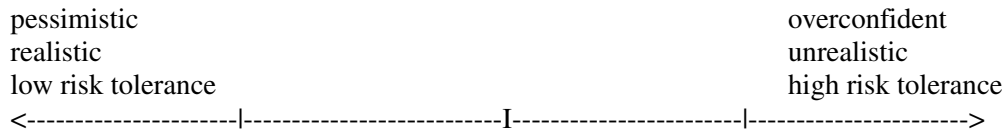
EXHIBIT 2

Type and Gender-Based Risk Tolerance Scales

Scale 1. — Gender-Based



Scale 2. — Personality Type-Based



INFJ	ENFJ	ENFP	ENTP	ESTP
	INFP	ENTJ	ESTJ	
	INTJ	INTP	ISTP	
	ISFJ	ISTJ	ESFP	
		ISFP		
		ESFJ		

personality type and then tabulated answers to investor bias questions. We answered the question, “Did respondents of opposing personality extremes (and male and female respondents) reveal different investor biases? For example, did Extraverts respond to a particular question differently from Introverts?”

The study yielded many statistically significant insights. Broadly, our findings showed that many personality types and both genders are differentially disposed to numerous behavioral finance biases. Exhibit 2, labeled the “Type and Gender-Based Risk Tolerance Scales,” illustrates the most widely applicable results of our study. These easy-to-use continuums were developed after determining that susceptibility to the overconfidence and optimism biases distinguishes both personality type and gender. Specifically, a male ESTP subtype can be considered the most risk tolerant investor, while a female INFJ can be considered the least risk tolerant.*

These results suggest many useful applications. Chiefly, personality type and gender can be used to create an investment program that will compensate for behavioral biases. For example, introverts, intuitives, feelers, judgers (INFJ), and women tolerate significantly less risk than their type and gender counterparts. A conservative investment plan should be crafted for these individuals—

even if a standard risk tolerance questionnaire indicates otherwise—so that this investor class can weather market movements over the long term.

PUTTING IT ALL TOGETHER: IMPLICATIONS FOR PRACTITIONERS

Investment advisors are urged to consider client gender and personality type in assessing risk tolerance prior to executing an investment program. We suggest the following four-step method:

- **Step One: Ask your client to take a personality type test.** Completing and evaluating a lengthy Myers-Briggs Type Indicator® test may not be an option for some advisors and their clients. Conveniently, many condensed personality tests are available. Exhibit 3 presents an abbreviated identification methodology adapted from Tieger and Barron-Tieger [1995].
- **Step Two: Evaluate responses to determine personality type.**
- **Step Three: Assess risk tolerance using the “Type and Gender-Based Risk Tolerance Scales” in Exhibit 2.** Using the scales in the previous section, assess the

EXHIBIT 3

Simplified Personality Assessment

Extraverts	Introverts
Like being the center of attention.	Avoid being the center of attention.
Talk more than listen.	Listen more than talk.
Communicate with enthusiasm.	Keep their enthusiasm to themselves.

Circle: E or I

Sensors	Intuitives
Trust what is certain and concrete.	Trust inspiration and inference.
Value realism and common sense.	Value imagination and innovation.
Tend to be specific and literal; give detailed descriptions.	Tend to be general and figurative; use metaphors and analogies.

Circle: S or N

Thinkers	Feelers
Step back; apply impersonal analysis to problems.	Step forward; consider effect of actions on others.
Value logic, justice, and fairness; one standard for all.	Value empathy and harmony; see the exception to the rule.
Naturally see flaws and tend to be critical.	Naturally like to please others; show appreciation easily.

Circle: T or F

Judgers	Perceivers
Are happiest after decisions have been made.	Are happiest leaving their options open.
Have a work ethic; work first then play.	Have a play ethic; play first then work.
Prefer to know what they are getting into.	Like adapting to new situations.

Circle: J or P

client. Consider incorporating other aspects of the client's profile into the assessment, such as the investor's life cycle stage and other often-used qualitative measures. Quantitative risk tolerance measures can also be helpful, but should be used as cross-verifying tool, not the sole measure.

- **Step 4: Execute investment program.** Equipped with a cross-verified assessment, the advisor can create an asset allocation and execute an investment program designed to mitigate behavioral biases. Exhibit 4 depicts a broad asset allocation framework based on the following assumptions and empirical findings from our study:

1. Women are 33% more risk averse than men.
2. The most risk tolerant gender/personality combination should be 100% in equity-based investments.
3. The most risk averse gender/personality combination should be 100% in fixed income-based investments.
4. There is an equal distance between personality clusters (e.g., the distance between the INFJ and [ENFJ . . . ISFJ] cluster is equal to the distance between the ESTP and [ENTP . . . ESFP] cluster). Clusters are partitioned by shading in Exhibit 4.

EXHIBIT 4

Gender and Personality-Based Asset Allocation Model

Personality Type	Suggested Male Asset Allocation	Suggested Female Asset Allocation
INFJ	33.3% Equity, 66.6% Fixed Income	100% Fixed Income
ENFJ	50% Equity, 50% Fixed Income	16.6% Equity, 83.3% Fixed Income
INFP	50% Equity, 50% Fixed Income	16.6% Equity, 83.3% Fixed Income
INTJ	50% Equity, 50% Fixed Income	16.6% Equity, 83.3% Fixed Income
ISFJ	50% Equity, 50% Fixed Income	16.6% Equity, 83.3% Fixed Income
ENFP	66.6% Equity, 33.3% Fixed Income	33.3% Equity, 66.6% Fixed Income
ENTJ	66.6% Equity, 33.3% Fixed Income	33.3% Equity, 66.6% Fixed Income
INTP	66.6% Equity, 33.3% Fixed Income	33.3% Equity, 66.6% Fixed Income
ISTJ	66.6% Equity, 33.3% Fixed Income	33.3% Equity, 66.6% Fixed Income
ISFP	66.6% Equity, 33.3% Fixed Income	33.3% Equity, 66.6% Fixed Income
ESFJ	66.6% Equity, 33.3% Fixed Income	33.3% Equity, 66.6% Fixed Income
ENTP	83.3% Equity, 16.6% Fixed Income	50% Equity, 50% Fixed Income
ESTJ	83.3% Equity, 16.6% Fixed Income	50% Equity, 50% Fixed Income
ISTP	83.3% Equity, 16.6% Fixed Income	50% Equity, 50% Fixed Income
ESFP	83.3% Equity, 16.6% Fixed Income	50% Equity, 50% Fixed Income
ESTP	100% Equity	66.6% Equity, 33.3% Fixed Income

SUGGESTIONS FOR FURTHER RESEARCH

Given our sample of 100 individuals, we could not examine—with any degree of statistical significance—behavioral biases for each of the 16 personality types delineated by the Myers-Briggs Type Indicator®. A research team would need more than 1,000 samples to produce results of significant statistical power. Perhaps a financial institution or other large organization has the resources and incentive to conduct such a large-scale test.

Examining how an individual's responses change over time represents a second avenue for future research. Researchers might ask, "Does age, income, previous investment outcomes, or bull and bear market backdrops influence investor biases, or are biases rooted, relatively static personality traits?" Additionally, researchers might examine whether investor types (e.g., individuals, institutions, growth managers, value managers, small cap managers, fixed income managers, and international managers) are, like personality types, differentially susceptible to biases.

ENDNOTE

* In terms of additional statistically significant results from our study, beyond those related to the overconfidence and optimism biases, we found the following: Intuitives are more likely to cut losses right away, while Sensing types are more likely to buy and hold and are twice as risk averse as Intuitives; Introverts are more subject to errors of preference and care about the path of their wealth (i.e., dislike market drawdowns) to a greater extent than Extraverts; Judging types are one third more risk averse than Perceiving types; Women are more susceptible to the hot hand fallacy than Men; Men look at their portfolios more often than Women do; Men are more likely to cut losses immediately, while Women are more likely to buy and hold; Women are a third more risk averse than Men.

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