

REGULATORY FIT CAN BE MORE THAN A FEELING:
EVIDENCE OF FACILITATED PROCESSING FOR PREVENTION FIT
IN INVESTMENT DECISION-MAKING CONTEXTS

by

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ABSTRACT

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Regulatory Fit Can Be More than a Feeling: Evidence of Facilitated Processing for Prevention Fit in Investment Decision-Making Contexts

Thesis directed by Assistant Professor Susan Jung Grant

We extend the literature on regulatory fit theory (Higgins 2000) by testing whether individuals who experience regulatory fit engage in facilitated processing. Research suggests that regulatory fit results in a state of “feeling right” about both the outcome and the decision process. When one’s regulatory focus is sustained during goal pursuit, participants show greater willingness to pay for objects, provide higher brand attitude ratings (Avnet and Higgins 2006; Lee, Keller, and Sternthal 2010), and exhibit increased engagement in tasks (Higgins 2000). Prior work has been limited to these types of subjective assessments and has not examined information-processing implications.

We find an asymmetry such that greater processing occurs for states of prevention fit but not states of promotion fit. In four studies we use an investment decision-making context to test whether participants who experience regulatory fit discriminate between strong and weak positive arguments (Experiment 1) and strong and weak negative arguments (Experiment 2). We find that individuals who experience prevention fit discriminate between strong and weak arguments for both positive and negative information. Interestingly, our finding that prevention fit participants discern argument strength in the domain of positive information is not directly predicted by theorizing on regulatory focus. Additionally, participants who experience prevention fit tend not to rely on the disposition effect (Shefrin and Statman 1985), a heuristic in which investors sell winning stocks too quickly and hold losing stocks too long (Experiment 3). Overall, we find

support for our view that sustaining a prevention focus (prevention fit) facilitates depth of processing.

A fourth experiment investigates reliance on a second investment heuristic, the $1/n$ asset allocation rule (Benartzi and Thaler 2001). No effects of regulatory fit are observed, however, we find that inducing a prevention focus increases participants' reliance on the $1/n$ heuristic. We attribute this to a desire for a more conservative portfolio on the part of prevention-oriented participants and discuss potential implications of this finding.

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CHAPTER I

INTRODUCTION

As an increasing number of non-professional investors seek to navigate their financial destinies through online trading, understanding how individuals process and make sense of information in forming investment decisions is of practical concern. This is heightened by anecdotal evidence and empirical findings suggesting that individual investors tend not to achieve optimal investment outcomes (Barber and Odean 2000; Lehenkari and Perttunen 2004; Odean 1998, 1999). For example, the disposition effect (Shefrin and Statman 1985), which describes the tendency for investors to sell a winning stock too quickly and hold a losing stock too long, has been shown to be more prominent among relatively novice investors (Dhar and Zhu 2006). Similarly the $1/n$ heuristic (Benartzi and Thaler 2001), a strategy in which investors spread their assets equally among the presented options, appears to be a common tactic among retirement plan participants. This use of heuristics implies that individuals may be engaging in superficial evaluations of financial decisions. However, research to date has not examined these phenomena from an information processing perspective. If the disposition effect represents a heuristic decision process that stems from loss aversion, then it may be possible to attenuate the effect through facilitated information processing. Similarly, if the $1/n$ heuristic represents a simplified decision strategy, helping investors access greater processing resources might lead to better investment decisions.

In this paper, we examine how regulatory fit (Higgins 2000) influences depth of processing for investment decision-making. Regulatory focus proposes two systems of self-regulation (promotion and prevention) that differ with regard to how individuals conceptualize, set, and pursue goals. A promotion orientation emphasizes aspirations, hopes, and ideals, and sets

maximal goals in which positive outcomes are approached through eagerness strategies, where a prevention orientation emphasizes duties, obligations, and oughts, and sets minimal goals that employ vigilant strategies to avoid negative outcomes. Regulatory fit results when one's promotion or prevention focus is sustained during goal pursuit and results in a state of "feeling right" about both an outcome and the decision process. Participants in laboratory studies report greater willingness to pay for identical objects (Avnet and Higgins 2006, Higgins et al 2003) and provide higher brand attitude ratings (Lee, Keller, and Sternthal 2010) when they experience regulatory fit versus non-fit. Additionally, "feeling right" from regulatory fit has been associated with increased engagement in a task (Aaker and Lee 2004, Higgins 2000, Shah, Higgins, and Friedman 1998). These findings support the notion individuals place value in subjective experience of a decision process above and beyond the value associated with the outcome. However, questions remain as to whether value from fit corresponds to systematic or heuristic processing (Aaker and Lee 2006). Some studies suggest that regulatory fit is more likely to occur under low motivation conditions, indicative of heuristic processing (Briley and Aaker 2006, Wang and Lee 2006), where other studies suggest regulatory fit corresponds to more systematic thinking (Idson, Liberman, and Higgins 2000). We offer a potential explanation for these conflicting results by providing evidence that depth of processing differs for experiences of promotion fit and prevention fit.

In exploring the effects of information processing we seek to investigate whether regulatory fit can be leveraged to yield more critical evaluations of content independent of the subjective assessment of the process. Specifically, we attempt to determine whether increased engagement in a task and more favorable evaluations correspond to greater elaboration and scrutiny in assessing information quality in a stock evaluation task. If regulatory fit simply

amplifies the evaluation of a stock as good or bad, this would suggest limited processing, however, if regulatory fit contributes to discrimination between strong and weak reasons for owning a stock, this would suggest systematic processing.

The selection of an investment context for this investigation provides several advantages. From a practical standpoint, prevention and promotion serve as proxies for different types of investors. This would include investors who differ with respect to type of investment account (401k vs. personal trading account) or, holding account type constant, investors who simply differ in risk tolerance. Additionally, an investment context allows for a unique opportunity to investigate positive and negative messages, as both types of information are relevant to evaluations a stock's future potential. These mappings offer useful insights as we seek to contribute both to theoretical findings as well as contribute to understanding more about how individual investors utilize information in their investment decisions.

Because naïve investors have extensive access to financial information in making investment decisions, this raises questions such as: How are other news and information about stocks assessed and integrated into the investor's trading decision? When are individual investors biased by heuristics in evaluating stocks and when do they rely on more inferential processing of substantive inputs? And are there circumstances in which investors make better decisions as a consequence of relatively greater processing of available information rather than being unduly influenced by whether they hold a winning or losing stock in their investment account? We explore these questions in this paper through tests of argument quality discrimination (Experiments 1 and 2) and find that individuals who experience prevention fit correctly assess information strength regardless of valence. We then test whether our finding of facilitated processing for prevention fit can attenuate two different investment heuristics: the disposition

effect (Experiment 3) and naïve diversification (Experiment 4). We find support for facilitated processing on the part of prevention fit participants in Experiment 3, however no effect of prevention fit emerges in Experiment 4.

Theoretical Background

Prior literature on goal-relevant processing suggests that individuals may have distinct goals when investing that have implications for decision-making (Hamilton and Biehal 2005), portfolio assessment (Jung Grant and Xie 2007), and vehicle selection (Zhou and Pham 2004). For instance, Hamilton and Biehal (2005) find that when independent goals are accessible, participants tend to choose investment portfolios with higher expected returns; in contrast, when interdependent goals are promoted participants tend to choose investment portfolios with lower volatility. Jung Grant and Xie (2007) show that when hedging a bet, investors with a desire to maximize return attend to the hedging component, while investors with a desire to minimize risk focus on the hedged component. And Zhou and Pham (2004) demonstrate that a retirement account primes investors to contemplate risk, whereas an equity account primes a focus on returns. These studies suggest a robust relationship between prevention – the self-regulatory focus orientation concerned with safety, status quo and security – and an emphasis on risk, and a comparable correspondence between promotion – the self-regulatory focus orientation concerned with growth, achievement and advancement – and an emphasis on return.

This alignment of risk with prevention and return with promotion allows us to make predictions about how individuals assesses financial information because of the established tendency for prevention individuals to act with vigilance and for promotion individuals to act with eagerness. For example, we anticipate prevention-oriented individuals to be more attentive

in limiting errors (Liberman et al. 2001) and avoiding mismatches to their goals (Crowe and Higgins 1997), whereas promotion-oriented individuals are inclined to be more tolerant of false alarms (Crowe and Higgins 1997) and more exploratory in their processing (Friedman and Forster 2001). Further, Zhu and Meyers-Levy (2007) show that a promotion focus fosters relational elaboration, while a prevention focus elicits item-specific processing, suggesting that promotion-focused investors may be more inclined to attend to overarching connections among disparate items, whereas prevention-focused investors tend to encode specifics.

These contrasting tendencies of promotion and prevention orientations have implications for assessments of risk and return. Promotion-focused people place a premium on moving toward positive states, preferring errors of commission to errors of omission; therefore, they freely abstract meaning from whatever information is available. Prevention-focused people find little attraction to positive states but are occupied with avoiding negative states; therefore, they watch for details and assess carefully. Applying these tendencies to a stock evaluation suggests a promotion-oriented investor would focus on identifying potential for return, whereas a prevention-oriented investor would scrutinize the data to ensure the soundness of the investment. In sum, these differences in processing suggest a tendency among promotion focused individuals to assess and decide more readily on less information, where prevention focused individuals would demand a higher threshold.

Though similar to preceding findings in suggesting that an investor's regulatory focus will lead to an emphasis on risk (prevention) versus return (promotion) as an important driver in processing financial information, our research posits an expanded point of view that builds upon the differences in processing styles between prevention and promotion. We contend that while notions of financial risk and return are compatible with regulatory foci, a one-to-one mapping of

risk to prevention and return to promotion oversimplifies the complex nature of investment decision-making. Investment decisions require individuals to focus *both* on the pursuit of gains *and* on the avoidance of losses. As such, a decision based solely on risk or solely on return fails to consider the inherent tradeoffs between the two dimensions. This raises the question of whether regulatory focus results in a singular emphasis on the most relevant concern for the investor's strategic orientation or whether prevention- and promotion-oriented investors are capable of maintaining a dual focus on the tradeoffs between risk and return.

In support of our view, we draw guidance from the notion of asymmetric conditional importance found in construal level theory, which identifies a hierarchical structure of for evaluating feasibility and desirability (Eyal et al 2004). According to this view, considerations of feasibility (i.e. how a goal is achieved) are subordinate to considerations of desirability (i.e. why a goal is pursued). Illustrating this point, Eyal et al suggest that one need not consider the potential side effects (feasibility) of a medical treatment unless it offers health benefits (desirability). Sagristano, Trope, and Liberman (2002) supply experimental evidence of this concept in their examination of participants' desire to learn more about a hypothetical gamble when initially presented with incomplete information. These authors provided participants either with information about the payoff of the gamble (desirability) or information about the probability of winning the gamble (feasibility). Participants were then asked how interested they would be in learning about the missing dimension. This study found that desire to learn about probability information was greater when the payoff value was high than when it was low, whereas desire to learn about the payoff value was high regardless of whether the probability of winning was high or low (Sagristano et al. 2002, Preliminary Study 2). This implies that assessing desirability is independent of feasibility but not the inverse.

Drawing upon this logic, we suggest that risk and return adhere to a similar hierarchical structure in which considerations of risk are subordinate to considerations of return: without a focus on profit, an investor would not need to contemplate the risk of an investment. Extending this hierarchical framework to regulatory focus provides insight into the question of whether promotion and prevention orientations correspond to a singular or dual focus. Prior research has established that for promotion-oriented investors, growth and future profit are the central, salient goal; yet for prevention-oriented investors, risk and judicious use of assets are salient. However, in light of a hierarchical construction for risk and return, it must be the case that considerations of risk are evaluated in the context of an acceptable level of return. Therefore, a prevention-oriented investor maintains concerns about the security of investments but also necessarily harbors aspirations for profit. As such, we assert that a prevention orientation holds the potential to consider *both* kinds of goals and the inherent tradeoff between risk and return.

Specifically, we propose that investors with a promotion orientation focus on maximizing profits and therefore seek mainly to realize the goal of achieving a positive outcome. Investors with a prevention orientation are capable of considering both the possible downside implied by an investment's variability as well as the potential for a positive return and therefore seek to balance the tradeoff between risk and return. Because this view draws on a logical framework from construal level theory, we anticipate that the capacity to contemplate both risk and return will be realized when a prevention-oriented investor's regulatory focus is sustained by the construal level of their evaluation resulting in a state of regulatory fit (Higgins 2000; Lee, Keller, and Sternthal 2010; Semin et al 2005).

Relationship to Construal Level Theory

In addition to informing our conceptualization of a hierarchical structure for risk and return, the notion of asymmetric conditional importance leads us to re-examine prior findings in the construal level literature itself (Liberman and Trope 1998). Liberman and her colleagues conclude that desirability grows in importance in the distant future but that feasibility diminishes over time (Eyal et al. 2004; Liberman and Trope 1998; Trope and Liberman 2000, 2003). In light of the notion of asymmetric conditional importance, an alternative interpretation of the data reported by Liberman and Trope (1998) is that *both* feasibility and desirability are considered in the near future but that desirability dominates in the distant future. This account is demonstrated by the word-processor scenario (Liberman and Trope 1998, Experiment 3), in which respondents were asked to consider either a desirability measure (how important is it that the word processor is quick and updated) or a feasibility measure (how important is the time it takes to learn the software) for either the near or distant future (tomorrow versus next year). In the near future, participants rated the desirability and feasibility features as similarly important; in the distant future, participants rated the desirability feature as significantly more important than the feasibility feature. This representative pattern of data suggests two conclusions: (1) desirability is considered regardless of temporal proximity, and (2) *both* feasibility and desirability are considered in the near future. The adequacy of this re-interpretation to explain subsequent results reported in the construal level literature appears robust (particularly illustrative examples of this reinterpretation include Liberman and Trope 1998, Study 4; Trope and Liberman 2000, Study 2; Smith and Trope 2006, Study 3). In sum, these papers suggest that feasibility and desirability are co-constituents of an individual's focus for proximate evaluations. Because desirability is always important, the addition of feasibility concerns for low-level construal suggests a dual focus

similar to our conceptualization of how a prevention-oriented investor might evaluate both risk and return. A singular focus on desirability for high-level construal also parallels our conceptualization of a promotion-oriented investor. Where desirability can be assessed independently of feasibility, opportunities for return can be evaluated without contemplating the associated risk. As such, combining prevention with low-level construal and promotion with high-level construal to achieve regulatory fit suggests an interesting possibility: the concrete nature of low-level construal may facilitate processing for prevention fit.

Contributions

The present research contributes both to practical considerations of consumer financial decision-making and to theoretical aspects of information-processing. With regard to practical applications, we address the complex realities of investment decisions and show how a promotion versus prevention view contributes to differences in information processing. From a theory standpoint, our research sheds light on how promotion and prevention orientations use financial information with an emphasis on understanding when each displays depth of processing. We observe conditions under which investors indicate a greater likelihood of selling a stock that has achieved a gain and a greater likelihood of holding a stock that has incurred a loss, consistent with the disposition effect. Furthermore, we find evidence that prevention fit attenuates this effect and provide evidence that prevention fit evokes greater processing, suggesting that the disposition effect tends to prevail when processing is limited.

The substance of our theoretical contribution involves providing evidence that (1) prevention-oriented investors, by virtue of their dual focus on risk and return, possess the

capacity to process information to for both types of concerns and that (2) promotion-oriented investors tend not to exhibit this same level of discernment.

Corroboration for these two propositions could include evidence of two kinds. First, finding that investors who experience prevention fit are able to distinguish strong from weak positive news would corroborate our view that prevention-oriented investors focus on both risk and return. Notably, this result would not be predicted by regulatory focus theory. The second kind of evidence needed to support our view includes the attenuation of investment heuristics such as the disposition effect and the $1/n$ heuristic. An attenuation of the disposition effect would involve prevention fit investors responding to questions about selling and holding without undue influence from prior stock performance. This hypothesis is motivated by the perspective that concrete information contributes to prevention fit which prompts facilitated processing as a result of a prevention focus reflecting a relatively analytical processing style. In contrast, those deciding to hold a stock based on whether the investment is a winner or a loser (promotion-oriented investors, irrespective of fit, and prevention-oriented investors who experience non-fit) might be regarded as making a judgment based on relatively superficial desires for securing a gain and avoiding the realization of a “paper” loss. By finding such evidence, we assert support for our view.

Experimental Overview

The motivation for this research is to understand how investors use information in forming evaluations of stocks. Using distinct manipulations to elicit a promotion versus prevention orientation, we first test whether participants discriminate between strong and weak positive information (Experiment 1) and between strong and weak negative information

(Experiment 2). We then examine whether evidence of facilitated processing observed for prevention fit attenuates the disposition effect (Experiment 3) and the $1/n$ heuristic (Experiment 4).

CHAPTER II

EXPERIMENT 1

In Experiment 1, we assess whether regulatory fit facilitates greater processing by testing whether participants are able to discriminate between strong and weak arguments about the company they are investing in. The approach is conceptually similar to the methodology Petty and Cacioppo (1986) used to test for elaboration likelihood; like these authors, we manipulate the persuasive impact of argument strength to differentiate extent of processing. In the present study, participants read news briefs providing either strong or weak positive evidence of the company's prospects. We expect that participants engaging in greater processing about the investment opportunity would be more likely to hold their stock position upon reading about a positive earnings announcement than when presented with news announcing a new celebrity endorser.

Due to differential sensitivity to the presence and absence of positive (negative) outcomes (Higgins 1987, 1997), regulatory focus predicts that promotion-oriented (versus prevention-oriented) investors would exhibit greater eagerness (vigilance) when given positive (negative) information. As such, positive information provides relevant cue to achieving the goals of promotion-focused individuals (approaching gains), where negative information provides cues relevant to the goals of prevention focused individuals (avoiding losses). Regulatory focus theory also predicts that a prevention-oriented individual would be indifferent toward positive information due to their focus on the presence and absence of losses, which implies a lack of sensitivity to the strength of positive arguments. However, we predict that prevention-oriented individuals provided with a concrete prime would experience regulatory fit through low-level construal and consequentially would display depth of processing for positive information.

Method

Participants. Sixty-five participants were recruited from the marketing department subject pool in exchange for partial course credit. We varied construal level (abstract versus concrete), regulatory focus (prevention versus promotion) and argument strength (strong positive versus weak positive). Participants were, therefore, randomly assigned to one of eight conditions in a 2 x 2 x 2 between-subjects, complete-factorial design.

Procedure. Participants were provided with an investment decision-making scenario in which they were asked to imagine that they owned 100 shares of a stock purchased 6 months ago at a price of \$45 per share. Participants then read a description of the company that was based on similar content but written using either concrete or abstract language (see Semin et al 2005 for details on this operationalization). The concrete company profile included descriptions such as, “Wright-Gorsuch wants to help every man, woman, and child have days in which they can do more and feel better,” and the firm markets “shots that fight off colds, flus, and pneumonia in the winter months, antibiotics that attack infection caused by 412 bacterial strains, as well as a supplement of 23 vitamins, minerals, and amino acids.” These descriptions express the firm’s activities with specifics. In contrast, participants provided with the abstract company profile read descriptions of the firm’s operations expressed at a higher level of construal with descriptions such as, “Wright-Gorsuch is committed to improving the quality of human life by developing products that contribute to the overall health of mind and body. Wright-Gorsuch has introduced therapies that enhance patient outcomes when faced with disease, supplements that deliver essential nutritional benefits.” These items are more general and represent the company in abstract terms. Full versions of the stimuli are provided in Appendix A.

Following the company description, participants were provided with five news briefs about the firm. Each news brief contained a headline and a short article. Three of the news briefs provided positive news about the company; two provided neutral information. The positive news briefs indicated either strongly positive or weakly positive information about the firm. Strongly positive news items included (1) an expected rise in sales projections, (2) a cash infusion from a favorable court ruling, and (3) the opening of a new research laboratory. Weakly positive information included (a) the CEO being interviewed on *Larry King Live*, (b) an announcement of a Super Bowl ad, and (c) an announcement of an upcoming celebrity endorsement.

Additionally, two neutral news briefs appeared in all conditions. These included a notice of an annual filing with the Securities and Exchange Commission which always appeared in position three and a report about a government study on health care which always appeared in position five. A version of the news briefs used as the stimulus is included in Appendix B.

Following the news briefs, participants were provided with a stock chart in which the ending price yielded a “paper” gain. Additionally, participants were given a data table highlighting information on recent price performance: 52-week high/low, earnings per share, market capitalization, trading volume, exchange, P/E ratio, and beta. The table was modeled after those found on online financial portals such as MSN Money and Google Finance. A version of the stock chart stimulus appears in the top panel of Appendix C.

Next, participants were asked to describe in writing why the stock was either “a judicious way to protect your assets” (prevention) or “an effective way to achieve growth and profit” (promotion) as the manipulation of regulatory focus. A lined page of paper was provided for participants to elaborate on this question.

After completing the regulatory focus manipulation, participants responded to a series of dependent measures: likelihood of selling the stock, likelihood of buying more of the stock, and likelihood of keeping the stock. The measures utilized seven-point scales anchored by “unlikely” and “likely” with higher values indicating greater likelihood. Participants were free to flip back and forth through the booklet during the study as they evaluated information and indicated their preferences. Finally, participants answered questions related to their confidence in the stock, investing experience, and demographic profile for use as potential covariates.

Manipulation Checks. Thirty participants from the marketing department subject pool evaluated either the abstract or concrete company profile descriptions. Respondents were asked how abstract, concrete, specific, and general they found the information. Each measure utilized a seven-point scale anchored by “not at all” and “very” with higher values indicating stronger ratings. The four items were averaged to form an index with the concrete and specific items reverse coded ($\alpha = .90$). A between subjects analysis of variance revealed a significant difference in the predicted direction ($M_{\text{abstract profile}} = 4.83$, $M_{\text{concrete profile}} = 3.83$; $F(1, 28) = 6.36$, $p < .02$) suggesting the company description manipulation differed in abstractness and concreteness as intended.

Forty-four participants from the marketing department subject pool rated either the strong or weak news items using a seven-point scale anchored by negative and positive with higher values indicating more positive ratings. An analysis of variance revealed that the strong positive news briefs ($M = 5.74$) were rated as marginally more positive than the weak positive news briefs ($M = 5.22$; $F(1, 41) = 3.03$, $p = .089$), suggesting the manipulation operates in the intended direction. Notably, the marginal result for the argument strength manipulation works

against us, as it implies greater difficulty in testing for discernment between strong and weak arguments.

Results

An analysis of variance indicated that overall, participants found the strong positive news briefs more compelling than the weak positive news briefs. Participants were more likely to hold their position when provided with strong positive information ($M = 6.42$) than when provided with weak positive information ($M = 5.88$; $F(1, 57) = 5.03, p < .03$). The main effect was qualified by a significant three-way interaction $F(1, 57) = 6.08 (p < .02)$. Follow-up analyses were conducted to examine these results within the prevention and promotion conditions.

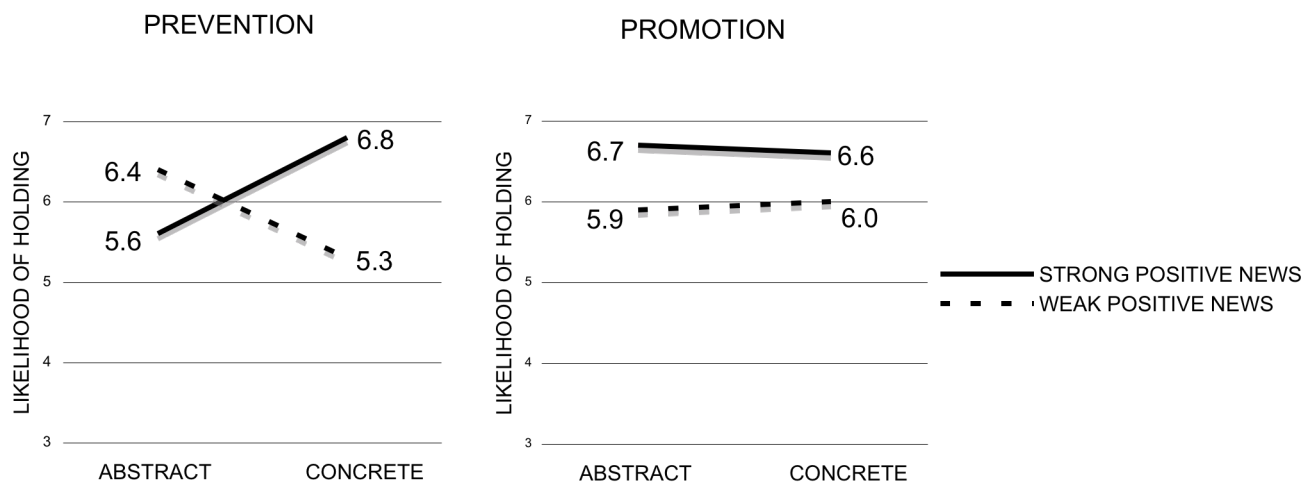
For the prevention conditions, there was a significant interaction of construal level and argument strength ($F(1, 57) = 7.32, p < .02$). Prevention fit participants were more likely to hold their position when they read strongly positive news ($M = 6.75$) than when they read weakly positive news ($M = 5.25$; $F(1, 57) = , p < .05$) suggesting these participants discriminated between the strong and weak news. However, preferences for holding the stock in the prevention non-fit conditions were not significantly different ($M_{\text{strong}} = 5.63, M_{\text{weak}} = 6.38$; $F = 2.29, p = .15$). This result suggests that prevention non-fit participants did not attend to the strength of the arguments in their evaluations. Further, the assessment of positive news articles differed for prevention fit versus prevention non-fit. Prevention fit participants were more likely to hold the stock when given strong positive news than prevention non-fit participants ($F(1, 57) = 6.23, p < .03$), which supports facilitated processing based on prevention fit.

For the promotion conditions, only the expected main effect of argument strength was observed ($F(1, 57) = 7.18, p < .02$). Promotion-oriented participants were more likely to hold when

they read strong positive arguments ($M = 6.64$) than when they read weak positive arguments ($M = 5.94$) regardless of fit versus non-fit, consistent with a promotion orientation displaying sensitivity to positive information as would be predicted by regulatory focus theory. The interaction between construal and argument strength was not significant for promotion-oriented participants ($F < 1, p = .76$). The results are presented in Figure 1.

FIGURE 1

Likelihood of Holding Shares When Given
Strong versus Weak Positive Information About the Stock



Discussion

As predicted, in Experiment 1 we found prevention fit effects indicative of facilitated processing. Here discrimination between strong and weak information about the stock's potential provides evidence of increased processing. In differentiating between strong and weak positive news, prevention fit participants demonstrate sensitivity to the potential for the stock to earn a positive return. This result supports our view that prevention-oriented participants seek to invest

for reasons above and beyond avoiding a loss, in line with a framework of asymmetric conditional importance.

Participants who experienced prevention fit (those primed with a concrete company description and evaluated the stock from a prevention focus) attended to the quality of positive arguments. This suggests that they were able to evaluate both the degree to which this information indicated an opportunity to invest in a stock that would be safe (consistent with a prevention focus) as well as the degree to which the stock represented an opportunity to achieve growth and profit.

Notably, the finding that prevention fit participants display sensitivity to the strength of positive information would not be predicted by regulatory focus theory. Regulatory focus posits that prevention represents an approach-avoidance system oriented toward avoiding losses and seeking non-losses while remaining agnostic to gains (Higgins 1998). Demonstrating that prevention fit participants correctly attend to the strength of positive news bolsters our claim that in the context of financial decision-making, prevention-oriented individuals hold a dual focus as these participants attend to the strength of news related to positive outcomes. Further, this finding provides relatively strong evidence that prevention fit contributes to facilitated processing in light of the expected insensitivity to positive news.

We also find that promotion-oriented participants show differential sensitivity to argument strength, however, this is due to the fact that positive information is instrumental to their central goal of earning a return, a finding that holds irrespective of level of construal. This suggests that when content fits with regulatory focus, there is no additional benefit of fit from construal. If this is true, then in the domain of negative arguments we should observe only a main effect of argument strength among prevention-oriented participants.

We test this explicitly in Experiment 2 by providing promotion- and prevention-oriented individuals with strong and weak *negative* arguments. Because negative information is instrumental to prevention-oriented participants' goal of avoiding a loss, we expect to find strong-weak discrimination for these participants. However, promotion-oriented participants would not be expected to differentiate between strong and weak negative information, as this content is not relevant to their central goal of achieving a high return. Discernment on the part of prevention-oriented participants regardless of construal would provide evidence that the effect we observe in Experiment 1 for promotion-oriented participants can be attributed to the compatibility between regulatory focus and informational valence.

It is additionally possible that when presented with negative news briefs promotion fit participants would correctly discriminate between strong and weak negative news mirroring the effect we found in Experiment 1 for prevention fit. However, our conceptualization of a promotion orientation as having a singular focus on achieving a return would suggest insensitivity to the strength of negative information. While evidence of non-discernment would not be informative in isolation, a lack of differentiation for promotion-oriented participants in combination with an interaction between argument strength and regulatory focus would be meaningful. If prevention-oriented participants are both more likely to hold the stock when given weak negative news and less likely to hold the stock when given strong negative news as compared to promotion-oriented participants, this would suggest complete insensitivity to negative information on the part of promotion-oriented participants.

CHAPTER III

EXPERIMENT 2

This study provides participants with either strong or weak *negative* information about the stock. The presence of negative information should undermine the potential for the stock to increase in value, however, a scrutinizing investor might distinguish between strong and weak negative information as a basis for their decision to hold their shares. In this study, we expect that participants responding to the strength of the news briefs would be less likely to hold the stock when provided with news related to substantive declines in the company's prospects than when presented with information about superficially negative events.

Method

Participants. Ninety-three students from the marketing department subject pool participated in this experiment for partial course credit. We varied three factors: construal level (abstract versus concrete), regulatory focus (prevention versus promotion) and argument strength (strong negative versus weak negative). Participants were, therefore, randomly assigned to one of eight conditions in a 2 x 2 x 2 between-subjects, complete-factorial design.

Procedure. Our test for differential processing relies on the same general framework used in Experiment 1. However, in this study, instead of examining the effect of positive information, we look for discrimination across strong and weak negative news. The news briefs provided either strongly negative or weakly negative information about the company and were based on the items created for Experiment 1. Strongly negative news briefs included: (1) an expected decline in sales projections, (2) an out-of-court settlement in which Wright-Gorsuch pays an

undisclosed amount to a rival firm, and (3) an indefinite delay in plans to open a new research laboratory. Weakly negative news briefs included: (a) the CEO being interviewed on *Larry King Live* to address gender-discrimination allegations, (b) stalls in the development of a Super Bowl ad, and (c) a canceled celebrity endorsement deal. Neutral items on Securities and Exchange Commission filings and a government study about health care appeared in positions three and five respectively. A version of the stimulus is included in Appendix D. The construal and regulatory focus manipulations were identical to those used in Experiment 1, as were the stock chart and financial data table.

Manipulation Check. Forty-three participants from the marketing department subject pool rated either the strong or weak news items using a seven-point scale anchored by negative and positive with lower values indicating more negative ratings. An analysis of variance revealed that the strong negative news briefs ($M = 2.43$) were rated as more severe than weak negative arguments ($M = 3.73$; $F = 18.69$, $p = .0001$), suggesting the manipulation could be interpreted as intended.

Results

An analysis of variance revealed a main effect of argument strength, indicating that participants overall were more likely to hold their position when the information was weakly negative ($M = 4.85$) than when the information was strongly negative ($M = 4.04$; $F(1, 85) = 6.00$, $p = .01$), which suggests that the argument strength manipulation was successful.

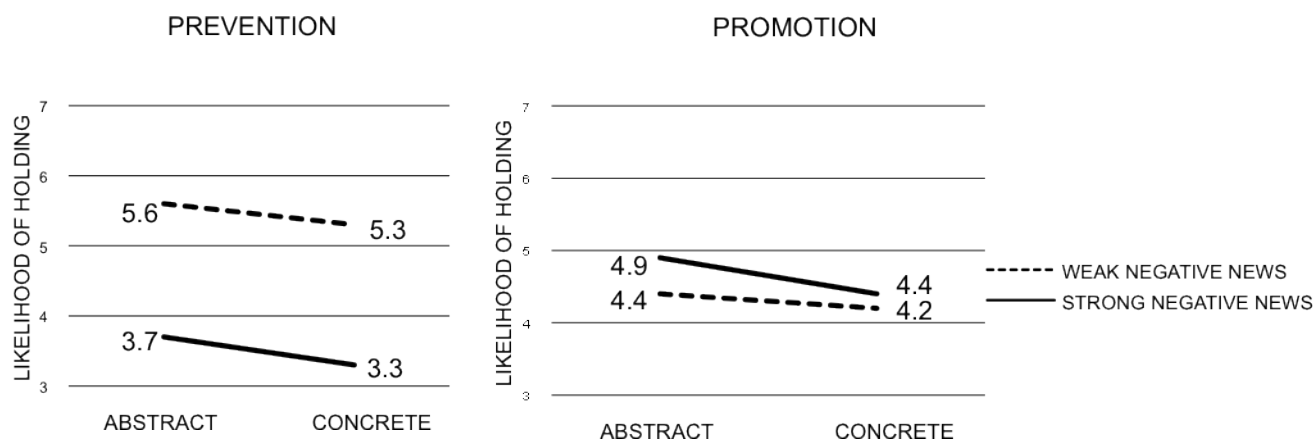
As anticipated, the three-way interaction was not significant ($F < 1$, $p = .76$) and there was no main effect or interaction for the construal manipulation ($F_s < 1.21$, $p_s > .27$). However, a

significant two-way interaction between regulatory focus and argument strength did emerge ($F(1, 85) = 11.77, p < .001$). A follow-up analysis was conducted to examine this effect.

Within the prevention conditions, there was a significant main effect of argument strength ($F(1, 85) = 15.70, p < .001$). Promotion-oriented participants, regardless of construal, attended to the strength of the negative arguments. Participants who read the strong negative news briefs were less likely to hold their position ($M = 3.50$) than participants who read the weak negative news briefs ($M = 5.43$). Promotion-oriented participants, however, were equally likely to hold their position regardless of whether they read strongly negative information ($M = 4.64$) or weakly negative information ($M = 4.29$; $F < 1, p = .44$). Further, compared to promotion-oriented participants, prevention-oriented participants were both less inclined to hold the stock when given strongly negative information ($F(1,85) = 5.60, p = .02$) and more inclined to hold when given weakly negative information ($F(1,85) = 6.73, p = .01$). In summary, prevention-oriented participants attended to the strength of negative news, but promotion-oriented participants did not. The results are presented in Figure 2.

FIGURE 2

Likelihood of Holding Shares When Given
Strong versus Weak Negative Information About the Stock



Discussion

As expected, prevention-oriented participants were willing to hold the stock when presented with weakly negative news but not when the news briefs indicated more serious troubles related to fundamental business operations. This result is symmetric to our finding in Experiment 1 that promotion-oriented participants appropriately evaluate positive information regardless of level of construal. These findings indicate that promotion-oriented individuals and prevention-oriented individuals each discern strong arguments from weak arguments when the information satisfies their specific regulatory concerns. In Experiment 1 we find that because positive information is relevant to a promotion orientation, there is no additional effect of regulatory fit versus non-fit. Similarly, in Experiment 2 we find that because negative information is relevant to a prevention orientation, construal neither facilitates nor inhibits information processing.

Interestingly, in the present study promotion-oriented participants treated the strong and weak negative information equally in their evaluations and did not attend to differences in severity. This result is consistent with prior research suggesting promotion oriented individuals attend to the presence and absence of gains while remaining insensitive to the absence and presence of losses (Higgins 1998; Cesario, Grant, and Higgins 2004). Further, the observed pattern of results supports our conceptualization of a promotion focus as holding only the goal of achieving a return. The interaction between regulatory focus and argument strength indicates that prevention-oriented participants were both less likely to hold the stock when presented with the strong negative news and more likely to hold when presented with weak negative news than promotion-oriented participants. Promotion-oriented participants simply failed to discriminate between strong and weak news suggesting that information related to the riskiness of the stock did not affect their evaluation.

Additionally, no effect emerged for promotion fit. Where the result in Experiment 1 showed that prevention fit contributed to processing positive information, there was no symmetric effect for promotion fit in Experiment 2. This is congenial with our view that a singular focus on return did not allow promotion-oriented participants to sufficiently differentiate strongly negative news from weakly negative news.

CHAPTER IV

EXPERIMENT 3

The third experiment extends the findings from Experiments 1 and 2 by testing whether the prevention fit effect can attenuate an investment heuristic, the disposition effect. The disposition effect describes a phenomenon in which investors sell a winning stock too quickly and hold a losing stock too long (Dhar and Zhu 2006; Shefrin and Statman 1985, Webber and Camerer 1998). The disposition effect hypothesizes that loss aversion inhibits shareholders from realizing a “paper” loss and that risk aversion leads investors to sell a winning stock too quickly as they hurry to realize the gain (Kahneman and Tversky 1979; Odean 1998; Shefrin and Statman 1985).

Where in Experiments 1 and 2 we tested for depth of processing using argument strength as a diagnostic variable, in the present study, we examine whether the deeper processing observed for prevention fit participants can be leveraged to curtail the tendency to sell a winning stock and hold a losing stock. We hypothesize that, consistent with the disposition effect, when a stock falls below the original purchase price, participants would generally indicate a preference for holding their position and a even desire to buy additional shares, and when the stock price rises above the original purchase price, participants would be inclined to sell their shares. However, if the disposition effect reflects an emphasis on past performance rather than the future prospects of the stock, it may be possible to attenuate the effect through a more critical evaluation of the investment opportunity, consistent with the more thoughtful evaluations demonstrated by prevention fit participants in the first two studies.

Based on the findings in Experiments 1 and 2, we predict an attenuation of the disposition effect for participants who experience prevention fit. Facilitated processing due to prevention fit

should lead participants to recognize that a “paper” gain or loss is an insufficient basis for making trading decisions, and thus, participants in the prevention fit condition should exhibit indifference to holding and selling in the absence of diagnostic news about the future performance of the stock.

Method

Participants. One hundred seventy-two participants were recruited from the marketing department subject pool in exchange for partial course credit. In addition to construal level (abstract versus concrete) and regulatory focus (prevention versus promotion), we also varied ending stock price (up versus down). Participants were, therefore, randomly assigned to one of eight conditions in a 2 x 2 x 2 between-subjects, complete-factorial design.

Procedure. As in Experiments 1 and 2, participants were presented with a stock evaluation task. Following the company description, participants were provided with a stock chart in which the ending price yielded either a “paper” gain (“up” condition) or a “paper” loss (“down” condition). Both versions of the stock chart initially plot identical paths, however, near the conclusion of the sequence, the stock prices move symmetrically in opposite directions. In the “up” condition, the path moves above the purchase price, indicating a “paper gain” for the participant, while in the “down” condition the path falls below this reference point, indicating a “paper loss” for the participant. The chart for the “up” condition is identical to the stimulus used in Experiments 1 and 2. Both stock charts are presented in Appendix B. In addition to the stock chart, participants were again given a data table highlighting information on recent price performance. The information provided in the table (i.e. recent price performance, market capitalization, P/E ratio) was consistent with the ending stock price indicated in the chart.

Following the stock chart information, participants completed the regulatory focus task. The construal and regulatory focus manipulations were identical to those used in the first two experiments.

Conceptually, the disposition effect reflects the influence of prior prices on the evaluation of a stock as part of a forward-looking assessment. Because the disposition effect relates to both selling a profitable stock and holding a losing stock, we must incorporate both measures as part of our analysis. As such, an aggregate measure of the stock evaluation provides a balanced assessment. We averaged three items, (1) likelihood of selling the stock, (2) likelihood of buying more of the stock, and (3) the likelihood of keeping the stock, to form a scale for analysis with the “sell” measure reverse coded ($\alpha = .80$). Higher values of this index represent a greater likelihood of keeping the current position and a greater desire to buy more of the stock, as well as a lower likelihood of selling the current shares. For consistency, we discuss the findings with regard to a “hold” metric.

Results

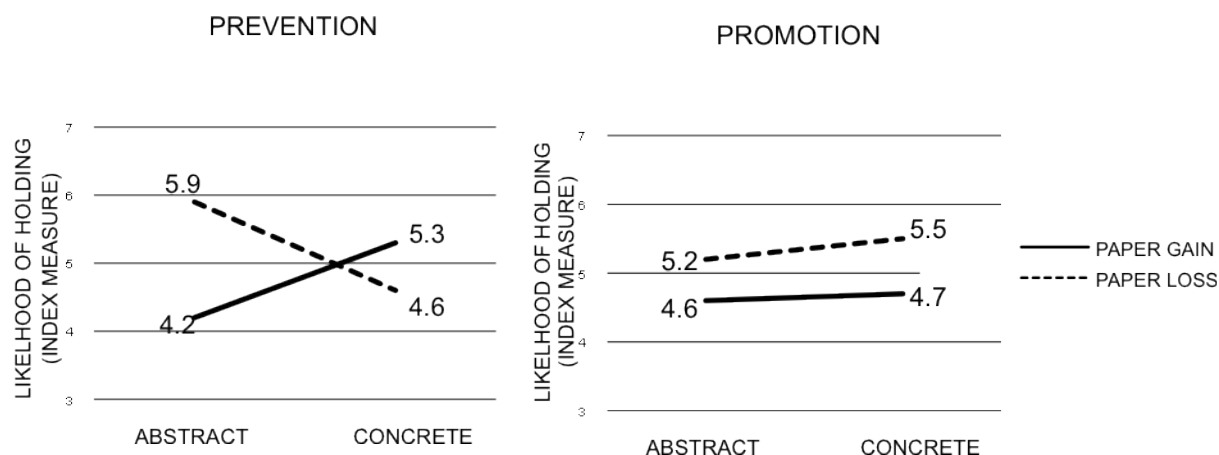
An analysis of variance revealed a main effect of stock price, indicating that participants overall were more likely to hold their position when the stock was down ($M = 4.73$) than when the stock was up ($M = 4.22$; $F(1, 164) = 5.92, p < .02$). This suggests that in general, evaluations reflect desire to hold a losing stock but not a winning stock, consistent with the disposition effect. The main effect was qualified by a significant three-way interaction $F(1, 164) = 4.52 (p < .04)$. Follow-up analyses were conducted to examine the effects within the promotion and prevention conditions.

Within the prevention conditions, there was a significant interaction of construal level and stock price ($F(1, 164) = 6.97, p = .01$). Consistent with the overall disposition effect, prevention non-fit participants were more likely to hold when the stock was down ($M = 5.13$) than when the stock was up ($M = 3.86$; $F(1, 164) = 6.46, p < .02$). In contrast, prevention fit participants were as likely to hold when the stock was down ($M = 4.02$) as when it was up ($M = 4.67$; $F(1, 164) = 1.53, p = .23$), suggesting that these respondents did not fall victim to the disposition effect. Additionally, contrasts show that when the stock was down, prevention fit participants were significantly less likely to hold than prevention non-fit participants ($F(1, 164) = 4.98, p = .03$), that is, prevention fit participants were less willing to hold a losing stock than prevention participants who experienced non-fit. When the stock was near the historic high, prevention fit participants did not significantly differ from prevention non-fit participants in their preference for holding the stock ($F(1, 164) = 2.43, p = .128$). However, because this contrast examines an effect within the stock “up” condition, for which the disposition effect predicts an emphasis on selling, it is possible that the index measure is clouding this specific comparison. This contrast reaches the conventional level of significance when we examine the likelihood of selling measure alone ($p = .03$), indicating prevention fit participants were less likely to sell a winning stock than prevention non-fit participants.

Within the promotion conditions, only the expected main effect of stock price was observed ($F(1, 164) = 4.83, p = .03$). Participants were more likely to hold when the stock price was down ($M = 4.83$) than when it was up ($M = 4.26$), suggesting that promotion-oriented participants exhibit the disposition effect irrespective of construal level. The results are presented in Figure 3.

FIGURE 3

Likelihood of Holding Shares When Stock Price Represents a “Paper” Gain or Loss



Discussion

In Experiment 3, we set out to demonstrate that the facilitated processing observed for prevention fit participants in the first two studies would inhibit an investment heuristic, the disposition effect. We found evidence of this pattern. Central to our information processing inquiry, the disposition effect did not emerge for participants who experienced prevention fit. Contrasts revealed that these participants were more likely to hold a winning stock and less inclined to hold a losing stock. Where in Experiments 1 and 2 we provided participants with strong and weak reasons for owning the stock, in Experiment 3, participants were simply provided with a company description and a chart of historic prices. In this present context, prevention fit participants may be inferring that a stock price increase indicates the company is performing with meritorious results and therefore is worth holding, and a stock price decrease may indicate the company is performing with poor results and is therefore not worth holding.

Such inferential reasoning would suggest that these participants are processing the data beyond a superficial reading of a gain or loss relative to prior prices. Notably we find no effect of promotion fit on the stock evaluation. The disposition effect emerged for participants who evaluated the stock from a promotion perspective regardless of level of construal.

CHAPTER V

EXPERIMENT 4

In Experiment 4 we extend our investigation in several ways. In this study, we test whether prevention fit attenuates the $1/n$ heuristic, which would provide further evidence of facilitated processing for individuals who experience prevention fit and generalize our finding to include evaluations of several investment funds. Additionally, we empanel adult participants in order to test our theory among a more general population.

The $1/n$ heuristic, or naïve diversification asset allocation rule (Benartzi and Thaler 2001) provides another interesting investment context for examining depth of processing. Across several experiments Benartzi and Thaler (2001) find that the percentage of assets allocated to fixed-income and equity funds depends on the number of bond funds and stock funds presented in the investment array. Further, regardless of the composition of the set of funds, a common approach involves selecting an equivalent allocation for each fund. In applying the $1/n$ asset allocation strategy, retirement plan participants engage in a specific application of the more general diversification heuristic, which is indicative of limited processing (Read and Loewenstein 1995). While the percentage of assets held in stocks and bonds differs according to the number of stock funds and bond funds presented, the inclusion of four funds is critical to the design of this experiment, as the $1/n$ rule tends to emerge when 100 is easily divisible by n . When n is either 2 or 4, somewhere between 37% and 64% of people opt for a $1/n$ allocation, however, when n is 3, they tend to follow a different simple allocation rule such as a 50/25/25 split among the three funds (Benartzi and Thaler 2007). As such, a four-fund design provides a useful framework for examining the $1/n$ asset allocation rule.

Based on our findings in the three previous studies, we expected that the prevention fit effect would attenuate the $1/n$ heuristic. In Experiments 1 and 2, prevention fit participants attended to argument strength for both positive and negative arguments. And, in Experiment 3, participants who experienced prevention fit reduced their reliance on “paper” gains and losses in evaluating the stock. Because these results suggest deeper processing, it is possible prevention fit might have also inhibited the naïve diversification bias, however, evidence for this did not emerge.

Method

Participants. Adult participants recruited through an online panel were invited to take part in this study. Seven hundred thirty-two participants clicked on the link to begin the study. Participants were initially presented with instructions about the experiment and asked to provide demographic information for classification purposes. Embedded within this task was an attention check question designed to filter out participants who hurriedly provided answers without fully reading the instructional prompts. Participants who failed this task were directed to an end of survey message. Three hundred twenty-four participants passed the attention check and continued on to the experimental manipulations. Participants were assigned to either a control condition or one of four experimental conditions in a 2 (construal level) x 2 (regulatory focus) between-subjects design. Fifty-nine participants were excluded from the final analysis for failure to follow instructions in the experimental manipulations.

The final sample included 265 participants (153 women) with mean age of 48 and household income between \$60,000 and \$70,000. Twenty-eight percent of participants reported owning an online trading account. Sixty-eight percent of participants were employed, 12% were

retired, 10% were homemakers, 6% were unemployed or on disability, 3% were students, and 1% provided no response.

Procedure. Following the demographic questions and attention check, participants in the experimental conditions completed a priming task in which they focused on why versus how dimensions of physical health (Freitas, Gollwitzer, and Trope 2004). In the high-level construal condition, participants were presented with the question, “Why do you maintain physical health?” and a space to provide an answer. Upon submitting their answer, participants were presented with the statement, “In the previous question you said:” with their answer listed below using a text piping feature within the software. Participants were then asked to further explain, “Why do you do this?” This continued until participants had provided answers to four “Why?” questions. In the low-level construal condition, participants were presented with the question, “How do you maintain physical health?” and proceeded in a similar manner until the participants had provided answers to four “How?” questions. Participants in the control condition neither saw nor completed the construal manipulation task.

Next, participants were presented with four charts to evaluate, each presenting the historic returns for a different fund (Benartzi and Thaler 2001). Unlike prior investigations of naïve diversification which vary the number of stock and bond funds presented, the charts in the present experiment were constructed such that the four options differed with respect to objective desirability in order to allow for tests of discrimination. The set of funds was designed as follows: (A) high volatility, medium return, (B) medium volatility, medium return, (C) low, volatility, low return, and (D) low volatility, high return. Each chart presented annual returns for the past 15 years with 11 years of positive returns and 4 years of negative returns. Funds C and D offered lower volatility than funds A and B; and within the higher volatility options, fund B

offered lower volatility than fund A, while holding return constant. Because fund D had the highest return and lowest volatility, it was objectively best. Funds B and C reflected typical tradeoffs between volatility and return. And though fund A had a higher return than fund C, it was dominated by funds B and D, which offered equivalent and better returns respectively, with lower volatility. Thus participants should have avoided fund A. These charts appear in Appendix E.

As part of the presentation of the funds, participants were asked to evaluate the different investment opportunities. In the promotion condition, participants were asked to consider why these funds might be “an effective way to achieve growth and profit,” and in the prevention condition, participants were asked to consider why these funds might be “a judicious way to protect their assets.” A text area was provided for participants in the experimental conditions to elaborate on this prompt. Participants in the control condition were simply asked to review the four investment funds.

After participants reviewed the four charts, they were asked to indicate their allocation level for each fund, with the stipulation that the total must sum to 100%. Following the asset allocation task, participants indicated the extent they focused on the number and magnitude for gains and losses using seven point scales anchored by “not at all” and “a lot” with higher values indicating greater focus. Measures of prior investment experience, Need for Cognition (Cacioppo, Petty, and Kao 1984), and the Behavior Identification Form (Vallacher and Wegner 1989) were also collected.

Results

The focal dependent measure for this study was the extent to which participants relied on the $1/n$ asset allocation rule. A logistic regression using a complete set of contrast codes revealed a somewhat surprising main effect for regulatory focus ($\chi^2(1, N = 265) = 4.15, p < .05$), in which the $1/n$ asset allocation rule was used to a greater extent by prevention-oriented participants (18.7%) than promotion-oriented participants (8.2%). For the control condition, 13.5% of participants relied upon the $1/n$ rule, however this did not differ significantly from either the promotion condition ($\chi^2(1, N = 174) = 1.02, ns$) or prevention condition ($\chi^2(1, N = 180) < 1.0, ns$). No effects were observed for the construal level manipulation, regulatory fit, trading account ownership, need for cognition, measured construal level (BIF score), age, sex, or income ($ps > .15$).

Because fund D was constructed as the low variance, high return option, scrutinizing investors would have identified this as the optimal selection. On average, participants allocated 38.9% to fund D, with 35.5% of participants selecting fund D as the largest proportion of their portfolio. Overall, a large minority of participants recognized the superiority of fund D and chose this fund as the largest holding in their portfolio. Interestingly, an analysis of variance reveals that participants in the control condition allocated more to fund D (43%) than participants in the experimental conditions (36.9%; $F(1, 262) = 3.36, p = .067$). A summary means is provided in Table 1 below.

TABLE 1

Percentage of Participants Selecting a 1/n Allocation Strategy and Mean Amount Invested in Each Fund According to Experimental Condition

CONDITION	1/n	FUND A	FUND B	FUND C	FUND D
Mean (All Participants)	13.6 %	18.7 %	17.8 %	24.6 %	38.9 %
Control	13.5 %	17.5 %	17.1 %	22.4 %	43.0 %
Experimental Conditions	13.6 %	19.4 %	18.1 %	25.7 %	36.9 %
Prevention	18.7 %	19.0 %	17.3 %	24.8 %	38.9 %
Promotion	8.2 %	19.76 %	19.0 %	26.6 %	34.7 %
Prevention Fit	20.0 %	20.3 %	18.6 %	22.9 %	38.2 %
Prevention Non-Fit	17.4 %	17.7 %	16.0 %	26.7 %	39.6 %
Promotion Fit	2.7 %	20.7 %	19.2 %	29.1 %	31.1 %
Promotion Non-fit	12.5 %	19.1 %	18.8 %	24.7 %	37.4 %

A separate analysis of variance reveals that the participants' level of construal, as measured by the BIF, significantly predicts the allocation to fund D ($F(1, 251) = 4.65, p < .05$). Specifically, participants who tend toward lower levels of action identification on the BIF (more concrete construal) allocated more to fund D. No other main effects or interactions were significant ($ps > .50$). Correlations are presented in Table 2 below.

TABLE 2

Correlations Between Individual Difference Variables and Allocation to Fund D

	Correlation with Allocation to FUND D	t-value	p-value
BIF Score	-.13	-2.15	$p < .05$
NFC Score	-.01	-0.11	<i>ns</i>
Investing Experience	.05	0.78	<i>ns</i>
Sex	-.07	-1.15	<i>ns</i>

Discussion

Compared to prior examinations of naïve diversification, use of the $1/n$ rule in the present study was fairly limited. Relatively few participants selected a 25% allocation for each of the four funds. In part, this may be due to a subtle difference in context between this experiment and prior studies. In the present study, participants were asked to consider a general investment scenario, where previous research has focused specifically on retirement accounts (Benartzi and Thaler 2001, 2007). Zhou and Pham (2004) find that considering a retirement account primes a prevention focus. Given this perspective, it is possible prior examinations of naïve diversification observe increased reliance on the $1/n$ rule due to investors adopting a prevention focus as a result of considering allocations for their retirement accounts. This would be consistent with our finding that in a neutral investment context, a prevention focus increased reliance on the $1/n$ asset allocation rule. If this is true, use of the $1/n$ rule reflects a desire for a more conservative portfolio. That is, when considering retirement (or when adopting a prevention focus), investors recognize the benefits of a diversified portfolio and attempt to accomplish this by assigning a $1/n$ allocation to each fund. This literal approach to diversification would also explain why prior investigations of naïve diversification find that participants opt for a $1/n$ allocation regardless of the number of stock funds versus bond funds available. For naïve investors seeking a conservative investment strategy, a diversified portfolio reflects sampling from all the available options rather than a balance of different asset classes.

Interestingly, participants who naturally adhere to lower levels of identification placed a greater proportion of their portfolio in fund D. This is partially consistent with our theorizing in that lower level of construal appears to reflect a more detailed evaluation of the investment opportunities. While we had expected to find an effect for prevention fit, the increase in naïve

diversification for prevention-oriented participants suggests that reliance on $1/n$ potentially stems from something other than shallow processing. Naïve diversification for retirement accounts may be a “thoughtful” heuristic in the sense that investors must first recall that diversification is an important aspect of a conservative portfolio before applying a naïve (literal) diversification strategy. If this is true, then the $1/n$ allocation rule is not necessarily the result of superficial analysis, but rather the execution of a well-intentioned, though perhaps oversimplified, approach to minimizing risk exposure.

Despite the relatively large sample size for this study, few significant differences appeared in the data. This may be due to small effect sizes. It is also possible that the heterogeneity of the sample contributed to difficulty uncovering effects. Only 33% of participants worked in a professional, business-related field. Approximately 33% of participants were not in the workforce (disabled, unemployed, retired, or student), and 20% were employed in fields related to clerical work or skilled/unskilled labor. Additionally, fewer than 30% of participants owned a trading account, which suggests differences in familiarity with investment decisions that potentially introduce another dimension heterogeneity.

As well, factors related to the implementation of the online study may also have contributed to noise in the data. The design called for a moderately high level of attention and focus throughout the experiment. While the manipulations have worked well in laboratory settings, they may have been less well-suited for use with an online panel. Although, the attention check was successful in screening out the least attentive participants, the threshold for attention may still have been too low for the relative subtlety of the manipulations. Additionally, it may have been helpful to instruct participants at the beginning of the study that they should complete the questionnaire in one sitting. It appears handful of participants took long breaks at

different points in the study. Presumably, these participants were focused on other tasks during this time or left and came back to complete the questionnaire at a later point. In either case, this suggests lowered attention that may have affected our ability to find effects for the manipulated variables. Additionally, the construal level manipulation appears to have been problematic. It is possible the instructions did not clearly explain the process. The four iterations of why/how questions resulted in redundant answers and in some cases annoyed or distracted participants to the point that their responses to the third or fourth question was a comment along the lines of, “how many times are you going to ask this?” Though the manipulation has worked well in laboratory settings, it may need modification for effective use in online studies.

CHAPTER VI

GENERAL DISCUSSION

The present research makes three primary contributions: (1) it provides evidence of differences in processing for prevention fit and promotion fit; (2) it identifies conditions that attenuate the disposition effect; and (3) it provides additional insight into the $1/n$ heuristic. These findings extend and enrich understanding of regulatory focus and regulatory fit and additionally contribute to the financial decision-making literature.

In our studies, we find support for the view that prevention fit participants engage in systematic processing for positive information, a finding that is not anticipated by regulatory focus theory. Additionally, this finding breaks from prior research, which has shown symmetric effects for regulatory fit. In part, this may be due a difference in operationalizations. Prior research on regulatory fit has examined subjective judgments such as brand attitude ratings and willingness to pay, where we test for depth of processing, which is independent of consumers' subjective evaluations.

Our finding that prevention fit displays discrimination for the strength of positive arguments speaks to several different theoretical questions. These include differences between a non-gain and a non-loss and the analytical versus holistic styles of prevention and promotion. Though overlapping, there are clear objective differences between a non-gain and a non-loss that have implications for the evaluative capacity of prevention and promotion orientations.

According to regulatory focus, prevention-oriented individuals seek to avoid negative end states and promotion-oriented individuals seek to achieve positive end states (Higgins 1997, 1998). Consistent with the notion of asymmetric conditional importance, the presence of positives implies an absence of negatives, though the inverse does not hold. As such, there are

reasons to expect that prevention individuals might be able to infer absence of negatives from presence of positive. This is supported by research showing that a prevention focus exhibits a relatively analytical processing style that utilizes item-specific information and achieves fit through the compatibility of concreteness, suggesting a preference for fact-based evaluations. Our operationalization of regulatory-construal fit, reveals that prevention-oriented individuals display the ability to discriminate argument strength for positive information and to recognize that a “paper” gain or loss is insufficient for evaluating the future prospects of a stock. These findings open new directions for research on regulatory focus and regulatory fit, as well as new investigations of how regulatory focus and regulatory fit evaluate non-gains and non-losses.

Additionally, we find that a promotion orientation facilitates discrimination between strong and weak positive news and that a prevention orientation facilitates discrimination between strong and weak negative news, regardless of level of fit. In both cases participants differentiate between strong and weak arguments because the informational content is meaningful to their regulatory focus (Aaker and Lee 2006, Avnet and Higgins 2006). Evidence for this effect has not been previously reported in the literature, though the result is highly anticipated and not particularly surprising.

Importantly, in addition to extending theoretical understanding of regulatory fit, we also demonstrate how prevention fit might help improve investment decisions by showing that facilitated processing attenuates the disposition effect. Since Shefrin and Statman (1985) first coined the term, the disposition effect has motivated a number of research investigations. Ferris, Haugen, and Makhija (1988) differentiate the disposition effect from alternative strategies, Odean (1998) examines the disposition effect at the individual investor level, and Dhar and Zhu (2006) segment investors based on the disposition effect and find evidence that the effect is more

frequent among inexperienced investors. These prior findings tend to emphasize the prevalence, robustness, and extent of the effect with limited focus on the underlying mechanisms of the effect. In contributing to this literature, our studies offer a new perspective on the disposition effect by examining specific cognitive elements that influence stock evaluations. The loss aversion bias believed to contribute to the disposition effect appears to correspond to relatively limited processing in that the decision to sell or hold reflects the gain or loss and not an evaluation of future prospects for the firm. In a similar vein, recent research has found that investors exhibit an “ostrich effect” and selectively attend to their accounts when they experience gains and avoid looking at their portfolios when their stocks have gone down (Karlsson, Loewenstein, and Seppi 2005). As such aversion to realizing a “paper loss,” may have an additional basis in willful ignorance. Other research has shown that the complexity of financial decisions leads to inertia in which people simply choose not to choose (Samuelson and Zeckhauser 1988). Further, it is possible that the complexity of assessing investment opportunities contributes to results such as reports that people spend less than an hour evaluating retirement fund options (Benartzi and Thaler 1999) and a reduced inclination to participate in a retirement plan as the number of funds offered increases (Iyengar, Huberman, and Jiang 2004). Overall, these studies suggest that investors may lack the capacity to assess investment opportunities. In examining cognitive dimensions of investment decisions, we offer insight into one mechanism that could potentially be leveraged to aid non-professional investors in their investment decision-making: prevention fit. It is possible that inducing such a state could benefit novice investors in certain circumstances. However, our finding in Experiment 4 that a prevention focus increases the reliance on the $1/n$ rule suggests that not all heuristics stem from limited processing and that interventions designed to improve investment decision-making may

be more or less effective depending on whether investors are considering assets in a retirement account versus a stock trading account.

Our conceptualization of the hierarchical nature of risk and return (Eyal et al. 2004) provides a framework that offers insight into financial decision-making. Because return has value independent of risk, information on the potential for a stock to go down may be meaningful only in the context of the tradeoff for potential return. This suggests that return can be assessed independently of risk – or even in the absence of risk – an implication that might offer insight for examinations of inflated markets and exaggerated values. Along these lines, a *New York Times* article examining the underlying causes of the recent financial downturn suggests, as we do, that a return focus may engender a myopic set of considerations. In reflecting on potential contributions to the market's decline, Dean of the Harvard Business School, Jay Light, commented that “we lived through an enormous extended period of financial good times, and people became less focused on risks and risk management and more focused on making money” (Holland 2009). This only serves to underscore the significance of understanding how investors utilize financial information in their investment decisions.

CHAPTER VII

FUTURE RESESEARCH

Experiments 1-3 suggest an asymmetric effect for regulatory fit, which departs from prior findings. One possibility is that this asymmetry emerges due to our selection of a stock investment context in which evaluations required a detailed and critical assessment of the information. However, this does not preclude the possibility that there are contexts in which promotion fit participants outperform prevention fit participants. For example, a state of promotion fit might be more effective in development of new products. Such a context would potentially leverage the exploratory and relational processing style of a promotion focus to strengthen creative efforts and improve innovation. Further, beneficial effects of experiencing promotion fit may operate via an alternative mechanism. It is possible that an effect of promotion fit would emerge through processing fluency rather than elaboration. This prospect provides an interesting basis for investigating promotion fit.

An additional limitation of the present research is that it examines differences in processing for regulatory-construal fit, which is just one operationalization of regulatory fit. Prior research has demonstrated that regulatory fit can be achieved through numerous mechanisms including gain versus loss frames (Shah, Higgins, and Friedman 1998), evaluations based on feelings versus reasons (Hong and Lee 2008), and arm flexion versus extension (Forster, Higgins, and Idson 1998). These different operationalizations deserve greater attention in future research exploring processing effects for regulatory fit.

Additionally, we speculate that prevention and promotion orientations exist as chronic individual differences among investors. These orientations may vary systematically across generations, within individuals over time, or as a function of investment occasion. Thus, young

working adults could be expected to employ a promotion focus in making investment decisions, whereas retirees could be inclined to base decisions on a prevention focus. Different investment goals (e.g. safeguard principal versus grow assets) or choice in investment vehicles (e.g. a bond fund versus a high-growth small-cap index) may also contribute to differences in investment decisions as a function of regulatory focus. While we have relied upon manipulations of regulatory focus to serve as proxies for these different possibilities, these differing contexts may provide natural opportunities for further investigations of regulatory focus and regulatory fit in an investment decision context.

In the present studies, the attenuation of the disposition effect provides support for greater processing on the part of prevention fit participants, however, the tendency to sell a winner and hold a loser is simply one manifestation of biased evaluations within the broader context of naïve investment decision-making. Huddart, Lang, and Yetman (2009) find increased trading activity when a stock sets a new high or low, which is only partly consistent with the disposition effect. Though trading spikes at the high are compatible with selling a winner, the finding of increased trading volume at the low is not. It is possible that investors seek to buy into new stocks that are at a low and then sell when the stock achieves a new high. If this is true, then it would reflect a naïve attempt to time the market by forming stock evaluations based on historic highs and lows. In this case, investors might be engaging in evaluations based on a trading range. Thus, when a stock is near its high, investors are inclined to sell because they believe the stock will fall. And when a stock is near its low, investors are inclined to buy because they believe the stock will rise. Recent work extends the findings of Huddart et al (2009) and identifies trading spikes at highs and lows for six additional time frames beyond the 52-week high and low suggesting that increases in trading volume occur for numerous reference points (Mizrach and Weerts 2009).

Together, these findings point to the possibility of a trading range effect in which investment decisions reflect anchoring on a salient high and low in the evaluation of the stock. This possibility deserves attention in future research in addition to the effects of “paper” gains and losses that contribute to the disposition effect.

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APPENDIX A

COMPANY DESCRIPTION STIMULUS

Abstract Company Description

Wright-Gorsuch is a research-oriented nutrition and pharmaceutical company. Wright-Gorsuch is committed to improving the quality of human life by developing products that contribute to the overall health of mind and body. Wright-Gorsuch has introduced therapies that enhance patient outcomes when faced with disease, supplements that deliver essential nutritional benefits, and treatments that reverse the damage humans experience due to environmental hazards. Wright-Gorsuch focuses on helping people to accomplish their life's goals. Wright-Gorsuch has several profitable medications and three products in the research pipeline that the company is optimistic about. However, the FDA approval is a complicated and unpredictable process. Wright-Gorsuch faces some uncertainty about whether this investment-intensive research can be translated into profits.

Concrete Company Description

Wright-Gorsuch is a research-oriented nutrition and pharmaceutical company. Wright-Gorsuch wants to help every man, woman, and child have days in which they can do more and feel better. Wright-Gorsuch has been named by physicians in medical journals for its work to bring to market shots that fight off colds, flus, and pneumonia in the winter months, antibiotics that attack infection caused by 412 bacterial strains, as well as a supplement of 23 vitamins, minerals, and amino acids that work to repair tissue and bone loss. Wright-Gorsuch researchers look for ways to make the human body stronger. Wright-Gorsuch has several profitable medications and three products in the research pipeline that the company is optimistic about. However, the FDA approval is a complicated and unpredictable process. Wright-Gorsuch faces some uncertainty about whether this investment-intensive research can be translated into profits.

APPENDIX B

POSITIVE ARGUMENTS STIMULUS

Strongly Positive News Briefs

**Wright-Gorsuch Sales Projections
Expected to Rise Next Quarter**

Wright-Gorsuch CEO, Michael Dermot announced last Friday that 1st quarter sales for 2007 were very strong. Analysts are expected to revise projections upward for the 2nd quarter sales in the coming weeks.

**Verdict in Favor of Wright-Gorsuch
Will Yield Cash Infusion**

The licensing agreement dispute between Wright-Gorsuch and Hanlon Industries finally came to a close yesterday. The judge sided in favor of Wright-Gorsuch citing that Hanlon Industries had “clearly violated the agreement.” Details regarding the financial penalties will be decided later this month, but the verdict will certainly result in a large cash payment to Wright-Gorsuch.

**Wright-Gorsuch Files
Annual Financials with SEC**

As required by all publicly traded companies, Wright-Gorsuch submitted its annual financial statement to the SEC last month marking the end of its fiscal year. Wright Gorsuch follows an October fiscal filing schedule which is typical of many publicly traded firms.

New Laboratory Scheduled to Open in Late 2008

Wright-Gorsuch unveiled plans to open a new laboratory sometime in the 4th quarter of 2008. The new site will primarily support additional research and development efforts, however a few administrative staff will also call the new lab home.

**Government Plans Study on Future
of Healthcare in America**

The Department of Health intends to begin a multi-year study focusing on the future of healthcare needs of the US population. The study will address various lifestyle and genetic factors contributing to healthcare consumption. This study differs from previous research in that effort is being dedicated to examining how people consume nutritional supplements such as those produced by Centrum Corp., MetRx, Wright-Gorsuch, and Pfizer among others.

Weakly Positive News Briefs

**Wright Gorsuch CEO
to Appear on *Larry King Live***

It was announced this week that Wright-Gorsuch CEO, Michael Dermot will be interviewed on *Larry King Live* next month. CNN will air the program on April 6.

**Wright-Gorsuch Secures
Commercial Airtime for Super Bowl**

Wright-Gorsuch announced today that it has secured airtime for the upcoming Super Bowl. No details have been released about the content of the commercial.

**Wright-Gorsuch Files
Annual Financials with SEC**

As required by all publicly traded companies, Wright-Gorsuch submitted its annual financial statement to the SEC last month marking the end of its fiscal year. Wright Gorsuch follows an October fiscal filing schedule which is typical of many publicly traded firms.

**New Celebrity Endorsement Deal
to be Announced for 2007**

Wright-Gorsuch unveiled that it is very close to signing a contract for a new celebrity endorsement agreement. The company has maintained confidentiality regarding who the new endorser will be, however, a company spokesperson announced that they hope to release this information in the near future after the agreement is official.

**Government Plans Study on Future
of Healthcare in America**

The Department of Health intends to begin a multi-year study focusing on the future of healthcare needs of the US population. The study will address various lifestyle and genetic factors contributing to healthcare consumption. This study differs from previous research in that effort is being dedicated to examining how people consume nutritional supplements such as those produced by Centrum Corp., MetRx, Wright-Gorsuch, and Pfizer among others.

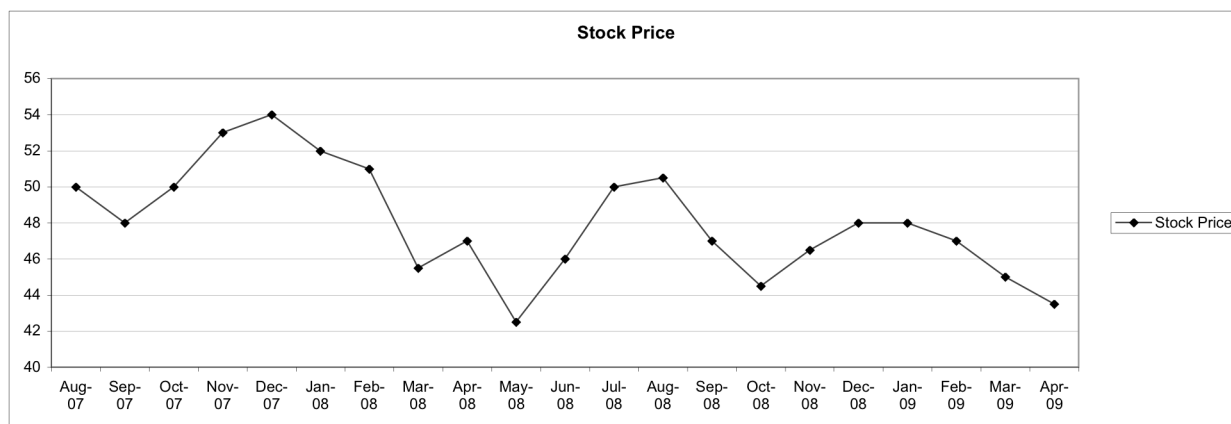
APPENDIX C

STOCK CHART STIMULUS

Stock Price Goes Up: “Paper” Gain



Stock Price Goes Down: “Paper” Loss



APPENDIX D

NEGATIVE ARGUMENTS STIMULUS

Strongly Negative News Briefs

Wright-Gorsuch Sales Projections**Expected to Fall Next Quarter**

Wright-Gorsuch CEO, Michael Dermot announced last Friday that the 3rd quarter sales for 2006 were weaker than had been anticipated. Analysts are expected to revise projections downward for the 4th quarter sales in the coming weeks.

Wright-Gorsuch Settles with Hanlon Industries

The licensing agreement dispute between Wright-Gorsuch and Hanlon Industries was settled out of court today. Wright-Gorsuch has agreed to pay an undisclosed amount to Hanlon Industries in order to prevent further litigation expenses. A spokesman from Wright-Gorsuch said that the two companies have resolved their differences and that the matter is now behind them.

Wright-Gorsuch Files**Annual Financials with SEC**

As required by all publicly traded companies, Wright-Gorsuch submitted its annual financial statement to the SEC last month marking the end of its fiscal year. Wright Gorsuch follows an October fiscal filing schedule which is typical of many publicly traded firms.

New Laboratory Delayed

The Wright-Gorsuch plan to open a new laboratory has been delayed indefinitely. The new site was intended primarily to support additional research and development efforts, however, the design also included space for a few administrative staff. Company officials did not indicate when additional information would be available.

Government Plans Study on Future of Healthcare in America

The Department of Health intends to begin a multi-year study focusing on the future of healthcare needs of the US population. The study will address various lifestyle and genetic factors contributing to healthcare consumption. This study differs from previous research in that effort is being dedicated to examining how people consume nutritional supplements such as those produced by Centrum Corp., MetRx, Wright-Gorsuch, and Pfizer among others.

Weakly Negative News Briefs

Wright Gorsuch CEO**to Appear on *Larry King Live***

It was announced this week that Wright-Gorsuch CEO, Michael Dermot will be interviewed on *Larry King Live* to discuss issues related to gender discrimination allegations. CNN will air the program on April 6.

Wright-Gorsuch Troubles with Super Bowl Ad

Wright-Gorsuch announced today that it has fired its ad agency, Whitman and Jones, which had been working on a Wright-Gorsuch Super Bowl ad. Company officials indicated that the two firms experienced creative differences relating to the content of the commercial. No information was released about whether or not Wright-Gorsuch still plans to air a Super Bowl ad.

Wright-Gorsuch Files**Annual Financials with SEC**

As required by all publicly traded companies, Wright-Gorsuch submitted its annual financial statement to the SEC last month marking the end of its fiscal year. Wright Gorsuch follows an October fiscal filing schedule which is typical of many publicly traded firms.

Wright-Gorsuch Celebrity Endorsement Deal Cancelled for 2007

Wright-Gorsuch announced that it has cancelled its contract with its celebrity endorser. Sources indicate the firm backed out of the contract after discovering the individual was involved in a DUI arrest. Plans to find a new endorser have not been unveiled.

Government Plans Study on Future of Healthcare in America

The Department of Health intends to begin a multi-year study focusing on the future of healthcare needs of the US population. The study will address various lifestyle and genetic factors contributing to healthcare consumption. This study differs from previous research in that effort is being dedicated to examining how people consume nutritional supplements such as those produced by Centrum Corp., MetRx, Wright-Gorsuch, and Pfizer among others.

APPENDIX E

INVESTMENT FUNDS STIMUS

