The Emotion of Money: The Posited Relationship of Emotional Intelligence to Long-Term Investment Performance

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The Emotion of Money: The Posited Relationship of Emotional Intelligence to Long Term

Investment Performance

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Abstract

Is investment performance improved if one's emotions are controlled in comparison to others who are panicking and over reacting to volatile swings in the stock market? Logic suggests this could be the case given that investors who can stay balanced and trade against this cycle of emotion typically are investment performance leaders. This thesis investigates whether there is a relationship between emotional intelligence (EI) and investment behavior.   Emotional intelligence includes characteristics such as emotional awareness and emotional management.   A previously published Vanguard Investments study about individual investors found that those who tested higher for emotional intelligence made investment decisions that correlated with better investment outcomes. (Ameriks, 2007) This thesis advances that concept by investigating professional mutual fund portfolio managers. Higher levels of emotional intelligence should be even more vital for portfolio managers who must develop emotional management skills for career survival. It was hypothesized that those who have higher emotional intelligence would have better investment performance than their peers. Portfolio managers were recruited by email and completed a survey that ascertained emotional intelligence attributes based on their responses. Portfolio managers with higher emotional intelligence exhibited investment performance that was modestly superior to their peers. A control group of individuals were then asked the same types of questions. Their responses reflected lower mean EI scores and less control over their emotions and their financial composure.

The results point to a link between emotional intelligence and investment performance. More specifically, the portfolio managers with the highest mean EI test score managed mutual funds that reported performance in the highest investment performance quartile. This relationship was modest but meaningful and points to an important input in the investment decision process.

Dedication

I dedicate this thesis to my family and Antoinette "Ton Ton" Russell. To my wife, Megan, and my sons, Colin and Liam, for your unconditional love and support. I thank you for all that you mean to me.

To Ton Ton, thank you for inspiring me to finish this thesis and your tireless commitment.

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opportunity to work with such a talented and intellectually rich individual.

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Chapter I

Introduction

Human Behavior flows from three main sources: desire, emotion, and knowledge" Plato

Humans are emotional beings, and thus prone to be strongly influenced by

emotions when presented with decisions. As such, a key question is whether a higher

level of emotional intelligence improves investment choices. Behavioral finance experts

have made an important contribution to the investment decision-making process with the

acknowledgement that investors tend to be affected by emotion in making investment

choices (Wood et al., 2002, Lo, 2005).   Recent research suggests a link between

emotional intelligence (EI) and investment behavior. (Ameriks et al., 2007 & Ameriks et

al., 2009) This thesis proposes to investigate whether portfolio managers who

demonstrate investment success have measurably higher levels of emotional intelligence

than less successful managers? If successful portfolio managers possess greater

awareness and understanding of their emotions than other investors, can these portfolio

managers use that attribute to make superior investment choices?

It is hypothesized in this study that portfolio managers with higher than average

emotional intelligence will be more successful investment managers than their

colleagues. Research provides evidence that emotional intelligence matters in

emotionally-oriented professions. (Goleman, 2000) In the portfolio management

profession where emotional awareness and management of emotions is paramount to

superior decision-making, persons with higher levels of emotional intelligence should excel.

An assessment of emotional intelligence in professional portfolio managers should help us better understand their decision-making. Statistical measures were utilitized to identify a subset of this group of portfolio managers who consistently outperformed their peers. After gathering investment performance data and segmenting top quartile portfolio managers, a comparison was made of emotional intelligence of the top quartile managers to those within the broader group of portfolio managers.

This research suggests EI may be a key attribute of outstanding portfolio managers. Results of this research may aid in the selection and education of investment professionals. Most investment professionals dedicate significant portions of their education to understanding investment valuation and financial concepts, with a limited amount of time allocated to studying the impact emotions can have on investment decision-making. Research focused on professional portfolio managers will further expand our understanding of investment decision-making. If investment professionals' emotional intelligence skills could be developed and enhanced, they should be positioned to make better, more profitable decisions more often.

Definition of Terms

Emotional intelligence (EI): The capacity to identify and manage both one's own emotions and the impact of others' emotions (Goleman, 1995) "…the ability to perceive and express emotions, to understand and use them, and to manage emotions so as to foster personal growth." (Lewis, Haviland-Jones, 2000, p. 506)

The EI model used by Mayer and Salovey has four distinct areas: perceiving, using, understanding, and regulating emotions. (Lewis, Haviland-Jones, 2000, Ameriks et al., 2009).

Perceiving emotion: the ability to recognize emotional signals in people's communications.

Using emotions: the ability to use emotion as a source of information to enhance thinking and problem solving.

Understanding emotions: the ability to analyze emotions, predict how emotional states will change over time, and evaluate the influence of emotion on an outcome.

Regulation of emotions: the ability to understand and respond to emotional stimuli in the context of a particular goal or social outcome. Regulating emotion is synonymous with managing emotions.

Investment success: investment return in the context of how a portfolio manager's investments perform relative to an appropriate peer group. More specifically, a comparison of a portfolio manager's mutual fund investment performance in the context of other portfolio managers who are utilizing the same investment universe as the standard of measure.

Mutual Funds: a pool of diversified individual investment securities managed by professional money managers. Mutual fund portfolio managers are segmented into investment "style" groups. Morningstar is one of the pre-eminent aggregators that tracks data about investment funds and its manager(s).   An investment universe represents a Morningstar category based on investment characteristics such as market capitalization or Value or Growth investment characteristics.   Morningstar creates easily understood

comparisons of underlying funds and their fund managers. These services enable the

quantification and comparison of relative investment success. (Morningstar, 2008)

Portfolio Turnover: The rate of trading activity in a fund's portfolio of investments, equal

to the lesser of purchases or sales for a year, divided by average market value of total

assets during that year. (Investors word.com, 2009) (Morningstar, 2008)

Long Term: defined and quantified as annualized total returns periods of three years or

longer with the presumption that a three year or longer time horizon reduces the impact

of short term investment factors, consequently reducing the likelihood that luck, not skill,

was responsible for superior relative investment performance.

Background of the Problem

"Investing is not a game where the guy with the 160 IQ beats the guy with the 130 IQ…Once you have ordinary intelligence, what you need is the temperament to control the urges that get other people into trouble in investing." Warren Buffett (Buffett, 2008)

In 2002, Daniel Kahneman, a Princeton University psychologist won the Nobel

Prize in Economic Sciences for his study of the decision-making processes of investors.

Experts in Behavioral Finance, like Kahneman, seek to conjoin psychology and

economics to create a platform from which to explore the range of emotions involved in

making investment decisions. An individual's psychological or emotional make-up can

influence selection of investments. (Pompian, 2006) It can cause an investor to avoid

some opportunities altogether, thus it is important to understand the extent of that

influence. (Pompian, 2006) Investors need to consider emotions as important data in

investment decision-making. (Ameriks et al., 2007 & Caruso and Salovey, 2004)

Behavioral Finance experts seek to label and explain emotional factors which impact

decisions thereby helping investors develop skills to recognize their own biases and

situations in which particular errors occur. (Wood et al., 2007) Awareness of emotionally driven biases and an assessment of those biases are crucial to good investment decision-making. (Wood et al., 2007)

Emotional biases include behaviors like hindsight bias, heuristics and herding. (Pompian, 2006) Hindsight bias is a cognitive bias that causes people to believe they predicted the future, when in fact the person has "predicted" it only with the benefit of hindsight. (Statman, 2003) As Statsman and Scheid wrote in 2003, Warren Buffett is now generally accepted as an investment genius; but was his investment genius recognized before the fact or was Buffet's genius only recognized more recently, with hindsight? (Statman, 2003) Hindsight bias is an example of an emotional bias that causes people to overestimate their initial knowledge and can in turn prevent them from learning from mistakes. (Pompian, 2006) Despite the rationality which many psychological and financial theorists assume underly decisions, most people are generally not disciplined statisticians, particularly under stressful conditions. When making investment decisions, people typically do not calculate odds properly which results in repetitive errors. Researchers have found that people customarily react to an avalanche of data by taking shortcuts or adopting rules of thumb rather than by diligently calculating the probability of all possible outcomes each time. They make intuitive leaps to conclusions using process-saving shortcuts termed heuristics. (Kahneman, 1998) Building an awareness of investors' emotional biases might lead to more thoughtful decision-making.

The human instinct to follow the crowd or herding usually results in investors' buying at the top and selling at the bottom. (Ameriks et al., 2008) Investors follow the

crowd because biologically it gives them pleasure. (Firth, 2010) (Ameriks et al., 2008)

A functional magnetic resonance imaging (fMRI) study found that when participants

made decisions that agreed with the experts they had neuron activation in their ventral

striatum similar to what brain associates with reward. (Firth, 2010) The fMRI scanner is

able to record brain activity by measuring related changes in blood flow. (Firth, 2010)

Results showed that when someone agrees with your choice, the resulting brain activation

is biologically similar to that of a cash reward. (Firth, 2010) This study showed that

when we conform to an experts' opinion we feel safer and it gives us pleasure. However,

although individuals want to follow the crowd, it can harm us as investors. (Firth, 2010)

What Is Emotional Intelligence and Why Is It Important?

For this study emotional intelligence (EI) is characterized as the ability to

perceive and express emotions, to recognize the emotional signals in communication, and

to use emotion as a source of information in making better investment decisions. (Lewis,

Haviland-Jones, 2000, Ameriks et al., 2009). The concept of emotional intelligence (EI)

has been around since the 1930s when Edward L. Thorndike termed it "social

intelligence" and defined it as the trait-like ability to get along with others. (Goleman,

1995) The term EI was first published in 1990 and was originally suggested as a new

cognitive ability. (Mayer, 2008) Emotional intelligence (EI) has had a range of

definitions and constructs because the theory is relatively new and still evolving.

(Bradbury, 2009) The theory of EI is still being developed so that it seems acceptable

that there continues to be differences in its definition. (Bradbury, 2009) Goleman

proposed EI as an intuitive ability and an individual difference variable including self-

awareness and social competency. Stated differently, Goleman thought of EI as how we

manage ourselves and our relationships which consisted of the traits of self-confidence, optimism, conscientiousness, leadership, and initiative. (Goleman, 1995) He suggested that individuals need to have fundamental emotional abilities before they can develop emotional competencies. (Goleman, 2001) Goleman proposed a model of EI focused on corporate leadership and work effectiveness. (Goleman, 2001) Goleman led researchers to search for methods of applying EI to work outcomes.

Goleman claimed that EI was a more important determinant of success in work performance than IQ. (Goleman, 1995) He stated that when star performers were measured against average performers the major difference in their profiles was attributable to EI rather than solely cognitive abilities. (Tweedy & Wright, 2006) A study of 1,171 U.S. Air Force recruiters was cited as evidence for this claim. The highest performing recruiters had significantly higher EI scores and recruiting success than the lower performers. The high performers met 100% annual quota success versus low performers who had success rates under 80%. (Tweedy & Wright, 2006) The experiment ruled out other demographic factors as determinants of job success. Air Force recruiters with higher EI were found to be better performers which suggests that emotional competence abilities may in turn be applied to other vocations.

An American Express training program for Financial Advisors (FA) examined the role emotional intelligence training played in financial counseling sales. (Luskin, 2005) In the American Express experiment their 87 participants were divided equally between a training group and a control group. The training group sought to develop FA managers as emotional coaches for their subordinates. The program provided training in several EI abilities including self-awareness, self-regulation, empathy, and social skills. Over 15

month period, the business development of financial advisors with EI trained leaders grew at an 18.1% rate relative to the untrained control group's 16.2% growth. (Luskin, 2005) This study found that performance of Financial Advisors with emotional competencies were more effective in the investment industry. (Luskin, 2005) Results were noteworthy because the performance of the EI trained group was 11% higher than the control group. (Luskin, 2005) After the training, the participants in the training group reported lower stress levels and more frequent positive emotional states. (Luskin, 2005). Despite Goleman's suggestion that EI is an innate characteristic, the American Express experiment provides that EI skills are malleable and can have measurable impact in the investment industry. The debate of whether EI training is possible with quantifiable benefits will continue. The majority of such studies support the claim that higher EI leads to superior work performance outcomes as well as better outcomes in one's professional and personal life. (Tweedy & Wright, 2006)

There are several EI measures but only two primary tools will be highlighted. The first is the Trait-based model or the Trait emotion self-efficacy model which focuses on an individual's assessment of his/her emotional abilities, using a self-report, such as the EQ-I ™ test, the Swinburne University EI Test (SUEIT), or the Schutte Self-Report EI test (SSEIT). (Petrides et al., 2007) These measures are favored by Goleman. The tests are criticized for measuring what individuals think of their own abilities and for revealing personality traits rather than specifically identifying EI. (Zeidner, 2008)

The second EI measurement highlighted is the ability-based model which Mayers and Salovey endorsed. (Brackett, 2003) Mayer narrowed the definition of emotional intelligence, limiting it to a set of abilities involved in analyzing and using emotions to

enhance thinking. (Mayer et al., 2008) Mayer and others applied the EI concept to using

emotional information as a guide to cognition and behavior. Mayer and associates

advocated clearly defining emotional intelligence in order to improve future research.

(Mayer et al., 2008) They thought that individuals able to control their behavioral

response to emotions had higher levels of EI. (Mayer et al., 2008) Mayer argues for an

EI definition based on the four-branch model of EI and used the Mayer-Salovey-Caruso

emotional intelligence Test (MSCEIT) to validate his construct. (Mayer et al., 2008)

Mayer criticized Goleman's EI concept as lacking scientific rigor because some of

Golelman's research was proprietary and was not published in peer review journals.

(Zeidner, 2008)   Some researchers criticize Goleman's definition for including too many

self-report personal qualifications such as optimism and wellbeing. (Zeidner, 2008)

Goleman acknowledged that some of his research was generated from corporate

constituencies and that further scientific research was needed. (Goleman, 2001) Ameriks

and Salovey, who apply EI to investing, define the EI concept as simply using emotions

more productively. (Ameriks et al., 2009) Each of the definitions noted emphasized the

importance of utilizing emotion as a component in decision-making. Mayer and

Bradbury highlight using emotion as a means to solve problems. The problem-solving

aspect of their definition seems to be the main difference between cognitive intelligence

and emotional intelligence. (Zeidner, 2008)

The Ability model is based on a self-reporting test and views emotions as a

beneficial source of information. This model is favored by Salovey and Mayer and is

designed to measure EI as a set of mental abilities. (Mayer et al., 2008) Perceiving,

understanding, using, and managing emotions are important fundamentals of the Ability

model. The test gauges a person's emotional intelligence ability by asking participants to identify emotions and solve problems. (Mayer et al., 2008)   There are two methods to scoring the MSCEIT test: general consensus and expert scoring. In the general consensus method, higher scores result from similar responses to the answers of the other test

takers. (Bradbury, 2009) The expert scoring method matches the test takers' answer to the answer established by a team of experts in emotional intelligence. The MSCEIT measure has been criticized as lacking face and predictive validity in the workplace. (Bradberry & Su, 2006) The Ability model is validated by its reliability scores and its long time scrutiny as a measurement tool over the past decade. (Grewal, 2005) Bradberry and Su found that MSCEIT was better at predicting relationship management skills than at predicting job performance. (Bradbury, 2009)

There has been some debate over whether EI abilities are able to be acquired. Mayer believes that EI is an ability that can be learned. He believes EI is malleable because his measurement tool focuses on behavior and not on personality traits. (Cherniss, 2000) Mayer posits that individuals can learn, understand, develop, and grow EI abilities. (Cherniss, 2000) Mayer argues that using one's emotions as a mental skill leads to growth in emotional intelligence and MSCEIT scores which then in turn predicts better decision-making. (Cherniss, 2000 & Brackett, 2003) Eichmann completed a study of corporate leaders in which she measured EI before training and after a 10-week session. (Eichmann, 2009) Her research detailed a complete EI education course design and the results showed EI scores significantly improved for the post-training EI measure. (Eichmann, 2009) The Bar-On measurement model was used in the study and incorporated stress management and general mood self-report data. Goleman has

evolved his perspective on the ability to learn EI. He now suggests that if a leader

possesses fundamental emotional attributes, then his/her emotional competencies can be

enhanced. (Goleman, 2002) Goleman argues that EI can be improved if training is

focused on the brain's limbic system rather than the neocortex. (Goleman, 1998)

Goleman argues that the limbic system learns best through effort, motivation, and

feedback and that EI is born in the neurotransmitters of the brain's limbic system. The

limbic system is seen as responsible for feelings, impulses, and drive. (Goleman, 1998)

Training needs to focus on breaking old behaviors and establishing new ones in an

individualized way. (Goleman, 1998)

The advantage of the Ability model over the Trait model is straightforward. The

Ability model is validated by Eichmann's experiment which found measured

improvements in EI abilities. (Eichmann, 2009) Scores on ability-based measures are

more relevant because of their association with everyday life and work outcomes.

(Grewal, 2005) A tool that both measures abilities and is performance based is more

applicable to portfolio manager decision-making. At present, there are no scientific

studies that directly examine improved EI in portfolio managers. Leaders in the

investment industry, like Michael Mauboussin, advance the argument in his study of high

performing portfolio managers that have improved their decision-making by journaling

their emotions. (Wood el al., 2007) Because people learn to overcome their fear

response, portfolio managers can learn to recognize situations where emotional control

can improve their decision-making. (Mayer, 2008) The connection between Mayer's

Ability model with its narrower EI definition and the MSCEIT test supports the use of

Mayer's measure. The MSCEIT test's four-ability model appears to be the measure that

best replicates portfolio manager decision making. Brackett conducted an investigation of the convergent, discriminant and incremental validity of three EI measures. (Brackett, 2003) He tested two self- report tests, EQ-I ™ and SREIT, and the MSCEIT. Results showed that MSCEIT is separated from personality and wellbeing whereas the self-report tests were not. (Brackett, 2003) The MSCEIT measure was found to be distinct from personality and intelligence measures. (Brackett, 2003) Mayers does recognize that some aspects of EI are innate but believes his four factor measure is able to segment EI abilities. (Brackett, 2003)

What Do We Know About Successful Investors in Relation to EI?

Research in emotional intelligence (EI) highlights several predictable behaviors. For example, Ameriks found that individual investors with high EI exhibited certain investment behaviors such as lower trading volume and the use of low cost fund options that correlate to good investment results. (Ameriks et al., 2009) Ameriks' research provided correlation between investors with high EI investing in a more balanced manner than investors with lower EI. More specifically, high EI investors' self-driven retirement accounts had a greater tendency to allocate between 50 and 90% of their portfolio to equities vs. lower EI investors who allocated a disproportionate amount to fixed income as an impulsive reaction to market information. Participants with more balanced equity allocations owned portfolios with better risk return characteristics. (Ameriks, 2009 & Lashgari, 2015) Ameriks identified that more impulsive investors who tested lower for emotional intelligence did not exhibit behaviors that correlated with good investment results. These investors traded more and tended to react impulsively to new market information (Dalbar, 2017) Evidence from the past 22 years reflects that investors appear

to sell financial assets that have risen in price too quickly but hold onto loss producing investments for a long time. The strong negative emotion from actually taking a portfolio loss has stronger emotional impact than holding onto the loss without addressing it. (Kahneman, 1998) Individuals that have higher EI characteristics can be positioned for enhanced decision making. Of particular note, Ameriks' research found that those who generated the highest investment returns had used emotion more productively. (Ameriks, 2009)

An Iranian research paper examined components of emotional intelligence as they related to retail investors. (Pirayesh, 2013) The study's focus was on ordinary retail investors in Iran as opposed to professional investors. The study investigated emotional biases including representation, mental accounting and risk aversion during the execution of investment decisions. He gave questionnaire-based surveys to 270 Tehran stock exchange investors to evaluate if there was a meaningful link between emotional intelligence (EI) and investment decision. Pirayesh's reported hypothesis found a statistically significant relationship between EI and investment decisions. Pirayesh concluded there was a positive and meaningful relationship between emotional intelligence and investment decisions among retail investors that were actively trading on the Teheran stock exchange. This study survey asked participants to rate themselves on characteristics related to emotion intelligence including interpersonal characteristics, stress management and behavioral biases. Pirayesh found that when investors became risk averse, they identified that they were more likely to use their emotional intelligence. However it seems questionable that survey participants would be able to be self-aware and accurate about their own shortcomings. There is a significant amount of research in

the field of behavioral finance that recognizes investors as overconfident in their own skills. (Wood, 2010) This is similar to the more popular Dunning-Kruger effect which is a scientific experiment that shows people tend to hold overly inflated views of their abilities in many intellectual domains. (Dunning & Kruger, 1999) This theory presents that peoples whose test scores are in the lowest quarter percentile estimate themselves to be in a much higher percentile dues to imperfect self-assessments. Pirayesh examined 15 other sub-hypotheses including factors like stress management and interpersonal characteristics. The majority of his 15 sub-hypotheses were not statistically confirmed.

A 2016 Pakistani study investigated whether or not emotional intelligence had a significant effect on investment decisions specifically as it related to security selection. (Tanvir, 2016) The study was based on a 30 item Likert scale questionnaire presented to 225 Pakistani, 90.7% male, stock exchange investors to gauge whether participants' decision making was impacted by their self-awareness, self-management, motivation, empathy and/or relationship management skills.(Goleman, 1996) He examined his sample of experienced investors to see if they believed their emotional intelligence impacted their investment decision making. Tanvir found a statistically significant relationship between EI and investment decisions. He used regression, correlation and descriptive statistics to analyze his convenience sample of 225 investors. He found statistically significant data and correlation on all of his variables except relationship management. He concluded that emotional intelligence has an impact on investment decision among Pakistani stock exchange investors. The participants surveyed rated themselves highest on self-awareness and ranked it as the most important aspect of their investment decision making. The addition of 360-degree feedback could have offered

additional insight. 360-degree feedback incorporates input from peers and others related to the study participant. This self-assessment aspect of Tanvir's study is noted as a study limitation but its impact may still be understated. Another shortcoming of the study is that there was no data captured on the efficacy; i.e. profitability of investment decisions made. It should be noted that both the Iranian and Pakistani studies reference the Ameriks 2009 investigation as a significant resource for their research.

Another study from Pakistan considered the impact of EI in addition to financial literacy as moderating factors on investment decision making. (Hadi, 2017) Hadi used a 5-point Likert scale questionnaire with the respondents to his survey. 225 surveys were sent out and 150 people responded.   94.4% of the participants were male stock exchange investors in Pakistan and South Asia.   The questionnaire was divided between questions around participants' decision making in relation to EI factors and questions to establish the financial literacy of the participants. He found a significant relationship between EI and investment decisions as well as a significantly positive correlation between EI and financial literacy. This study concurs with similar research finding that people with a higher level of education tend to reflect higher levels of EI in the various test results. (Lusardi, 2008) However, the high percentage of male vs. female participants ignores the data that identifies females as consistently scoring higher on EI tests relative to males. (Ameriks 2009) As such, the findings are skewed. Hadi's research found a significant relationship between emotional intelligence and successful investment decision among Pakistani investors although it is not clear how successful investing is defined. Importantly, he used a new measure called the Wong & Law emotional intelligence Scale (WLEIS) which is considered an effective EI tool with Chinese populations. The WLEIS

appears more effective at identifying EI abilities than a number of other measures although it has not been validated outside the Asian culture. The conclusions are limited by the small sample size. This new measure as well as support for the link between EI and better relative investment decision making are noteworthy. (Hadi, 2017)

Research from Mayer, highlighted that people with high EI are usually more socially adept, have better quality relationships, and are viewed as more interpersonally sensitive than those with lower EI. (Mayer et al., 2008) These attributes would help portfolio managers develop research ideas, decision feedback, and investment abilities. Mayer further claims that higher EI predicts better social outcomes and lower EI predicts interpersonal discord. (Mayer et al., 2008) Ameriks' results supported Mayer's sociability claim in that participants with higher levels of extraversion were more open to including international investments as a component of their portfolios. (Ameriks et al., 2009) Finally, Mayer claims that those with high emotional intelligence achieve higher peer review ratings and work outcomes. (Mayer et al., 2008) There is a considerable amount of research supporting the argument that higher EI ability predicts better work outcomes and strong investment results. (Ameriks et al., 2009 & Luskin, 2005) Professional portfolio managers with higher EI scores should produce better investment results. (Ameriks et al., 2009)

Emotional intelligence is a more important determinant of success for those who operate in emotionally-oriented professions. (Goleman, 2000) Evidence supports that portfolio managers operate in an emotionally-oriented profession. Brain imaging studies identify money's impact on dopamine levels or the pleasure chemical in the brain. (Lea & Webley, 2006) A functional magnetic resonance imaging (fMRI) study found that

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money induced reward system activation similar to responses resulting from a cocaine infusion. (Lea & Webley, 2006) Scientists are making progress in understanding the brain's reward system and how financial profits and losses influence emotion. Goleman claimed the financial service profession is an emotionally-oriented vocation. (Goleman, 2000) Financial service professionals deal with feelings about money, trustworthiness, safety, and mortality. (Goleman, 2000) Goleman argued that broad emotional competencies are critical in financial planners' job performance. (Goleman, 2000) He found that planners deal with the safety issue around money and need to address the issue of mortality involved in life insurance and estate planning. These subjects require financial planners to handle their own emotional reactions in a careful manner. (Goleman, 2000). A study of employees of an insurance company found a correlation between EI and positive work outcomes. The study used MSCEIT test scores and controlled for other predictors including personality traits. (Lopes et al., 2006) Higher EI scorers were related to higher work performance ratings from peers and/or supervisors for interpersonal facilitations and stress tolerance. (Lopes et al., 2006) Results support the argument that EI scores and work performance outcomes have a correlation in the financial industry.

The focus of emotional intelligence research is on understanding its influence on the decision process. (Trammell, 2008) Detecting and interpreting emotional signals can help investors manage accordingly. EI studies assist observers and market participants to understand the investor whose behavior is the most unpredictable variable in the capital markets. (Trammell, 2008) The powerful influence of emotion on investment decision-making has been observed in the Iowa Gambling Task (IGT), a widely used experimental

task to assess decision-making under ambiguous conditions. (Bechara et al., 2005)   IGT

participants are asked to select cards from four advantageous or disadvantageous decks of

cards, with two decks being advantageous and two being disadvantageous. Participants

often subconsciously find the advantageous decks long before they can verbalize why

they decided to choose from the optimal decks. (Bechara et al., 2005) If participants in

the task of picking the cards are patient enough to steer toward the smaller but more

consistent rewards, they accumulate higher winnings with lower risk. The IGT

experiment asserts the positive role emotion plays in decision-making. However, there

are other studies that posit IGT participants could be consciously aware of the advantaged

card decks which would reflect a weighting toward cognitive processes rather than

emotional processes (Webb et al, 2014) Since the IGT is a significant study, with further

research suggesting outcomes could have been due cognitive drivers rather than

emotional processes, the IGT is not a full proxy study for the assessment of EI relative to

investment decision making given the broader dimensions of investment decision

making. A principle of investment success is found in investors who have the ability to

focus on long-term rewards and avoid the distraction of immediate profits. Performance

on the IGT suggests that one behavior characteristic, the ability to delay gratification, can

lead to long-term investment success. Emotional intelligence incorporates the ability to

regulate one's emotions and to persist in the face of short-term obstacles. The IGT

suggests emotion can be a wise guide in some circumstances; however, it can also be a

dangerous deceiver in other circumstances.

A study of brain-impaired investors versus normal investors highlights the

negative side of emotion for investors. Shiv and associates detailed an investigation

where participants with neurological damage to the emotional processing segment of their brains made more profitable investment decisions than normal participants. (Shiv et al., 2005) Participants were given $20 and instructed that investing in each round would cost $1. Participants were asked to decide whether to invest in each round when faced with a series of coin tosses. The experiment was constructed so that participants would be best served by investing in each round of the experiment. The weighting of the winner's payout ($2.50 for a win and $0 for a loss) was so great that participants who played in each round had a greater probability of gaining higher profits. This construct is what is known as a positive expected value gamble. The participants with brain damage were more likely to invest in rounds after a loss than the normal participants. Normal participants were more prone to adopt a less risky strategy after losing in a preceding round despite the same probability (50/50) of success in each round. (Shiv et al., 2005) The authors concluded that those who react less emotionally to losses make better investment decisions in certain circumstances. The ability to identify situations where it is best not to respond emotionally is a key attribute of an individual with a high level of emotional intelligence. (Ameriks et al., 2009) The researchers associated the positive expected value gamble construct to the equity market in that stocks historically have provided higher long-term investment returns than bond investments…yet it is difficult to be disciplined emotionally when your investments are declining rapidly (Shiv et al., 2005). The Shiv research reflects that investors who learn to control their emotions and become less reactive to losses can make advantageous decisions. The control of emotions leads to approaching decisions with a calmer more analytical framework, also known as second level thinking and theoretically highlights the practice of emotional intelligence.

The Shiv research points to the importance of emotional management and its role inside emotional intelligence.

Emotional intelligence is an important factor for dealing with behavioral biases. A research study by Shapiro (Shapiro et al., 2012) examined Chilean high school students and concluded that students with higher GPAs and standardized test scores had fewer behavioral biases then their peers. These students with higher GPAs and standardized test scores were assessed as having higher cognitive ability and were found, experientially, to have less behavioral bias when faced with risk-taking choices. The group of students with higher cognitive resources were less impatient and less sensitive to short-run time preferences. (Shapiro et al., 2012) This study provides support for the argument that those who test for higher emotional intelligence might be superior decision-makers than their peers.

Loss aversion tends to be one of the most prevalent behavioral biases. (Kahneman, 1998) Loss aversion refers to our preference to avoid the pain of a loss and in the case of investments, causes investor to sell equity holdings into market declines. This bias leads investors to panic during market declines, pulling their cash out of the stock market after a significant market downturn. Investors with higher emotional intelligence might have the fortitude to maintain a long-term time horizon.

Historical investment performance data illustrates the poor results from investors lured into overheated market segments and frightened away after they cool. A study by Dalbar Associates, a financial research firm, noted that for the most recent twenty-year period ending December 31, 2016 the Standard and Poor's 500 stock index returned an average 8.2% per year, compounded annually. It is interesting to note the average

investor in stock mutual funds achieved a mere 2.1% annualized return over that same

period. (Dalbar, 2017) The "average investors" underperformance relative to the

adoption of a buy and hold of a passive index investment strategy is a clear indication of

investors being driven by their emotions. This difference between the S&P 500 index

return and an individual investors' actual return could be considered the behavior gap

between the return an investor could have gotten by staying in an index fund versus the

return generated from going in and out of an equity mutual fund. According to the

Dalbar study individuals' performance is more dependent on their investment behavior

than the actual mutual fund they purchase. Stated differently mutual fund investments

perform well but investors do not. Investors who stick with their long-term plan have

been more successful than those who try to time the market. (Dalbar, 2016) It is likely

that those who favor long-term time preferences are displaying a higher level of

emotional intelligence. To remedy this, investment decisions should be based on

realistically derived and carefully articulated long-term investment principles.

Professionals can help the average investor by adding a different emotional perspective to

the decision process. Often the questions and counseling of a professional helps develop

a viewpoint, which would not have been considered otherwise. The intent of this

research is to examine whether professional investors who are aware of their emotions

and are able to manage their emotions more effectively are then in turn positioned to

make more successful investment decisions. The challenge is to use emotion intelligently

and productively when implementing strategy to improve investment portfolios. This

emotional behavior gap leads us to explore emotional intelligence and its effect on

decision-making. (Ameriks et al., 2007)

The financial trading profession can be an emotionally stressful vocation because of the multi-faceted intensity of the profession's day-to-day demands. During times of security price volatility, the limbic system's amygdala causes glands in the body to release hormones, like adrenaline and cortisol. These hormones lead to increasing heart and breathing rates, rising blood pressure, and a heightened sense of self. (Keiv, 2007) The research in this area is complex with many unanswered questions. In a study of the reaction of futures traders' endocrine glands in financial risk taking, researchers found that under volatile market conditions traders' cortisol rose to above average levels, similar to the effect of other stressors. The experiment was performed under real working conditions in a trading environment in London. Trader's cortisol levels rose when losing or gaining money rapidly or when market volatility was high. (Coates, 2008) Rising cortisol can promote selective attention to negative news resulting in a predisposition to finding threat and risk where none exist.(Coates, 2008) As financial market volatility increases the cortisol level in investors' brains, this could cause market participants to behave in a reactive manner that contributes to an exaggerated market movement. (Coates, 2008) Awareness of the physiological changes in investor's brains may lead to insights about situations when investor behavior is being driven by negative emotions. What differs between traders in these environments is how individuals adapt or react to hormonal changes. Traders who recognize and adapt to their body's signals are likely to perform their jobs more effectively. (Keiv, 2007) Thus, there is a possible biological explanation for investor behavior in the equity market during 2008's liquidity crisis. A liquidity crisis is brought about when investors perceive the need to sell their investments in order to be "safe" with the stability of cash. On September 15th, 2008, the

surprise bankruptcy of Lehman Brothers, a $600 billion investment bank, lead to

unprecedented bond and stock market volatility and a significant change in investor

liquidity preference. In the fourth quarter of 2008 stock price volatility approached levels

last reported during the Great Depression. (Davis, 2009) Investor uncertainty leads to

extreme market volatility. Subsequent to the Lehman announcement from September 25

to October 8, 2008, the liquidation of stock holdings by traders/investors liquidated

stocks lead to 25.8% decline in Standard & Poor's 500 Index. Stock market volatility

reached unprecedented levels during this ten day period. The Coates study suggests that

in real-time trading, rising cortisol is a result of trader's uncertainty along with a change

in the trader's risk tolerance. (Coates, 2008)   These research findings support the

understanding of EI whereby some portfolio managers are measurably better at managing

their emotions in volatile trading environments. Those professionals who recognize and

use emotions more productively would be less reactive to market uncertainty and

therefore likely to make more profitable investment decisions. They may even have the

opportunity to profit from the trading overreaction of others. Emotional intelligence

skills, like emotional regulation, may lead to calmer decision-making in periods of

market stress, and better adaptation to market volatility.

Emotional regulation is an important ability for portfolio managers and traders

because they operate in an environment where prices are continuously changing. (Coates,

2008) The lay population might find daily stock price uncertainty emotionally

challenging. (Ameriks et al., 2008) Agency theory suggests that the principal or person

whose money is being invested acts in a psychological state which differs from the agent

or professional investor. (Jensen & Meckling, 1976) The stress from price ambiguity can

restrict individuals' openness to thoughtful decision-making effecting their investments. (Ameriks et al., 2008) Investors or principals can engage agents to delegate daily decision-making. (Jensen & Meckling, 1976) Portfolio managers acting as agents provide emotional detachment, professional experience, and analytic acumen to the investment process. A behavior gap happens when people in an unemotional state underestimate the influence of emotional situations on their choices and preferences. (Montier, 2007) Study participants overestimated how the break-up of a romantic relationship would affect their level of happiness. (Montier, 2007) Subjects returned to their baseline level of happiness much quicker than they forecasted. Similarly, investor behavior provides evidence that investors overestimate their ability to accept portfolio declines resulting in liquidation of their investment holdings during periods of market uncertainty. (Montier, 2007) A psychological study found that many individuals have difficulty forecasting how future pain, sexual arousal, or hunger might affect their cognition and behavior. (Dunn and Laham, 2006) Forecasting uncertainty impacts decision-making in investment situations. (Ameriks et al., 2008) Portfolio managers acquire market temperament through years of experience as research analysts or assistant portfolio managers. Portfolio managers develop their abilities through honest appraisal and rapid feedbacks. (Peterson, 2007) They learn to be comfortable with stock market ambiguity as part of their professional development. Portfolio managers' professional survival depends on adaptation and understanding of the collective emotions of their own and others' investment decision-making. An important aspect of psychology for portfolio managers is self- awareness and self-control of emotional impulses. (Peterson, 2007)

Portfolio managers who emotionally adapt will make investment decisions that lead to career longevity. (Peterson, 2007)

Another study of securities traders developed by Lo and Repin measured participants' physiological characteristics during live trading sessions in order to understand how experienced traders differed from less experienced traders. Lo and Repin's study measured skin conductance, blood volume pulse, heart rate, electromyographical signals, respiration, and body temperatures. (Lo & Repin, 2002) Their research found that periods of market volatility resulted in increased cardiac volume and skin conductance physiological reactions. In addition, there was greater reactivity in less experienced traders. (Lo & Repin, 2002) Similar to Coates, they found traders exhibited increased stress in periods of market volatility, which impacted their decisions. (Lo & Repin, 2002) It is possible that more experienced traders have higher levels of emotional intelligence, which would tend to support the study's results. Alternatively, the study's results may have been affected by its small sample size or other limitations. (Lo & Repin, 2002) Perhaps as a trader accumulates more years of work experience, he/she develops an expertise in managing their emotions. Alternatively, experienced traders may have been desensitized to extreme responses to market changes or those with high EI are more successful and stay in the role of portfolio management longer, when those low in EI, associated with lower investment performance, tend to leave the field.

Why Would Emotional Intelligence Help Improve Investment Performance?

Emotional intelligence includes delayed gratification and/or better emotional regulation. It involves recognizing emotional cues and using them to adapt cognition and

behavior. (Ameriks, 2009). For example, if someone screams "fire" in a crowded smoke filled theater it is always best to move immediately toward the exit and this same concept holds true when investing. Investors in newspaper company stocks would have been well served to recognize the secular industry decline and liquidated their investments. Delayed gratification, based on emotionally oriented information, is not always the optimal decision from a long-term investment perspective. In the Iowa Gambling Task, the participants quickest to recognize the advantageous card deck made the most profits. (Bechara et al., 2005) In certain investment situations, emotional cues indicate behavioral trend changes, and financial and emotional pain can be avoided by immediately reacting to these signals. Stock analysts act together in a herding mentality when establishing corporate earnings estimates. (Wood et al., 2007) These analysts consistently act similarly to their colleagues when providing forecasts. This behavior results in analysts consistently missing reversals of directions in earnings trends because the analysts acting in a socially consistent manner. (Wood et al., 2007) Once a negative earnings trend begins an investor should consider liquidating their investment to prevent losing capital. Behavioral finance experts document the probability of a negative earnings trend becoming greater than the probability of a continued increase of earnings. (Wood et al., 2002) In such situations delaying gratification is likely to be the less profitable or suboptimal decision. Portfolio managers' experience helps recognizing trends much like the Lo experiment found that experienced currency traders made better decisions. (Lo & Repin, 2005 and Wood et al., 2002) Shiv's neuroscientific investment study reflected the importance of proper emotional judgment in "real time" decisions.

Successful investing necessitates the need to use emotional information more productively than professionals in other fields.

Behavioral finance researchers believe that investor's perception of risk, and their probability calculating proficiency, changes with their emotions. (Wood et al, 2007) Stated differently, scientific research claims that investors calculate probabilities more accurately when in a calm or more flexible state of mind. (Grewal, 2005) Investors often make investment plans based on long-term investment goals yet when faced with extreme market volatility their emotions rise, their time horizon compresses, and they make unprofitable decisions, including liquidation of their equity holdings at market bottoms. (Ameriks, 2009) Individuals with higher than average levels of emotional intelligence (EI) would be expected to better calculate probability outcomes for their decisions in times of stress. Those high in EI are likely to have sharper cognition in volatile equity markets. (Ameriks, 2009) Experiment participants in the Shiv investment game (brain impaired versus normal) who approach investment decisions in a non-emotional, statistical manner, made the best decisions. Daniel Goleman describes individuals as having two brains—a rational brain and an emotional brain. (Goleman, 1995) In some situations it is better to use the emotional brain in decisions and in other situations we should use our rational brain. Emotionally intelligent investing is about effectively assigning probabilities to future events with uncertain outcomes. High EI individuals would be less probable to blindly follow the crowd (herding) and more likely to understand the emotion of their investment decisions. High EI individuals would be expected to make more profitable investment decisions by selecting lower cost mutual funds and trading less frequently than low EI individuals. Additionally, high EI

individuals are experientially more effective in the financial service industry. A compilation of research studies by research professionals concluded that those with higher levels of EI have been found to exhibit higher work performance. (Druskat et al., 2007)

Ameriks, Wranik and Salovey found evidence of a link between emotional intelligence and investment decision-making. Ameriks research explored the relationship between investment decisions and three psychological variables: emotional intelligence, personality (BFI), and impulsiveness. The Ameriks study participants were Vanguard clients who were recruited through email invitations. Vanguard is one of the world's largest investment management companies. Researchers tracked participants' investment returns over a three year period (2004 to 2006) for the 2,595 Vanguard investors that participated. The research considered various aspects of financial decision making including: the decision to invest in stocks, frequency of transactions, investment returns and the use of actively managed mutual funds and index finds. Investigators measured investment behavior using three psychological tests: The Big Five Inventory developed by John and Srivasta, MSCEIT and UPPS Impulsive Behavior Scale developed by Whiteside and Lynam 2001. They found that no single character trait dramatically increased or decreased the study participants' internal rate of return (IRR). They found evidence of a link between EI, other psychological characteristics and investment decision-making. Importantly, individuals with high EI were more conservative in terms of their asset allocation and trading, relative to their counterparts who had lower EI. The Ameriks study participants who ranked highest for perceiving emotions achieved the highest investment returns (IRR) during the period of the study. This could be the result

of those participants correctly understanding their own emotion and the emotions of other investors. Study participants with higher EI tended to make less extreme decisions and preferred a more balanced approach when managing their retirement portfolios. (Ameriks et al, 2009) The EI link with investment performance is an area of focus in this current research study.

They also ranked each participant's activity level relative to their peers. Study participants scoring highest for managing emotions were less reactive to market changes and more likely to hold better performing investments. Their analysis found a correlation between investors' emotional intelligence and trading frequency. (Ameriks et al., 2007) Even after controlling major demographic factors, participants who were in the highest quintile for perceiving emotion traded more frequently than other participants. (Ameriks et al., 2007) Amerik's research assumes that lower trading activity results in lower trading cost and better investment results. (Ameriks et al., 2007) Interestingly, those scoring highest for managing emotions, traded least frequently suggesting more successful investors are better at regulating their emotions. (Ameriks et al., 2007) Similarly Dalbar Associates data, cited at a Vanguard investment symposium, completed a mutual fund flow study which reflected that those who followed more consistent investment strategies over a longer time horizon, meaning lower activity levels and sticking with an investment strategy, were less likely to underperform their peers. (Ameriks et al., 2008) The proposed research differs in that Ameriks and his associates surveyed individual investors and the current investigation considers a group of professional portfolio managers. Professional portfolio managers have more investment experience than the Vanguard study participants and their role as agent for the investment

funds they manage should result in more profitable investment decision-making. It is believed that professional portfolio managers who are compensated to grow their mutual fund portfolio and act as agents may be more emotionally controlled in their investment decisions.

In summary, research in emotional intelligence indicates that individuals with higher EI make superior investment decisions. (Ameriks et al., 2008) Researchers provide evidence that emotional intelligence has a bearing both in leadership positions and in emotionally-oriented professions. Data substantiates that the portfolio management profession is an emotionally oriented profession and scientific evidence supports that investment decision-making is impacted by emotion. Those investors with high EI trade less frequently and have slightly better investment returns. (Ameriks et al., 2008) At least experimentally, those who react less emotionally after investment losses finish with the higher profit. (Shiv et al., 2005) It is expected that professionals who acknowledge and control their emotions better than their peers will make more successful decisions. Studies of traders help us identify and understand psychological responses that improve investment decision-making. (Coates, 2008 & Lo, 2002) Coates' experiment found traders' decision-making was physiologically impacted by market volatility. Lo's currency trader study found experienced traders moderated their psychological responses and made more profitable trades. These findings related to emotional intelligence in the following ways. First, those who are aware of their peers' overreaction to market uncertainty might profit from that awareness.(Coates, 2008) Second, experienced traders who are less anxious made more deliberate and calm profitable investment decisions than less experienced traders. (Lo, 2002) These studies bring up interesting questions about

the biochemistry of profits and losses. Do professional portfolio managers with higher

levels of emotional intelligence perform differently from their peers? How will portfolio

managers who participate in this study EI scores compared with the MSCEIT test

normative population? Since greater emotional awareness and ability to regulate one's

emotions are critical component of investing, portfolio managers with these abilities

could be more successful. Professionals who can maintain an emotional balance during

real-time decision-making might make better investment decisions. A comparison of

their investment results relative to their peers could identify measurable differences.

Ameriks found those individuals who scored higher on a test of emotional intelligence

exhibited behaviors that correlating strongly with good investment performance. Would

similar results (Perceiving emotion, lower turnover or trading frequency) be reflected for

professional fund managers who exhibit better investment returns? Research may

support the concept that those with higher levels of emotional intelligence make more

advantageous investment decisions.

Hypotheses and Design of Study

This study examined four relationships. The first was to see if there was a link

between emotional intelligence (EI) test scores and Morningstar investment performance

quartiles. The study's main hypothesis was that portfolio managers with higher emotional

intelligence would deliver superior investment performance relative to their peers. The

second component compared EI test scores and Morningstar investment performance

percentage rankings. It was expected that portfolio managers who score highest on an EI

test would be performing well enough as a professional money manager to be in the

higher percentage rankings within Morningstar's style categories. This hypothesis

examines if portfolio managers with higher emotional intelligence have higher investment performance rankings.

Initially the experiment intended to use the Mayer Salovey Caruso Sitarenios Emotional Intelligence Test (MSCEIT). The MSCEIT has eight subsections and is a 141 item self-report test that requires respondents to solve emotionally oriented problems. (Mayer, Salovey, Caruso, Sitarenios, 2003) The entire test takes 30 to 45 minutes, but it was probable that few professional portfolio managers would take 45 minutes to complete the test. Given the low 4% response rate (71 responses of 1,712 invited) this was an appropriate decision. The alternative assessment measures considered included: (1) The Institute of Health and Human potential EQ Quiz, (2) the Global EI test and (3) the Korn Ferry Hay Group EQ measure. The Institute of Health and Human Potential EI Test is a 23 question self-report test using the Likert scale and takes approximately ten minutes to complete. The Global EI Test is 40 question self-report text based on Daniel Goleman's four quadrants and takes approximately nine minutes to complete

This study used the Korn Ferry EI test which is described in the "Instrument" section. The Korn Ferry test along with additional questions was administered to two different populations. The validity and reliability of the test measure was examined; and, finally, we looked to see if there was a link between EI test scores and investment behavior including age, gender, investment outlook, portfolio turnover and financial composure as variables in this regression.

Chapter II

Method

The study was conducted through email and included questions that gauged portfolio manager participants' emotional reactions while making decisions. A control group was recruited through Amazon Mechanical Turk. Data was administrated through Qualtrics and tabulated for a comparison of the two populations.

Participants

Portfolio manager participants completed a survey on the impact of various emotional reactions while making investment decisions. The study sample consisted of 71 mutual fund portfolio managers who have been managing a mutual fund for at least three years. The sample was comprised of portfolio managers between the ages of twenty-five and seventy-five. Managers were pre-screened using Morningstar's databases to identify their manager start date to ensure they had at least three years' experience and responsibility over their respective mutual fund. A three-year or greater investment performance record was chosen because it is a long enough period to separate skill from luck. These managers had investment portfolios' performance data readily available through Morningstar. The mutual funds under their management represent greater than $157 Billion in investment assets. All participant performance data complies with Global Investment Performance Standards (GIPS). GIPS protocols represent the standards chosen by Chartered Financial Analyst (CFA) Institute to ensure fair

representation and full disclosure of investment performance results. GIPS is the investment industry standard.

The Morningstar mutual fund database contains investment performance data for over 140,000 mutual fund share classes as well as information on the manager of each fund. Morningstar's database was the source for building the list of portfolio managers invited to participate in this study.   Morningstar's database does not contain contact information for these portfolio managers. Google was used to identify email addresses and phone numbers. A list of portfolio managers was compiled and invitations were sent to 1,712 managers from June 8, 2018 to August 22, 2018. Email invitations stated that their participation was requested to compile research on various emotional reactions while making investment decisions. The email noted that the survey was short and should take seven minutes or less to complete and that if they chose to respond they could decide to stop answering questions at any time. Summary research results would be available to participants who requested it and participants received Starbucks' gift cards in appreciation of their input. The survey collected limited personal information. Invitees were informed that no personal data would be shared. Each participant was informed their responses would be destroyed upon completion of the study. Subsequent to the invitations being sent to prospective participants, a follow-up phone call was made to inform the mutual fund managers of the email and, when possible, a voice mail was left requesting their participation in the study. While these phone calls were time consuming, they were made in the interest of increasing the response rate.

Seventy-nine professional portfolio managers consented to completing the survey and 71 completed the survey. Eight surveys were excluded from the results because these participants responded to less than two of the 17 questions. Of the 71 participants who completed the survey, 7% (5) were female and 93% (66) were males. There is a clear gender disparity in the ranks of professional portfolio managers. Morningstar funded a study (Lutton and Davis, 2015) that found less than 9% of fund managers in the United States were female (Morningstar, 2018)

Morningstar's database segments mutual funds into investment styles and then ranks each fund manager based on their investment return. The Morningstar database provided information on portfolio managers who rank in the top quartile of their respective peer group. This quartile ranking information was a key component of this study. (Morningstar, 2018)

The survey was subsequently posted to Amazon's Mechanical Turk (M-Turk) website. M-Turk is an internet marketplace used for the collections of survey data. The same survey, with the exclusion of four questions specifically focused on investment decisions by professional investors, was completed by 160 Mechanical Turk (M-Turk) workers. The purposes of this second group of respondents was to provide a comparison in order to validate the Korn Ferry Hay group EI test and also to better understand emotional intelligence across survey populations. Although this researcher initially targeted 100-person sample size from M-Turk, 160 respondents had logged on to complete the survey in the first 20 minutes it was available online. All respondents completed the survey. The M-Turk worker population is located worldwide and, on average, was younger than respondents in the portfolio manager population were.

Respondents received $0.75 for completing the survey. 24% - 39 individuals - of the 160 responses were located in India and 76% - 121 individuals - were located elsewhere. After collection of M-Turk EI test scores, this data was uploaded to Qualtrics for tabulation.

<p style="text-align:center">Instrument</p>

The portfolio manager survey administered through Qualtrics was comprised of 17 questions. The survey received approval from the Harvard University Committee on the use of Human Subjects Research Investigative Review Board (IRB) on May 29, 2018. The 17 multiple-choice questions covered age, professional portfolio management experience, investment specialization (Equities, Bonds or Alternatives), current market view (represented by current cash levels versus historic cash levels), financial composure, investment style and behavioral biases including over-confidence.

Ten of the questions were the Korn Ferry ten question multiple-choice emotional intelligence test constructed by Korn Ferry Hay Group. Korn Ferry is a global consulting firm focused on organizational issues and is known for its work in the area of emotional intelligence. They have amassed engagement, reward and management data on over 20 Million professionals. (Korn Ferry Website, 2018) Most importantly, this particular test contains users'response to problem-solving tasks or situational questions as a measure of EI. This approach was similar to the MSCEIT test and seen as superior to the EI self-report tests used in similar research studies, because Korn Ferry test actually tested EI as opposed to participants' personal assessment of their EI ability.

In order to validate the test responses from portfolio managers the same EI test was given to a control group comprised of Mechanical Turk (M-Turk) workers. As

stated, the M-Turk comparison group responded to the same ten EI questions as well as the same two demographic questions and financial composure question. Having two different populations respond to the same surveyed provided validation of the EI Test as well as a better understanding of response differences between the two test-taking groups.

Procedure

After obtaining approval from the Harvard University Committee on the use of Human Subjects invitations were sent out by email. Participants could contact the Investigative Review Board (IRB) at Harvard University by emailing: cuhs@harvard.edu for further disclosures or if they had any questions about the study. 1,712 professional mutual fund portfolio managers were solicited to participate in the study. The portfolio manager distribution list had a broad group of professional portfolio managers encompassing more than twenty Morningstar investment style categories. Participants were informed the EI test would remain confidential and that they could have access to research results, if desired. The invitation email advised prospective participants that the survey would take approximately seven minutes to complete and that participants were free to stop taking the survey at any time. The E-mail provided a link to Harvard's IRB policies as well as a survey link for easy of participant accessibility. E-mail distribution is a low-cost method of assembling data for research. The survey link connected participants over to the Qualtrics survey site. If participants did not complete the study, a second request was initiated after two weeks in an attempt to increase the number of respondents.

The M-Turk procedure had a more simplified process. The same survey, with the exception of the four questions addressing professional portfolio manager decision

making, was posted onto M-Turk website. Potential survey takers were informed of the time anticipated to complete the survey.
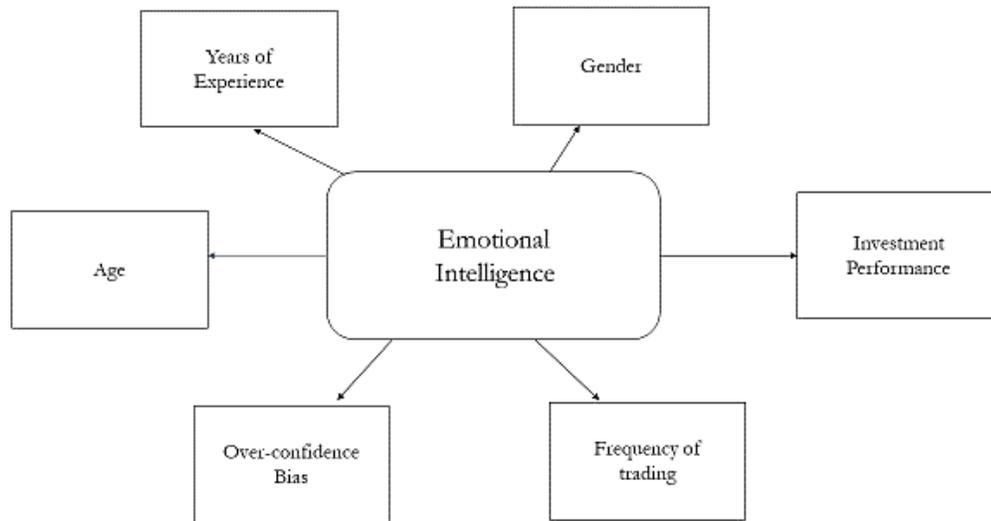

Figure 1: Study Diagram

The study's aim is to ascertain if there is a link between EI and investment decision-making in professional investors. This figure reflects this study's focus and assorted variables.

Data Collection

All responses and EI test scores were collected and calculated on Qualtrics software: www.Qualtrics.com. Qualtrics is an online survey software used to design and analyze surveys online. Qualtrics powers more than a billion surveys every year. It is a survey software trusted by over 9,000 business and institutions worldwide and is used by over 80% of Fortune 100 companies (Qualtrics.com, 2018). Qualtrics software allows one to gather data and reach target respondents as well as provide strong data collection and report preparation tools. Evidence suggests that Qualtrics is a reliable and effective

platform for conducting a wide range of surveys including tests such as this one. In

addition, Qualtrics provides a sufficient level of confidentiality and security.

Each participant had a unique URL to acknowledge electronic consent. As noted

previously, subjects could stop the survey at any time. After participants completed the

survey, a follow-up thank you was automatically sent and each participant received a $10

Starbuck gift card for participation. The thank you e-mail emphasized the researcher's

appreciation of the respondent's time and offered access to study results. 71 participants

successfully completed the Behavioral Finance Survey and we tabulated the results.

The same survey, with the exclusion of four investment-oriented questions, was

also completed by 160 Mechanical Turk (M-Turk) respondents.   This group was not

limited to mutual fund portfolio managers and thus provided a comparison of individual

over the age of 18 years old. EI test scores were collected through M-Turk and uploaded

to Qualtrics for tabulation. The second survey group of an M-Turk population allowed

for a reliability analysis of the EI test measure.

Chapter III

Results

This section reviews the survey questions and summarizes the responses from the research study. The figure below highlights the most important finding. Figure 2 notes the mean scores of the portfolio manager EI test by investment performance quartiles and reflects that the portfolio managers with the highest EI scores were in the highest performance quartile. The portfolio managers who had the lowest mean EI score had investment performance which ranking them in the lowest quartile. The results are suggestive of a link between EI and investment performance but do not provide any clear conclusions. This section will summarize the demographic responses and then provide further statistical detail supporting Figure 2 and Table 1 below.
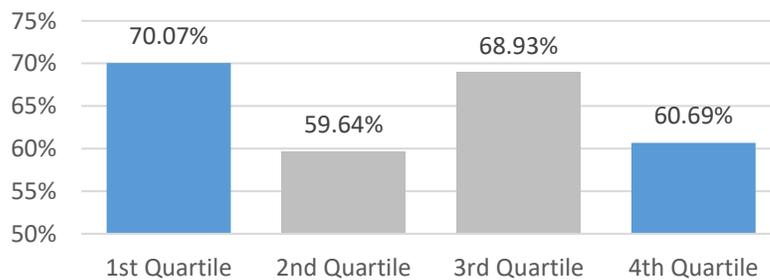

Figure 2: Mean EI Score by Investment Performance Quartile

This figure is a breakdown of participants' mean EI test score segmented by Morningstar mutual fund performance quartile. This figure details Portfolio manager's EI Scores with a comparison of the Highest Performance Quartile Versus the Lowest Performance Quartile.
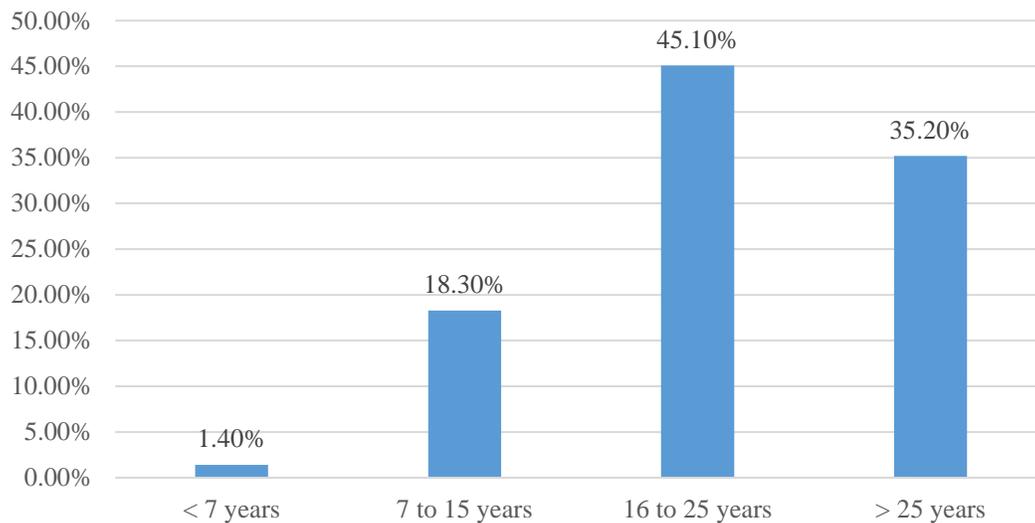
Figure 3: Portfolio Manager Experience

This figure summarizes the response to how long portfolio manager participants have been investing in a professional capacity.

The portfolio manager participants were an experienced group (Figure 3) with more than 80% of subjects having over 16 years' experience and 99% having over 7 years' experience.   In fact, with 35.2% of managers having over 25 years of experience, it appears to be a professional career that individuals enjoy for a long time. One would think this might lead to a long-term low turnover approach as more favorable for portfolio managers. This is interesting because it shows that professional mutual fund portfolio managers have longevity and more job security than expected in an industry where performance evaluator, according to Morningstar fund flows, are so short term in their decision-making.

Question two (Figure 4) asked participants in the portfolio manager population to identify their areas of expertise, 70% of those surveyed specialized in public equities or stocks, 27% of the respondents managed bond portfolios and 3% were responsible for Alternative Investments which were defined as uncorrelated investments relative to stocks and bonds.

The portfolio manager participants were an experienced group (Figure 3) with more than 80% of subjects having over 16 years' experience and 99% having over 7 years' experience. In fact, with 35.2% of managers having over 25 years of experience, it appears to be a professional career that individuals enjoy for a long time. One would think this might lead to a long-term low turnover approach as more favorable for portfolio managers. This is interesting because it shows that professional mutual fund portfolio managers have longevity and more job security than expected in an industry where performance evaluator, according to Morningstar fund flows, are so short term in their decision-making.

With respect to age (Figure 5), portfolio manager participants were very mature with 80% over the age of 41 years old and the highest percentage or 62% being between the age 41 and 59 year old, 18% were over the age of 60 years old. It is interesting to note that many of the respondents are older and more experienced, since as previously noted, the data on emotional intelligence supports the notion that EI increases as we age. The portfolio manager population had 80% over the age of 41 whereas 86% of the M-Turk population were below the age of 40.
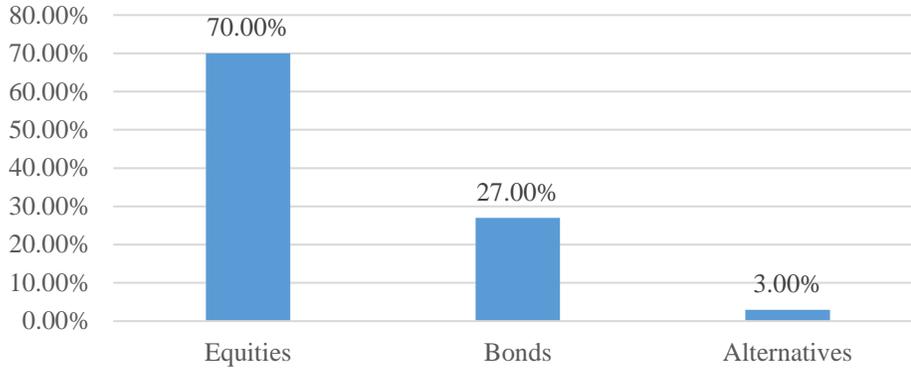
Figure 4: Investment Specialization

This figure is a breakdown of participants' area of expertise or specialization. It highlights that a high percentage of portfolio managers are responsible for stock mutual fund portfolios.
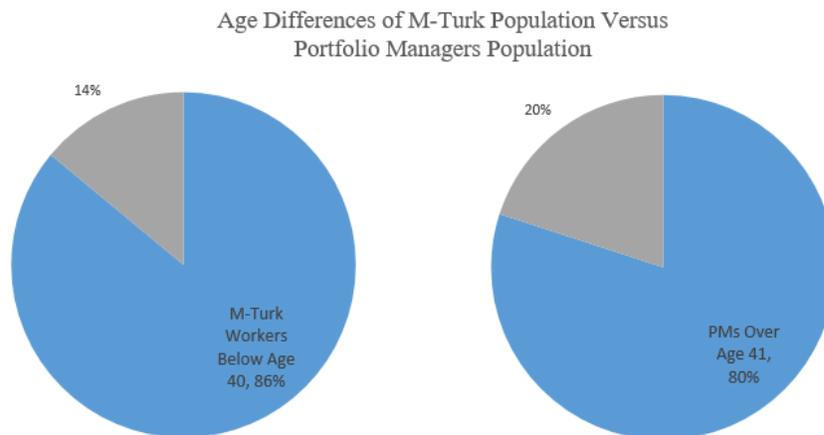

Figure 5: M-Turk Age Difference Relative to Portfolio Managers

This figure is a breakdown of participants' age differences across the two survey populations. The M-Turk respondents are much younger than the portfolio manager population.

Regression analysis was used for testing the relationship between EI scores and portfolio managers' performance quartiles (Table 1). The analysis reflected a statistically significant relationship between the two variables F (3.814), p=0.014, r^2=0.123. Therefore the hypothesis that professional portfolio managers with higher emotional intelligence scores demonstrate higher investment performance was supported. There was a statistically significant difference in overall scores among the investment performance quartiles. It makes logical sense that investment professionals with higher levels of emotional intelligence would make better investment decisions than those who do not, given that the financial service industry is an emotionally-oriented profession, as noted previously. This backs up the assertion that the ability to manage one's emotions can be advantageous for professional portfolio managers when compared with their peers, at least in one aspect of this experiment.

The results of the ANOVA and regression analysis are reflected in Table 1 below. In terms of the ANOVAS, there was a statistically significant difference in overall scores among the quartiles. However, it could not be detected and confirmed based on the multiple comparison analysis.

In this regression, the quartiles of EI are not significantly different from one another in predicting investment performance. This regression used EI test scores as the dependent variable and added age and gender as variables and the Morningstar investment performance quartiles were statistically significant variables (2nd quartile, t=-2.89, p=0.005, 4th quartile, t=-2.44, p=0.017). After controlling for age and gender, people in the second quartile dropped on average 11 points and people in the fourth quartile dropped 9 points when compared to the first quartile.

Table 1

Correlation Between EI Test Sores and Investment Performance

Demographics	n	M	SD	Min	Max	F	P
Panel A: Gender							
Male	66	65.26	12.49	25	90	1.063	0.306
Female	5	71.2	11.28	55	85		
Panel B: Quartile^							
1st	27	70.07	10.6	55	90	3.815	0.014
2nd	14	59.64	12.48	40	80		
3rd	14	68.93	9.64	60	85		
4th	16	60.69	14.34	25	80		
Panel B: Age Group*							
1	61	1	-	-	-	1.388	0.257
2	68	13	12.52	45	85		
3	64	44	12.7	25	85		
4	70	11	10.68	55	90		
5	73	2	17.68	60	85		
Total	71	65.68	12.43	25	90		

Due to small sample sizes, only age groups 2-4 were used in the Analysis of Variance

^Multiple comparison analysis were conducted but due to Bonferonni Correction, no differences were located

Table 2

Coefficient of Determination: EI Test Scores and Performance Quartiles

Model Summary			
Variable*	B	t	Sig
Constant	68.14	27.502	<.001
Gender	4.06	0.738	0.463
2nd Quartile	-11.2	-2.89	0.005
3rd Quartile	-1.1	-0.284	0.777
4th Quartile	-9.11	-2.444	0.017
Age Group 2	4.33	1.139	0.259
Age Group 4	6.03	1.512	0.135
r2 = 0.123			

To avoid multicollinearity, the 1st Quartile and Age Group 3 were used as reference groups

Note: This table reflects the regression output for the first regression model using Investment Performance Quartile Rankings as the outcome or dependent variable and EI Test Scores as the independent variable.

Gender and age were not found to be statistically significant variables given that the p-value was above .05 between those variables. Furthermore, the coefficient of determination (r^2) of .123 connotes a relatively weak relationship. This is not surprising as the human subject element of social science research means that there is often difficulty in getting a high Coefficient of Determination. In this experiment, the Coefficient of Determination helps explain how much variability there is between EI scores in relation to investment performance quartiles. The R or correlation coefficient allows us to examine the degree of linear correlation between the two variables.

The results are suggestive of a link between EI and investment performance but do not provide any clear conclusions. Since so few variable can be held constant this is

not unreasonable. We can state that there is a relationship between EI scores and investment performance but the relationship is not as consistent as we would like to observe. More specifically, there is a modest link between EI scores and investment performance quartiles and there is a non-monotonic correlation within the sample. There may have been a stronger relationship had we been able to collect a larger sample of portfolio managers. This represents an opportunity for future research.

Portfolio manager EI Test scores covered a wide range from the lowest score of 25 to highest score of 90 with an average or mean score of 65.7 and a standard deviation of 12.34. Interestingly, females' average score of 71.2 was higher than the average male score of 65.3 with a lower standard deviation of 11.28 but the small sample size limits the ability to draw any conclusions from this data. Research suggest that because of the way females learned to empathize as children, on average, they tend to build a greater level of emotional intelligence. (Van Rooy, 2005) Given that only five females responded to the survey, it was difficult to draw any conclusions about this data. The same sample size limitation prevailed when looking at EI scores across age groups. As noted, the respondents were older and that may have skewed the average EI test higher since research suggest that on average more mature age groups score higher in EI skills. The full EI score profile of the study participants are presented in Figure 6.

Table 3

Summary of Portfolio Manager EI Test Scores and M-Turk EI Scores

EI Scores	Minimum	Maximum	Mean	Std Deviation	Variance	Population
Portfolio Managers	25.00	90.00	65.68	12.34	152.33	71
M-Turk Workers	11.00	85.00	46.89	17.56	308.32	160

Most importantly, the mutual fund portfolio managers in the highest investment performance quartile scored the highest in the EI test while those managers in the lowest investment performance quartile scored the lowest. These results were statistically significant with a p value of 0.014 which means the results were statistically significant at the .05 level which signifies the likelihood of this happening by chance is very low. Given a p-value of less than .05 we can reject the null hypothesis that there is no difference between means and conclude that a significant difference does exist between EI scores and investment performance. The mean score of managers in the top quartile was 70.07 with a low standard deviation in test scores of 10.6. In this regression, equation quartiles were a statistically significant result.

M-Turk EI Test scores covered a wider range from the lowest score of 11 to highest score of 85 with an average or mean score of 46.9 and a larger standard deviation of 17.56. Research suggest that females tend to build a higher level of emotional intelligence and evidence supported that argument in the portfolio manager sample, with a very small sample size. The M-Turk output for females with a much large sample size does not support that claim. Given that almost one third (51/159=32.1%) of the M-Turk respondents were female it allowed us to further examine if there was a relationship

between these variables. There was not a statistically significant relationship between EI scores and either gender or age.   The same sample size limitation prevailed when looking at EI scores across age groups. As noted, the respondents were older for portfolio managers and that may have skewed the average EI test higher since research suggest that on average more mature age groups score higher in EI skills.   (Scheibe, 2009)
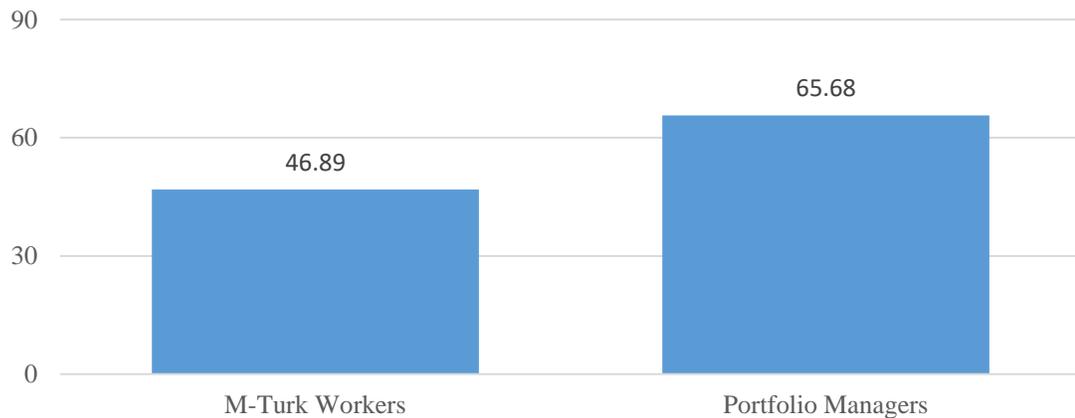

Figure 6: EI Test Scores: M-Turk Relative to Portfolio Manager Population

This figure provides an aggregate summary of EI test scores for the M-Turk population survey as well as the Portfolio manager population.

A second regression analysis was run testing the relationship between EI scores and portfolio managers' performance percentage ranking (dependent variable). The regression analysis (Table 2) that tabulated EI scores and individual Morningstar performance rankings did not reflect a statistically significant relationship between the variables, t=-0.591, p=0.557, r^2=.046. Therefore the hypothesis that professional

portfolio managers with higher Emotional Intelligence scores demonstrate higher

Morningstar style percentile rankings, was rejected for this aspect of the experiment. For

this regression, the adjusted r squared was only .046. The only variable that was

significant was age group three.

There was a statistically significant difference in EI Scores between M-Turk and

mutual fund managers (t=9.337, p<.001). However, EI Scores segmented by age and

gender did not reflect a statistically significant difference within M-Turk workers and

portfolio manager populations.

In terms of reliability, to show a very reliable instrument of measure, alpha should

between .70 and .95. M-Turk had a reliability of .540, which is adequate but not as high

as one would like, but sufficient for this experiment. Portfolio managers had a reliability

value of -.182, which is not adequate. This is a limitation with the reliability of the EI

test instrument in the study.

The same sample size issue persisted as we added and tested other variables using

regression analysis. The other variables added were gender, years of professional

portfolio oversight, age category, stock and market outlook and reaction to market

changes or volatility (see Table 3). Regression analysis found that none of these

variables improved the relationship or was more predictive of investment performance.

In past research, age contributed to higher EI but in this experiment, this relationship did

not persist. A larger sample size for each population could result in a stronger

relationship between these two variable.

Table 4

EI Test Scores Related to Morningstar Fund Ranking

Summary	Description			
Variable*		B	T	Sig.
Constant		32.06	1.034	0.306
EI Score		-0.2	-0.591	0.557
Turnover	Annualized	-0.01	-0.484	0.631
Gender		9.26	0.587	0.56
Market Change 2	Increase risk	13.34	1.591	0.118
Market Change 3	Maintain	-5.77	-0.659	0.513
Market Change 4	Reallocate	-5.8	-0.645	0.522
Experience 3	16 to 25 years	-12.4	-0.813	0.42
Experience 4	> 25 yrs	-26.88	-1.493	0.142
Age Group 3	Age 41 to 59	36.54	2.313	0.025
Age Group 4	Age 60 to 69	31.93	1.48	0.145
Market Outlook 2	Less Cash	-50.87	-1.52	0.135
Market Outlook 3	Same Cash	-6.2	-0.617	0.54
Over Confidence Bias 3	Above average	2.24	0.222	0.825
Over Confidence Bias 4	Sig. Above Avg.	-6.42	-0.511	0.612
r2=0.046				

*To avoid multicollearity, market change 1, experience 2, age group 2, Market Outlook (cash versus norm) 1 and overconfidence bias 2 were used as reference groups. Market change is related to response to the survey question about volatility. Turnover is defined in the List of Definitions found on page 3

Note: This table uses investment performance rankings as the outcome or dependent variable and EI test scores as the independent variable.

Table 5

EI Test Reliability

Reliability Analysis	
	Cronbach's Alpha
M-Turk	0.54
PM Score	-0.182

The last survey question summarized above asked subjects about their financial composure. Over confidence bias is a well documented effect in which an investors "subjective confidence in his or her judgement is reliably greater that the objective accuracy of those judgements" (Pallier, 2002, p.257). In this study, portfolio managers overstated their mutual fund performance relative to their peer portfolio managers. Financial composure is a key attribute of investors with higher levels of investor emotional intelligence. An investors' ability to remain composed during periods of increased market uncertainty and price volatility should result in better decision-making and thus improved outcomes. This question asked subjects to rank themselves relative to their mutual fund portfolio manager peer group using the categories of: Below Average…Average... Above Average…and Significantly Above Average.

Table 6

Average Test Scores by Populations

Group	n	M	SD	t	df	p
PM Manager	71	65.68	12.43	9.337	188.2	<.001
M-Turk	161	46.6	17.94			

Note: There was a statistically significant difference between the EI score of portfolio managers and M-Turk workers. The table also details the output of a validity test the EI measurement instrument.
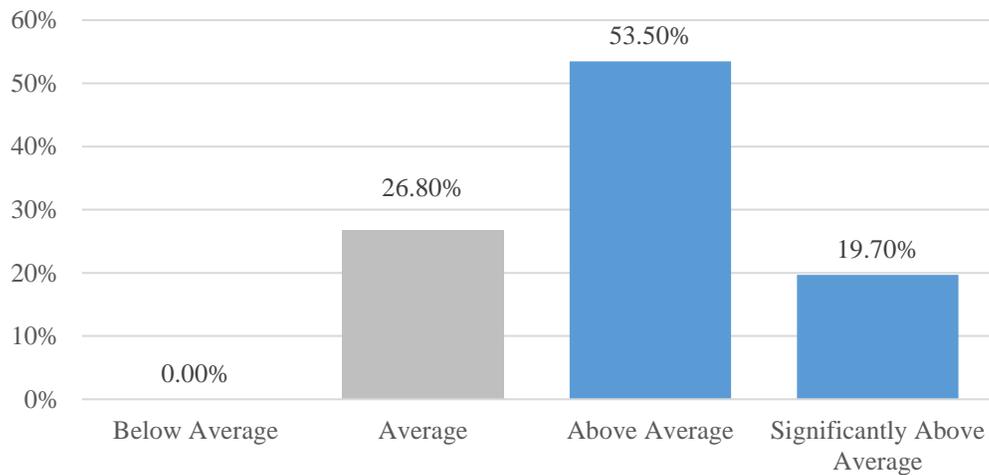

Figure 7: Self-Assessment of Financial Composure by Portfolio Managers

The figure above presents the over-confidence bias of Portfolio Managers relative to
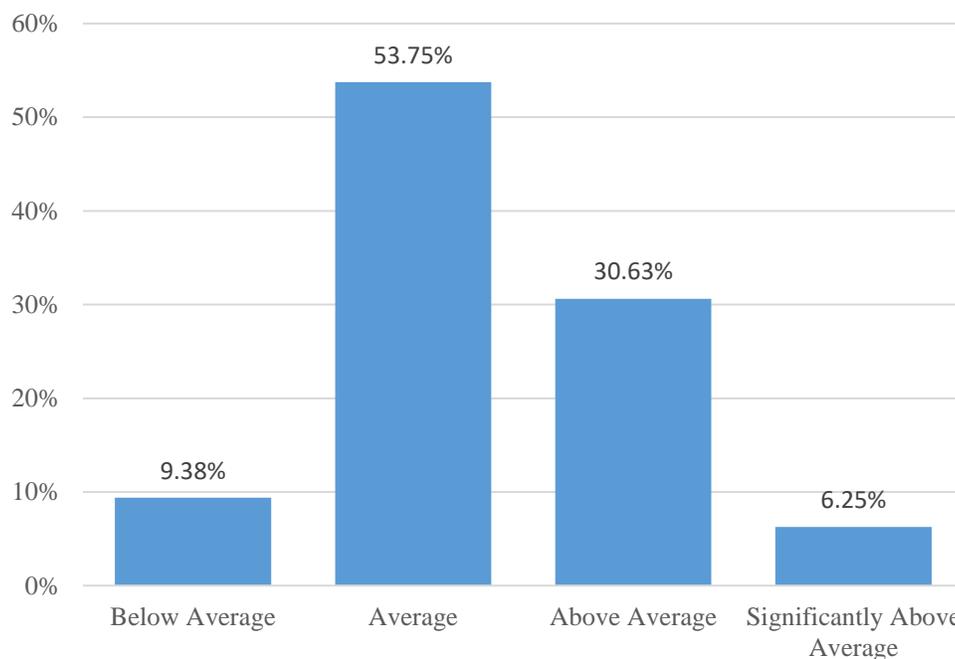
peers.

Figure 8: M-Turk Workers Self-Assessment of Financial Composure

This bar chart presents a self-assessment of financial composure of M-Turk workers relative to peers.

As detailed earlier in this report, most individuals rate themselves as above-average drivers. In the case of the portfolio manager test result there was a significant over confidence bias among the portfolio manager respondents with more than 73.2 % of respondents rating themselves as above average or significantly above average. Not one respondent rated themselves as below average in their emotional composure. This is a statistical impossibility as they were calibrating themselves relative to their peer group of portfolio managers. Interestingly the Morningstar data clearly details where these managers ranked relative to their peers—these portfolio managers do not appear to reflect or integrate their own Morningstar rankings, even though this same Morningstar data is often incorporated as a factor in determining a portfolio manager's annual compensation.

It is not a surprise that there is no correlation between a portfolio manager's perception of their financial composure and their actual mutual fund performance ranking. These results suggest that portfolio managers over estimate their talent level. They were asked the question: "How composed do you feel during periods of market uncertainty and price volatility--how would you rank yourself in that regard to a peer group of portfolio managers?" 73.2% assessed themselves as above average or significantly above average; however, there were 41 of 71 (57.8%) who were either first quartile (27/71) or second quartile (14/71) performers which translates to more than 15% reporting that they are better than they are relative to peer group performance. While this may not be a perfect comparison, this data reflects subjects who considers themselves better performers than their performance results actually are.

A third regression analysis tested the relationship between EI score by quartiles and portfolio managers' behavior (dependent variable). The regression analysis (Table 4) tabulated EI scores by performance quartiles and portfolio manager behavior such as: responses to market volatility, investment outlook, portfolio turnover and over confidence bias. This regression did not reflect a statistically significant relationship between any of the variables (p>0.05). Therefore the hypothesis that professional portfolio managers with higher Emotional Intelligence scores demonstrate different investment behavior, was rejected for this aspect of the experiment. The only variable that was significant was age group three (P=0.04).

Current Cash vs. Historical Cash

3.00%

28.50%

68.50%

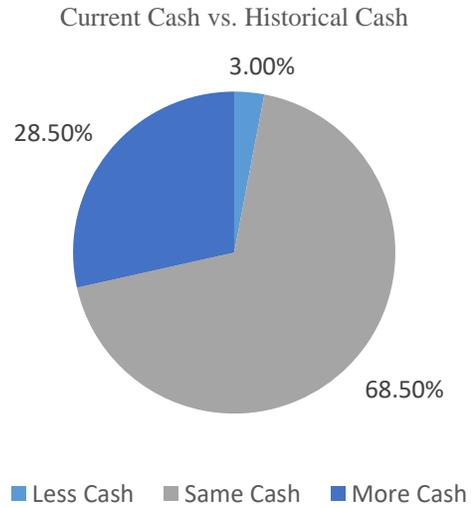■ Less Cash ■ Same Cash ■ More Cash

Figure 9: Market Viewpoint

This pie chart provides mutual fund manager cash level compared to recent history. It

provides a view of the portfolio managers' investment outlook in July and August 2018.

Table 7

Portfolio Manager EI and Investment Behavior

Response	Performance Quartile			
	First		Fourth	
Response	n	%	n	%
Market Change				
1	15	57.70%	12	75.00%
2	13	50.00%	9	56.30%
3	9	34.60%	9	56.30%
4	10	38.50%	4	25.00%
Market Outlook				
1	11	40.70%	2	13.30%
2^	1	3.70%	0	0.00%
3*	15	55.60%	13	86.70%
Overconfidence Bias				
1^	0	0.00%	0	0.00%
2	7	25.90%	3	18.80%
3	14	51.90%	9	56.30%
4	6	22.20%	4	25.00%
Overall	27	100.00%	16	100.00%

*Significant at alpha = 0.05 (p = 0.04)
^Sample Size too small for comparison

Turnover by Performance Quartile

Quartile	n	M	SD	t	df	p
First	27	84.74	197.62	0.788	40	0.434
Fourth	15	43	68.94			

Spearman Correlation*

Variable	r
Gender	0.071
Age	0.142

*Dependent Variable = Performance Quartile

Ordinal Regression

	Coefficient	Wald	df	Sig.
Threshold				
Quartile 1	-2.881	5.485	1	0.019
Quartile 2	-2.055	2.899	1	0.089
Quartile 3	-1.115	0.875	1	0.35
Location				
EI	-0.036	4.029	1	0.045

*Chi-Square = 44.263, p = .336; Pseudo-r2 = .057

Correlation*			
Variable	r	p	Correlation
Gender	-0.009	0.911	Point-Biserial
Age	0.125	0.115	Spearman

*Dependent Variable = EI

Note: The output for a regression model using EI test scores and survey answers related to market volatility, market outlook, turnover and over confidence bias.

Research Limitations

There are several limitations to the research method. Self-selection bias is a limitation in that those who participate in the study may be systemically different from non-responders. They may be more aware and knowledgeable with respect to emotion and its impact on investment decision making than those who chose not to respond to the

survey. The EI test questions measure what respondents say rather than, perhaps, how they actually make decisions. As such, the questions are phrased as to indirectly elicit information about how the respondents act. For example, being aware that emotional biases exist is one learned ability, but being able to execute in a volatile equity market is a more difficult and demanding undertaking. The Korn Ferry test environment could be different from the portfolio manager's investment decision-making environment. Portfolio manager participants most likely answered the EI questionnaire after the stock market had closed for the day and therefore may have responded in a calmer state. It was necessary to have mutual fund manager complete a shorter EI test in order to obtain a higher response rate. However, Korn Ferry EI test could be a limitation of this study in that time is scarce for mutual fund portfolio managers so that it was unrealistic for them to take more than ten minutes to complete this voluntary exercise. The researcher tried to address this limitation by surveying a separate population comprised of M-Turk workers.

Behavioral biases are natural emotional tendencies, so that an accurate identify of investors' thoughts and investment actions could be challenging. (Kahneman, 1998) However, one should expect that portfolio managers' years of experience should lead to greater understanding of the impact of their emotions on their decision-making. In retrospect, a portfolio manager's tenure at a fund may have been of additional usefulness as a variable to examine as a separate variable and as an analytical component relative to investment performance. This factor may have greater influence than levels of emotional intelligence.

The inability to obtain a significant number of portfolio manager respondents was the study's most serious limitation and it limited the generalizability of the results. In

addition, professional portfolio managers tend to be competitive individuals and some of their responses suggest that the portfolio manager responded to some of the EI test questions in a socially desirable manner, which would skew the study results. (Grierson, 2009)

As was cited in the American Express experiment, EI is malleable and can have a measurable impact in the investment industry. This research study corroborates that EI's malleability is a component of decision making in the investment industry. Although this does not mean this test is without flaws, it did identify a characteristic that bears further research. The research method has not been able to control for a wide variety of selection effects that may differentiate this sample from the broad population of professional investors. It was assumed that professional portfolio managers have had the interest and motivation to learn emotional-oriented skills throughout their career. This assumption is a limitation of the study. This will require the need to check the data focusing on reducing or eliminating selection bias. Further analysis between Korn Ferry EI results and M-Turk general population EI results reflected that there was a difference in mean scores between portfolio managers and M-Turk workers; but the reliability analysis with an alpha of 0.54 was below a more desirable range of 0.70 to 0.95.

Chapter IV

Discussion

This research effort examines the relationship between emotional intelligence (EI) test scores and Morningstar investment performance quartiles. In addition, this study examined the relationship between EI test scores and Morningstar investment performance rankings. Two populations were evaluated to assess any differences and test reliability. Finally, this study looked for correlations between EI test scores and investment behavior including investment outlook, portfolio turnover and financial composure in addition to age and gender variabilities. All of these studies were unsuccessful in finding both a statistically significant and strong relationship in the variables examined. However, for two of these tests we found statistically significant relationship between EI and Morningstar investment performance quartiles with a modest non-monotonic relationship between these variables. We also found a statistically significant difference in EI test scores between a portfolio manager population and the control group although the EI test measure itself was only marginally acceptable.

This research attempts to ascertain if there is a link between emotional intelligence in mutual fund portfolio managers and investment performance. The data output was mildly supportive of that hypothesis. This study's hypothesis was that portfolio managers with higher than average emotional intelligence will be more successful investment managers than their colleagues. This study indicated that mutual fund portfolio managers in the highest Morningstar investment performance quartile scored the highest in the EI test while those managers in the lowest investment performance quartile scored the lowest. These results were statistically significant with a

p value of 0.014 and were statistically significant at the .05 level and thus the likelihood of this happening by chance is low. If EI had no effect on a Portfolio Manager's performance, then the statistical differential would be far less. Given that 0.014 p-value is less than .05, we can reject a null hypothesis reflecting there is no difference between means and conclude that a significant difference exists between EI score and investment performance. While these results are suggestive of a link between EI and investment performance, they do not provide clear conclusions because the relationship was not confirmed through further examination of the data. Since so few variable can be held constant, this is not unreasonable. We can state that there is a relationship between EI scores and investment performance yet the relationship is not as consistent as we would like to observe. More specifically, there is a modest link between EI scores and investment performance quartiles and there is a non-monotonic correlation within the sample. There may have been a stronger relationship had we been able to collect a larger sample of portfolio managers. This represents an opportunity for future research. Research provides evidence that emotional intelligence matters in "emotionally-oriented" professions. (Goleman, 2000) In the portfolio management profession where emotional awareness and management of emotions is paramount to superior decision-making, persons with higher levels of emotional intelligence could be hypothesized to make better decisions.

An assessment of emotional intelligence in professional portfolio managers helps us better understand their decision-making. Statistical measures were utilized to identify a subset of these portfolio managers (investment performance quartiles one and four) who have consistently performed differently than their peers. After gathering investment

performance data and segmenting top quartile portfolio managers, we compared the emotional intelligence of these top quartile managers to those within the broader group of portfolio managers in order to better understand their decision making.

This research identifies that EI is a key attribute of outstanding portfolio managers and the research results could improve selection and education of investment professionals. Most investment professionals dedicate significant portions of their education to understanding investment valuation and financial concepts, with a limited amount of time devoted to studying the impact emotions can have on investment decision-making. Research such as this focuses on professional portfolio managers furthering themselves and expands our understanding of investment decision-making. If investment professionals' emotional intelligence skills could be developed and enhanced, they should be positioned to more often make better and more profitable decisions.

<center>Significance of the Study</center>

This study advances the concept of emotional intelligence as a factor in investment decision- making process. The results are suggestive of a link between EI and investment performance but do not provide any clear conclusions. We can say that there is a relationship between EI scores and investment performance, but the relationship is not as consistent as we would like to observe. There may have been a stronger relationship found had we been able to survey a larger sample of portfolio managers. The overall results of a link between emotional intelligence and portfolio managers' investment performance adds to the Vanguard study, cited earlier, which found a link between emotional intelligence test scores and individual retirement account investment performance. The study draws further attention to the importance of including awareness

<center>63</center>

of emotion and regulation of emotions as important inputs in the recruitment and training of portfolio managers. The research also found a statistical significant difference in mean EI scores between the portfolio manager population and the control group. Is the substantial EI score differential between portfolio managers at 65.68 and the general control group at 46.60 due to portfolio managers having learned to develop superior EI skills? Do portfolio managers survive in the investment industry because they use emotions more productively than the general population? In order to draw conclusions, additional research is needed.

This study's establishment of a link to emotional intelligence represents an opportunity for future research. The likely reasons for lack of statistical significance in this analysis could be the small portfolio manager sample size. The current study findings are insufficient to support our hypothesis that EI has an impact on investment behavior in mutual fund portfolio managers. The results on the EI measure can only be held valid for the M-Turk population sample and not a general statement that portfolio managers have higher EI than the general population.

The smaller sample size also limited opportunities for further analysis of other variables. The other variables included gender, years of professional portfolio oversight, age category, stock and market outlook and reaction to market changes or volatility. Regression analysis found that none of these variables improved the relationship or was more predictive of investment performance. In past research, age contributed to higher EI but this relationship was not reflected in this experiment. However, as previously noted, a larger portfolio manager sample size could result in a strong relationship between these two variable.

This study found that professional portfolio managers suffer from overconfidence biases reflected in their belief that they are better at understanding their own emotions than they are in actuality. Given this, mutual fund portfolio managers might improve their investment decision-making if they took time to ask themselves: "What are my thoughts? What are my feelings and what are my actions." This may help managers increase their emotional awareness and lead to more thoughtful and more logical decisions. The survey responses indicates that portfolio managers exhibit an overconfidence bias. This overconfidence bias may limit portfolio managers' ability to learn from their mistakes through examining their past unsuccessful investment decisions as a methodology to improve future decisions.

In conclusion, this research examined four relationships. First, we found a modest link between emotional intelligence (EI) test scores and Morningstar investment performance quartiles. Second, we did not find a link between EI test scores and Morningstar investment performance rankings. Third, we found the Korn Ferry EI test measure showed differences across two populations and modest test reliability. Finally, we did not find a link between EI test scores and investment behavior including age, gender, investment outlook, portfolio turnover and financial composure. Although these studies were unsuccessful in finding statistically significant results, the link between EI and Morningstar investment performance quartiles and the differences in EI test scores across populations suggests this as useful areas for further research opportunities.

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