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Betting That I Will Fail, When Success is More Likely

A Test of Alternative Theoretical Explanations

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Abstract

In this study, I attempt to explain why people involved in meaningful tasks will often bet that they will fail, even when success is more likely. I present four theoretical frameworks that may explain this behavior, and then contrast the specific predictions provided by each. The Estimation Bias model argues that people simply miscalculate the probability of success. The Social Impression Management model states that people bet they will fail because they are trying to promote a positive (humble) social image. The Risk-Diversification model states that people are risk-averse and "hedge" their bets – by betting they will fail, they make sure that potential failure is offset by winnings from the gamble. The Defensive Pessimism model suggests outcome satisfaction is higher when expectations are low, and people bet that they will fail to lower outcome expectation. In two experiments, I test the predictions of each model.

In this paper I explore a curious phenomenon: People performing meaningful tasks will often bet that they will fail, even when success is more likely. The study investigates possible explanations for this seemingly irrational and unprofitable gamble. The purpose of the current study is to understand why individuals, who can be expected to choose the best available odds in a mundane lottery, will sometimes bet against the odds when the outcome of the lottery is their performance on a meaningful task.

In the performance of tasks, and in the pursuit of goals, outcomes are often uncertain. Facing such uncertainty, people are inclined to make predictions regarding the outcome of their endeavors. Forecasting allows people to anticipate likely outcomes, to then prepare for the most likely states of the world, and hence maintain greater control over their environment (e.g., Heider, 1958). In organizations, managers need to predict when projects will be completed and how well the customer's expectations will be met given budget constraints and deadlines. Team leaders need to be able to estimate each team member's (including their own) ability to perform before delegating authority and assigning tasks.

But such forecasting seems plagued with error. Research suggests it is difficult for individuals to anticipate or forecast with future states of the world. For example, people tend to inaccurately forecast the duration of their affective reactions to negative events (Gilbert, et. al, 1998), to misapply past experiences when making current predictions (Gilovich, 1981), to overestimate the likelihood of an improbable event when the event has been primed (Tyler, 1984), to vary in their optimism regarding future outcomes depending on mood (e.g., Johnson & Tversky, 1983), and to overestimate the likelihood of a specific behavior when reasons for such behavior have been analyzed (Wilson & LaFleur, 1995).

The existence of such biases is largely attributed to reliance on decision heuristics by individuals who are boundedly rational (e.g., March, 1978), effort-minimizing "cognitive misers" (e.g., Fiske & Taylor, 1984), or multi-tasking "motivated tacticians" (Fiske & Taylor, 1991). Such behavior is considered sub-optimal at best and entirely dysfunctional at worst. It follows that individuals would not purposely miscalculate the probability of future events – doing so would only hurt them. And by extension, when people do know the probability of future events, there is no reason why they should purposely ignore this information when it is potentially useful. However, consider the following situations:

Pat is studying for a midterm examination. The subject is somewhat difficult, but Pat has managed to do pretty well in the subject so far. In fact, in other classes that are similar (in content and/or in difficulty) Pat has received an 'A' slightly more often than a 'B', and never a grade lower than 'B'. As Pat is studying, a friend passes by and asks aloud, "Why are you studying so much? You know you'll get an 'A'." He then adds, "I bet you $5 that you will get an 'A' on this exam". Pat accepts the bet. That is, if the grade on the test is an 'A', Pat pays $5, but if the grade is lower than an 'A', the friend pays $5.

Jamie, an associate partner in a leading consulting firm, is representing the firm as it bids for a valuable contract. The firm has an excellent reputation in the industry, and Jamie is known for not having lost a single bid in the last three years. The contract is very important to the firm, and Jamie has worked hard on this project to prepare an impressive proposal. As Jamie is going over the presentation, a fellow associate partner comes by the office to wish Jamie luck. She then adds, "if you get the contract, you'll have to take me out to lunch". "Sure", responds Jamie, "but if I don't get the contract, lunch is on you".

Randi has been preparing specifically for the 800m race for the past six months. Randi is the returning gold medalist in the event and is favored to win the race. Randi is part owner of the athletic club where much of the training takes place. The co-owner is Coach Brandell ("Coach"). As Randi stretches before the race, Coach comes up to offer some last minute advice. Coach knows that this race is extremely important to Randi. As they chat, an unresolved issue is brought up. Coach had been planning to visit his cousin in Wisconsin the following week. Randi had made plans to go sailing with some friends the same week. The problem was that one of them would have to stay and watch the club. Up until now, they had not been able to resolve the issue. Finally, Randi announces, "tell you what – if I win this race today, I'll stay here next week and watch the club and you can go on vacation. I'll just reschedule the sailing trip." "That sounds fair", responds Coach. "I know this race means a lot to you. If things don't work out today, I'll stay home and watch the club and you can keep your plans with your friends."

These three scenarios share a common theme. In each, the main character accepts a gamble that is tied to the outcome of his or her task. In each case, the gamble is such that if the main character succeeds in the task, he or she loses the gamble. If Pat gets an 'A' on the test, the friend must be paid $5. If Jamie wins the contract, the coworker must be taken out to lunch. If Randi wins the race, Coach wins the vacation. Finally, in each case, the main character is expected to *succeed* at the task (the objective prior probability of success is higher than the chance of failure). Pat has a strong academic record with more A's than B's. Jamie has not lost a bid in the last three years. Randi is the returning champion and is favored to win the race. It is easy to see why the other character would be willing to participate in the proposed gamble (the

other character is expected to win), but it is not clear why Pat, Randi, and Jamie decide to accept the bet. All three of these people, at least implicitly, bet that they are going to fail, though they are expected to succeed.

Though each of the preceding examples involved two people, the focus of this paper is on the behavior of the individual who engages in the meaningful task. Why will an individual bet that she will fail, even when success is more likely? Such behavior may be explained by a variety of perspectives and theoretical frameworks. In this paper, I will discuss four such frameworks. I discuss these theoretical frameworks in turn, and then contrast the predictions of each. Each of these frameworks sets boundary conditions on the observed phenomenon - i.e., under what conditions will people bet that they will fail, even when success is more likely. The purpose of this study is to identify the boundary conditions for such behavior as imposed by each theoretical framework, and to then choose the theoretical framework that best fits observed behavior. The four alternative theoretical frameworks I will explore are termed: 1) Estimation Bias, 2) Social Impression Management, 3) Risk-Diversification, and 4) Defensive Pessimism.

Estimation Bias

If people miscalculate the probability of success, perhaps by overestimating the probability of failure, then we should not be surprised to see them bet that they will fail. For example, people will overestimate the probability of a negative event (e.g., likelihood of earthquake) when they have been thinking about such an event (e.g., Tesser, 1978; Tyler, 1984). It may be argued that in the present situation, if people are considering the consequences of poor performance, dwelling on the possibility of failure, they will be likely to underestimate the probability of succeeding. The subjective probability of success (the probability that the person

assigns to such an occurrence) is then less than the objective probability. When objective probabilities are unknown, individuals must make decisions based on subjective probabilities (e.g., Mitchell & Biglan, 1971). An individual calculates expected return using the subjective probabilities assigned to potential outcomes. Then, even if the objective probability of success is high, if the subjective probability is sufficiently less than the objective probability, people will maximize expected return by betting that they will fail.

In sum, individuals are likely to err in estimating the probability of events, and it is possible that such an error will influence them to act in accordance with what we sometimes observe - i.e., to bet that they will fail when they are expected to succeed. The estimation bias model predicts people will bet they will fail, even though they are trying to maximize expected return from the gamble, when they have incorrectly assessed the odds of succeeding. Such an estimation error should be more likely when the information regarding the objective probability of success is not available to the individual.

Social Impression Management

What will people think if I bet that I will succeed? If the person feels that making such a decision will affect how others perceive her, impression management concerns might influence behavior (e.g., Schlenker, Bonoma, & Tedeschi, 1973). A statement such as "I bet you that I will be successful" might be considered arrogant, or conceited by those who hear it. If such an interpretation is expected, the person bets she will fail to preserve a more positive image. Someone that bets she will fail, especially when success is more likely, might be considered humble. If a social impression such as this is valued, the person will take the gamble that has the lower (monetary) expected return.

However, the effect of impression management concerns on behavior in the current context is ambiguous. The statement "I bet you that I will be successful" might be considered arrogant, as posited above, but it might also be considered confident, which is a more positive trait. Similarly, a person who bets she will fail, especially when success is more likely, might be considered pessimistic. In this case, the person has an even greater incentive not to bet she will fail. What then determines the effect of impression management concerns in the current context? There are two primary factors that must be considered. First, how does the person expect her behavior to be interpreted by others? How others interpret the behavior will be a function of the actual behavior, the situational context, as well as the type of observer (Heider, 1958; Jones & Davis, 1965). Second, what type of image does the person wish to promote? In the current context, if in fact impression management concerns are the reason people bet against themselves, we can infer that these people expect others to judge them harshly if they voice their expectation of success. In the mind of the gambler, the expected monetary loss from betting she will fail is less than the value of maintaining or promoting a positive social impression. This model predicts people will bet they will fail only when their actions can be observed by others[1].

Risk-Diversification

Models of decision-making in economics and social psychology often assume that individuals are risk-averse (e.g., Kahneman & Tversky, 1979). A risk-averse individual prefers

[1] The focus in this paper is specifically on *social* impression management. Certainly, self-identity maintenance and self-impression management concerns (e.g., Murnighan, Oesch, and Pillutla, 1998) strongly influence the behavior of individuals in various contexts. However, the purpose of this paper is to understand a specific type of behavior (i.e., betting failure when success is more likely) and to compare different theoretical perspectives that provide strong and specific explanations for this phenomenon. Self-identity maintenance and self-impression management theories do not provide such an explanation in the current context. It is not clear what type of self-impression an individual might be motivated to promote by betting that she or he will fail.

an amount X with certainty to a lottery that has expected value X, but greater variance (risk)[2]. It follows that individuals will be willing to pay some amount greater than zero in order to avoid a lottery that has expected return equal to zero, but greater variance. This explains such behavior as the purchase of different types of insurance (e.g., health, automotive) and the diversification of stocks in an investment portfolio. If the person remains healthy, the cost of the insurance is not offset by any gain, and the person would have been better off without having purchased insurance. If the person becomes sick, however, the insurance company pays the cost of care (which is much greater than the cost of insurance). In this event, the decision to purchase insurance has paid off. The expected return on health insurance is always negative for the insured – on the average people will pay more for insurance than they receive. Insurance is popular because people are generally risk averse, and prefer to lose a small amount of money (cost of insurance) with certainty, rather than a large amount of money (cost of care) with a small probability.

Aversion to risk takes a slightly more complicated form in investment decisions. The investor's strategy is to purchase stocks that not only have small variance, but also small covariance with the existing portfolio[3]. Sometimes investors will purchase stock that is *negatively* correlated with the existing portfolio. This means that if the existing portfolio rises in value, the new stock is expected to fall in value. The expected return on the stock is negative – the person expects to lose money on this stock. The investor will pursue such a strategy for exactly the same reason people buy health insurance – just in case things go wrong.

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[2] More formally, an individual is risk averse if for any money lottery $F(\bullet)$, the degenerate lottery that yields the amount $\int x\, dF(x)$ with certainty is at least as good as the lottery $F(\bullet)$ itself, where the lottery is described by means of the cumulative distribution function F: $\mathbf{R} \rightarrow [0,1]$. (Mas-Colell, A., Whinston, M.D., &Green, J.R., 1995)

[3] The covariance measures how correlated the performance of one stock is with the performance of another. The risk of a portfolio is the weighted-sum of all variances and covariance's in the portfolio. The weight of each

A person who buys insurance and a person who diversifies the investment portfolio by purchasing a negatively correlated stock are following the same strategy: Risk-Diversification. Both people are confronted with uncertainty as to the state of the world in the future. The person considering health insurance does not know whether she will be sick or healthy in the future. The investor considering an additional stock does not know whether the current portfolio will rise or fall in value. Each person faces two possibilities: one state of the world is good (no cost of care / portfolio value rises), the other state of the world is bad (high cost of care / portfolio value falls). The risk averse individual would prefer less of a difference between the two possible states of the world – rather than have one state that is good and the other bad, the risk averse individual prefers to face two states of the world that are more moderate. In fact, the person is willing to pay to have it this way. To make the potential states of the world not as extreme, one buys insurance, and the other buys the negatively correlated stock. Each of them essentially *shifts* some money from the good state of the world into the bad state of the world. In doing so, the buyer of insurance is now indifferent between the potential states of the world (at least financially) because even if she becomes sick, the insurance company will pay the cost of care – risk is eliminated. The investor, because she has a stock that will rise in value if the existing portfolio happens to fall, now faces two states of the world that are more similar, though there is still some risk. Both can expect to lose money as a result of their decisions, but both have managed to reduce some of the risk they faced – and reducing (or eliminating) risk is valuable to the risk-averse individual.

A person who faces uncertainty in a performance situation may be expected to behave in the same way. If the person is risk-averse, she will be willing to lose a small amount of money

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variance (and by extension, of each covariance) is determined by the fraction of investment capital that is invested in the stock.

with certainty to make the two extreme potential states of the world more moderate. If the person bets that they will succeed, then in one potential state of the world the person is successful *and* wins the gamble; in the other potential state, the person fails and loses the gamble. Pursuing a risk-diversification strategy, the individual will shift some money from the good state of the world into the bad state of the world. The risk-averse individual will prefer to lose the gamble when she is successful, and to win the gamble in case she fails. To diversify the risk, the person will bet she will fail. By doing so, the person expects to lose money on the gamble, but much like the investor, she is better off due to the reduction in risk. This model predicts people will bet they will fail when they want to offset potential failure with a gain from the gamble.

Defensive Pessimism

A person might benefit by lowering outcome expectation. If failure is anticipated, then actual failure will not hurt very much and actual success will be even sweeter than it would be otherwise, because it will come as a pleasant surprise. If success is anticipated, exactly the opposite is true. Actual success will not be as enjoyable, and failure might be devastating. Norem and Cantor (1986) refer to such a strategy as "defensive pessimism". In particular, Norman and Cantor state that "defensive pessimism is an anticipatory strategy that involves setting defensively low expectations prior to entering a situation, so as to defend against loss of self-esteem in the event of failure" (pg. 347). Social comparison theory (Festinger, 1954) suggests that the amount of satisfaction people derive from their outcomes is based in part on the comparison of this outcome with the outcome of relevant others. But people not only compare their outcomes with the outcomes of others, but also with imagined outcomes – outcomes that

"may have been" (e.g., Kahneman & Miller, 1986; Medvec, Gilovich, & Madey, 1995). This suggests that anticipating failure may increase the satisfaction with the eventual outcome. Any outcome (success or failure) will be better appreciated if it is being compared to potential failure rather than potential success. This explains the need to *anticipate* failure, but it does not explain why it is important for people to *bet* that they will fail. The reason for this is that people are consistency seekers. It is not easy for people to simultaneously hold two conflicting, or incongruous thoughts (Festinger, 1957). It follows that the person will not be able to simultaneously anticipate failure and bet that she will succeed. To anticipate failure, the person must fully commit to the idea that failure is the likely outcome. When this is done, it makes sense for the person to bet that she will fail. This model predicts people will bet they will fail when a lower expectation of task outcome will increase outcome satisfaction.

Testing Alternative Frameworks

In this section, I explicate the predictions made by each of the four theoretical frameworks. In particular, I indicate how the predictions of any one model differ from those of other models. In doing so, I provide a strategic framework with which to test the alternative models in an empirical context.

According to the estimation bias model, the reason people bet that they will fail is that they underestimate their actual chance of success. Neither the social impression management model, nor the risk-diversification model makes such a claim. The defensive pessimism model does make a similar claim. However, the expectation of failure in the defensive pessimism model serves a specific purpose for the person – enhanced gratification from actual outcome; no benefit is associated with the miscalculation in the estimation bias model. This distinction will

allow us to differentiate the two models in an empirical context. Both models predict that a person is likely to overestimate the probability of failure, but according to the estimation bias model, this overestimation should not take place when objective probabilities of success are made available to the individual. If we find that people do not bet that they will fail when information regarding the objective probability of success is made available to them, but they do otherwise, we will support the estimation bias model.

According to the social impression management model, it is the actual announcement (verbal or otherwise) that deters people from betting that they will succeed. It follows that if the person is able to make the wager (success or failure) anonymously, the person will always bet she will succeed when success is more likely. No other framework makes such a prediction. To support the social impression management model we must find that under conditions of anonymity, people will no longer bet they will fail when success is more likely.

According to the risk-diversification model, the reason a gamble with negative expected return is chosen is that it helps to shift money from the good state of the world to the bad state of the world. It follows that in the absence of a reward for having guessed the outcome correctly, people will have no reason to bet they will fail when success is more likely. Taking away the reward for winning the bet eliminates the option of diversifying risk and so according to the risk-diversification model, it eliminates the motivation to bet "fail" when success is more likely. To support that risk-diversification model, we must find that when the reward from winning the bet is taken away, people no longer bet they will fail when success is more likely.

According to the defensive pessimism model, the person is made better off by having low expectations of herself. The defensive pessimism model presupposes two conditions: 1) the outcome is meaningful to the individual, and 2) the person's self-evaluation is susceptible to

performance on the meaningful task. It follows that if a person has high self-esteem, it is likely that setting a goal (high performance) and not achieving it will not be a big deal. For someone with low self-esteem, performing poorly when high performance was expected could be much more traumatic. So, the defensive pessimism model predicts low self-esteem individuals are more likely to bet they will fail than high self-esteem individuals. No such distinction between these two groups is predicted by any of the other three models. To support the defensive pessimism model, we must find that when success is more likely, people with high self-esteem are less likely to bet "fail" than are people with low self-esteem.

To summarize, we have the following framework within which to test the alternative models.

- If people are less likely to bet "fail" when the objective probability of success is made available to them, we support the estimation bias model.
- If people are less likely to bet "fail" when their bet is anonymous, we support the social impression model.
- If people are less likely to bet "fail" when the reward from winning the bet is eliminated, we support the risk-diversification model.
- If people with high self-esteem are less likely to bet "fail" than are people with low self-esteem, we support the defensive pessimism model.

Methods

Two studies examine the tendency of some people to bet that they will fail in a task even when they are more likely to succeed. The first of these is a laboratory experiment in which all four of the theoretical models are tested. The second is a field study in which the risk-diversification and defensive pessimism models are pitted against each other in a richer, more

realistic context[4]. This approach follows the advice of Runkel and McGrath (1975), among others, who suggest the use of multiple methods in testing hypotheses. The first study provides greater control over the conditions in the experiment and allows the experimenter to randomly assign participants in all conditions. In the second study, some control is sacrificed in exchange for the opportunity to study the phenomenon of interest in a more natural setting.

In the first study, college students are first given a test that ostensibly measures spatial reasoning ability. To manipulate self-esteem, they are then given either positive or negative feedback on the test. They are then told they will soon be completing a different task that measures verbal ability. Participants are then either given or not given statistics regarding the past performance on this task by other students who are like them. Participants are then asked to bet either $5 or no money (a "gentlemen's bet") regarding their own performance on this test. Finally, half of the participants make this bet anonymously, and the other half of the students are told that the bet they make will be printed on a sheet that all current and future participants will see. [See Table 1].

Study 2 focuses on the behavior of college students who are preparing for final examinations. In this study, half of the students are given the choice to bet $5 on either of two outcomes. They can choose to bet $5 that they will receive an 'A' on their final examination, or to bet $5 that they will receive a 'B' on their final examination. The other half of the students are told that they will be given $5 regardless of what they bet. All students in this study are

[4] These two models are revisited in Study 2 to the exclusion of the Estimation Bias and Social Impression Management models because the manipulations required for the latter two are relatively straightforward in Study 1. On the other hand, it seems appropriate to study the effects of self-esteem and assessment of risk in a field setting because the extents to which self-esteem can be manipulated in a laboratory experiment and the extents to which poor performance on a laboratory task will be considered a "risk" are themselves empirical questions. As such, taking these two issues to the field seems not only appropriate, but necessary.

asked to complete a questionnaire that is designed to measure their self-esteem (a version of Rosenberg's Self Esteem Scale).

Study 1

Participants will be college students that are randomly selected by advertising on campus. Participants will be asked to participate in a study in which they have a chance to win $5. The design of the experiment is a between-subjects 2×2×2×2 factorial (Reward vs. No Reward) × (High Self-Esteem (HSE) vs. Low Self-Esteem (LSE)) × (Anonymous vs. Non-Anonymous) × (Statistics vs. No Statistics). Participants will be randomly assigned to one of the 16 cells. [See, for example, Table 1].

All participants will first complete a short test that ostensibly measures spatial reasoning ability. They will then be given feedback regarding their performance on the test. Participants in the HSE condition will be told that they did "Well Above Average" and participants in the LSE condition will be told that they did "Somewhat Below Average". All participants will then be told that the next part of the study entails an exam that measures verbal ability. They will be told that this exam is considered one of the best available tests of verbal ability and has been shown to correlate highly with professional success. This will be done to increase the meaningfulness of the task for participants. Participants will also be told that this test does not correlate at all with the first test that they took. In reality, the participants will never actually take this second exam. Participants will be given a sheet of paper that has either a lot of information (Statistics condition) or a little information (No Statistics condition) regarding the performance of previous participants who are the same gender, academic major, and age as the participant. The print-out given to Participants in the No Statistics condition will only say that people with similar

characteristics tend to perform "slightly better" than the average participant. The print-out for participants in the Statistics condition will have more detailed and unambiguous information. Specifically, they will be told that participants like them, on average, have received scores that correspond to the 55th Percentile. In addition, there will be information that suggests it is unusual for a participant with the current characteristics to perform below the 50th percentile. All participants will then be asked to estimate their own performance on the task. This will be done two ways. First, participants must choose between "I will probably score Below the Average" and "I will probably score Above the Average". Second, participants will be asked to guess the exact percentile score that they will receive. Responses to these questions will provide the dependent measures. Participants in the Reward condition will be told that if they accurately guess their performance on the first question ("Below Average" or "Above Average", they will receive $5. Participants in the No Reward condition will be told that they will be paid $5 regardless of what they bet. Finally, participants in the Anonymous condition will be assured that no one (not even the experimenter) will know what their bet was, and all task scoring and payments will be made using numeric identification codes of the participants choice. Participants in the Non-Anonymous condition will be told that all bets and names of people who take this exam are posted on a bulletin board which current and future participants can see.

Measures. Fail Rate: The first dependent variable is the percentage of participants in each cell that estimate they will perform "Below Average". This will be called the "Fail Rate". People who bet that they will be below average are betting that they will "fail" when they are actually expected to "succeed". This is because all participants are either given a little information ("people like you tend to perform slightly better than others") or a lot of information (a sheet of statistics) that suggests they should objectively expect to succeed based on prior

probabilities. In either case, someone who bets "Below Average" is betting against the odds. Each of the theoretical models predicts a different pattern of Fail Rates across the different cells. These patterns are summarized in Table 1. In the table, a statement such as "x < y" means that the Fail Rate in cell x is less than the Fail Rate in cell y. That is to say, participants in the x condition are less likely to bet they will fail than participants in the y condition.

Percentile Estimate: The second dependent variable is the percentile estimate that participants in each condition provide. Each of the theoretical models predicts a different pattern of Mean Percentile Estimates across the different cells. These patterns are summarized in Table 2. In the table, a statement such as "X > Y" means that the Mean Percentile Estimate in cell X is more than the Mean Percentile Estimate in cell Y. That is to say, participants in the X condition predict that they will perform better than what the participants in the Y condition predict. For example, if the Defensive Pessimism model accurately predicts behavior, we would expect to see participants in the HSE conditions predict, on average, that they will perform better than participants in the LSE conditions predict.

Potential Results and Hypothesis Testing. Table 1 summarizes the predictions of each model with regards to the first dependent measure. Though the different models provide seemingly conflicting predictions, it is possible that support for more than one of the theoretical models will be found. For example, a result such as:

$$a + b > c + d \quad \textit{and} \quad a + c > b + d$$

provides support for both the defensive pessimism model (HSE < LSE) and the risk-diversification model (No Reward < Reward). In fact, a fifth model, labeled "Integrative Model" that combines the predictions of all four theoretical models is introduced in Table 1. The prediction of this model tests specifically the possibility that all four theoretical explanations

account for at least some of the observed behavior. Though no interaction effects are predicted in this paper, it is certainly possible that more than one main effect will be significant. Table 2 summarizes the predictions of each model with regards to the second dependent measure. It is important to note that the only substantial difference between Table 1 and Table 2 is that the all of the "<" signs have changed to ">". This makes sense, because Fail Rate is expected to be high for those individuals who have a low percentile estimate. Again, the "Integrative Model" combines the predictions of all four theoretical models.

Study 2

Participants will be college students that are randomly selected by visiting on-campus Residence Halls. Participants will be asked to participate in a study in which they have a chance to win $5. The design of the experiment is a between-subjects 2×2 factorial (Reward vs. No Reward) × (High Self-Esteem (HSE) vs. Low Self-Esteem (LSE)). All participants will be first asked to complete a questionnaire designed to measure self-esteem (a version of Rosenberg's Self Esteem Scale[5]). Participants will self-select into the Self-Esteem condition in this experiment.

All participants will be asked the following information: Identification Number, academic status, academic concentration, Grade Point Average, and a list of classes in which they are currently enrolled. In addition, they will be asked to estimate the percentage of 'A' grades that they have received in classes that fall under the same subject as the classes they are currently taking. For example, if a student is currently enrolled in a Calculus course, she will be asked to estimate the percentage of her previous college math courses in which she received an

[5] Demo (1985) has shown that Rosenberg's Self-Esteem Scale is valid in measuring *experienced* self-esteem.

'A'. Then, for each class that they are enrolled in, participants must give the grades they have received on exams and papers so far in the quarter. Participants in the Reward condition will then be told that they can bet $5 on the outcome of their final examination for each of their classes. Specifically, they can choose to bet $5 that they will receive an 'A', or $5 that they will receive a 'B'. This decision will be made for each of their classes. These participants will be told that one of their decisions (i.e., one of their classes) will be chosen to determine their payoff after final examinations are over. If the student accurately predicts the grade for this final examination, the student will be paid $5. If the student does not receive the grade that was predicted, no money will be given. These students will be told that they will either be paid $5 (if they win the bet) or nothing – students will not have to pay if they are wrong.

Students in the No Reward condition will be also be asked to make the same bet, but these students will be paid $5 regardless of their bet. This eliminates the option of risk-diversification.

Measures and Relevant Data

The *objective expectation* of the student's outcome on the test will be measured using the academic background provided by the student. Grade Point Average (GPA), Grades in Similar Classes (GSC), and Grades in Current Class (GCC) will be the three factors used to form the *objective expectation* of each student's grade on the final examination[6]. If two or more of these measures indicate that the student has received more A's than B's in the past, the *objective*

[6] This formulation will be discussed with instructors and students before the study is conducted to make sure that: 1) Students tend to agree that these three factors are the most likely predictors of final examination grade among all factors to which the student has access, and 2) Professor's agree that there is a reasonable correlation between these indicators of past success and likelihood of success on the current test. For the purpose of this research, the first of these is the more important criteria – we are interested in how people behave given their beliefs about the likelihood of success.

expectation for the student *for that class* will be 'A'. If one or none of the measures indicates that the student has received a plurality of A's in the past, the *objective expectation* for the student for that class will be set to 'B'.

Not all data that is provided by participants will be relevant to the current study. For example, if the *objective expectation* for a particular student×class data-set is 'B', the gambling behavior is not useful in testing any of the hypotheses. In this study I am interested in the behavior of individuals who are objectively expected to succeed (get an 'A'). This study will use data that comes from student×class data-sets in which the *objective expectation* is 'A'; all other data-sets will be dropped from the analyses. This should not bias the analyses in any way because all students are told that they can bet 'A' or 'B' for each class, independent of their bets on other classes. Henceforth, any mention of students and participants will refer only to those that are being included in the analyses.

Finally, a distinction needs to be made between data-sets where *objective expectation* is *unanimously A* (all three measures indicate the participant is an A-student) and those data-sets where *objective expectation* is *mostly A* (only two of the three measures indicate the participant is an A-student). Even though both types of data-sets are to be used in the analysis, it is hypothesized that a smaller percentage of students who have a *unanimously A* expectation will bet that they will fail than those students who have a *mostly A* expectation.

Potential Results and Hypothesis Testing

This study will test the risk-diversification model and the defensive pessimism model. The risk-diversification model predicts that students in the No Reward condition will not bet that they will get a 'B'. If the percentage of students in the No Reward condition that bet they will

get a 'B' is not significantly less than the percentage of students in the Reward condition that make the same bet, we will reject the risk-diversification model as a possible explanation. It is not necessary to find that *all* students in the No Reward condition bet they will get an 'A' to find support for the risk-diversification model, because it is possible that this model works in conjunction with other models.

The defensive pessimism model predicts that there will be a difference between the percentage of HSE students that bet they will get an 'A' and the percentage of LSE students that bet they will get an 'A'. If there is no significant difference between these two groups, we will reject the defensive pessimism model as an explanation.

No interaction effects are predicted in this study.

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