A WINNING MINDSET

A THESIS

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A Winning Mindset

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Abstract

No matter how big or small, almost every decision we make as human beings revolves around emotion. We may not choose to admit it, but emotions play a huge role in our decision-making, no matter the context. In a gambling environment, decisions and choices made are even more blurred by emotion because of the knowledge that money is at risk and can be easily lost. However, in order to be successful, emotional thoughts need to be thrown away in order to allow bettors to make decisions strictly off of their intuition. Gamblers who listen to their initial decision and bet by using their intuition are more efficient and more successful in the long run. Gamblers who over analyze their initial thoughts and second guess their intuition unknowingly create a stressful and elongated gambling process that eventually leads to them losing money.

ON MY HONOR, I HAVE NEITHER GIVEN NOR RECEIVED
UNAUTHORIZED AID ON THIS THESIS

Signature x: Jack Gates

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Introduction

The world of sports betting is home to a mental, emotional, and psychological roller coaster. When a previously confident bet turns negative, an immediate gut-wrenching sensation is felt in one's stomach, spoiling everything else around. The unwanted result boasts its presence, the buzz and background noise fades away, leaving one to accept their defeat. Eventually, the better must pick up the shattered pieces of their dignity and try to figure out the next best move in order to win that lost money back. They meticulously go over the day's slate and try to find the most confident bet to save them from their current hole. Analyzing every line, the player injuries, and even the online advice from the day's more successful betters. Ultimately, the options are a low-risk high reward play of a 5-team teaser, or putting everything on the line, promising oneself, "If I lose this I'm done".

On the contrary, after a successful bet, there's a blur of excitement and the winner is bombarded with volumic cheers, high fives, and fist bumps. The color green showers the account, and the "free" or "house" money elicits a sense of accomplishment and happiness. After checking the slate, the immediate reaction is to continue the success and hammer the next game with those earnings. There's no contemplating, no second guessing, just intuition and the little voice in the back of one's mind saying, "this is the one".

Which strategy—being over analytic or going off intuition—is more lucrative? The theory of loss aversion claims that losing has a way bigger effect on the human brain than winning does (Kahneman & Tversky, 1979). In other words, people hate to lose more than they love to win. That is why when people see a big red negative number in the loss column, "panic mode" sets in. Hands get sweaty, hearts start to race, and one can't help but second guess everything that comes to mind; thanks to nervousness. The saying "scared money doesn't make

money" is a cliché but is none-the-less accurate. While gamblers credit their wins off of intuition, data shows that they are more often than not too scared to act on intuition. As this paper with strive to explain, the threat of a loss weighs more on the human conscience than winning does.

This is where the term "house money" comes into play. The money earned through winning is termed "house money", because that money wasn't the result of hard work, and the gambler lacks a connection with it. As the house money increases, gamblers tend to make bigger, more riskier bets as a result of using money that lacks a conscious value (Kusev et al., 2017). Typically led by intuition, this style of betting is quick, confident, and efficient. With this information, a common question asks if it is more lucrative to always bet on intuition? This research serves to test the outcomes of acting on intuition versus acting on calculated and meticulous pre-betting research.

Throughout this paper, I will be testing a bettor's intuition and how emotions may inhibit that intuition. My hypothesis is that bettors are more successful when listening to their initial instinct instead of rationally overanalyzing every detail in order to make the most logical decision. I believe that the bettors who use their intuition to make decisions quickly and efficiently are more successful than those who take a long time second guessing their initial decision because they are too worried about not losing rather than trying to win.

Literature Review

Although we may not agree, decision making is linked to the emotional part of the brain and your emotions play a role on our in our decision making. In the book *How We Decide*, author John Lehrer wrote, "emotions don't impede rational thought, they underpin it" (p.14). He

told a story about a man name Elliot, who had a small tumor cut from his cortex near the brain's frontal lobe, the section for our emotions. After the surgery, Elliot's IQ stayed the same - testing in the smartest 3 per cent - but, after surgery, he was incapable of decision making. Normal life became impossible. Routine tasks that should have taken him ten minutes now took hours. Elliot endlessly deliberated over irrelevant details: whether to use a blue or black pen, what radio station to listen to and where to park his car. His indecision was pathological. After doing a series of tests, scientists discovered that he had zero emotional capacity. Nothing phased the man, whether it was a severed foot, a naked woman, a house on fire, or similar evocative stimuli. This was an unexpected discovery. At the time, neuroscience assumed that human emotions were irrational (Elster, 1996). A person without emotions should therefore make better decisions. The subject's cognition should have been uncorrupted by his surgery. To Damasio, Elliot's pathology suggested emotions are a crucial part of decision-making. Cut off from our feelings, the most banal decisions become impossible. A brain that can't feel can't make up its mind. This study is foregrounded in the fact that the emotional brain is important in decision making, which in turn creates a learning system where intuition comes into play.

Intuition Over Rational Thought

The human brain is very efficient at taking in new information and making a fast, unconscious decision (Bargh & Morsella, 2008). Our brains are constantly taking in millions of bytes of information so that when the time comes, it can make a decision almost instantaneously. As humans, we commonly refer to the ability of a person's mind to "collaborate and compete" as a natural process and/or reaction (Morse, 2006, p. 2). The brain is able to do this by utilization of the dopamine feedback system. The body's changes in dopamine steer cranial senses and

patterns that the human brain receives and translates (Morse, 2006). In specific relation to this research, dopamine is chemically altered every time a person experiences success and/or failure; ultimately breeding a person's intuition.

For example, Lieutenant Commander Michael Riley (of the first Marine division) was monitoring radar screens and at 5:01 a.m., Riley noticed a blip on the radar that made him very suspicious. Yet, he had been seeing blips similar to this one all night long, this one filled him with fear. His pulse started to race, and his hands quickly became cold and clammy. On the radar, the blip looked identical to American A-6 fighter jets, and it was headed right towards the allied convoy. Trusting his intuition, he decided to issue the order to fire. Riley waited behind the radar console full of anxiety, knowing he could have either killed two of his own pilots or saved the fleet from an Iraqi missile. Fortunately for Riley, he saved an entire fleet, and when he was asked about his decision, he said "I just knew" (p. 32).

When Riley stared at the radar screen, it was most likely his dopamine neurons that told him he was looking at a missile and not an A-6 fighter jet (Lehrer, 2009). Scientists have identified this neurotransmitter to help to regulate all of our emotions (Synder, 2011). As neuroscientists James Olds and Peter Milner named it, dopamine is "the common neural currency of the mind" and helps the brain make decisions when presented with alternatives (Kringelbach & Berridge, 2010). Further expanding on initial research, Wolfram Schultz specified that the dopamine system is all about expectation (Schultz, 2016). As demonstrated in his 1980s monkey experiment, Schultz concluded that the anterior cingulate cortex (ACC) region of the brain will release dopamine, inducing positive sensations throughout the body. This positivity is essentially what gave Commander Riley the "the feeling" to order the fire order. However, whenever the dopamine neurons make a mistaken prediction—like when a gambler expects to win and loses on

a last second play—the brain generates a unique electrical signal, known as error-related negativity (Schultz, 2002). The negativity signal instantly stops releasing dopamine which replaces those previous positive sensations with stress, commonly described as “panic mode” or “spiraling”.

Applying the dopamine feedback system to sports gambling, if a cellular prediction proved false—for example, if a player chose the wrong team to win—then the dopamine neurons immediately stopped firing (Clark, 2010). Disappointment is educational, and that player would not likely choose that same team that lost, even if they are playing a different opponent. However, if the prediction was accurate—if they chose the winning team—then the player felt the pleasure of being correct, and that particular connection was reinforced. As a result, their neurons quickly learned how win and make money. Due to the power of dopamine, the player had experienced the secret to win at a gambling game before they could even understand and/or explain the solution. Ultimately, the ability for a gambler to dually be aware and attempt to control their emotions is advantageous when making bets. Studies have shown that the fluctuations of dopamine are translated into a set of prophetic feelings. While emotions aren’t completely accurate, they are a crucial cognitive tool.

Blink card game

Malcom Gladwell wrote the book *Blink* and conducted a card game gambling experiment (Conan, 2005). There are four decks of cards in front of the player: two red and two blue. The player doesn’t know that the decks are aren’t the same. The red decks have big time winners as well as big time losers which makes it so that you can’t win any money with red. The blue decks are a slow and steady approach of small winners but very few losers. If you stick with only

playing blue, then you will walk away with money. Malcom was asked how long it takes players to figure this out, and his response was “Well, consciously, if you ask them after about 50 cards, they'll say, 'You know, there's something wrong with red.' And after about 70 cards, they'll say, 'I get it. You know, the payoffs are big, but the losses are greater with red,' right? So, they figure it out logically after 70 cards. But at the same time, if you measure their skin conductance on their palms, that is, how much--you know, when you--when we're under stress, our palms start to sweat, so you measuring that sweat. What you find is that after about 10 cards, their palms are sweating whenever they take cards from the red deck. And if you look at their behavior, you'll see that long before they're consciously aware that they're supposed to stay away from red, they've started to shift from red towards blue. And what that says to me is that there's another--we have a second kind of brain operating below the surface that's capable of making very sophisticated judgments very quickly, and that's really what my book is about.

Gladwell named his book *Blink* because he says, "There can be as much value in the blink of an eye as in months of rational analysis” (Ratilde, 2005, p.1). The central theme is about “thin slicing”, which are the snap judgments that we make within our adaptive subconscious. However, in the card game in Blink, everyone starts off under the same circumstances. This card game tested the subconscious and how quickly it actually works. Scientists discovered that our brain realizes the pattern 10 cards in, instead of 50 cards in, without the players even knowing it. The game that I am testing starts players off either in the losing mindset or the winning mindset. By timing each move a player makes, I can see what is going on in their minds and see if they are making snap second decisions using their intuition such as Tom Brady in the pocket, or if they are over thinking things because they are nervous and losing. Malcom Gladwell proved that

there is such a thing as thin slicing and how intuition comes into play subconsciously, but I want to look at how players make decisions when they are losing versus when they are winning.

Loss Aversion

Going back to the book *How We Decide*, John Lerher says "The brain is programmed to avoid loss – 'Wins' triggers dopamine, whilst losses activate the amygdale (the part of the brain that is responsible for creating emotions such as fear and anxiety)" (p.68). The theory of loss aversion is the idea that people hate to lose more than they like to win. Losing takes a larger toll on our emotional state than winning does. Therefore, in a lot of decisions we don't play to win but rather play not to lose.

There two systems, system 1 and system 2, that Nobelist Daniel Kahneman talks about in his book *Thinking*. System 1 operates automatically and quickly, with little or no effort and no sense of voluntary control. For example, it allows you to answer simple math problems, orient to the source of a sudden sound, read peoples expressions, etc. These all require little or no effort. Similarly, to Tom Brady and Lieutenant Riley, we have intuition from constant practice and learning. There are many mental activities that become fast and automatic through prolonged practice such as driving a car down an empty road or reading a billboard.

System 2 allocates attention to the effortful mental activities that demand it, including complex computations. The operations of system 2 are often associated with the subjective experience of agency, choice, and concentration. Intense focusing on a task can make people effectively blind, even to stimuli that normally attract attention. The most dramatic demonstration of this is offered by Christopher Chabris and Daniel Simons, in their book *The Invisible Gorilla*. They constructed a short film of two teams passing basketballs, one team

wearing white shirts, the other wearing black. The viewers of the film are instructed to count the number of passes made by the white team, ignoring the black players. This task is difficult and completely absorbing. Halfway through the video, a woman wearing a gorilla suit appears, crosses the court, thumps her chest, and moves on. The gorilla is in view for 9 seconds. Many thousands of people have seen the video, and about half of them do not notice anything unusual. It is the counting task—and especially the instruction to ignore one of the teams—that causes the blindness. No one who watches the video without that task would miss the gorilla. Seeing and orienting are automatic functions of System 1, but they depend on the allocation of some attention to the relevant stimulus. The authors note that the most remarkable observation of their study is that people find its results very surprising. Indeed, the viewers who fail to see the gorilla are initially sure that it was not there—they cannot imagine missing such a striking event. The gorilla study illustrates two important facts about our minds: "we can be blind to the obvious, and we are also blind to our blindness" (Kahneman, 2011).

Loss aversion is listed in the category of system 1 or "fast thinking". This is why when loss aversion is involved, it effects our intuition, and our brains switch to system 2 or "slow thinking." In my study I am looking at that switch from fast thinking to slow thinking with players are losing and loss aversion comes into play. In other words, when intuition turns into deliberate, rational thought.

Methodology

Emotions are a part of everything that we do, especially when betting or making risky decisions. Loss aversion is the rational thought part of the brain that is telling you to take a step back and look at all of the options which inhibits the fast-track intuition to do its job. Loss aversion creates apprehension because of the idea that the result of losing emotionally outweighs the highs

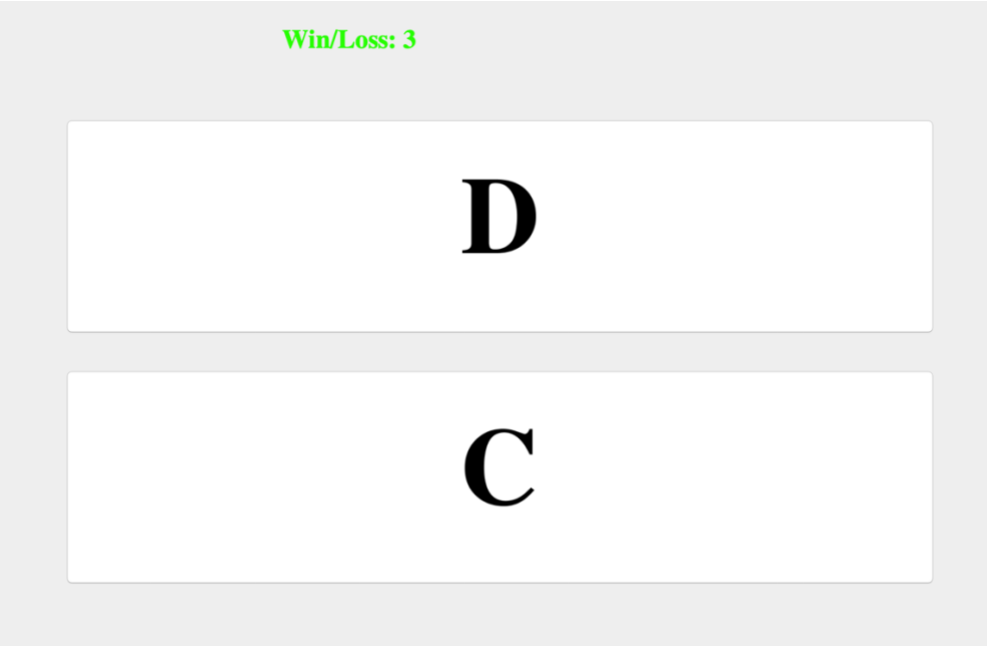
of winning. System 1 and System 2 thought processes work well in unison throughout your life, but my hypothesis suggests intuition is the most important when gambling, and the idea of loss aversion should be thrown out the window or it will always be holding you back.

To test this hypothesis, eighty different players participated in an experiment. All of which were either in college or graduated and it was evenly mixed between males and females. Before they played the game, they were told that the highest score would receive $100 with second and third places receiving $50, but they were not informed that the survey was timed or involved a pattern. There were multiple variables that were examined at the end of each game. Those variables included their total win/loss score, their score in the first half of the game as well as in the second half, average time it took in the first half, average time it took to make decisions when the "A" team was involved, and average correct time as well as incorrect time. I examined many variables by the first half versus the second half because I was curious to see if players would have a worse start to the Alphabet game after losing their first 80% of games involving the numbers. Time, measured in seconds, is used as a mechanism to understand players intuition. Intuition is the ability to make quick decisions or "fast thinking" and therefore those who are using their intuition should be able to have answers under two seconds.

To test the relations between intuition and loss aversion, a UCLA graduate, PJ Smigliani, created two "games" that would test intuition and loss aversion. The game is simple: there are four "teams" that are represented by the letters A, B, C, and D. Two of these letters appear on the screen and the test subject is tasked with choosing which "team" they think is going to win without any previous information about the respective teams. After the subject clicks one option, a green 0 will pop up if the guess was correct, but if wrong, a red X will appear. At the top of the screen, the computer presents the subject's overall score. The person with the highest score

within the trials wins $100, second place gets $50, and third gets $50. These prizes helped to incentivize players to do well and made it more realistic to gambling.

Figure 1: Screenshot of Letter Section of the Game



For the purposes of my research, I created an additional element to the research "games". Prior to beginning, the software randomly assigns each subject with the game set: one where they would start off by winning the majority of the time, and one where they would start off losing the majority of the time. Both games start off with a set of numbers, with the same rules stated above. In game 1—the game to test intuition—the players get 80% correct no matter which numbers they choose. Whereas in game 2—the game to test loss aversion—the players start off by getting 80% wrong. Games 1 and 2 were included in the initial round of the test in an effort to boost or diminish player confidence. This addition is necessary to test the theory that a player's initial attitude is an essential aspect of their guessing accuracy.

Figure 2: Screenshot of Numbers Section of the Game

The participants are unaware that the game is a timed test. The timing of their decisions is notable because it is an indicator of their subconscious approach to making monetary-based decisions. I hypothesize that individuals who started out with game 2 will take a lot longer to make a decision due to second guessing their initial thought. As the loss aversion theory claims, the fear of losing has a much more significant mental impact than winning. On the contrary, I hypothesize individuals that participate in game A will make decisions quicker than their counterparts, as they are less likely to second guess their initial thought and instead, let their intuition guide their choices.

Additionally, the test follows a pattern of wins and losses, which adds another element of testing player intuition by explicitly evaluating their mental reactions to wins and losses. This test does have a small pattern, and this is how I will test their intuition. I combined the win/loss total of the AFC North and NFC South divisions in the NFL so that it keeps up with being realistic to sports betting. Statistically speaking, the letter A wins 41% of the time, B wins 29% of the time, C wins 21% of the time, and D wins 8% of the time. In this way, the letter A becomes an indicator of intuition as it quickly becomes evident it is the most-winning letter.

Those taking the test should eventually figure out that A usually wins and should click A quickly. Those who are losing may second guess their intuition and take longer to choose when A when it pops up and may even choose wrong.

I expect to show that when people are losing their mental reactions to overthink decisions causes them to choose poorly. This might explain when a gambler has lost money, they subsequently keep losing and end up in a monetary downward spiral. In contrast, when a gambler wins money and listens to their intuition, they may be more confident and win more frequently. Furthermore, my research may explain the common phrase when a gambler is "hot" or "on a roll" because they don't overthink decisions and are therefore more risk tolerant

The "A" games are important because they really test our intuitive thought process. Since "A" is the favorable team then our subconscious should realize that and understand that is the immediate answer when it is presented on the screen. Slow answers or the decision to not pick "A" when it is on the screen is a result of overthinking or "slow thinking". This may be caused by the player failing to rely on their intuition, which is caused by second guessing their initial thought because they aren't scoring well. Players who score low begin to steer away from their intuition due to the effects of loss aversion. This often creates a snowball effect that creates further loss throughout the course of the game.

The variables that involve time are representative of fast thinking versus slow thinking or intuition versus rational thought. Decisions were made between .500 seconds and 5 seconds. If my hypothesis is correct, those who chose quickly were players who were performing well in the experiment and going off of their first instinct when presented with a set of letters, while the players who were not doing well were second guessing their initial thought which led to a high time.

Results

Figure 3: Final Data of All of the Players and Two Sample T test (Test of Means)

	Game 1	Game 2	P>t Test Of Means
Average Total Win/Loss	8.95	9.05	.46
Win/Loss First Half	4.76	3.65	.59
Win/Loss Second half	4.15	5.45	.32
Avg. Total Time	2.29 sec	2.37 sec	.22
Avg. Time First Half	2.38 sec	2.52 sec	.11
Avg. Time A Games	2.41sec	2.35 sec	.45
Avg. Correct Time	2.62 sec	2.66 sec	.32
Avg. Incorrect Time	1.89 sec	2.01 sec	.16

As you can see in Figure 1, there is almost no difference between the data when we look at Game 1 versus Game 2 (considering there's only about a 5% difference in all of the data). This is interesting considering players in Game 2 started out losing 80% of the time while players in game 1 started out by winning 80% of the time. Though one would expect that loss aversion and intuition would play a significant role in altering the results of players in Game 1 and Game 2, the minimal difference we actually observed may be a result of the fact that the conscious mind can only deal with small chunks of data at any point in time. In both Game 1 and Game 2, players were exposed to both letters and numbers, which likely inhibited them to identify patterns. The thinking mind is ideal at working with a small amount of data, but when too much is added it then tries to grossly simplify and thus makes sub-optimal decisions. In George Miller's paper "The Magical Number Seven, plus or minus two", He explains that the human mind only has a certain number of "slots" to hold information in its short-term memory. When creating these tests, I made a decision to use numbers instead of letters at the beginning. By doing this, it may have added too much information for the conscious mind to make rash

decisions and pick up on the patterns easily. When doing trial phases of the test, there were no numbers at the beginning and almost every player picked up on the pattern quickly.

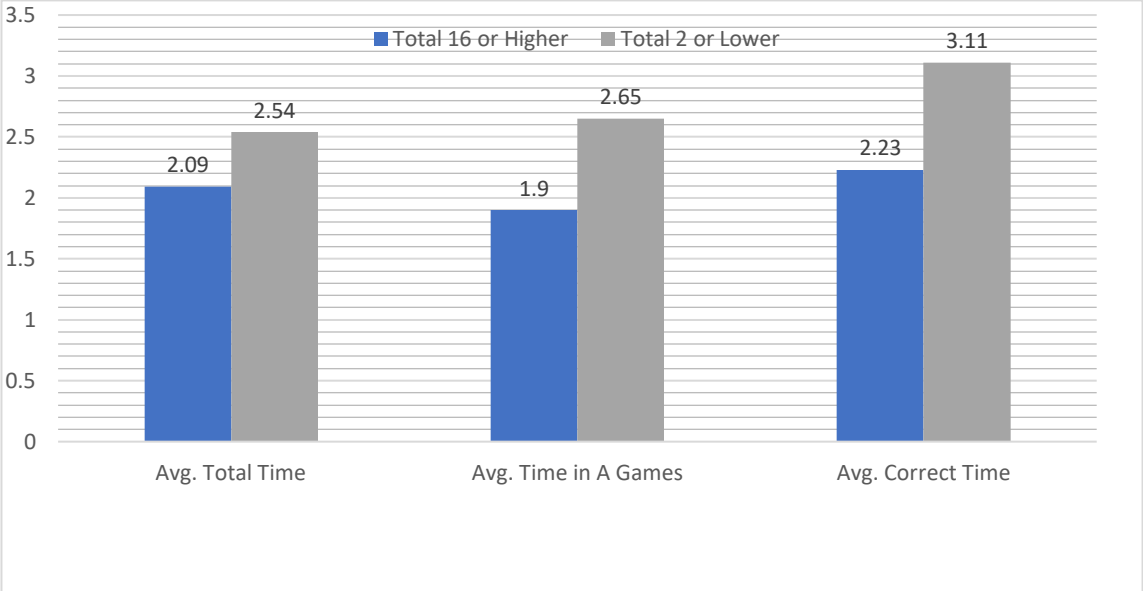
Another theory is that after the numbers the players started off with a “clean slate” before they began with the phase with the letters. This may have created a different mindset for the players and created a more even playing field even though they started out differently. This can be related back to gambling in a sense that gamblers often start off each week with a “clean slate.” The previous weeks wins, and losses do not affect the bettor’s mindset in the week that lies ahead.

There are slight differences in the results that prove my hypothesis. The win/loss in first half compared to second half is very even when looking at game 1. However, in Game 2 the wins/loss in the first half were an entire point lower compared to Game 1 which might be in relation to the players starting out losing. The average time in the first half of Game 2 was definitely higher than the average total time, which may also be because they started out by losing. Getting in that losing mind set makes players think longer about their decisions which result in higher times.

Figure 4: Overall Data of Players with Total Scores of 16 or Higher and 2 or Lower

	High Performing Player (Total 16 or Higher)	**Low Performing Player (Total 2 or Lower)**
Avg. Total Win/Loss	19.36	-3.89
Wins/Loss First Half	10	-1.15
Wins/Loss Second Half	9.53	-2.52
Avg. Total Time	**2.09 sec.**	**2.54 sec.**
Avg. Time First Half	2.23 sec.	2.57 sec.
Avg. Time in A Games	**1.90 sec.**	**2.65 sec.**
Avg. Correct Time	**2.23 sec.**	**3.11 sec.**
Avg. Incorrect Time	1.76 sec.	2.05 sec.

Figure 5: Bar Graphs of Significant Data from Figure 4



Although there wasn't a difference in data between Game 1 versus Game 2, there was a huge difference between the data when comparing the players who did well versus the players who did poorly. Looking at figures 4 and 5, you can see that the variables "Avg total time", "Avg time in A game," and "Avg correct time" are highlighted. These three are very different from players who performed well versus players who didn't. These are significant because this proves that players who performed well made very quick decisions, especially those that involved the "A" team, as well as when they answered correctly. This shows that the top players listened to their first instinct and listened to their intuition when "A" was involved, and it paid off in the long run.

Figure 6: Means Test of Players Total Win/Loss (dependent variable)

Variable	Obs	Mean	Std. Dev.	Min	Max
winloss	79	9	9.341114	-14	24

You can see from Figure 6 that the mean of the total scores (Game A and Game B) was 9.00. So, the top 25% of players landed with scores of 16 or higher and the bottom 25% of players landed with scores of 2 or lower. Figure two gives the same information as figure one, and figure three highlights the main differences that are important when looking at intuitions versus rational thought.

After looking at the quickest and slowest times in each respective category, I was able to calculate how much of a percentage change was between the top and bottom players. The average total time between the top players and the bottom players is a 10% difference, the average time in games involving the letter "A" is a 16% difference, and the average correct time is a 20.5% difference. The base size for this experiment is too small to expect major statistical significance. This is an area for further exploration to increase the base size.

These are important statistics because it gives us insight on the decision making of these players with an emphasis on how quickly they make their decisions. The games that involve the "A" teams are the games that really test intuition. The players who did the best picked up on that intuition quickly and efficiently. They didn't second guess their subconscious which resulted in faster times. Similarly, with the average correct times, those who did well had very quick correct times. Those who second guessed their intuition and took longer to think about their decisions ended up having worse scores.

Explanation of Variables:

WinLoss: A players total score at the end of the entire game (48 questions)
Winlossfirsthalf: A players score in the first half of the game (24 questions)
Avgtime024: Average time it took players to answer the first half questions
Winlosssecondhalf: A players score in the second half of the game (24 questions)
Avgtimeagames: Average time it took players to make decisions that involved the "A" team
Avgcorrecttime: Average time it took for players when they answered correctly
Avgincorrecttime: Average time it took for players when they answered incorrectly

Below is a simple linear regression ran with WinLoss as the dependent variable and the other variables as the independent variables.

Figure 7: Regression with Total Players Total win/loss as Dependent Variable

```
. regr winloss avgtimetotal winlossfirsthalf avgtime024 winlosssecondhalf avgtimeagames av
> gcorrecttime avgincorrecttime
```

Source	SS	df	MS	Number of obs	=	79
				F(7, 71)	=	3839.61
Model	6788.06839	7	969.724056	Prob > F	=	0.0000
Residual	17.9316096	71	.252557881	R-squared	=	0.9974
				Adj R-squared	=	0.9971
Total	6806	78	87.2564103	Root MSE	=	.50255

winloss	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
avgtimetotal	1.852106	.6719902	2.76	0.007	.5121953	3.192016
winlossfirsthalf	.985901	.0115823	85.12	0.000	.9628066	1.008995
avgtime024	-.0560435	.1995157	-0.28	0.780	-.4538666	.3417796
winlosssecondhalf	1.000053	.0123853	80.75	0.000	.9753574	1.024749
avgtimeagames	.0340988	.0675381	0.50	0.615	-.1005683	.1687659
avgcorrecttime	-1.057842	.3913058	-2.70	0.009	-1.838083	-.2776
avgincorrecttime	-.7884468	.3310875	-2.38	0.020	-1.448616	-.1282771
_cons	.1121585	.260045	0.43	0.668	-.4063564	.6306735

In looking at Figure 7, there are some key conclusions to be made supporting my hypothesis that the quicker the answers are then the most likely the players will perform well because they are deciding off of intuition, versus players who do poorly because they over analyze their initial decisions and ultimately second guess their intuition. Looking at the regression with win/loss as the dependant variable, the independent variables with a significant

impact on a player's total win/loss ($p<0.05$) are *avgtimetotal, winlossfirsthalf, winlosssecondhalf, avgcorrecttime, avgincorrecttime*. The win loss first and second half variables are too correlated with the total scores to have a major impact on our hypothesis, so we won't look at those in particular (I suspected these variables to be significantly different because of the two separate starts with the number games, but we figured out that since the players started at zero to begin the letter portion it did not matter much). However, what's interesting to note is the significant variables, the average total time has the biggest impact on a player's total win/loss because its coefficient is the biggest (a 1 unit change in *avgtimetotal* changes *winloss* more than any other variable). This proves that how quick a player makes their decisions is directly correlated with how well they do in the game overall, and how quick a player makes decisions is based upon them using or not using their intuition.

Conclusion

This paper proposed the idea that although emotions are an important part of our every-day decision making, they shouldn't be avoided during the act of gambling. The hypothesis stated that gamblers should use their intuition when making decisions rather than their over-analyzing rational thoughts. After creating a game that tests intuition versus rational thought, we can conclude that the hypothesis is correct. The players who performed the best had the fastest overall times, the fastest times when they answered correctly, and the fastest times when their intuition was really being tested with games that involved the "A" team. Although creating two different games proved to be irrelevant when looking at the data and trying to test the theory of loss aversion, we proved the theory of the "Magical Number of Seven" and how players were distracted and didn't pick up the pattern as easily when there were too many numbers and letters

at one time. This is interesting for gamblers because it shows that previous performances have no emotional impact when given a “clean slate.”

Wiping your emotions clean is a difficult task, as they often appear subconsciously, and we lack awareness of their affects. The human brain too, makes decisions subconsciously and it is a very powerful attribute that we do not recognize in our day-to-day lives. The current study begs the question: What other decisions are controlled by emotion but should be based off intuition alone? As humans, we need to start asking ourselves why we make certain decisions and what brought us to do that, whether it was emotion or intuition alone.

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