

PERFORMANCE UNDER PRESSURE: AN ANALYSIS OF FIELD GOAL ATTEMPTS IN
PRESSURE SITUATIONS

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ABSTRACT

Grayson R. Atkins: “Performance Under Pressure: An Analysis of Field Goal Attempts in Pressure Situations”

(Under the direction of Barbara Osborne)

Collegiate placekickers, especially kickers at FBS Power 5 institutions, across the country experience high levels of pressure when they are called upon to make a field goal attempt that could help their team win the game. This field goal within the presence of pressure can lead to an attempt resulting in an enormous celebration or a disastrous defeat due to a multitude of different factors, like the distance of the attempt, the amount of wind, if the opposing coach calls a timeout before the attempt to ice the kicker, etc. In this study, pressure kicks are defined as an attempt within the last five minutes of the fourth quarter or any kick in overtime to either make the game a one possession game if the team is losing by 9 to 11, if the team is down by less than three points, if the teams are tied or if the kicking team is leading by 6 to 8 to force the game into a two score game for the opposing team. Previous literature has determined that the largest predicting variable in the outcome of the attempt is the distance. Data was recording using the ESPN database and the WeatherStem database. 1,286 total kicks were observed from the 2019-2020 FBS Power 5 football season, with 98 of those attempts being “pressure” kicks. The distance and the amount of wind present were found to be the strongest predicting factors, while the pressure variable was a statistically insignificant variable. Based on the 1,286 observed field goal attempts, this model predicted that collegiate kickers should make the field goal attempt in a pressure situation approximately nine times out of ten.

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CHAPTER 1: INTRODUCTION

1.1 INTRODUCTION

When a kicker jogs out onto the field to attempt a field goal, there are only two outcomes, either a made attempt or a missed attempt. The placekicker position is one of the most unique positions in all of sports. Kickers hold a very individual skill in the context of a team sport. All eyes are on the kicker when they attempt a kick, and they only get one chance to perform their task. The stakes and pressure are increased when the attempt is to win or tie the game. Based on the outcome of the field goal, the kicker may be praised by the fan base for making the kick, but most fans will say that is what the kicker is supposed to do. However, if the kicker misses the kick, they will be blamed for losing the entire game, chastised, and sometimes even threatened. Kickers are expected to be able to control their nerves when faced with pressure to execute their role of making field goals.

Collegiate football has been synonymous with American sports since its creation in the 1880s. Tens of thousands of patrons pour into stadiums across the country every Saturday in the fall to watch student-athletes compete. Within the context of the team game of football is multiple individual skills, including placekicking. While special teams, which includes kicking and punting, are often the forgotten third phase of football behind offense and defense, it is extremely important for the team to be successful. Kickers face immense pressure when they are called upon to perform for their team. A pressure kick is arguably one of the most competitive tasks that any player will face in a football game. Pressure kicks are defined as a field goal attempt, during the last few minutes of the game or overtime, which could result in a tie game or

giving the kicking team the lead if the attempt is successful (Goldschmied, Nankin, & Cafri, 2010). Pressure can produce notable changes when a player is under an increase in pressure at a critical moment at the end of the game. This pressure will either cause them to succumb to the effects of pressure or they will find a way to cope with the pressure and successfully perform their task.

There are many factors that take place during the field goal attempt that will create pressure. Pressure can only truly be felt when an individual is experiencing it for themselves, however, others can recognize when the individual is under stress based on the external circumstances. Factors that increase pressure for the field goal attempt and affect the outcome of the kick include the score of the game, the distance of the attempt, the experience level of the kicker, whether the kicking team is playing at an away stadium or playing in their home stadium, the wind and temperature during the game, whether the kicking team is ranked or not, whether the opponent is ranked or not, the amount of fans in the stands, and whether or not the kicker was iced before the field goal attempt.

Key transformations in the game of football were developed at the hands of Walter Camp, known as the Father of American Football. In 1883, a successful field goal attempt was worth five points until it was changed in 1909 to three points, which stands today (Oriard, 2017). Throughout the history of football, the placekicker has been a deciding factor in games. Adam Vinatieri, the leading scorer in NFL history, had 33 game winning field goals over the course of his career, including field goals to win Super Bowl XXXVI and XXXVIII (Stuart, 2016). Kicking to win the Super Bowl is arguably the play with the most pressure on an individual in all of sports. Multiple BCS Championships and New Year's Six Bowl games have been won on a game winning field goal. USC's Matt Boermeester made a last second field goal from 46 yards

to win the 2017 Rose Bowl against Penn State and Georgia's Jack Podlesny made a 53-yard field goal to win the 2021 Chick-fil-a Peach Bowl (Hanashiro, 2017; Riley, 2021). Kickers must learn to cope and adapt to the possible effects of pressure so that they can perform when their team needs them the most.

1.2 PURPOSE AND SIGNIFICANCE

Most research behind placekicking in high pressure situations has been focused on the NFL (Goldschmied, Nankin, & Cafri, 2010; Hsu, Liu, & Chang, 2019). This research will focus on the collegiate level because it can be a resource to kickers as well as coaches who may lack in their ability to communicate with their kickers regarding how to handle pressure. If kickers are able to understand changes that pressure can cause and have the ability to compartmentalize those feelings, then they will be able to handle the pressure situation better and have a higher success rate on field goal attempts (Jones, 2008). This study is significant because special teams is an incredibly important phase of football, and games can be decided by the outcome of the field goal. Previous research has focused on kickers in the NFL who have learned to handle pressure through years of experience in intense situations. This study will allow college placekickers to recognize the most prominent variables that lead to pressure, so that they can recreate the variables in practice and perform better when they have a pressure field goal attempt in a game.

Based on a multitude of factors, such as home field advantage, pressure, icing the kicker, and the uncertainty of how an athlete will perform when they face a high-pressure situation, the athlete will either perform at the optimal level and make the pressure kick or will let the pressure negatively affect them and miss their kick. The purpose of this analysis is to determine which

distracting factors have an effect on the successful outcome rate of “high pressure” field goal attempts in Power Five college football games over the past several seasons.

1.3 RESEARCH QUESTIONS

Research questions for this analytical study include:

- Is there a relationship between the following variables cited in previous literature and the success or failure of a “high pressure” field goal attempt?
- What factors are the strongest predictors of a successful or failed “high-pressure” field goal attempt?

CHAPTER 2: LITERATURE REVIEW

2.1 KICKER BACKGROUND

Kicking a field goal has always been an integral component of American football since the first field goal in the late 1880s. Placekickers throughout the 151-year history of college football have been placed in pressure situations where all eyes are solely on them, and they must successfully perform in order for their team to win. Michael Leahy, a journalist for the *Washington Post*, said that being a kicker is football's loneliest position (Leahy, 2010). In 2016, *Bleacher Report* furthered Leahy's claim by ranking kickers as the most thankless and pressure-filled position in all of sports (Mazique, 2016, p.4)." The desire to perform well and to make the field goal is certainly an added pressure that kickers face. However, it is not the only factor they are facing when attempting high pressure kicks. While place kicking has been researched for 150 years, most studies are focused on National Football League (NFL). This study tests what researchers have learned from kickers in the NFL as applied to placekickers in the Power Five college football conferences.

2.2 PRESSURE

Pressure is defined as the "excessive or stressful demands, imagined or real, made on an individual to think, feel, or act in particular ways" (American Psychological Association, 2020). Pressure can alter the performance of a person depending on how they deal with the natural sense of anxiety that accompanies pressure. Roy Baumeister has been identified as one of the top social psychologists in history. In 1984, Baumeister analyzed the term "choking under pressure" and

why some people's performance may worsen when they are dealing with pressure. Baumeister found that pressure is a result from "any factor or combination of factors that increases the importance of performing well on a particular occasion" (Baumeister, 1984, p. 610).

When kickers cannot deal with the duress of an important kick like a field goal to win the game, it may result in impairment of the athlete's performance. Performance impairment as a result from pressure is commonly associated with the athlete "over-thinking" the task at hand, which in turn causes the athlete to consciously think about what they are doing, leading them to over-analyze their automated response, which further causes them to adjust their once routine and automated kicking movement (Baumeister and Showers, 1986, p. 362). When an individual faces pressure, they become more aware of the importance to perform or execute a behavior or action correctly. Baumeister concluded that when a person has higher levels of self-consciousness, they are more likely to successfully perform the task and less likely to "choke" under pressure than individuals who are less self-conscious about compartmentalizing their thoughts and emotions (Baumeister, 1984, p.619).

Individuals who are more aware of their everyday behaviors and emotions are more likely to handle the stressful feelings that occur when facing pressure, and those that can handle their emotions in a pressure-filled situation are better equipped to succeed. While comparing student-athletes versus non-athlete students and their responses to pressure situations in the classroom, Alexander Rankin concluded that individuals who can process their emotions are more prepared to succeed in their career (Rankin, 2016, p.36). In terms of kicking, the kickers that can internalize the pressure of the moment and clear it from their minds, are more likely to perform better than the kickers whose minds race when the pressure increases.

Every individual handles pressure in their own unique way. Many times, athletes, especially kickers, will develop a routine in practice so that they can feel confident in games when they face more pressure. Research on routines conclude that routines can reduce the feeling of anxiety and pressure because they can increase a sense of familiarity in a new environment (Hazell, Cotterill, & Hill, 2014; McCann, 2008). Routines also help enhance the feelings of control and confidence when pressure situations tend to dramatically drop those same feelings. Many times, when a kicker is faced with a pressure kick, feelings of stress, concern and anxiety can flood into their brains, but routines help reduce decision-making and thinking (McCann, 2008, p.15).

While some kickers succumb to the pressure of a crucial kick, others find ways to avoid being affected by the pressure and can still successfully attempt the field goal. Kickers, just like other athletes, develop coping strategies to help overcome the pressure. In a study conducted by Krohne and Hindel (1998) focusing on athletes' coping style in ping-pong matches, the two concluded that avoidant coping style correlated with less anxiety and greater rates of success, while the approach coping style led to more anxiety. In sport situations where urgent decisions are necessary, avoidant coping techniques help the athletes to defend against interfering acts and thoughts (Krohne & Hindel, 1988, p. 231). Avoidant coping techniques are used when the individual tries to cope by separating themselves from the threat through techniques like denial and withdrawal. The approach style coping style is when the individual copes by directly facing the threat through techniques like problem solving (Dubow and Rubinlicht, 2016, p. 111). Hamid Bahramizadea and Mohammad Ali Besharat researched the impact of coping with stress in relation to sports achievement and concluded there was a significant positive correlation between

male athletes' avoidant coping style and sport achievement (Bahramizadea & Besharat, 2010, p.676).

Arguably the most common coping strategy for kickers in a pressure situation is to rely on their routine because it can be done without thinking. Routines are an important part of an athlete's ability to perform successfully, however, when an athlete cannot manage their emotions when faced with the adversity of a kick under duress, it can lead to a breakdown in their routine. When the pressure changes a kicker's routine or their mechanics of kicking the ball, what once produced favorable results consistently may now produce a negative result. When faced with a stressful situation, athletes may focus on the multiple parts of a movement in hopes that it will create focus and lead to success. However, "explicit monitoring," focusing on every individual facet of the kicking process, led to a decrease in performance compared to relying on the kicker's automatic response based on repetition and muscle memory (Otten, 2009, p. 597).

In a situation where someone experiences pressure, the fear of failure, or being concerned about making a bad decision or not performing the task successfully, can cause people to overthink the situation. Dr. Sian Beilock coined this response as "paralysis by analysis" (Morin, 2014, p.9). When faced with pressure, overthinking can destroy a person's ability to perform at their full potential.

2.3 PRESSURE KICK-LIKE SITUATIONS

A kicker attempting to clinch a team win in the final moments of a game is one of the highest-pressure situations in competitive sports. When a field goal kicker trots out to attempt a game winning field goal or a field goal that is needed to extend the game, they face a large amount of pressure because they are held responsible for the outcome of the kick and the outcome of the game. However, a game-winning field goal is just one example of a highly

pressured scenario where an athlete either performs successfully or the athlete performs poorly and “chokes.” Research on game-winning pressure situations in other sports, like a penalty kick in soccer or pressure free throws in the final seconds of a basketball game, also informs the current study.

In basketball, the closest comparison to a game-winning field goal attempt in basketball is a player shooting a free throw at the end of a game with the game on the line. Researchers at the University of Texas conducted a study focusing on the effects of pressure on NBA basketball players shooting “pressure” free throws in the final thirty seconds of a game. Researchers found that when a player is shooting a free throw down by one in the final thirty seconds of a game, their free throw percentage decreases by an average of 7%, while their free throw percentage actually rises 2% when the score is tied (Toma, 2017, p. 551).

Penalty shootouts in soccer are another example of a high-pressure situation that is similar to a game winning field goal attempt. Luc Arrondel, Richard Duhautois and Jean-François Laslier conducted a study looking at a sequence of kicks taken during penalty shootouts from the French National Team during three separate cup competitions. The study was composed of a total of 2, 504 kicks taken from 252 penalty shootouts. In the study, the three French researchers concluded that even experienced shooters had lower success levels of scoring when the stakes were high and when there was a greater risk of losing if they missed after finding that the probability drops from 0.739 to 0.663 when faced with pressure (Arrondel, Duhautois & Laslier, 2018, p.21). There are many pressure situations that individuals face, even in the context of a team game, like field goal kickers in a football game.

2.4 DISTRACTION

Kickers may feel an added sense of pressure when there is an element or multiple elements of distraction that they face when trying to perform. Athletes' ability to focus their attention efficiently and remain focused when they do face distractions has been recognized as a crucial part of sport performance. Distraction may be any stimuli or response requirement that is irrelevant to the primary task including external stimulus imposed by a second party or created by the individual (Sanders, Baron & Moore, 1978, p. 292). A distraction can refer to any internal or external factor that can lead an individual to lose concentration on the task at hand. External distractions in sport like crowd noise or comments made by opposing team players can play a role in distracting the kicker, as well as visual distractions like the crowd waving their hands or the video board playing perplexing visuals.

Distraction relates to the mental or cognitive thoughts that an individual has during the performance of a task. In the arena of sports, athletes can be distracted by external elements that are all around them. When the athlete lets their mind wander to these elements that do not relate to the task at hand, it can consume their attention. This leads to a decrease in performance because they are no longer solely focused on the things they need to do to be successful. Rainer Martens and Daniel Landers conducted a study of an individual's motor performance when faced with different elements of distraction (1972). The researchers concluded that when the number of elements of distraction increased, the motor performance decreases (Martens & Landers, 1972, p.355). Applying this logic to kicking, as the number of distracting elements in a stadium increase, the likelihood of a successful field goal attempt decreases. Kickers are constantly trying to eliminate the distractions from their mind, but the opposing team is trying everything they can to cause the kicker to miss the kick, including the opposing coaches. Coaches will often call

timeout before the kicker attempts the field goal to distract them even more. Many psychologists describe this as theory of distraction through aggression because the coach is actively calling the timeout in an attempt to interrupt the kicker from completing their task of making the field goal.

Kickers in the Power Five conferences face many distractions when attempting to make kicks. One element of distraction is visual distractions used by the home team's video board. For example, during the 2020 season, Texas kicker Cameron Dicker attempted a 40-yard field goal while playing at Oklahoma State. The video board operator put several different yellow lines that resembled uprights on the giant video board behind the field goal post. Dicker made the field goal but there was some controversy over the legality of the distraction tactic. It was unclear if there was anything in the Big 12 or NCAA rule book regarding whether or not a move like placing fake uprights behind the field goal posts was allowed, though it could certainly be an effective strategy to rattle opposing kickers moving forward (Selbe, 2020, p.2). Another example of the home team imposing their best distraction tactics is the University of Minnesota video board operator placing a giant chipmunk on the Jumbotron right behind the uprights in TCF Bank Stadium when an opposing team is kicking a field goal (Sherman, 2015, p.3). These are just two examples of an added visual distraction that kickers may face throughout the game, especially when they attempt a high-pressure kick away from their home stadium. Opposing teams will do anything they can to distract the opposing kicker from successfully doing their job. Distractions, no matter if they are visual, verbal or even internal, can certainly play a role in the outcome of a field goal attempt in a high-pressure situation.

2.5 HOME FIELD ADVANTAGE

Playing in front of an audience creates various outcomes in an individual's performance. Many believe that an athlete playing on their home field, which typically is full of a supportive

audience, has a “home field advantage.” The theory of home field advantage has been well researched in the past (Agnew & Carron, 1994; Courneya, 1990; Courneya & Carron, 1992). Home field advantage is described as the “consistent finding that home teams in sports competitions win over 50% of games played under a balanced home and away schedule” (Courneya and Carron, 1992, p.13). Simo Salminen (1993) further concluded that home field advantage occurs when a team’s winning percentage when playing games at home is higher than when the team plays games on the road, no matter what their record is for the season. The idea of a home field advantage is often connected to the idea that a supportive audience in the stands will increase the performance of individuals on the home team while decreasing the performance of the visiting team.

A contributing factor to a team’s home field advantage is how comfortable the team is playing in the stadium. Courneya and Carron (1992) found that the home team has an advantage because of the familiarity of the stadium, including the playing surface and the stadium’s facilities. Further research even found that teams that relocated to a new home stadium reduced the home team advantage (Pollard, 2002, p.972). Playing in a familiar stadium, like playing in the kicking team’s home stadium where they have spent many hours practicing, reduces stress that could lead to a decrease in performance. Therefore, when a team is less familiar with the stadium and the playing surface, statistically, they do not have as large of an advantage over the visiting team as teams that are familiar with their home venue.

Home field advantage has been researched across college football and the National Football League, as well as across other sports. A study conducted by Richard Pollard (1986) found that a home field advantage of 55% was found in the National Football League and 53% in Major League Baseball (Pollard, 1986, p.30). A home field advantage of 70% was found at

basketball games at the college level (Silva & Andrew, 1987, p. 197), while home field advantage was 62% for home teams in college baseball games (Courneya, 1990, p. 625). This prior research suggests a home field advantage in collegiate and professional sports provides a real advantage for a team playing on their home field.

While previous research suggests that home field advantage does exist, there is conflicting research regarding the impact of pressure on individual performances which may not correlate to a home field advantage. Baumeister and Steinhilber (1984) first reported that under certain conditions, playing in front of a home crowd may actually be a disadvantage. Their study found that when individuals shot free throws in the NBA playoffs from 1967 to 1982, the shooter on the home team shot five percent worse than the shooter on the visiting team (Baumeister & Steinhilber, 1984, p. 90). More recent research focusing on the NFL found that the home field advantage was not existent like some may believe (Goldschmied, Nankin & Cafri, 2010, p. 309). One possible explanation for a home field “disadvantage” that researchers have suggested is that individuals are trying too hard to perform well in front of their home crowd which causes a decrease in their performance. For example, an individual may not try to impress a home crowd because the home crowd is more likely to continue to support the athlete even if they fail or do not perform well. However, an athlete may feel an increase in pressure to try and impress an unsupportive crowd, like an away crowd, in an attempt to show the new crowd their ability to perform well. These studies show there is conflicting research both supporting and rejecting the idea of home team advantage at the professional and collegiate levels, while also indicating a potential difference in individual performance related to home team advantage.

2.6 AUDIENCE EFFECT

The most common factor believed to attribute to a team experiencing a home field advantage is the presence of a supporting crowd. Research has found that larger and denser crowds produced a greater advantage for the home team (Agnew & Carron, 1994, p. 59). Therefore, research suggests that a majority supportive audience, typically found when playing a game at home, would lead to an increase in performance, while a majority unsupportive audience, typically found when playing away from home, would lead to a decrease in an individual's performance. The common notion is that positive reinforcement comes from a supportive audience and an unsupportive audience creates negative reinforcement. The role of a present audience can heavily influence the outcome of an individual's performance.

The noise that a crowd generates during the game has an effect on the players. Leonard Wankel (1972) concluded that competition and the presence of an audience are both components of competition, which increases arousal. The behavior of the fans, either positive or negative, can influence the performance of the players on the field. In one study focusing on crowd impact on games, Donald Greer (1983) found that when the home crowd boos the home team, voicing their disapproval with how the team is playing, the team actually responded by playing better which led to more of an advantage. Noise can impact the focus on an athlete, especially a kicker, when they are attempting to complete a task. When the kicker is playing at their home stadium with a majority of the fans supporting the kicker's team, the crowd typically tries to stay as quiet as possible while the kicker is attempting a field goal. However, when the kicker's team is on the road, the crowd will try to make as much noise as possible to affect the kicker in any way they can.

While a home team crowd in the stands of the stadium is often supportive of their athletes which could lead to a higher level of comfortability because they are in their home stadium, a home crowd may also expect more of their athletes, which could lead to a decrease in performance. When athletes try to overperform to impress spectators, they start actively thinking about the actions they are performing instead of relying on their automated response which comes from years and years of practice and game experience. The presence of an audience places a greater value on the individual's performance of a specific task because there is either a reward or a consequence that they may receive (Seta & Seta, 1995, p. 102). Applying this conclusion to the context of field goal kicking, the kicker receives praise when they perform their task successfully, but failure to make the kick receives disapproval and even embarrassment.

2.7 “ICING THE KICKER”

“Icing the kicker” is a common phrased that has been used when the opposing team's head coach calls a timeout right before the kicker can kick the ball. The common argument for coaches is to make the kicker think a little longer about the significance of the kick and to increase the pressure. In a study conducted by Scott Berry and Craig Wood on pressure kicks in the NFL when icing does occur found that “a psychological effect of pressure exists and is compounded by more time to dwell on the kick” (Berry & Wood, 2004, p. 57). The extra time in between kicks can also lead to an increase in negative thoughts, like what happens if they do not make the kick, that come into the kicker's head. Icing the kicker is another example of distraction that the coach is applying to the kicker. The coach's action of calling a timeout is an example of the theory of distraction through aggression.

When a kicker comes onto the field in high pressure scenario, they have gone through their routine, made their mind on where they want to aim the ball and have focused their minds

on how they are going to attempt to make the field goal. New York Giants kicker Graham Gano said “I never go out expecting for the coach to call a timeout. I go out every time the same way as a regular field goal” (Cooper, 2021, p.18). When a timeout being called right before the snap causes the kicker to stop and completely regroup and it forces them to start the process all over again. Many studies and statistical analyses have been conducted on the effects of icing a kicker. For example, in a study researching “high-pressure” kicks in the National Football League, researchers found that NFL kickers were 80.4% successful if they were not iced before the kick, but only 64.4% successful when the opposing coach called a timeout before the snap (Goldschmied, Nankin, & Cafri, 2010, p.307). Opposing coaches calling a timeout right before a potential game winning kick is just another factor that kickers face when trying to perform their job.

2.8 OTHER FACTORS

While most non-kickers would say that distraction of an audience, home field advantage, and icing are the largest contributors to the outcome of a field goal in high pressured attempts, they are not the only factors. Some other factors include the outside pressure, the angle of the kick, the distance, weather, the experience level of the kicker, the kicker’s body mechanics and body makeup, among other potential factors.

2.8.1 OUTSIDE PRESSURES

Kickers are also faced with the pressure of performing well for themselves and for their teammates. Martín Gramática, a former collegiate kicker at Kansas State and an eleven-year veteran in the NFL, said “You feel like you let the whole team down, and that can start to get into your head” (Smiley, 2016, p.2). The possible sense of failure to the kicker and their teammates, as well as public scrutiny are not the only form of pressure that kickers face in the

high-pressure situations. There is also added pressure from the monetary implications that derive from the outcome of games. The “Power Five” is made up of sixty-five schools across five conferences, the Pacific-12 (Pac-12), the Big Ten, the Big 12, the Atlantic Coast Conference (ACC), and the Southeastern Conference (SEC). Power Five football teams generate billions of dollars in revenue every year. In the 2019 fiscal year, the Power Five teams alone generated more than \$2.9 billion in revenue. The revenue increased 6% from the previous 2018 season (Berkowitz, 2020, p.12). While schools are generating millions of dollars in revenue, it also requires millions of dollars expenses.

In a study done based on the finance reports released by the NCAA, it cost teams between \$9 million and \$60 million per win. Washington State was the most efficient team in cost per win with \$9 million and \$76 million in expenses. Clemson and Utah were the next best efficient with a cost of \$10 million per win. The least effective were Rutgers and Kansas with a cost of \$40 million and \$60 million per win respectfully (Porter, 2020, p.1). Winning games through the course of the season is a huge deal and sometimes kickers must make field goals in the late stages of games to clinch a win for their team. Going to conference championships and making bowl games makes the football programs hundreds of thousands of dollars. The Incentive Theory of Motivation proposes that human behavior is motivated by the pull of external goals, like recognition, rewards, and money (Shrestha, 2017, p.2). Applying the Incentive Theory of Motivation to collegiate athletics, student-athletes will have increased incentives to perform well because of money and increase in donations that comes from winning games, the recognition for performing their job successfully and other rewards. With the increased popularity and the high demand by fans, donors, and coaches, these athletes are under immense pressure to perform every time they step onto the field.

Collegiate field goal kickers face tremendous social pressure, especially kickers at Power Five programs. Jimmy Sanderson and Carrie Truax (2014) conducting a study that focused on fan interactions on Twitter either at or about collegiate athletes. Cade Foster, the starting kicker at the University of Alabama during the 2013, missed three field goals against rival Auburn in late November in a loss that eliminated Alabama from potentially winning a National Championship. After the misses, there were over twelve-thousand negative tweets that belittled, mocked, and even threatened Foster. Fans also solely blamed Foster for losing the game (Sanderson & Truax, 2014, p. 338). This type of negativity and hatred towards players can destroy a player's confidence and have a negative effect in their performance.

2.8.2 DISTANCE AND ANGLE OF KICK

Most outsiders to placekicking would argue that kicking the ball from the middle of the field would lead to the highest percent chance of successfully making the field goal attempt compared to an angled attempt from a hash. David Park of the University of Georgia conducted a study that focused on the different angles from potential locations on the field where a kick may be attempted from. For example, the study found that a 30-yard attempt from the right hash only has 11.16 degrees of variance to successfully make the kick. The angle of variance needed to make a 50-yard field goal decreases by nearly half to only 6.91 degrees of variance (Park, 2014, p.5). Therefore, attempts from a closer distance have a better angle, in terms of the width of the angle, to successfully make the kick.

The angles of the kick play a role in the outcome of the field goal attempt, as well as the distance of the attempt. Kickers are typically much more successful from kicks attempted from 40 yards and in. In a study by Rodger Sherman, kickers in the NFL made 93.4% of their attempts from 18 to 39 yards from 2010 to 2018. That percentage heavily decreased when the distance of

the attempt increased. NFL kickers from 2010 to 2018 attempting a field goal over 40 yards had a success percentage of 72.8% (Sherman, 2019, p.8). The main reason for kicks missing from longer distances is because there is a greater amount of time that the ball takes to get to the uprights, which means that there is an increase in the chances that something that can go wrong during the flight of the ball. All teams, from high school to the teams in the NFL, are looking for kickers with both accuracy and a deep field goal range, meaning that the kicker has the leg strength and leg speed to make attempts from more than fifty yards, sometimes even sixty yards. Attempts from over forty yards require the kicker to strike the ball correctly, otherwise the rotation of the ball will not be end-over-end, causing the ball to drift off the target. The farther the field goal is from the kick, the more exaggerated the improper ball flight becomes, causing a missed field goal.

2.8.3 EXPERIENCE OF KICKER

The common belief in society is that with experience comes more wisdom. Applying this notion to placekicking would mean that with more game experience, the more likely a kicker is to perform well in a pressure situation. In the 2020 football season, 22 of the 65 starting placekickers at Power Five institutions were seniors (NCAA, 2021). In the study conducted by Goldschmied, Nankin, and Cafri, they concluded that experience did not influence the performance of NFL kickers in pressure situations (Goldschmied, Nankin & Cafri, 2010, p.309). However, the researchers were quick to note that nearly all active kickers in the NFL have four years of experience playing in pressure situations in college. In this study, the kickers were found to have started an average of 7.69 seasons in the NFL, meaning that most kickers analyzed have been kicking for at least 11 years. However, in Power Five football, the experience of a kicker may be a large contributor on the outcome of the kick.

Previous experiences and performance of a field goal kicker may impact the performance of the kicker. In a 2007 study, Dr. Liad Uziel found that negative social regard and low self-esteem may result from actual repeated failures, while positive social regard and high self-esteem may result from actual repeated successful performances (Uziel, 2007, p. 35). The more attempts a kicker has in their career may affect the kicker's confidence and affect the outcome of the kick. Applying Uziel's findings to field goal kicking, a kicker with a high field goal percentage over the course of many attempts may perform better because they have more confidence than a kicker who has a lack of experience or had performed unsuccessfully in previous attempts.

2.9 THEORETICAL FRAMEWORK

The effect of pressure on performance can be examined through the lens of many different theories. One theory that applies to place kicking in a pressure situation is the self-focus theory. The self-focus theory was developed by psychologist Dr. Roy Baumeister in the 1970s and early 1980s. Baumeister's self-focus theory focuses on the characterization that performance pressure is any factor or combination of factors that leads to an increase in the feeling of the importance of performing well on a particular occasion (Baumeister, 1984, p. 610). Baumeister defines choking as the inferior performance that occurs in response in the presence of pressure (Baumeister, 1984, p. 610). In Baumeister's theory, when arousal occurs from a pressure situation, like a field goal attempt, the natural response is to become self-conscious and become aware of the magnitude of the moment and the importance of performing the task correctly. High pressure situations raise the levels of self-consciousness and the levels of anxiety in the individual. This conscious attention on performing the task leads to the individual focusing on the execution of the motor skills needed to complete the task. These motor skills are normally automated responses that are developed through repetition, like kicking field goals during

practice. This leads to the individual's performance being impaired because they are focusing on themselves and ultimately failing the task because they are distracted, or "choking" under the pressure. Dr. Baumeister concluded that when an individual can familiarize with the conditions that increase self-consciousness and levels of anxiety will increase their performance when they are faced with a pressure situation because they understand how to consciously control the body to successfully perform the skill.

This study was constructed by having 25 students playing a "roll-up" game. The experimental group was told to focus on their hands while playing the game, compared to the control group who was told to simply focus on scoring the highest score possible. Dr. Baumeister found in his study that the experiment group performed worse than the control group (Baumeister, 1984, p. 612). When pressure was added to the situation in the form of telling the participants the highest score by other participants, the study found that the individual with high levels of self-consciousness performed poorly compared to individuals who had did not increase their levels of attention towards their internal performance process (Baumeister, 1984, p. 619).

CHAPTER 3: METHODOLOGY

3.1 PREVIOUS STUDY DESIGNS

There have been studies across multiple sports that have examined performance under pressure (Cao, Price, & Stone, 2010; Hickman & Metz, 2015). Studies focusing on PGA Tour golfer used a binary logistic model to analyze the probability of a golfer making a putt for a specific monetary value, which is designed to create pressure on the participant. The result of the putt is the binary dependent variable, with a made putt resulting in a monetary reward and a missed putt earning the participant nothing (Hickman & Metz, 2015). The study used several similar independent variables that are used in this study, such as distance and experience.

Studies focusing on pressure free throws in a basketball game closely relate to pressure field goal attempts in football. The study examined pressure free throws in the last fifteen seconds of the game when the score of the game was within ten points. The study used a binary logistic model to analyze which independent variables have the greatest impact on result of the free throw attempt (Cao, Price, & Stone, 2010). This study is similar to field goal kicker because it has a binary outcome, the attempt is either good or no good, and it uses a binary logistic model to find the best predictors for the result of the kick.

Other studies that have focused specifically focus on kicking on variables like distance, temperature, altitude, field surface, precipitation, wind, whether the game was in the regular season or postseason and icing the kicker (Hsu, Liu, & Chang, 2019; Bilder & Loughin, 1998; Morrison & Kalwani, 1993). These studies have all focused predominantly on kickers in the

NFL, while this study solely focuses on kickers at the collegiate level. Most of the studies focusing on kicking used a binary logistic model to determine which independent variables have the greatest impact on the result of the kick. A binary logistic model is used because the result of the kick is binary, it is either a successful attempt or it is a missed attempt.

3.2 DESIGN

Data will be collected from the past three seasons from the Power Five conferences in Division I FBS college football. The conferences that make up the Power Five are the Atlantic Coast Conference (ACC), The Big Ten Conference, the Big 12 Conference (Big 12), the Pacific-12 (Pac-12), and the Southeastern Conference (SEC). The participants will be the starting field goal kickers at the 65 institutions of the Power Five and the University of Notre Dame. The field goal attempts collected for this study must have taken place in the last three minutes of the game or overtime. The attempt must also be kicked where the score differential is 3 points or less. Information regarding the two teams playing in the game, the day the game is played, the score, time remaining in the game, the kicker's year in college, whether the kicker's team was at home, away or a neutral site, the attendance at the stadium and the distance of the field goal attempt will be collected through ESPN. For data regarding the weather, specifically the temperature and wind speeds, will be collected through the WeatherSTEM database. WeatherSTEM is a device that monitors the weather around the stadium through radar. All data collected will be managed in a Microsoft Excel file and then converted to a numerical value in SPSS for analysis.

3.3 MEASUREMENTS

The data that was collected in this study was based on variables that were able observed and recognized. Variables collected in the research were used to predict the psychological components of behavior, as well as how to best cope in a pressure situation. One example of this

is if the collected data suggests that a determining factor in the outcome of a field goal attempt is calling a timeout in an attempt to ice the kicker, then more time should be spent simulating this type of situation during practice.

All field goal attempts by a kicker on a Power Five football team 2015-2016 season to 2019-2020 season were examined, but this study specifically focuses on field goal attempts that occurred in the last three minutes of the game or if the attempt occurred in overtime. From the ESPN website for college football data, the following information related to each field goal attempt: the opponent the kicker's team is playing, the date that the game was played, whether the field goal attempt was missed or made, whether the field goal kicker's team was at home, away or at a neutral site, the difference in the score, whether the kicker's team was tied, behind by one point, behind two points, or behind three points, the time left in the game or if the kick occurred during overtime, the conference the kicking team is in, the distance of the field goal, the kicker's , whether the kicker was iced or not, how many field goal attempts the kicker made and missed earlier in the game prior to the pressure kick, the kicker's experience as the starting kicker in college, and the kicker's field goal percentage from the previous season. The data was recorded into an excel file and then converted exported into SPSS to be analyzed.

3.4 PROCEDURES

Research was collected from secondary data via the ESPN college football website, for all NCAA games played by 65 Power Five team, including Notre Dame, from the 2019-2020 football season. Data was collected from every "pressure kick" that took place over the course of the season. After computing the list of all 65 institutions, all field goal attempts by school were entered to a Microsoft Excel spreadsheet. When analyzing the scores from all the games, if the score was within three points or if the game went to overtime, a pressure field goal attempt may

have occurred. Play by play of the game was provided through ESPN.com to see if the game resulted in a pressure kick during the final three minutes of the game or during overtime that could have tied the game or giving the kicking team the lead.

The play by play provided by the reliable ESPN college football site provided information which including: the opponent, the date the game was played, whether the field goal attempt was successful or not, the length of the field goal attempt, the temperature during the game, the wind speed, whether the kicker's team was playing at home, away, or at a neutral site, the score of the game, the score differential at the time of the kick (whether the kicking team was tied, behind one point, behind two points, or behind three points, the conference that the kicker's school is a member of, and whether or not the kicker was iced or not. The field goal kicker's year of experience in college and their field goal percentage from the previous season were also available through ESPN and included in the data. For each field goal attempt, a successful attempt was entered as a 1 and a failed attempt was entered as a 0. Field goal distance was recorded in yards from the spot where the kick was attempted from.

After the data is collected and recorded into the spreadsheet, a second researcher or a faculty advisor will be used to verify the data from six to seven schools, roughly ten percent of the data collected to ensure reliability of the information that was recorded. The review of approximately ten percent of the data by a second observer will be used to test inter-tester reliability. To analyze the collected data, a binary logistic regression model will be used to compute which variables are the best predictors for the outcome of a pressure kick. In the statistical analysis, the field goal attempt will be the dependent variable and all the other data points collected can be used as independent variables in the model. The first binary logistic regression run contained the independent variables found in the literature review should affect

the outcome of the kick, for example, the distance of the field goal and whether the kicker is playing in their home stadium. Additional independent variables were added to another binary logistic regression model to determine if any other independent variables were significant predictors of the outcome of the kick.

CHAPTER 4: RESULTS

4.1 DESCRIPTIVE STATISTICS

In this research study, 1,286 field goal attempts from 65 Power Five institution, including Notre Dame, were analyzed from the 2019-2020 collegiate football season. Of these kicks, 306 (23.8%) were missed, while kickers successfully made 980 (76.2%) attempts (see Table 1). Distance is typically the biggest factor on whether a kicker is going to make the attempt or not. The average distance of all field goals attempted during the season was 35.73 yards, with the shortest attempt being from 18 yards and the furthest attempt being from 62 yards. Location was also a factor that was analyzed in this study. Out of the 1,286 field goals, 667 (51.9%) of the attempts occurred on the kicker's home field, while 491 (38.2%) of the analyzed kicks were attempted at an away stadium. Kickers from the 65 teams attempted a total of 131 (10.2%) attempts during games played at a neutral stadium. Age and experience were examined in this study to see if it had an impact of the success rate of the field goal attempt. 193 (15.0%) field goals in the 2019-2020 season were attempted by freshmen, 371 (28.8%) were attempted by sophomores, junior year kickers were responsible for 385 (29.9%) kicks, while seniors attempted 280 (21.8%) field goals, and fifth-year seniors attempted 57 (4.4%) field goals.

Table 1. Percentage of Field Goal Attempts Made and Missed in 2019-2020 Season
(N=1286)

Missed		Made	
Frequency	Percentage	Frequency	Percentage
306	23.8	980	76.2

In this study focusing on the impact of pressure on the outcome of a field goal attempt, 98 (7.62% of all attempts) kicks fit the criteria of a “pressure field goal.” There were 277 kicks that occurred in the fourth quarter and 20 kicks that occurred during overtime periods. Kickers successfully made 68 (69.3%) of the 98 pressure field goals attempted in during the 2019-2020 football season (See Table 2). During a pressure situation at the end of a game, icing occurred on just 30 (30.6%) attempts of the 98 pressure kicks. Of the 98 pressure field goal attempts, 13 (13.2%) kicks were attempted when the kicker’s team was down 4 points to 11 points, meaning a made field goal would make it a one score game. 33 (33.7%) field goals were attempted by kickers when their team was down one to three points. Kickers attempting field goals when their team was tie accounted for 35 (35.7%) of the total tries, while only five (5.1%) attempts took place when the kicker’s team were up one to three points. The final 12 (12.2%) attempts occurred when the kicking team was up 4 to 8 points, causing the opposing team to score at least a touchdown or forcing them to score twice.

Table 2. Percentage of Pressure Field Goals Made and Missed in 2019-2020 (N=98)

Missed		Made	
Frequency	Percent	Frequency	Percent
29	29.6	69	70.4

4.2 CORRELATION MODEL ONE

A correlation model was used to analyze which variables had the strongest relationships were the strongest with the outcome of the field goal attempt. The variables that were entered into the model were distance, whether the kicker’s team was in the Top 25, whether their opponent was in the Top 25, which number of game it was during the season, whether the field was grass or turf, the temperature, the amount of wind present, the attendance, the in college, how many collegiate attempts they have in previous seasons, their field goal percentage from the

2018-2019 football season, whether their team won or lost the game, icing, and if the kick was a “pressure” attempt (See Table 3).

After running the Pearson correlation coefficient model, only the distance of the kick and the kicker’s team winning the game had a significant correlation. The statistical significance of the relationship between the field goal attempt and the distance was $p < .01$ with $p < .001$. The Pearson correlation coefficient between outcome of the field goal attempt and the distance of the kick is $-.342$, which is negative. The further the field goal attempt is, the less of a chance the kicker has of making the attempt. The statistical significance of the relationship between the field goal attempt and the kicker’s team winning the game was $p < .01$ with $p = .004$. The Pearson correlation coefficient between outcome of the field goal attempt and the kicker’s team winning the game is $.080$, which is slightly positive.

The next closest variable to being statistically significant was temperature. The statistical significance of the outcome of the field goal attempt and the temperature is $p = .069$, which is still not statistically significant. The Pearson correlation coefficient between the result of the field goal try and the temperature when the kick takes place is $-.051$, which is slightly negative, but the correlation is very weak. Surprisingly, pressure did not significantly correlate to the result of the attempt. The statistical significance of the outcome of the field goal attempt and when the kick occurred in a pressure situation is $p = .099$, which is not significant. The Pearson correlation coefficient between the outcome of the kick and when there is a pressure field goal attempt is $-.046$, which is slightly negative, but the correlation is also very weak.

Table 3. Correlation Coefficient

		Distance	Win	Temperature	Pressure
Good or No Good	Pearson Correlation	-.342**	.080**	-.051	-.046
	Significance	.000	.004	.069	.099
	N	1286	1286	1286	1286

4.3 BINARY LOGISTIC REGRESSION MODEL

A binary logistic regression model was used to analyze which factors were significant predictors for the outcome of the 1,286 field goal attempt during the 2019-2020 FBS football season. The variables that were entered into the first model included: the pressure variable, the distance of the field goal, the amount of wind present, if the kicker was iced, the score differential at the time of the field goal attempt, whether the kicking team was ranked in the Top 25 for that game, whether the opposing team was ranked in the Top 25, if the kicker was kicking at home or at a neutral site, on the road, and the kicker's previous number of field goal attempts from his previous collegiate seasons.

Distance is an obvious factor in the outcome of the field goal attempt. As the distance increases, the kicker has to be more accurate because the margin for error is decreased. The average college football weighs 14 to 15 ounces, so when the wind is blowing more than a couple miles per hour, the wind will affect the direction the ball flies (Culligan & Fedotin, 2018). The conference location could significantly affected the outcome of a pressure kick because of the natural elements, like wind. For example, the weather in games for Big Ten teams naturally has more wind and colder temperature later in the year than games in the SEC because of the geographic location of the schools. In the previous study by Goldschmied, Nankin, and Cafri (2010), icing was found to be effective in the NFL, but there is more money directly involved in

the NFL, which be more of a factor than in collegiate games. The variable of the kicker's team being in the Top 25, because it is believed that better teams will have more talented players, meaning better kickers. As previously studied by Dr. Liad Uziel (2007), repeated successes or repeated failures can impact the future outcomes of performances. Many people assume that the number of years spent in college, the kicker's amount of collegiate field goal attempts, and the field goal percentage from the previous season should be accurate predictors for the outcome of the field goal attempt in a pressure situation.

Table 4. Binary Logistic Regression Model

	B	S.E.	Wald	P-Value	Exp(B)
Pressure	.110	.309	.127	.721	1.117
Distance	-.096	.008	137.311	.000**	.921
Wind	-.029	.014	4.082	.043*	.971
Temperature	-.006	.005	1.894	.169	.994
Top 25 Team	.188	.152	1.534	.215	1.207
Top 25 Opponent	.071	.163	.190	.663	1.073
Away Game	-.129	.146	.776	.378	.879
Grass (0) or Turf (1)	-.038	.144	.069	.793	.963
Number of Career Attempts	.003	.004	.543	.461	1.003
Icing	-.930	.506	3.380	.066	.394

According to this logistic regression model, the only significant variables that would effectively predict the outcome of a field goal attempt were the distance of the kick, with a significance of $p < .01$ with $p = .008$, and the amount of wind blowing, with a significance of $p < .05$ with $p = .043$ (See Table 4). This model estimates that as the distance increases by one yard, the chances of making the field goal drops by 9.1%. According to this model, each mile per wind decreases the chances of making the field goal by 2.9%. One variable in this model that was significant at the $p < .1$ level was the icing, with $p = .066$. This model estimates that the kicker's chances of making the field goal decreases by 60.6% when the opposing teams head

coach calls a time-out before the attempt. According to this model, when a kicker faces a pressure situation, their odds of making the attempt increases by 11.7%, however, pressure did not have a statistical significance on the outcome of the field goal attempt with $p=.721$.

Another interesting finding from this logistic regression model was the location of the game did not have a statistically significant impact on the outcome of the pressure field goal. The model shows playing a game on the road would lower the chances of making the kick by 12.1%, but it is not statistically significant with $p=.378$. Each attempt a kicker has in college increases their chance of making the kick by 3% for every 10 field goal tries they have attempted in their collegiate career, however the number of career attempts is not statistically significant with $p=.461$. Playing on a Top 25 team increases the chances of making it by 20.7%, while playing a team ranked in the Top 25 increases the chances of making the kick by 7.3%, however both are not statistically significant with $p=.266$ and $p=.590$ respectively. Some believe that the playing surface would have an effect on the performance of the kicker because of how the surface interacts with the kicker's foot as they strike the ball. According to this model, playing on turf lowers the chance of making the kick by 3.7%, however, this variable is also not statistically significant with $p=.793$.

In the first logistic regression model, a chi-square test of independence was used to examine the relationship between the included variables and the outcome of a field goal attempt, which was statistically significant at $\chi^2(11, N=1,286)=173.697, p=.000^{**}$, with eleven degrees of freedom ($df=11$). Using the Cox & Snell and Nagelkerke R-square measures to determine the amount of pseudo variance in this logistic regression model, this model explains between 12.6% ($R^2_{CS}=.126$) and 19.0% ($R^2_N=.190$) of the variance. This regression model correctly predicted 76.5 percent of the pressure field goal attempts. The model also predicted that a kicker should

make the pressure kick over 9 attempts out of ten, or 95.3% (See Table 5). The model predicted that kickers would only miss the pressure field goal 16.3% of the time. In comparison to this first logistic regression model, the actual percentage of pressure kicks made during the 2019-2020 season was 76.2%, which is slightly lower than the model predicted.

Table 5. Prediction of All Field Goal Attempts in 2019-2020 Season (N=1,286)

Observed		Predicted		
		Missed	Made	Percentage Correct
Did the Kicker make or miss the kick?	Missed	50	256	16.3
	Made	46	934	95.3
Overall Percentage				76.5

4.4 ISOLATING PRESSURE KICKS

This purpose of this study is to see what factors are not only the best predictors for all the field goal attempts during the 2019-2020 football season, but more specifically, which factors have the largest impact on kicks during a pressure field goal attempt. When this model is applied to only field goal attempts in a pressure situation, distance drops the chances of making the field goal attempt by 7.8% with a statistical significance of $p < .01$, with $p = .008$. This regression model correctly predicted 77.6% of the pressure field goal attempts. The model also predicted that a kicker should make the pressure kick approximately 9 attempts out of ten, or 89.9% (See Table 6). The model predicted that kickers would only miss the pressure field goal 48.3% of the time. In comparison to this first logistic regression model, the actual percentage of pressure kicks made during the 2019-2020 season was 70.4%.

Table 6. Prediction of Pressure Field Goal Attempts in 2019-2020 Season (N=98)

Observed		Predicted		
		Missed	Made	Percentage Correct
Did the Kicker make or miss the kick?	Missed	14	15	48.3
	Made	7	62	89.9
Overall Percentage				77.6

4.5 OTHER INTERACTIONS

In an effort to see if there is any effect of the pressure variable depended on, interaction models were ran to examine the relationship between several variables like, the experience level of the kicker the past season, and games on the road.

When running a regression model to examine the interaction between a field goal attempt during a pressure situation and the past season's experience, this model shows that for every ten percent a kicker made in the 2018-2019 football season, the likelihood of the kicker making the attempt during the 2019-2020 season increases 3%. For example, a kicker who made 80% of their field goals the previous season are 24% more likely to make the pressure kick during the 2019-2020 season. However, this interaction is only statistically significant at $p=.181$, which is not statistically significant. This model could show that kickers that are coming off a high percentage season are confident in their ability to make kicks, which could lead to them performing well in pressure situations. The opposite could be true as well though, with the kickers who did not perform at a high level or did not kick at all, they would be less confident because they are either inexperienced or they were not successful in the past season.

When running a regression model to see the interaction between a pressure field goal attempt while playing a game on the road, this model shows that kicks are 31.6% less likely to make the pressure kick compared to when they are playing a game at their home stadium or at a

neutral site. However, this interaction is not statistically significant, with $p=.416$. This study shows that collegiate seem to be unphased in pressure situations, no matter their experience level or the location of the stadium.

Table 7. Interaction Model

	B	S.E.	Wald	P-Value	Exp(B)
Experience/Pressure	.002	.007	.075	.181	1.003
Away/Pressure	-.380	.467	.661	.416	.684

CHAPTER 5: DISCUSSION

5.1 IMPLICATIONS

After analyzing the results of the correlations and the binary logistic regression models, this study found that the only variable to significantly affect and predict the outcome of the field goal attempt in a pressure situation is the distance of the kick. This could lead to coaches deciding that the odds of scoring a touchdown on a Hail Mary attempt may be more probable than their kicker making a 55 yarder to win. The implication of this study also could help the defensive play calling by the opposing team's coaching. If the opposing team can keep the kicker's team from moving the ball within the 38-yard line, or a 55-yard field goal, the opposing team's chance of the kicker making the pressure field goal greatly decrease. This study may lead college coaches to recruit kickers out of high school that have proven ability to kick longer distance field goals. Kickers, along with all football players, increase their strength and speed once they are in a collegiate strength and conditioning program. For kickers, this increases their ability to kick the ball farther, but knowing that a kicker has the range to consistently make field goals from 50 plus yards in high school can give college coaches assurance that they have the long field goal range.

This study could lead to college coaches paying more attention to the kickers they are recruiting and paying attention to not only their field goal percentage, but also how far their attempts are from and how far the kickers are actually kicking the ball. Having a kicker with the capability to make long distance field goals, especially in pressure situations, increases their

team's chance of winning the game because the offense does not have to move the ball as far downfield. Some collegiate teams currently have a short distance field goal kicker that attempts kicks from inside of 50 yards and a long-distance kicker that attempts field goals longer than 50 yards. This study may lead to coaches recruiting kickers that may not be the most accurate, but who are more powerful and can make field goals up to 60 yards in an effort to give them more flexibility to attempt a long-range field goal that may give their team a chance to win if it comes down to a last second kick.

Another implication that may come from this study is the knowledge of what a timeout can do to affect a field goal attempt. Traditionally, the superstition is that coaches have called a timeout before the opposing kicker has attempted a field goal in a pressure situation in an attempt to meddle with the psyche of the kicker by calling a timeout to make them think about it more and increase the anticipation of the moment. This study shows that calling a time out in an effort to ice the opposing kicker is statistically significant in affecting the outcome of the pressure field goal. Therefore, an opposing coach will have to decide if they only have one timeout and there is less than a minute in a game whether or not they want to attempt to ice the opposing kicker or save the time out for their offense if the kicker ends up making the field goal attempt.

5.2 LIMITATIONS

This analytical study of all field goals attempted during the 2019-2020 football season among Power 5 teams has several assumptions made when the individual variables were recorded during data analysis. The first limitation is the outcome of a missed field goal attempt is solely on the place kicker. Due to a lack of information on the ESPN database, the researcher has to assume that there was no issue with the snap or the hold prior to the kicker contacting the football for the attempt. If there was a bad snap or if the hold was misplaced by the holder, this

could potentially cause the kicker to miss the attempt. A second limitation from the study is the assumption by the researcher regarding the use of the timeout by the opposing team. While the timeout could be used in an attempt to ice the kicker, the coach could be calling a timeout to stop the clock to preserve time or to substitute the right player personnel onto the field for the attempt.

A third limitation from the dataset would be the lack of data regarding the specific angle that the attempt was from. As mentioned in Chapter Two, the angle of the attempt is determined from where the ball is being kicked from. It can be assumed that the angle for making the field decreases as the distance increases, but without the actual data of the angle, this assumption could be a limitation. Due to the lack of some information available in the ESPN database, these limitations may have caused some distorted outcomes in the analysis. A final limitation to this study is the generalization of analysis with only one season of data. While nearly 1,300 field attempts were analyzed, the data is only from the 2019-2020 season. The season results could be different from year to year and further research of multiple seasons of data may lead to a more accurate generalization.

5.3 FURTHER RESEARCH

While the entirety of this data set in this study is quantitative, a more mixed methods approach could be applied in future research. This data does not factor in any psychological aspects surrounding the kicker while attempting the field goal, except for assuming that anxiety or the pressure felt increases during a pressure field goal attempt. Some psychological factors that could be examined are explicit monitoring, coping, and anxiety. Further research could examine the psychological aspects of a field goal attempt and how the results of the attempt may vary due to kicker's mental state. This further research could be done by anonymously surveying all the starting field goal kickers from the Power 5 schools to find out if they experience some

levels of anxiety when attempting a field goal, especially in a pressure situation. Another way that psychological factors impacting the performance of a kicker under pressure could be measured is by using a heart rate monitor. Strength coaches today use wearable monitoring systems, like Catapult or StatSports, to track heart rate, running speed, distance travelled, contact load, and other factors. This data would allow further researchers to see if increase in heart rate during a pressure moment impacts the outcome of the field goal. The ability to track heart rate would also allow future researchers to survey kickers on their coping techniques to slow their heart rate back to normal levels to decrease the influence of adrenaline.

A second variable that could be added to this data set in future research could be the role of the crowd in respect to crowd noise. No stadium is ever going to be completely silent. Normally when the home team is kicking a field goal, the crowd noise level is quieter compared to when the opposing team is attempting a kick. Measurements of crowd noise could be recorded in decibels to determine what level crowd noise truly becomes a factor if it is a statistically significant variable. This aspect could be taken another step if researchers also used data from the 2020-2021 college football season where some games were played with zero fans allowed in the stadium due to Covid-19.

Another variable that could be included is the location the attempt is taking place from, in regard to the hash or the middle of the field. For example, shorter field goal attempts from the right hash are more difficult for right-footed kickers because they have to swing more across their body. While many may think that kicking from the hashes should not make a difference, future researchers may find that kicking from the middle of the uprights may lead to a higher success percentage compared to kicking from the hashes. There are several ways that further

research can be done using this data set or using the procedures and methods to analyze other seasons.

5.4 CONCLUSION

Field goal kicking in football is often a skill that not many football coaches or fans think of until the game is on the line. The outcome of one field goal and could impact the entirety of a season for a team depending on the result. This study found that 7.6% of the 1,286 field goal attempts that occurred in the 2019-2020 FBS season were pressure field goal attempts. The outcome of those kicks may have determined a team's bowl eligibility, a conference championship, or even a National Championship. Many players experience pressure in certain moments during games over the course of a season, but none more than a placekicker attempting a kick to win a game when their team is trailing or is tied, or when they have the chance to put the game out of reach for the opposing team. The kickers in these situations have to be able to shut out all the distractions around them and focus on the one thing that matters, making the field goal when they are needed the most. There are hundreds of studies looking at the effects of pressure on an individual's performance. In most of these studies, pressure negatively impacted the way they performed.

After analyzing the data from field goal attempts from FBS Power Five programs during the 2019-2020 season, this research will add to the knowledge of which factors do and do not significantly predict the outcome of the field goal attempt. This study leads to the conclusion that not all variables that can be measured to predict the outcome of a pressure field goal matter. The largest factor that was significant in this study was the distance of the kick and the amount of wind that is present. As the field goal distance increases, the chances that the kicker makes the

field goal decreases because there is less margin for error. As the amount of wind increases, the likelihood of making the field goal attempt decreases by approximately three percent.

This study was constructed to primarily look at the kickers' performance in a pressure situation at the end of the game. Either the kicker can calm their mind and focus on everything they need to do to make the kick, or their emotions get the better of them and they choke under the pressure of the moment. While previous studies focused on field goal attempts in the NFL found that pressure did impact the outcome of the kick, collegiate kickers proved to be resilient in the 2019-2020 FBS season and showed that pressure did not affect the outcome of the field goal.

The common notion is experience is the best teacher, leading many fans to believe the more attempts a kicker has in their career, the more likely they are to make the field goal in a pressure situation because they know that they have previously done. While kickers who have attempted more field goals in their career, they may appear to be more comfortable and less likely to be phased by the increase pressure. However, this study shows that the number of years the kicker had been in college also did not have any statistical significance to whether or not they made the field goal under pressure, proving that whether the kicker is a fifth-year senior kicking in their first season as a starter has the same chance of making the pressure attempt as a true freshman kicking in their first collegiate game.

Most fans and even some coaches believe that calling a timeout to make the kicker think about the enormity of a field goal in a pressure situation would statistically increase the kicker's chance of missing the attempt, and this study shows that the extra minute that kicker has to think about the kick has some statistical significance on their performance. This study concluded that when a kicker must make a field goal to extend the game or win the game for their team in the

final moments, it ultimately comes down to the talent of the kicker, rather than the previous stats or analytics. This study shows that while the distance of the length of the kick and the weather affects the odds of making the pressure field goal attempt, this study shows that college kickers in the 2019-2020 FBS football season did come through clutch in the final moments of the game. Overall, this analytical study could influence the way collegiate coaches call the plays in pressure situations to help put their kicker in the best position to do their job and tie or win the game for their team when they are needed most.

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