

# Seeds of Thought

Cognitive Science Meets Investment Management

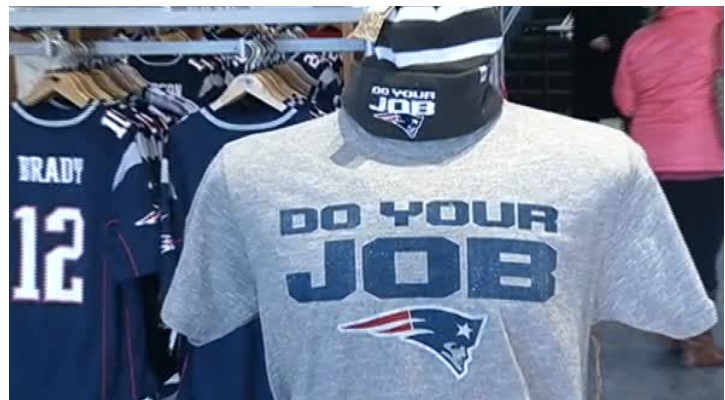
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## Do Your Job: The Power of Avoiding Mistakes

Since 2000, Bill Belichick is far and away the most successful coach in the NFL. Having won slightly more than 80% of their last 200 regular season games, his team, the New England Patriots are head and shoulders above the competition. They are the reigning Super Bowl champs for a fourth time under his leadership, have won 22 playoff games and are on track to easily win their division again this season. The results speak for themselves, but when compared against the other 31 coaches in the league they are simply astounding (see chart).

In fact, his record is so spectacular that many have resorted to accusations of cheating, seeing no other way to explain his incredible success. The reason even the experts are at such a loss for an explanation is that none of the usual explanations apply. While Belichick has exceptional players on his roster, they rarely come to him as stars. He has something of a knack for turning unsung players into superstars who are then poached for their “outlier” skills, yet time and again, those same players fade back to mediocrity in their new homes. The only true constant is quarterback Tom Brady, a sixth round pick from the 2000 draft when 198 players, including 6 quarterbacks, were selected ahead of him. Indeed, Brady is regarded by most as a superstar, but unlike all the other role players in Belichick’s regime who have garnered that kind of praise while on his roster, Brady never left, so whether he would be such a success with another team is up for debate. There is one other semi-constant for Belichick’s Patriots, though. They’ve always had one of the league’s best place kickers. Initially, it was Adam Vinatieri and since 2006, Stephen Gostkowski. Two of the greatest to ever play the position. The fact that these are the only two constants is actually very significant. More on that in a moment.

In the absence of a clear explanation as to why Belichick has been so successful, the experts have resorted to creating narratives that appeal to deep-seated beliefs. Truth is, if they really want to understand the secret of his success, all they need to do is listen to what he says in every pre- and post-game interview. While the press describe him as evasive, the reality is, the faulty communication lies in the experts’ inability to see past their own flawed, unsubstantiated bias. Coach Belichick’s answers to questions like, “How did you prepare your team for your opponent’s explosive offense or dominating defense?”, is repeated so often it has become a mantra for t-shirts and billboards. The answer goes something like this. “We didn’t prepare for them. We prepared ourselves. If all 11 players on offense, 11 on defense and 11 on special teams simply do their job, we have a good

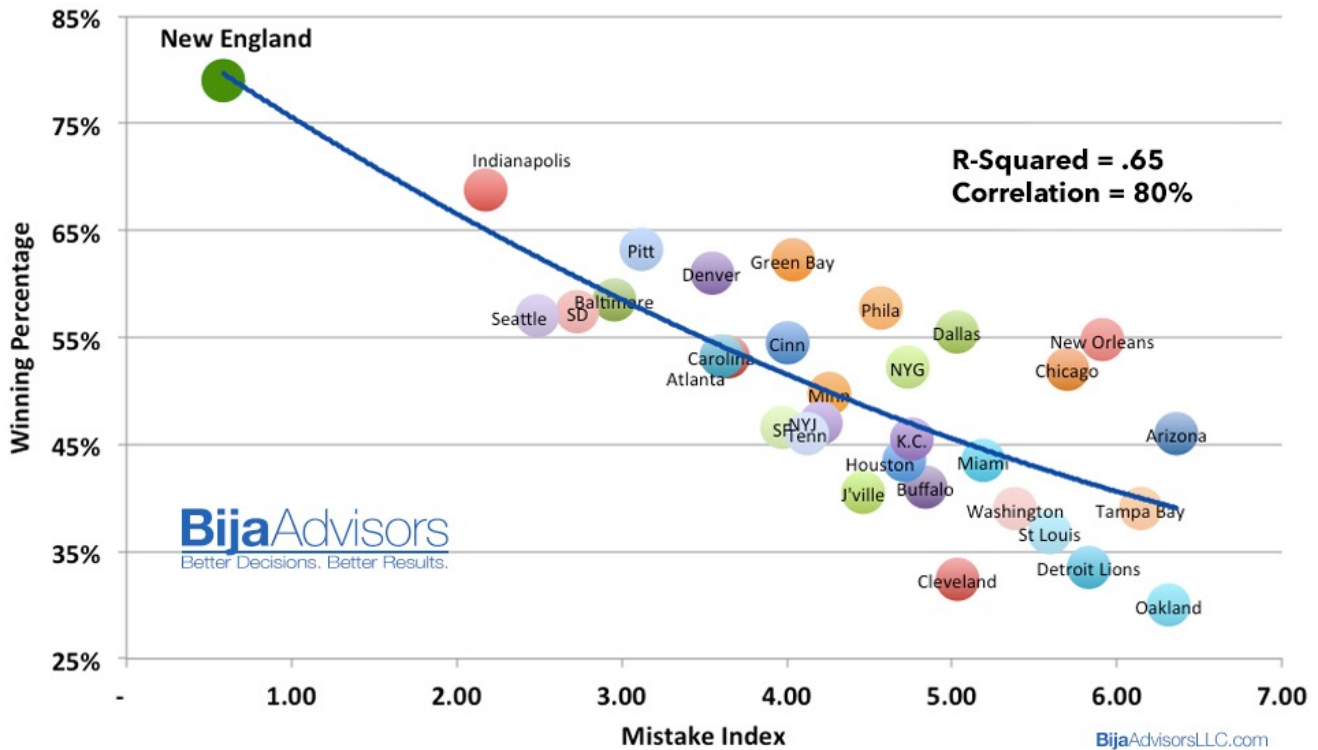


chance to win.”

Since it’s not sexy nor does it sound scientific, and because it’s assumed that everyone needs to do their job in order for a team to win, commentators simultaneously complain about and mock his evasiveness. While it may sound like a stock answer, he’s actually giving away his secret. Not everyone has ignored his mantra, though. Two of the top four playoff contenders in college football today are coached by Belichick disciples, Nick Saban’s University of Alabama and Kirk Ferentz’s University of Iowa. Listen to their press conferences and you’ll hear an eerily similar message.

I’ll be honest, they are my favorite press conferences, because they speak my language, as well as that of the only other coach to lead four teams to Super Bowl victories, Chuck Noll of the Pittsburgh Steelers. His mantra delivered the same message. “Before you can win a game, you first have to not lose it.” Whether you use Noll’s words or Belichick’s “Do your job”, the message is, don’t make mistakes. While that may sound obvious, surprisingly few experts in fields that involve elements of luck and skill (like ours), truly grasp just how different the approach is from the norm. Watch any football game with this mantra in mind, and you’ll see the game in a whole new light. You’ll discover that in almost every game, the outcome is determined by one team making fewer mistakes than the other. Don’t take my word for it though. The data makes the strongest argument.

### The Power of Avoiding Mistakes (200 Games in the NFL)

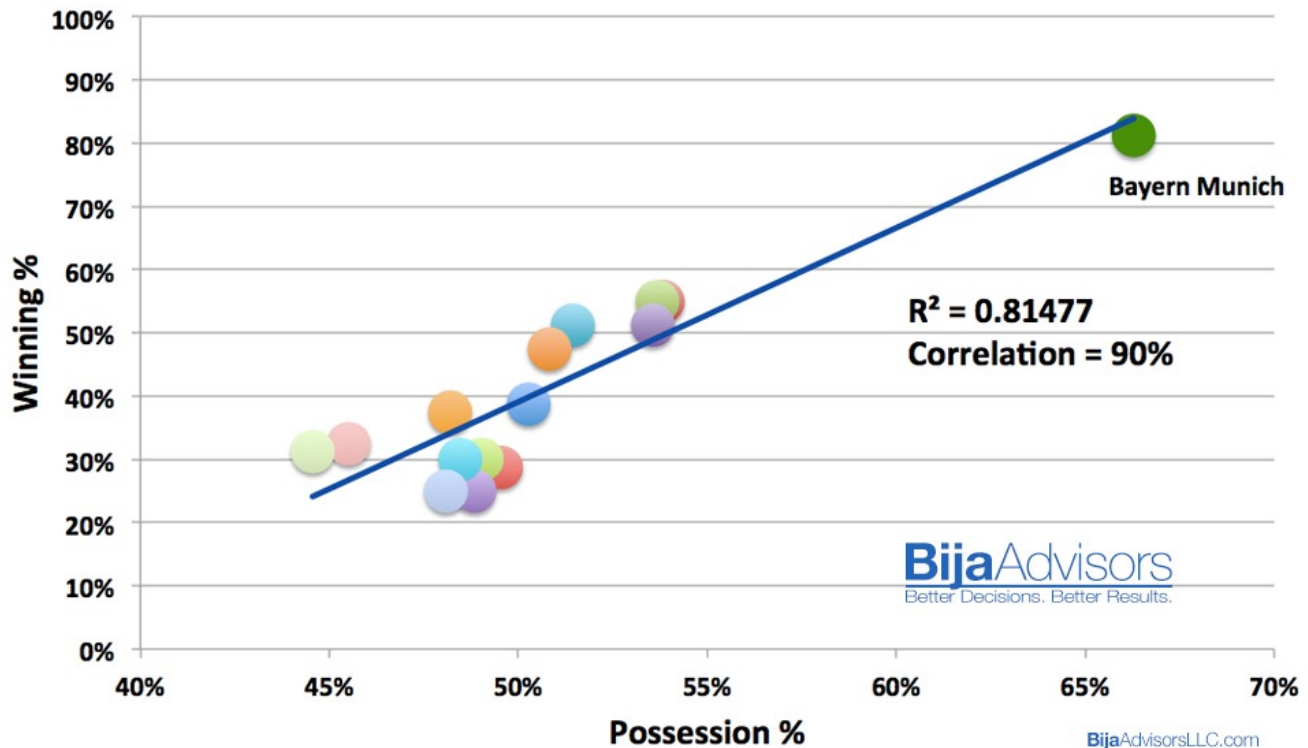


In order to create a “Mistake Index”, I have selected the one statistic from each of the three aspects of the game (offense, defense and special teams) which best represents a mistake in its purest form. It turns out there is a phenomenal correlation between a team’s mistake index and their winning percentage over

time. Truth be told, because of the natural competitive edge created with ball possession, the predictive power is nearly identical if we limit the inputs to two simple statistics—giveaways and field goal conversions. In other words, if the player on offense who touches the ball most frequently can avoid handing it over to the opponent and the player responsible for converting a field goal attempt into points can do so with great frequency, you are likely to wind up with a far better record than your opponents. See how Brady and Gostkowski fit in now? Think about Tom Brady and what adjectives are most commonly attached to his name. It's not “explosive”, “powerful”, or even “creative”, but rather “calm” and “unflappable”. In looking for someone to manage his offense, Belichick doesn't seek out the scrambler or the guy who can thread the needle. First and foremost, he wants someone who won't relinquish the competitive edge they have when simply possessing the ball. That is Brady's strength. Combined with Stephen Gostkowski's 88% field goal percentage, Belichick's team provides a formidable foe for any opponent.

As it turns out, Belichick, Noll, Saban and Ferentz aren't the only ones to discover the power of avoiding the mistake of relinquishing a competitive advantage to the opponent. Since taking the helm in 2013, Bayern Munich's coach, Pep Guardiola, has zeroed in on the very same aspect of his game. Although his mantra has been adjusted to fit soccer, the message is exactly the same. Above all else, he drills into his players that ball possession is of the utmost importance. While in possession of the ball, his team is more likely to score and less likely to incur a penalty than their opponent. In other words, as it is for American football, simply possessing the ball creates a competitive edge. Therefore, it should only be relinquished when attempting a high probability shot on goal. By pushing time of possession to extreme levels, opponents have a greater tendency to become frustrated, making them more emotional,

### Possessing a Competitive Edge 3 Years in the Bundesliga



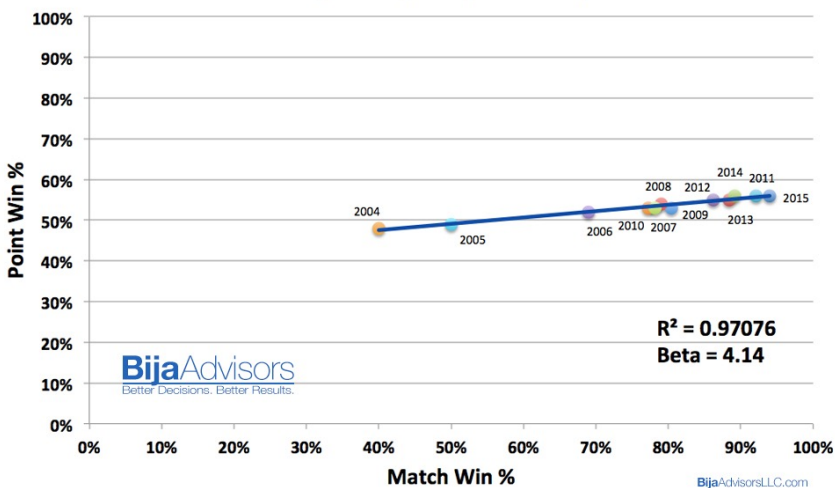
and leading to more mistakes. Those mistakes generate penalty kicks and breakaway opportunities for Pep's squad. In other words, they lead to high probability shots on goal.

None of this is rocket science. In fact, it's all fairly obvious. Why then don't all coaches and athletes focus on reducing mistakes? Much of it can be explained by cognitive bias and incentives. Commentators, highlight reels and the most often quoted statistics all tend to focus on the upside outlier. If an athlete wants to increase his pay, he need only create a narrative that appeals to our cognitive bias for extreme events. A single, spectacular one-handed catch shown repeatedly on ESPN's Sports Center and retweeted a few million times will override the mundanity of a hundred dropped passes over the course of a season. Just ask Odell Beckham Jr. or, if you're a basketball fan, Jeremy Lin. Simply scoring a goal won't set you apart from your peers, but just one well placed bicycle kick might. A low probability missed shot will fade into the background of a team sport with numerous players, all of whom share in the blame for a loss. However, one spectacular shot, and by spectacular I mean a shot that required more luck than skill, will be attributed to the shooter and much of the success laid at her feet. As a result of this skewed risk / reward, much of which we owe to a cognitive shortcoming, athletes expend less effort on tilting the odds of success in favor of them and their teams over time, and instead concentrate on threading the needle, swinging for the fences and unleashing the bone jarring hit in the hopes of being noticed.

There's another reason we focus on creating the memorable play, even at the expense of winning more games. We have a natural predilection for stories that help us make sense of the world in which we exist, even if those stories run in direct opposition to reality. It's more appealing to look at Belichick's phenomenal win/loss record and concoct a spectacular story of deceit and chicanery than to accept that he has crushed his competition by simply reducing his mistakes.

Same goes for athletes competing in individual sports such as tennis. We look at a player like Novak Djokovic and create a narrative of extraordinary dominance over his opponents. He is ranked number one in the world since 2011, has amassed nearly \$17 million in prize money already this year, and wins roughly 90% of the matches he plays. Given those statistics, who in their right mind would expect him to lose to anyone, let alone a young upstart? In explaining such dominance, we go to great lengths to create a story of almost superhuman ability, but the reality is quite different. In achieving everything described above, he still wins just 55% of all the points he plays. That's a mere 3% better than when he was ranked 3rd and earned 1/3 the prize money. Even more interesting, when he was ranked 680th in the world and earning less than \$100,000 per year, he was winning 49% of the points he played. So you see, the difference between good, great and once-in-a-generation is smaller than we think. Novak isn't superhuman. He simply makes slightly fewer mistakes than every one of his competitors.

**Marginal Improvement = Huge Impact**  
Novak Djokovic by Year (2004 - 2015)



So what does this have to do with investing? Everything. Making money in our business comes down to two things; having a portfolio with more winners than losers and / or bigger winners than losers. As it is with most coaches and athletes, investment managers tend to focus on the latter, and that has a great impact on every aspect of their game, from the risk management techniques employed to the rise in popularity of momentum trading. In placing greater focus and importance on skewed returns per trade, much like athletes, we tend to sacrifice the winners to losers ratio. So, if you want to know how to break away from the pack, tear a page out of the playbook of those who have already done it. Focus more on making fewer mistakes by relinquishing that competitive edge only when a high probability shot on goal is available. Remember, it's easier to improve your winners to losers ratio by avoiding mediocre trades than it is to win the lottery.

### About the Author

For nearly thirty years, Stephen Duneier has applied cognitive science to institutional investment management. The result has been the turnaround of numerous global trading businesses, career best returns for experienced portfolio managers who have adopted his methods, the development of a \$1.25 billion dollar hedge fund and 20.3% average annualized returns as a global macro portfolio manager.

Mr. Duneier teaches undergraduate and graduate courses on Decision Analysis in the College of Engineering at the University of California Santa Barbara.

Through Bija Advisors' publications and consulting practice, he helps the world's most successful and experienced investment managers improve performance by applying proven decision-making skills to their own processes.

As a speaker, Stephen has delivered informative and inspirational talks to audiences around the world for more than 20 years on topics including global macro economic themes, how cognitive science can improve performance and the keys to living a more deliberate life. Each is delivered via highly entertaining stories that inevitably lead to further conversation, and ultimately, better results.

Stephen Duneier was formerly Global Head of Currency Option Trading at Bank of America and Managing Director of Emerging Markets at AIG International. His artwork has been featured in international publications and on television programs around the world, and is represented by the world renowned gallery, Sullivan Goss. He received his master's degree in finance and economics from New York University's Stern School of Business.

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